Investment Management Certificate Program (IMCP)

University of Wisconsin-Milwaukee

Lubar School of Business

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Class of 2018 Report Packet

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Recommendation	BUY
Target (today's value)	$59.00
Current Price	$53.41
52 week range	$34.88 - $63.38

Services – Resorts and Casinos

Las Vegas Sands Corp.

Share Data	
Ticker:	LVS
Market Cap. (Billion):	$42.97
Inside Ownership	54.5%
Institutional Ownership	40.9%
Beta	1.30
Dividend Yield	5.4%
Payout Ratio	137.1%
Consensus Long-Term Growth Rate	6.6%

	2014	2015	2016E	2017E	2018E
Sales (billions)					
Year	$14.58	$11.69	$12.51	$12.86	$13.66
Gr %	4.9%	-26.1%	7.0%	2.8%	6.2%
Cons	$14.65	$11.79	$11.51	$114.8	$11.51
EPS					
Year	$3.52	$2.47	$2.75	$2.88	$3.28
Gr %	23.4%	-30.0%	11.3%	4.7%	14.1%
Cons	$3.46	$3.57	$2.35	$2.33	$2.61

Summary:
I recommend a buy rating with a target of $59. Continued expansion within the Asian markets will fuel Las Vegas Sands' growth in the coming years. LVS possesses a global growth business model that is hard to imitate. The firm is positioned well financially to enter into its target markets of Japan and South Korea with force, well ahead of its competition. The stock is undervalued based on DCF analysis. My price target of $59 plus the current dividend yield (5.4%) of $2.88 implies 15.65% upside.

Ratio	2014	2015	2016E	2017E	2018E
ROE (%)	38.2%	28.0%	28.0%	23.9%	27.8%
Industry	21.2%	8.3%	8.3%	2521%	98.6%
NPM (%)	19.5%	16.8%	16.8%	14.9%	16.5%
Industry	4.3%	20.4%	20.4%	2.6%	6.7%
A. T/O	0.65	0.54	0.54	0.55	0.61
ROA (%)	12.6%	9.1%	9.1%	8.1%	10.0%
Industry	6.1%	7.2%	7.2%	4.6%	4.7%
A/E	2.48	2.49	2.39	2.41	2.41

Key Drivers:

- Location: Over 56% of LVS' revenues are derived from the Macau market, where the firm holds the most central properties on the Cotai Strip. The firm dominates the international space, consistently generating superior returns compared to its peer group.
- Potential for Growth in Asian markets: As the firm plans to further expand internationally, and I am forecasting $1 billion in net fixed asset growth in 2016-17, and the firm just opened its Parisian expansion.
- Macroeconomic Trends: The gaming industry is economically sensitive and the stock outperforms during strong economies. Recently higher ISM readings and consumer confidence are positive developments.

Valuation	2015	2016E	2017E	2018E
P/E	16.3	30.3	22.7	20.3
Industry	20.0	42.0	23.9	22.0
P/S	2.34	4.45	3.70	3.40
P/B	5.2	7.7	5.6	5.6
P/CF	9.9	13.5	12.6	11.4
EV/EBIT	13.5	15.2	18.5	15.4

Valuation:
LVS was valued using relative multiples and a three-stage discounting cash flow model. The firm is undervalued on an intrinsic basis (target is $59). Las Vegas Sands appears to be undervalued compared to its peers based on a relative P/E valuation approach.

Performance	Stock	Industry
1 Month	-14.8%	-6.0%
3 Month	-7.2%	4.2%
YTD	21.8%	18.8%
52-week	21.4%	18.8%
3-year	-32.0%	-36.5%

Risks: Threats to the firm include foreign currency fluctuations, declining international revenues, slow growth in Asian tourism market, government regulation, and a world economic slowdown. In addition, LVS faces political risks and the risk of exposure to the premium mass market.

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Company Overview

Las Vegas Sands (LVS) is a world leading developer and operator of integrated resorts. Founded in 1988 by Sheldon G. Adelson, LVS operates on the four pillars of *green buildings, environmentally responsible operations, green meetings, and stakeholder engagement* as part of The Sands ECO360 Global Sustainability Program. LVS operates 10 properties worldwide, most recently opening the Parisian Macau in September 2016. With locations in the United States, Macau, and Singapore, Las Vegas Sands is the premier leader in the global gaming industry. The firm's properties are a destination for VIP, leisure, and business clients. Las Vegas Sands maintains a strict commitment to shareholders, returning more than $14.3 billion to shareholders through dividends and share repurchases since going public in 2004. With a strong history of success both domestically and internationally, Las Vegas Sands is poised to continue its strategy of global growth in order to implement its integrated resorts worldwide. Las Vegas Sands generates its revenues from casino win, hotel and conference room rentals, food and beverage, and from mall operations.

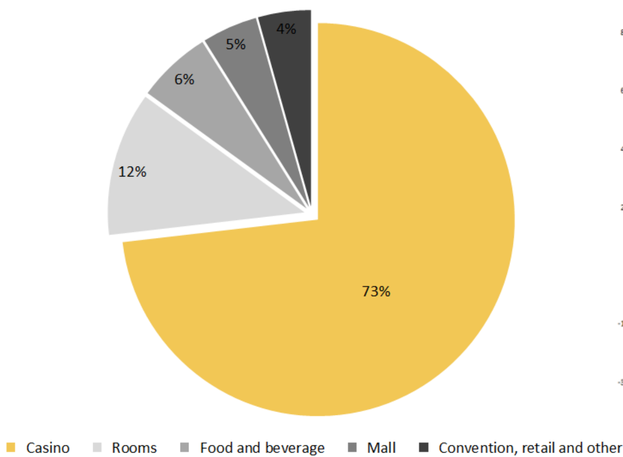
Casinos
The main revenue generation for Las Vegas Sands occurs through the operation of its premier casinos. LVS holds operating leases on casino equipment, allowing for state of the art slot machines and table games to be employed on the gaming-room floors on a recurring basis. Mass and Premium Mass are the designations used by Las Vegas Sands to distinguish revenues derived through its clientele, the general populous and high-roller clients.

Hotel Room
Las Vegas Sands welcomes a wide range of guests, from the high-roller player to the mass market client. As such, LVS has cleverly designed its integrated resorts to meet the needs of each and every individual. In 2015, LVS room revenue was $1.47 billion; consisting of 11.84% of total revenues before promotional allowances. Additional information regarding hotel room revenues, occupancy rates, and revenue per available room can be found in appendix 8: LVS hotel operations.

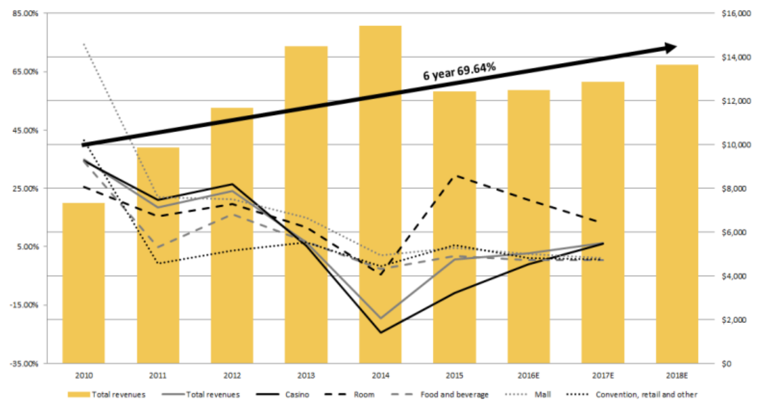
Retail Malls
LVS predominantly generates mall revenues through leases. Tenants are first selected by Las Vegas Sands, and are geared towards high-roller clients. Armani, Dior, Gucci, Prada, and Versace are a few of the iconic brands decorating more than 2.7 million square feet of retail space that Las Vegas Sands maintains across its properties worldwide.

Food and Beverage
The firm's smallest segment consists of casino floor offerings to clients, and several banquet facilities. In 2015, the segment consisted of $757.5 million of the $12.4 billion in revenues, before promotional allowances.

Figures 1 and 2: Revenue sources for LVS, year-end 2015 (left) and Revenue history since 2010



Source: Las Vegas Sands 10-K



Source: Las Vegas Sands 10-K

Business/Industry Drivers

The future success of Las Vegas Sands is dependent on several company-specific and economic factors; the following are the most important business drivers:

1) Location
2) Competition
3) Potential for Growth in Asian markets
4) Shift from VIP to Mass market
5) Macroeconomic Trends
6) Increased Regulation

<u>Location</u>

In the gaming industry, location is critical to the success of any firm. Las Vegas Sands has been sucessful in its development of integrated resorts within its target markets of Macau, Singapore, and Las Vegas. In the Macau market, LVS holds an advantage to its competitors due to the intereconnectedness of its properties, which accomodates the hot and rainy summer season that the region experiences. One of the primary destinations in Macau, settled along the Cotai strip, is The Venetian Macau. Regarded as now the world's nineth most expensive property,[1] valued at $2.4 billion, the 39-story resort provides guests with the largest casino floor in the world. The 10.5 million sq. foot propety is home to the Cotai Arena, as well as 800 gaming tables and more than 3,400 slot machines.

Las Vegas Sands recognizes that it has a strong advantage in the location of its casinos in the Macau gaming market. With transportation in the city of Cotai limited, and the addition of The Parisian by the firm, LVS is able to dominate the market by the proximity of its integrated resorts in relation to the Cotai Strip. With many gaming, mall, and dining options located within its properties, LVS is able to attract a large portion of the VIP and Mass Market.

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[1] Alice Young, "The 10 most expensive buildings in the world," http://www.constructionglobal.com/top10/717/The-10-most-expensive-buildings-in-the-world, (June 10, 2016)

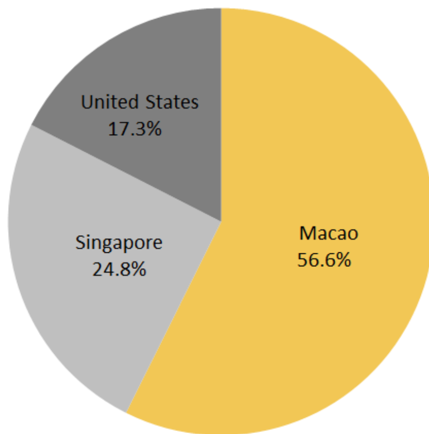
Figures 3 and 4: Las Vegas Sands' new Macau property, the Parisian, during the day (left) and at night

Source: Las Vegas Sands Investor Relations

Source: Las Vegas Sands Investor Relations

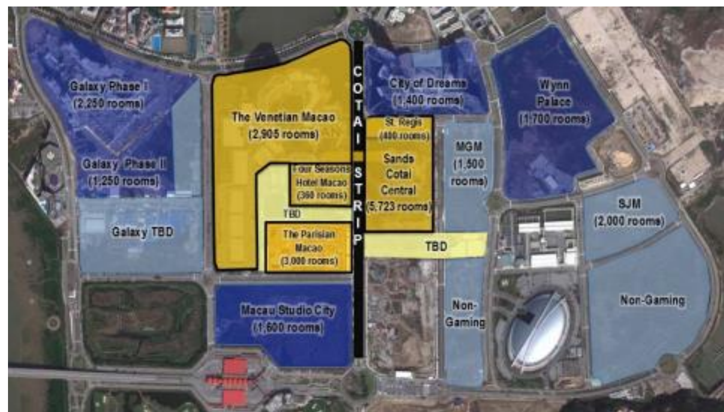
The firm's newest Macau development, the Parisian, debuted on September 13, 2016. Figures 3 and 4 above are fitting of the Las Vegas Sands brand. Overtaking Wynn Resort in Las Vegas as the world's seventh most expensive building, the $2.8 billion integrated resort welcomes guests with a half-scale Eiffel Tower. With nearly 3,000 hotel rooms and 56,000 sq. feet of meeting space, the resort contains a theater, 170 shops and 14 restaurants.

Figure 5: 2015 revenue by region



Source: Las Vegas Sands 10-K

Figure 6: Macau properties



Source: Las Vegas Sands Investor Presentation, November 3, 2016

In Singapore, Las Vegas Sands' secondary market, the firm operates one of the most iconic integrated resorts in the world – Marina Bay Sands. Valued at $5.5 billion, the property is the most expensive resort ever built and is ranked as the second most expensive building in the world. Pictured in figure 7, the Marina Bay Sands property produces nearly 25% of all Las Vegas Sands revenue.

The revolutionary 3-tower structure, each consisting of 55 stories, contains more than 2,500 rooms. Marina Bay Sands is connected at the top by a sky-deck with rooftop bars including an infitinity pool. With attractions including malls, shows, and an ice skating rink, the Marina Bay Sands resort is nothing short of spectacular. With 57% market share in the Singapore market, LVS operates the property against a single competitor, Genting Singapore.

Figures 7 and 8: Marina Bay Sands (left), The Venetian Macau

Source: Las Vegas Sands Investor Relations

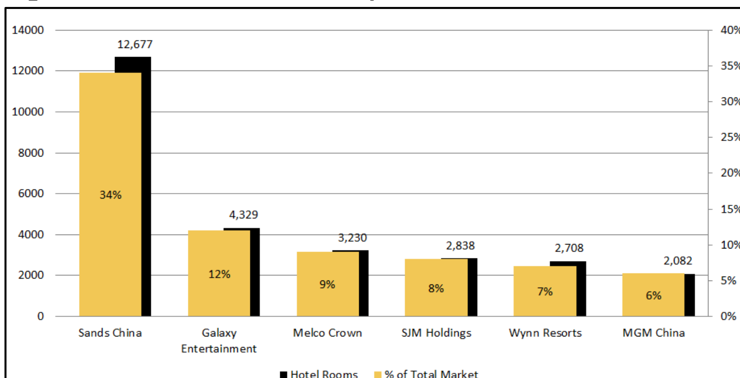
Source: Las Vegas Sands Investor Relations

Las Vegas Sands operates four properties in the United States; The Palazzo, The Venetian, the Sands Expo & Convention Center in Las Vegas, and Sands Bethlehem in Pennsylvania. Located on the corner of the Las Vegas Strip and Sands Avenue are the Palazzo and The Venetian. LVS has a premier location on the strip, and is directly diagonal to a large fashion mall. In Pennsylvania, LVS operates Sands Bethlehem as the only casino within a 45-mile radius. This segment accounted for $549 million in 2015, making up 4.6% of total LVS revenue.

Competitor Analysis

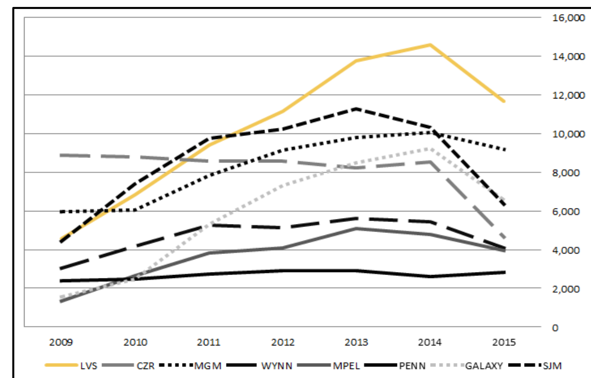
In each of the three markets where LVS operates, the firm faces intense competition for visitors and hotel guests, as well as business in its conference centers. LVS' advantage in Macau market, which contributes nearly 60% of the firm's revenue, is its number of hotel rooms. With the addition of the Parisian Macau, targeted towards the expansion of the mass market client, Las Vegas Sands holds 45% of the market share amongst gaming operators (12,677 rooms); constituting 35% of the total rooms in Macau.

Figure 9: Macau hotel room and percent of market share



Source: Las Vegas Sands 10-K

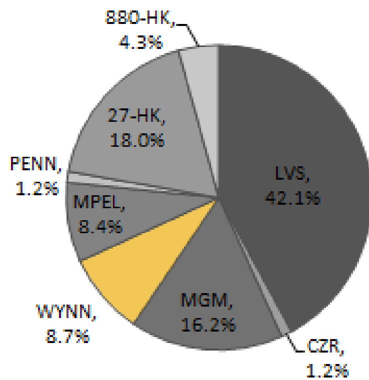
Figure 10: Competitor revenue



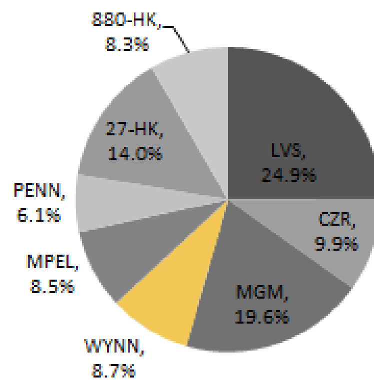
Source: Las Vegas Sands 10-K

Las Vegas Sands holds a strong competitive advantage in the Macau market by offering a diverse base of integrated resorts. With more than $13 billion invested in Cotai, LVS appeals to a broad set of clients by providing concerts, sporting events, family-friendly entertainment, shipping, and numerous tourism attractions. As noted, competitor properties Wynn and Galaxy are further from the Cotai strip and focus primarily on the VIP experience. These competitors lack the capital required in order to expand at the magnitude in which Las Vegas Sands has, and will continue to utilize, to achieve its global growth strategy.

Figures 11 and 12: Comparison of LVS comps by market cap (left) and sales (right)



Source: Las Vegas Sands 10-K



Source: Las Vegas Sands 10-K

Although LVS faces strong competition in the international and domestic markets, the gaming industry is extremely capital-intensive, allowing for LVS to enter into new markets much quicker and more efficiently than its competition. Las Vegas Sands holds a size advantage with 42.1% of total market cap against its top seven competitors, while contributing nearly to nearly a quarter of total sales amongst its competitors. Its higher market cap percentage than its sales percentage reflects its better margins and opportunities.

Potential for Growth in Asian Markets

Adelson has discussed plans to add an additional tower to Marina Bay Sands

Both day-trip and overnight visitors to Macau continue to grow. As gambling in China is prohibited, this is an attractive destination. During the 2016 Chinese Golden Week, a seven-day holiday (October 1-October 7), the number of Macau visitors increased to 970,000 – a 6.9% increase year over year. With the addition of more non-gambling attractions, the Macau market presents a large potential for growth. The Chinese government recognizes the potential of the country to thrive as a tourist destination and continues to invest in the deployment of infrastructure. This is consistent with China's strategy to transform its economy to be more consumer-driven, similar to that of the United States, through raising domestic wealth and consumption.

LVS founder Sheldon Adelson plans to further expand the Macau and Singapore markets. The firm has a single location in Singapore, Marina Bay Sands, positioned along the northern coast in downtown Singapore. Adelson hopes to bring an entertainment arena and an additional tower to the iconic city.

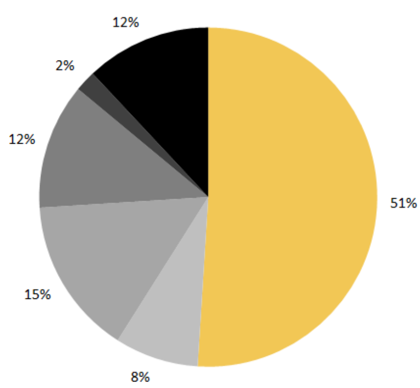
Shift from VIP to Mass market

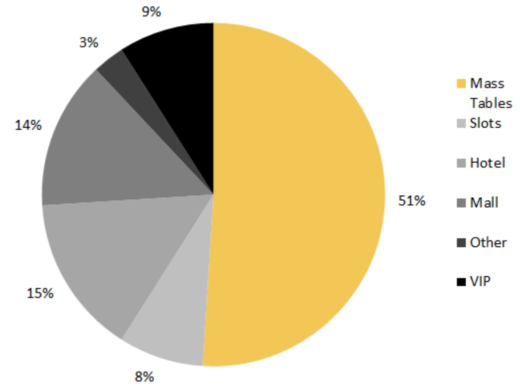
LVS has recognized that the mass market is more profitable than the VIP market. In 2Q16, 59% of the profits in Macau were associated with mass tables/slots and non-gaming. This grew 3% year over year, versus a decline in revenue from VIP tables.

59% of LVS profits in Macau resulted from Mass table and slot operations

The 2016 10-K notes that that high-end gaming is more volatile and variances in win-loss results have the potential to cause large fluctuations in cash flows from operations. As such, Las Vegas Sands is leading the transition to the mass market. VIP revenues shrunk from 12% of profit in 2Q2015 to 9% in 2Q2016. Figures 13 and 14 below highlight the small, yet significant changes to the profit contribution by segment within the Macau market. With strong capacity in the VIP space, transitioning to the more profitable Mass market will improve margins and revenues for LVS.

Figures 13 and 14: 2Q2015 and 2Q2016 Macau profit contribution by segment





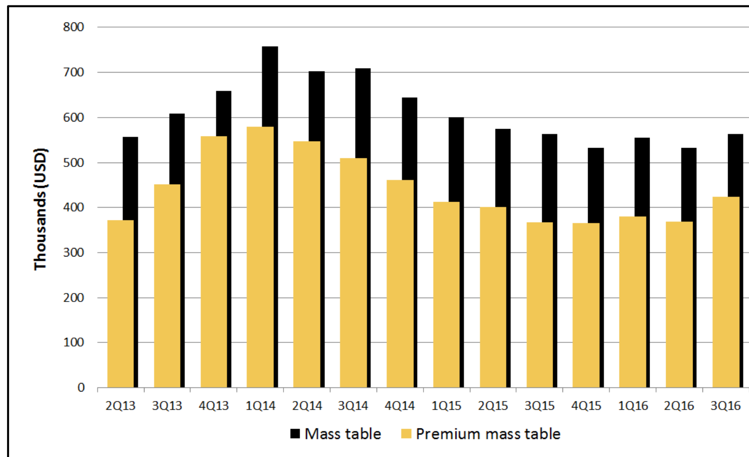
Source: Las Vegas Sands 10-K

Source: Las Vegas Sands 10-K

LVS has consistently delivered profit margins of 40-50% from Mass table operations

Boasting the deepest and broadest mass table offering in the Macau Market, LVS maintains a profit margin ranging from 40%-50%, in contrast to the 25%-40% offered by operating its premium mass tables. In the 2Q16 earnings call, management noted that mass gaming volumes and revenues in the Macau market increased year over year in June for the first time since September 2014. The Macau gaming market faced strong headwinds in 2014 and 2015, ultimately affecting the table revenues of LVS. The first two quarters of 2016 have shown positive signs of support, which is likely a signal that the market bottom has passed. It appears that LVS has found support after continued decline in Mass table and Premium mass table win.

Figure 15: Table win by quarter

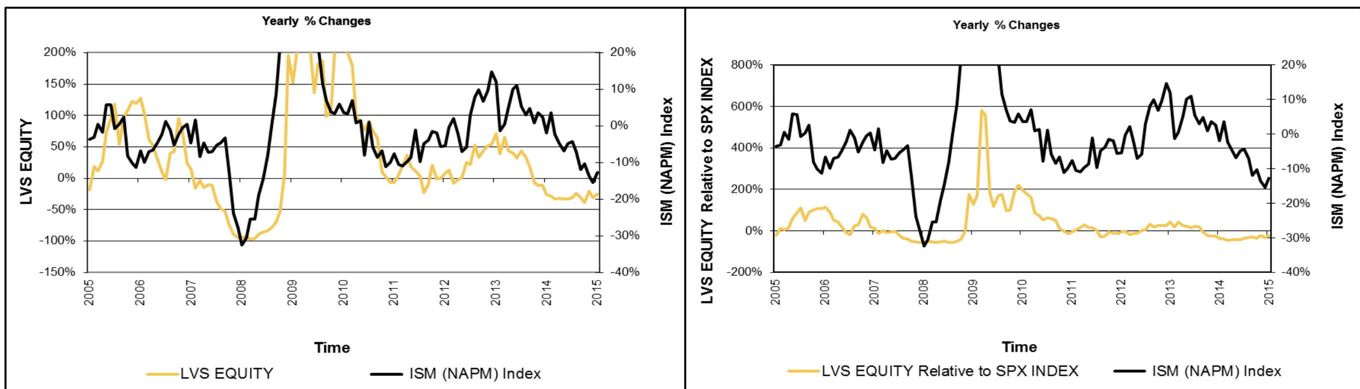


Source: Las Veaas Sands 10-K

Macroeconomic Trends

Changes in the macroeconomic environment affect the performance of Las Vegas Sands, both domestically and abroad. Revenues in the gaming industry are extremely sensitive to changes in consumer and corporate spending. The changes in price for LVS stock show a strong correlation to ISM indices for both China and the United States.

Figures 16 and 17: Absolute price of LVS versus ISM and relative price of LVS to SPX versus ISM

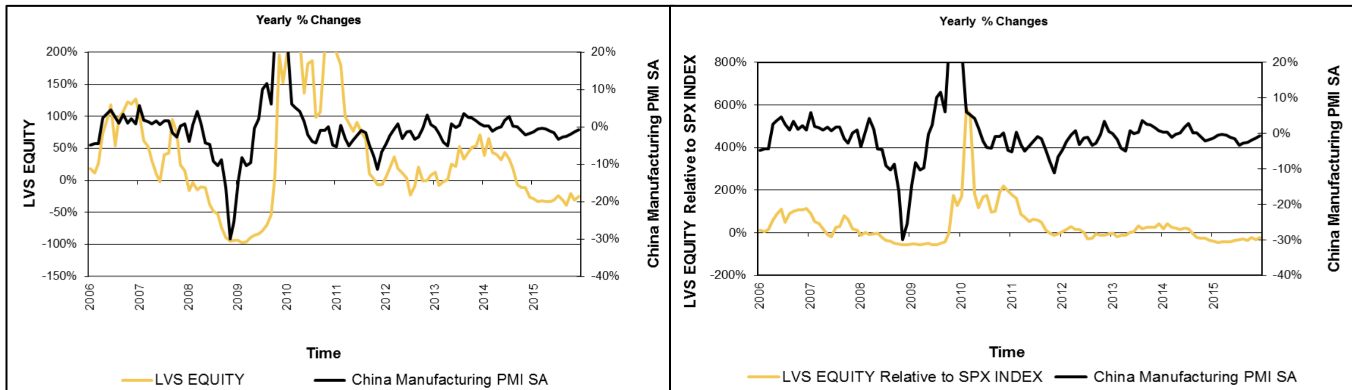


Source: Bloomberg, IMCP

Source: Bloomberg, IMCP

Using the ISM and PMI as barometers of economic activity, one can see that LVS does well on an absolute and relative basis to the S&P 500 when the economy is improving. The correlation with the ISM is 0.66 and 0.48 with the PMI in China.

Figures 18 and 19: Absolute price of LVS versus the China PMI and relative price of LVS to SPX versus China PMI

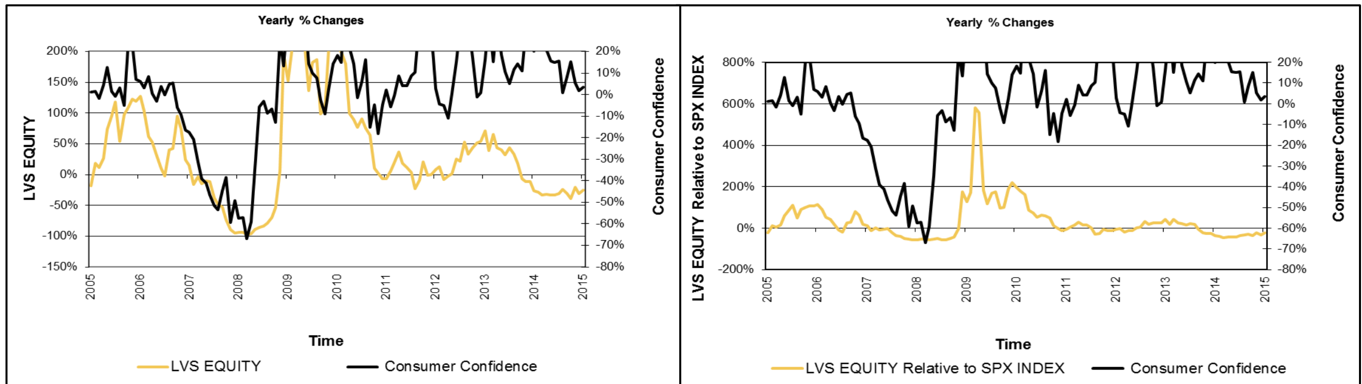


Source: Bloomberg, IMCP

Source: Bloomberg, IMCP

A cyclical industry by nature, the gaming industry is positively correlated (.60) to consumer confidence. LVS and its peers in the gaming space are particularly sensitive to declines in discretionary spending. It is imperative that Las Vegas Sands continues its expansionary endeavors with caution; a slowdown in the Asian markets abroad can be destructive to revenues, ultimately affecting shareholder return.

Figures 20 and 21: Absolute price of LVS versus Consumer Confidence and relative price of LVS versus ISM



Source: Bloomberg, IMCP *Source: Bloomberg, IMCP*

Political Reform and Increased Regulation

The President of China, Xi Jinping, has developed a mission to end corruption within the Chinese political system. This campaign has the potential to negatively impact high-ticket industries such as gaming. The Chinese government has noted in its corruption probe that the economy will ultimately benefit from the more stringent policies. High-ticket industries, including the gaming industry, will be benefit less from public funds as a result of the new policies. President Jinping's plan is geared towards investigation of, punishment for, prevention of, and reduced incentives for corruption.

As a result of his anti-corruption plan, the gaming industry has faced increased anti-money laundering regulation. Many Chinese officials believe that the gaming industry provides an outlet for high net-worth individuals to launder their money. The junket industry often facilitates trips for VIP high-rollers to Macau from China, working as an intermediary between the client and the casino, allowing the VIP to borrow money in order to gamble. Macau laws restrict the flow of cash into the region in order to prevent anti-money laundering amongst casinos and their client base. Casinos in the Macau market are subject to strict laws that are designed to keep the gaming industry honest. Firms face severe penalties, including expulsion from the country, should they fail to adhere to the policies outlined by the Macau gaming regulator and the Chinese government.

LVS is permitted to freely move tables between resorts to meet changing demand

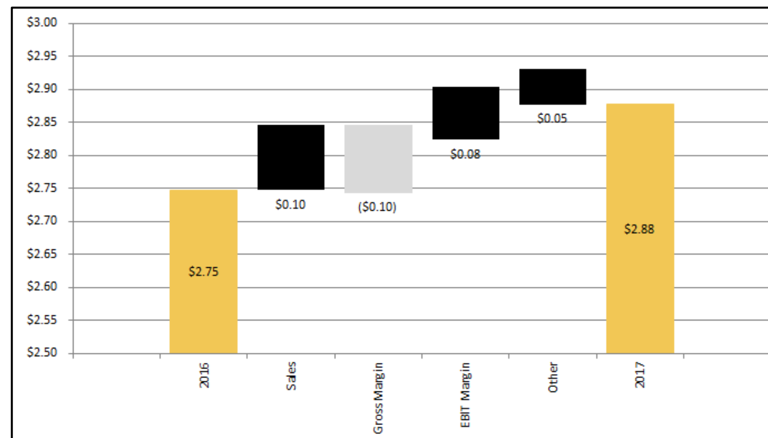
Most recently, the Macau gaming regulator implemented a 'new table count limit' for new casinos. According to the Gaming Inspection and Coordination Bureau of Macau, table limits have been set in order to cap growth in the gaming industry at 3% per year through 2023. The Macau gaming regulator wants to avoid a shock to the region should an unforeseen economic event occur, or if industry growth accelerates too quickly for the Cotai infrastructure. Las Vegas Sands has the advantage over its peers in the ability to allocate already in-use tables to the new Parisian or to other casinos that it operates. Another advantage is LVS has the ability to move legacy tables between its resorts. The new table limit set by the Macau gaming regulator excludes tables already being used by resorts in the city.

In order to continue operations in Macau, LVS must secure an extension of its subconcession, an agreement that permits the casino to operate in the region. The current agreement is set to expire in June, 2022. Should Las Vegas Sands fail to renew this subconcession, all of Venetian Macau Limited casino premises and gaming-related equipment immediately transfers to the Macau government, without compensation. While it is in the best interests of the Macau economy to grant an extension to the Las Vegas Sands subconcession agreement, the format of this international arrangement can be detrimental to the operations and future cash flows of the firm. Should the interests of the Chinese government change, the agreement can be cancelled, provided that Las Vegas Sands is given a one-year notice.

Financial Analysis

In FY 2016, I envisage EPS to increase to $2.88 from $2.75 in EOY 2015, driven in part by the opening of the Parisian Macau. With an uptick in Mass table and Premium table revenues during Q1 2016, LVS appears to have found support after weak 2015 table win results. While the firm faced market headwinds in 2015 due to challenges in the Macau and Singapore markets, I forecast that recovering revenues will result in a $0.10 increase in EPS.

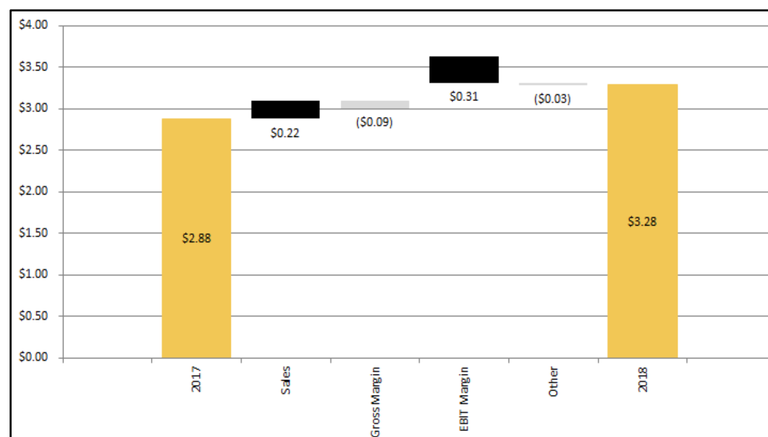
Figure 22: Quantification of 2017 EPS drivers



Source: Factset, IMCP

Although I forecast higher EBIT margins due to the aforementioned opening of the Parisian, my anticipation is that gross margins will fall slightly. The expected $0.10 negative gross margin hit on EPS is due in part to foreign exchange rate challenges with the Singapore dollar, as well as lower than expected international performance. I expect other business operations to positively affect EPS by $0.05.

Figure 23: Quantification of 2018 EPS drivers



Source: Factset, IMCP

I anticipate Las Vegas Sands will increase EPS $0.40 in FY 2017 to $3.28. Taking into account current market conditions in the United States, as well as the continued strength of the dollar, I expect that mean reversion will occur, which will favor foreign currency exchanges. LVS will improve revenues in the international markets resulting in a positive impact of $0.22 on EPS.

Figure 24: Sales and EPS YoY estimates

	Sales	EPS
2017 Estimate	$ 12,858	$ 2.88
2017 Consensus	$ 12,501	$ 2.64
2018 Estimate	$ 13,657	$ 3.28
2018 Consensus	$ 12,881	$ 2.81

Source: Factset, IMCP

Overall, I am more optimistic than consensus estimates for 2016 and 2017. I expect net revenue growth of 2.8% in 2017 and 6.2% respectively, as international market conditions continue to improve. In addition, I anticipate that revenues from the Parisian Macau will support strong revenue numbers as the firm continues the transition to attract the mass market to its numerous integrated resorts in Cotai.

Figure 25: Growth statistics 2013-2018E

Growth Statistics	2013	2014	2015	2016E	2017E	2018E
Sales	*23.7%*	*5.9%*	*-19.9%*	*7.0%*	*2.8%*	*6.2%*
Direct Costs	*17.1%*	*2.4%*	*-18.2%*	*7.4%*	*3.9%*	*7.2%*
Gross Margin	*37.6%*	*12.3%*	*-22.5%*	*6.2%*	*0.8%*	*4.4%*
SG&A, R&D, and other	*19.9%*	*-5.5%*	*-1.3%*	*5.7%*	*-1.9%*	*-12.4%*
EBIT	*47.3%*	*20.2%*	*-30.0%*	*6.5%*	*2.2%*	*12.3%*
Interest	*5.7%*	*-0.2%*	*-6.8%*	*8.8%*	*-14.3%*	*10.7%*
EBT	*52.4%*	*21.9%*	*-31.6%*	*6.3%*	*3.8%*	*12.5%*
Taxes	*4.5%*	*29.6%*	*-3.5%*	*5.6%*	*10.1%*	*18.4%*
Continuing income	*57.0%*	*21.4%*	*-33.5%*	*6.3%*	*3.1%*	*11.8%*
Other	*81.3%*	*15.2%*	*-43.9%*	*-17.2%*	*-6.7%*	*-4.3%*
Net income	*51.3%*	*23.2%*	*-30.8%*	*11.3%*	*4.7%*	*14.1%*
Basic Shares	*2.0%*	*-2.0%*	*-1.2%*	*0.0%*	*0.0%*	*0.0%*
EPS	*48.4%*	*25.7%*	*-30.0%*	*11.3%*	*4.7%*	*14.1%*
DPS	*-62.7%*	*42.9%*	*30.0%*	*10.8%*	*4.2%*	*3.3%*

Source: Factset, IMCP

Return on Equity

LVS leads the industry in ROE

Las Vegas Sands has led the industry in ROE for many years, and I expect this trend to continue. I expect ROE to increase in FY 2017 by 1.5% to 27.7%, followed by a 3.9% increase in FY 2018. DuPont analysis shows that ROE is driven by EBIT margin and asset turnover. Over the next few years I expect ROE to continue growing as LVS prepares to enter into new target markets. With a strong financial position, Las Vegas Sands has the potential to reap intense profits from further international expansion.

Figure 26: Growth statistics 2013-2018E

5-stage DuPont ROE	2013	2014	2015	2016E	2017E	2018E
EBIT / sales	24.8%	28.1%	24.6%	24.5%	24.3%	25.7%
Sales / avg assets	0.61	0.65	0.54	0.61	0.65	0.68
EBT / EBIT	92.1%	93.5%	91.3%	91.1%	92.5%	92.6%
Net income /EBT	73.4%	74.1%	75.0%	78.6%	79.3%	80.5%
ROA	10.3%	12.6%	9.1%	10.7%	11.6%	13.1%
Avg assets / avg equity	2.47	2.43	2.49	2.44	2.40	2.41
ROE	25.4%	30.7%	22.6%	26.2%	27.7%	31.6%

Source: Factset, IMCP

Free Cash Flow

With the opening of the Parisian in September 2016, more than $19 million in EBITDA was generated during the first 18 days of operation.

Las Vegas Sands' free cash flow has decreased significantly in 2015 to $2 billion, but is projected to rise to $3 billion in 2018. This cash flow is being used for dividends and share buybacks. The firm has a strong history of paying dividends, having increased payout to shareholders every year since 2013. It pays about $2 billion (2015) to $2.5 billion (2018) in dividends per year. Dividends are about 100% of EPS. Beginning in 2013, the firm implemented a share repurchase program. Since its inception, LVS has returned more than $2.4 billion to shareholders.

Cash flows decreased in recent years due in part to a recent $2.8 billion investment in the Parisian Macau. In 2015, LVS' capital expenditures towards investing activities totaled $1.53 billion, $1.29 billion of which was invested in Macau. The Parisian directly accounted for $766.7 million of these expenditures. In 2017 and 2018, I predict FCF to rise as NOPAT increases as net capital growth in 2018 turns negative.

Figure 27: History of share repurchases

Quarter	Shares Repurchased	Value of Shares Repurchased	Average Price (USD)
2Q13	883,046	$46,548,403	$52.71
3Q13	4,596,555	$299,622,027	$65.18
4Q13	3,090,680	$224,220,887	$72.55
1Q14	10,023,353	$809,858,312	$80.80
2Q14	4,179,725	$319,983,773	$76.56
3Q14	4,362,194	$299,749,823	$68.72
4Q14	3,841,383	$235,015,968	$61.18
1Q15			
2Q15	1,287,537	$64,974,331	$50.46
3Q15	1,748,584	$79,999,787	$45.75
4Q15	1,347,672	$60,043,975	$44.55
1Q16			
2Q16			
3Q16			
Total	35,360,729	$2,440,017,286	$61.85

Source: Factset, IMCP

Figure 28: Free Cash Flows 2012-2018E, excluding cash & debt

Free Cash Flow	2012	2013	2014	2015	2016E	2017E	2018E
NOPAT	$2,114	$3,208	$3,839	$2,613	$2,785	$2,828	$3,159
Growth		*51.7%*	*19.7%*	*-31.9%*	*6.6%*	*1.5%*	*11.7%*
NWC*	(563)	(837)	(916)	(947)	(976)	(1,003)	(1,065)
Net fixed assets	17,686	17,209	17,164	17,378	17,867	18,369	18,209
Total net operating capital*	$17,123	$16,372	$16,247	$16,431	$16,891	$17,366	$17,144
Growth		*-4.4%*	*-0.8%*	*1.1%*	*2.8%*	*2.8%*	*-1.3%*
- Change in NWC*		(274)	(79)	(31)	(29)	(27)	(62)
- Change in NFA		(477)	(45)	215	489	502	(160)
FCFF*		$3,959	$3,964	$2,430	2,325	$2,353	$3,381
Growth			*0.1%*	*-38.7%*	*-4.3%*	*1.2%*	*43.7%*
- After-tax interest expense	232	253	251	228	248	211	232
FCFE**		$3,706	$3,712	$2,202	$2,077	$2,142	$3,148
Growth			*0.2%*	*-40.7%*	*-5.7%*	*3.1%*	*47.0%*
+ Net new debt/other cap		(470)	232	(525)	(1,136)	-	-
Sources of cash		$3,236	$3,945	$1,677	$941	$2,142	$3,148
Uses of cash							
Other expense		649	747	419	347	324	310
Increase cash and mkt sec		1,085	(94)	(1,319)	(1,714)	(573)	368
Dividends		1,151	1,612	2,072	2,295	2,390	2,470
Change in other equity		313	1,708	497	0	0	(0)
		$3,197	$3,974	$1,669	$928	$2,142	$3,148
Change in other liab		(39)	29	(8)	(13)	-	-
Total		$3,236	$3,945	$1,677	$941	$2,142	$3,148

Source: Factset, IMCP

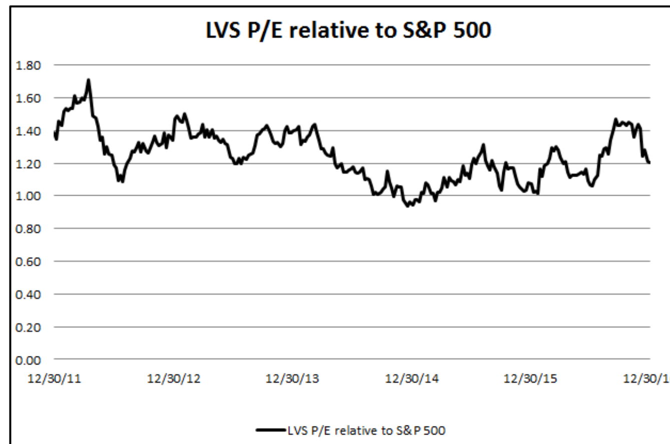
Valuation

Las Vegas Sands was valued using multiples and a 3-stage discounted cash flow model. The stock is undervalued relative to other firms, based on earnings multiples, and is worth $59. A detailed DCF analysis also values LVS at $59. Based on a relative valuation, LVS is undervalued compared to its peers.

Trading History

LVS is currently trading 16% below its 52 week high and priced 35% above its 52 week low. Las Vegas Sands' NTM PE is currently 23.95, compared to its five year average of 18.46. Its relative P/E is at a premium, but it is off its highs as the S&P 500 rallied at the end of 2016. In 2014-15, the relative P/E retreated as earnings fell, but it appears to have risen as people begin to anticipate a recovery.

Figure 29: LVS LTM



Source: Factset

Las Vegas Sands should trade at $66.24 by the end of fiscal year 2017, assuming that the firm maintains a 23.0 LTM P/E. Presuming that LVS achieves this, holders of the stock will realize a return of 24.02%.

- Price = P/E x EPS = 23.0 x 2.88 = $66.24

Discounting $66.24 back to today at a 12.3% cost of capital yields a stock price of $58.98. This valuation is reasonable given LVS' potential for continued growth and profitability.

Relative Valuation

On a TTM basis, LVS' is currently trading as the median of its peers with a P/E of 26.1, below the average of 32.4. Las Vegas Sands has maintained the strongest NPM (16.8% in 2015) and ROE (30.9% in 2015) amongst its competitors since 2009, which drives the premium that the stock trades at on a P/B and a P/S basis. Compared to its peers, Las Vegas Sands shares the highest Standard and Poor's debt rating with Wynn Resorts. LVS maintains the highest dividend yield (5.39%) amongst its peers, but its payout is 137.1% on LTM EPS. Going forward, payout is about 100%. A more thorough analysis of P/B and ROE is below.

Figure 30: LVS comparable companies

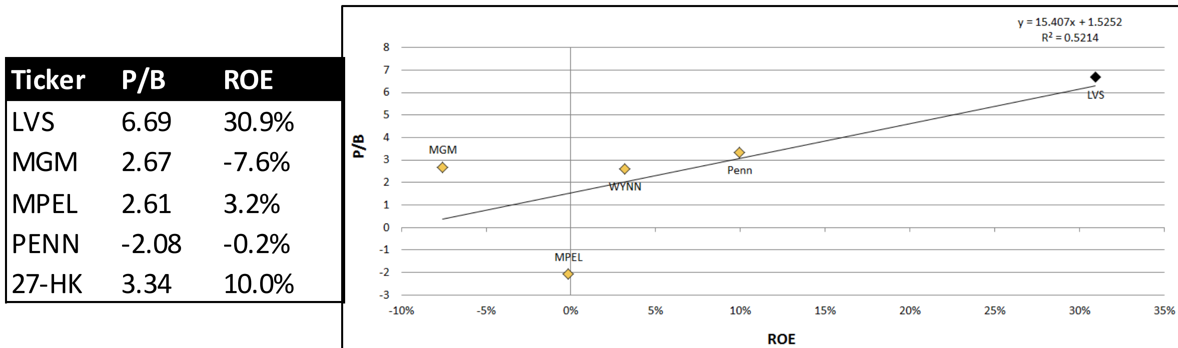
Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2014	2015	2016	2017	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
LVS	LAS VEGAS SANDS CORP	$53.41	$42,450	(1.2)	(14.8)	(7.2)	22.8	21.4	21.8	6.6	24.9%	26.2%	-29.8%	-4.9%	12.3%	37.6%	1.78	151.2%	B	5.39%	137.1%
CZR	CAESARS ENTERTAINMENT CORP	$8.50	$1,249	2.4	13.3	14.1	10.5	6.1	7.7		-98.5%	-14.5%	-305.5%	-142.0%	-96.2%		0.10	-256.0%	D	0.00%	
MGM	MGM RESORTS INTERNATIONAL	$28.83	$16,530	1.2	0.4	10.8	27.4	28.0	26.9	26.2	184.9%	-3.1%	164.5%	-239.0%	16.7%		1.68	206.5%	C	0.00%	
WYNN	WYNN RESORTS LTD	$86.51	$8,802	(0.8)	(15.2)	(11.2)	(4.6)	26.0	25.0	7.3	65.2%	0.1%	-73.3%	88.5%	18.5%	6.0%	1.85	-7045.5%	B	2.31%	85.5%
MPEL	MELCO CROWN ENTMT LTD	$15.90	$8,644	0.4	(19.1)	(1.3)	26.4	(5.6)	(5.4)	11.9	64.1%	-4.1%	-82.3%	100.1%	25.6%		1.80	116.2%		4.52%	309.2%
PENN	PENN NATIONAL GAMING INC	$13.79	$1,152	(0.6)	3.8	1.6	(1.1)	(15.0)	(13.9)	5.0	-21.1%	-77.0%	-100.4%	9900.0%	2.0%		1.76	-913.7%	C	0.00%	
27-HK	GALAXY ENTERTAINME	$4.36	$18,621	2.3	(12.2)	15.8	47.0	38.0	38.2	15.2		3.3%	-58.1%	38.5%	5.6%	33.8%	1.38			0.86%	
880-HK	SJM HOLDINGS LTD.	$0.78	$4,436	3.1	(3.2)	6.7	29.1	12.6	9.9	-2.7		-196.4%	379.9%	-100.1%	-40.0%	-8.8%	1.26			3.45%	59.4%
Average			$12,735	0.8	(5.9)	3.7	19.7	13.9	13.8	9.9	36.6%	-33.2%	-13.1%	1205.1%	-6.9%	17.1%	1.45	-1290.2%		2.07%	147.8%
Median			$8,723	0.8	(7.7)	4.1	24.6	17.0	15.9	7.3	44.5%	-3.6%	-65.7%	16.8%	8.9%	19.9%	1.72	-69.9%		1.58%	111.3%
SPX	S&P 500 INDEX	$2,239		(0.5)	1.8	3.3	6.7	8.5	9.5			7.6%	1.0%	7.7%	12.4%						

Ticker	Website	2015 ROE	P/B	P/E 2013	2014	2015	TTM	NTM	2016	2017E	2015 NPM	2015 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
LVS	http://www.sands.com	30.9%	6.69	19.1	15.2	21.6	26.1	20.9	22.7	20.2	16.8%	3.63	22.8%	11.8%	15.2	12.5	11.3	11.7%	2.2%	11.3%	$7.98
CZR	http://www.caesarscorporate.com	-224.3%	-0.47	-0.4	-0.4	0.2	-0.2	-12.5	-0.5	-13.3	127.2%	0.27	6.4%	116.2%	13.9	-0.1		146.0%	2.5%	-12.0%	-$17.96
MGM	http://www.mgmresorts.com	-7.6%	2.67	-90.1	-93.0	-35.2	64.1	22.5	25.3	21.7	-5.1%	1.80	13.8%	-2.6%	23.9	8.7	8.0	18.6%	10.9%	8.8%	$10.81
WYNN	http://www.wynnresorts.com	-145.8%	-65.68	12.1	12.0	45.1	37.0	22.4	23.9	20.2	4.8%	2.16	13.0%	2.4%	21.3	12.5	11.0	28.5%	2.1%	-0.5%	-$1.32
MPEL	http://www.melco-crown.com	3.2%	2.61	13.8	14.4	81.6	68.4	41.7	40.8	32.4	2.7%	2.18	5.3%	1.3%	115.0	15.8	14.0	4.5%	4.6%	8.5%	$6.10
PENN	http://www.pngaming.com	-0.2%	-2.08	-1.4	-5.9	1379.0	14.7	18.6	13.8	13.5	0.0%	0.41	18.1%	0.0%	12.9	3.1	5.7	1.1%	0.6%	2.9%	-$6.64
27-HK	http://www.galaxyentertainment.com	10.0%	3.34	14.5	14.1	33.5			24.2	22.9	8.4%	2.83		10.3%	23.3	17.5	16.5			21.5%	$1.31
880-HK	http://www.sjmholdings.com	-11774.1%	1.45	0.1	-0.1	0.0	17.2		15.7	26.1	-9181.6%	1.13		9.6%	6.7	9.3	11.4			-3.1%	$0.54
Average		-1513.5%	-6.43	-4.0	-5.5	190.7	32.4	18.9	20.7	18.0	-1128.4%	1.80	13.3%	18.6%	29.0	9.9	11.1	35.1%	3.8%	4.7%	
Median		-3.9%	2.03	6.1	6.0	27.6	26.1	21.6	23.3	21.0	3.7%	1.98	13.4%	6.0%	18.3	10.9	11.3	15.2%	2.4%	5.7%	
spx	S&P 500 INDEX			20.6	19.2	19.0			17.6	15.7											

Source: Factset

- Estimated P/B = Estimated 2017 ROE (27.7%) x 15.407 +1.5252 = $5.79
- Target Price: Estimated 2017 P/B (5.79) * Estimated BVPS (9.66) = $55.96.

Figure 31: LVS P/B 2015 ROE



Ticker	P/B	ROE
LVS	6.69	30.9%
MGM	2.67	-7.6%
MPEL	2.61	3.2%
PENN	-2.08	-0.2%
27-HK	3.34	10.0%

Source: Factset

I also compared Las Vegas Sands to its competitors based on several fundamental and valuation metrics. Each factor has been converted to a percent of the maximum for this analysis, as the metrics have different scales.

On a fundamental basis, a low weighting was placed on NTM earnings growth, with higher attention to the firm's growth over the past 5 years. My valuation placed a strong emphasis on LTD/Equity as the industry is very capital-intensive. I also attributed 10% weight to dividend payout. NTM sales growth has received a 15% weight while past 5 year sales growth, though still significant, holds a lower weight.

In terms of valuation, I have a high weight on price to book and EV/EBIT. As the gaming industry relies heavily on debt, concentrating on the EV/EBIT multiple distinguishes firms with higher growth rates and lower risk. Both P/E and P/S have 20% weight. Based on this analysis, LVS falls below the regression line, which implies that it is undervalued.

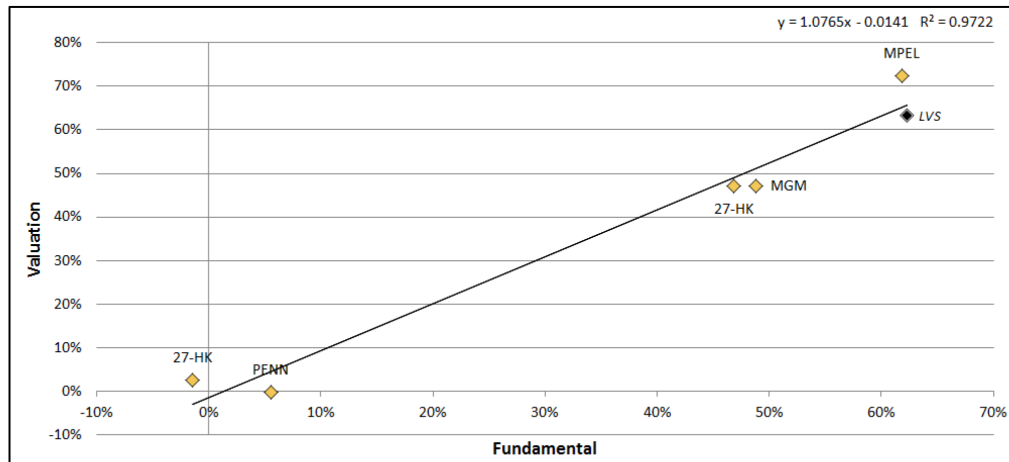
Figure 32: Composite valuation, % of range

				Fundamentals						Valuation			
		Weight		5.0%	15.0%	50.0%	10.0%	15.0%	5.0%	20.0%	32.0%	20.0%	28.0%
				Earnings Growth		1/(LTD/	1/	Sales Growth		P/E			EV/
Ticker	Name	Fund	Value	NTM	Pst 5yr	Equity)	Payout	NTM	Pst 5yr	TTM	P/B	P/S	EBIT
LVS	LAS VEGAS SANDS CORP	62%	63%	13%	100%	77%	43%	8%	52%	38%	100%	100%	13%
CZR	CAESARS ENTERTAINMENT CORP	-1%	3%	-53%	38%	-45%	60%	100%	-56%	0%	-7%	7%	12%
MGM	MGM RESORTS INTERNATIONAL	49%	47%	100%	38%	56%	60%	13%	41%	94%	40%	50%	21%
MPEL	MELCO CROWN ENTMT LTD	62%	72%	35%	38%	100%	19%	3%	40%	100%	39%	60%	100%
PENN	PENN NATIONAL GAMING INC	6%	0%	-11%	38%	-13%	60%	1%	14%	21%	-31%	11%	11%
27-HK	GALAXY ENTERTAINME	47%	47%	23%	90%	27%	60%	50%	100%	50%	50%	78%	20%

Source: IMCP

LVS is undervalued using a relative valuation

Figure 33: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

Through the use of a three stage discounted cash flow model, I was able to value Las Vegas Sands.

Using the Capital Asset Pricing Model, I calculated the firm's cost of equity to be 12.3%. The underlying assumptions used in calculating this rate are as follows:

- In my analysis, I expected a long term market rate of return of 10%, as the S&P 500 has historically produced returns of about 10%.
- A ten year beta of 1.30 was utilized as the company has higher risk than the market; however the company is the least risky of its peer group.
- The risk free rate, as represented by the ten year Treasury bond yield, is 2.40%.

I anticipate the cost of equity to be 12.3%, given the above expectations.
(Rf rate + 10 yr. Beta (Lt. Rm – Rf)

Stage One – For the first stage, the DCF model discounts free cash flow to equity (FCFE) for fiscal years 2017 and 2018 ($2.69 and $3.95). This results in a value of $5.53 per share.

Stage Two – In the second stage, my DCF model focuses on fiscal years 2019 to 2023. FCFE is calculated based on the firm's capital growth assumptions, NOPAT margin, and revenue growth. The resulting cash flows are then discounted at LVS' 12.3% cost of equity. I anticipate 2.8% sales growth in 2017, with additional growth of 6.2% in 2018, before growing at 6% through 2023.
While I forecast NOWC to sales to remain constant, I expect improvements in operations to cause NFA turnover from 0.70 in 2017 to rise to 0.80 in 2023. I predict that NOPAT margin for the firm will remain relatively constant, increasing from 22% in 2017 to 23.2% in 2023. Lastly, I predict a 6% increase in interest expense per year as the firm continues to take on additional debt in preparation for further expansion.

Figure 34: FCFE and Discounted FCFE, 2017-2023

	2017	2018	2019	2020	2021	2022	2023
FCFE	$2.69	$3.95	$3.26	$3.17	$3.71	$3.57	$3.08
Discounted FCFE	$2.39	$3.13	$2.30	$1.99	$2.08	$1.78	$1.37

Adding together, these discounted cash flows total $9.53.

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the stage two margin and growth assumptions that I used to determine FCFE. Finally, I anticipate that EPS for Las Vegas Sands will grow from $2.88 in 2017 to $4.93 in 2023.

Figure 35: FCFE and Discounted FCFE, 2017-2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$2.88	$3.28	$3.92	$4.18	$4.45	$4.67	$4.93

A 20 P/E is lower than the TTM P/E of 26.1 but still above the market. By 2023, growth opportunities may slow, so a lower P/E is warranted. However it is still above the market P/E as the firm may have above market growth opportunities for years to come and investors may pick up the stock now as they could be slow to recognize slowing growth.

Assuming that the terminal earnings per share for LVS are $4.93, with a price to earnings ratio of 20, a terminal value of $98.62 per share is calculated. Using a 12.3% cost of equity, this number is discounted back to $43.84.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $58.89 is calculated. Given LVS's current price of $53.41, this model indicates that the stock is slightly undervalued.

Scenario Analysis

Las Vegas Sands is a financially strong company that leads the competition in the gaming space. Revenues are based heavily on the health of the economies in which the firm operates. Sheldon Adelson, the founder of LVS, operates as the chairman and CEO. LVS was valued under three scenarios by changing key factors.

Figure 36: Composite relative valuation

Bull Case							
Expecatations	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Beta	1.0						
Sales Growth	*4.2%*	*9.3%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*
Gross Margin	35.7%	35.1%					
Ebit Margin	24.3%	25.7%					
P/E	27						
			Value (P/E) beginning of fiscal year 2017 =				**$90.40**
Base Case							
Expecatations	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Beta	1.3						
Sales Growth	*3%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*
Gross Margin	35.7%	35.1%					
Ebit Margin	24.3%	25.7%					
P/E	20						
			Value (P/E) beginning of fiscal year 2017 =				**$58.89**
Bear Case							
Expecatations	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Beta	1.6						
Sales Growth	*1.0%*	*2.5%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*
Gross Margin	26.8%	25.5%					
Ebit Margin	19.2%	21.4%					
P/E	12						
			Value (P/E) beginning of fiscal year 2017 =				**$32.54**

Source: Factset

A valuation of LVS stock was reached using the same DCF method as outlined in the previous section, resulting in the target prices shown in figure 36. The base case incorporated a P/E of 20, used as a conservative factor to estimate for the performance of the company. In all cases LVS will likely perform better than its competition as the firm leads the industry in ROE. The firm is expected to continue growing with expansionary plans to move to both the Japanese and Korean markets.

If that the foreign markets recover and currency fluctuations favor international markets where it operates, and the firm has continued success at the new Parisian location, I anticipate the firm to grow at 8%. In both the Macau and Singapore markets, tourism growth will spur improvements in the mass market table segment. With the opening of the Parisian, LVS will attract more business.

The future of Las Vegas Sands is heavily dependant on the economies in which the firm operates. In the case of an economic downturn, I expect LVS to grow at 2%. Further appreciation of the dollar and strength within the U.S. markets would weigh on the opportunity in the Macau and Singapore markets. With strong financials and fundamentals, I expect LVS to perform exceptionally well compared to its peers due to its market diversification, even in a poor economy.

Business Risks

Although I have an optimistic view on the future of the company, there are potential risks that could have a substantial impact to my target price for LVS:

1. Exposure to currency fluctuations
2. Revocation or failure to extend subconcession
3. Failure to expand into target markets
4. Regulation and compliance
5. Competitive marketplace

Exposure to currency fluctuations:

In 2015, 81.4% of LVS revenues were denominated in currencies other than the USD. Continued strength of the dollar against the Hong Kong dollar, as well as the Singapore dollar, has the potential to greatly reduce gross margins. The Macau pataca is pegged to the Hong Kong Dollar and does not pose any additional currency risk.

Revocation or failure to extend subconcession:

The subconcession agreement of LVS to operate in Macau expires on June 26, 2022. Failure to renew the subconcession would allow the Macau government to obtain all gaming-related equipment and casino premises. In addition, the Macau government may redeem the subconcession beginning on December 26, 2017. While the agreement states that the Macau government must provide at least one year notice before redemption, LVS is entitled to fair compensation or indemnity.

Furthermore, the Macau government reserves the right to cease operations, with the ability to obtain all gaming-related equipment, should it find that LVS failed to comply with basic obligations under the subconcession[2]. In the event of a serious non-compliance as a result of operations, the firm would not receive compensation for properties or gaming-related equipment. As LVS leases the gaming equipment through numerous suppliers, the firm runs an additional risk, should a non-compliance event occur.

Failure to expand into target markets:

Las Vegas Sands has targeted the markets of South Korea and Japan as areas of interest for further business expansion. With current regulations in the aforementioned countries prohibiting the operation of casinos, LVS faces the risk of continuing business without the ability to integrate its business model into new markets of interest. Although LVS has planned further expansions in Macau

[2] Las Vegas Sands Corp., 2015 Annual Report, Dec. 31, 2015, p. 31, from Las Vegas Sands Corp. investor relations website, http://s1.q4cdn.com/133622603/files/doc_financials/2015/Q4/2015-10-K-Print-Copy.pdf, accessed January 1, 2017

and Singapore, the inability to expand into the target markets previously mentioned may impact the intrinsic value of the business.

Regulation and Compliance:

The firm faces extensive regulation in both domestic and foreign operations. Failure of LVS to comply with stated regulations could severely affect the reputation of the firm and its financial condition. In the event that LVS fails to comply with regulation and AML policies in Las Vegas, the Nevada Gaming Authority has the ability to revoke the gaming license of the firm. In Macau, failure to comply with stated regulations could warrant the termination of the subconcession. In both cases, LVS may be forced to discontinue operations.

Competitive marketplace:

For LVS, 17.3% of revenues for the firm were from operations in the Las Vegas market. Competition in this landscape is substantial, and this presents operational and financial risks. LVS will almost certainly experience a decline in mid-week occupancy rates in the Las Vegas market, if the trade show business slows down.

Troubling events to LVS would include a slowing of the Macau and Singapore markets. Although LVS is well positioned in terms of competitive space and the location of its integrated resorts in Macau, a decline in tourist visits to the region may intensify competition for customers and revenues.

Appendix 1: Income Statement

Income Statement (in thousands)	2013	2014	2015	2016E	2017E	2018E
Sales	$13,770	$14,584	$11,688	$12,507	$12,858	$13,657
Direct costs	8,842	9,052	7,403	7,954	8,268	8,863
Gross Margin	4,928	5,532	4,285	4,552	4,590	4,794
SG&A, R&D, and other	1,515	1,431	1,413	1,494	1,466	1,284
Earnings before interest & tax	3,413	4,101	2,872	3,058	3,125	3,510
Interest	269	268	250	272	233	258
Earnings before tax	3,144	3,833	2,622	2,786	2,891	3,252
Taxes	189	245	236	249	275	325
Income	2,955	3,588	2,386	2,537	2,617	2,926
Other	649	747	419	347	324	310
Net income	2,306	2,841	1,966	2,189	2,293	2,616
Basic Shares	822	806	797	797	797	797
Earnings Per Share	$2.80	$3.52	$2.47	$2.75	$2.88	$3.28
Dividends Per Share	$1.40	$2.00	$2.60	$2.88	$3.00	$3.10

Appendix 2: Balance Sheets

Balance Sheets (in thousands)							
Items	**Dec-12**	**Dec-13**	**Dec-14**	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**
ASSETS							
Cash	2,516	3,600	3,506	2,187	473	(99)	269
Operating assets ex cash	1,962	1,915	1,684	1,422	1,501	1,543	1,639
Operating assets	4,478	5,516	5,190	3,609	1,974	1,444	1,908
Operating liabilities	2,525	2,752	2,600	2,369	2,476	2,546	2,704
NOWC	1,952	2,763	2,590	1,240	(502)	(1,102)	(796)
NOWC ex cash (NWC)	(563)	(837)	(916)	(947)	(976)	(1,003)	(1,065)
NFA	17,686	17,209	17,164	17,378	17,867	18,369	18,209
Invested capital	*$19,639*	*$19,972*	*$19,754*	*$18,619*	*$17,364*	*$17,267*	*$17,413*
Marketable securities	-	-	-	-	-	-	-
Total assets	*$22,164*	*$22,724*	*$22,354*	*$20,987*	*$19,841*	*$19,813*	*$20,117*
LIABILITIES AND SHAREHOLDER EQUITY							
Short-term and long-term debt	$10,230	$9,760	$9,993	$9,468	$8,332	$8,332	$8,332
Other liabilities	750	711	741	733	720	720	720
Debt/equity-like securities					-	-	-
Equity	8,658	9,501	9,021	8,418	8,313	8,215	8,361
Total supplied capital	*$19,639*	*$19,972*	*$19,754*	*$18,619*	*$17,364*	*$17,267*	*$17,413*
Total liabilities and equity	*$22,164*	*$22,724*	*$22,354*	*$20,987*	*$19,841*	*$19,813*	*$20,117*
Growth Statistics							
Cash		*43.1%*	*-2.6%*	*-37.6%*	*-78.4%*	*-121.0%*	*-371.1%*
Operating assets ex cash		*-2.4%*	*-12.1%*	*-15.6%*	*5.6%*	*2.8%*	*6.2%*
Operating assets		*23.2%*	*-5.9%*	*-30.5%*	*-45.3%*	*-26.9%*	*32.2%*
Operating liabilities		*9.0%*	*-5.5%*	*-8.9%*	*4.5%*	*2.8%*	*6.2%*
NOWC		*41.5%*	*-6.3%*	*-52.1%*	*-140.5%*	*119.5%*	*-27.8%*
NOWC ex cash (NWC)		*48.6%*	*9.4%*	*3.4%*	*3.0%*	*2.8%*	*6.2%*
NFA		*-2.7%*	*-0.3%*	*1.3%*	*2.8%*	*2.8%*	*-0.9%*
Invested capital		*1.7%*	*-1.1%*	*-5.7%*	*-6.7%*	*-0.6%*	*0.8%*
Marketable securities							
Total assets		*2.5%*	*-1.6%*	*-6.1%*	*-5.5%*	*-0.1%*	*1.5%*
Short-term and long-term debt		*-4.6%*	*2.4%*	*-5.3%*	*-12.0%*	*0.0%*	*0.0%*
Other liabilities		*-5.2%*	*4.1%*	*-1.1%*	*-1.7%*	*0.0%*	*0.0%*
Debt/equity-like securities							
Equity		*9.7%*	*-5.1%*	*-6.7%*	*-1.3%*	*-1.2%*	*1.8%*
Total supplied capital		*1.7%*	*-1.1%*	*-5.7%*	*-6.7%*	*-0.6%*	*0.8%*
Total liabilities and equity		*2.5%*	*-1.6%*	*-6.1%*	*-5.5%*	*-0.1%*	*1.5%*
Common Size							
Cash	*11.4%*	*15.8%*	*15.7%*	*10.4%*	*2.4%*	*-0.5%*	*1.3%*
Operating assets ex cash	*8.9%*	*8.4%*	*7.5%*	*6.8%*	*7.6%*	*7.8%*	*8.1%*
Operating assets	*20.2%*	*24.3%*	*23.2%*	*17.2%*	*9.9%*	*7.3%*	*9.5%*
Operating liabilities	*11.4%*	*12.1%*	*11.6%*	*11.3%*	*12.5%*	*12.9%*	*13.4%*
NOWC	*8.8%*	*12.2%*	*11.6%*	*5.9%*	*-2.5%*	*-5.6%*	*-4.0%*
NOWC ex cash (NWC)	*-2.5%*	*-3.7%*	*-4.1%*	*-4.5%*	*-4.9%*	*-5.1%*	*-5.3%*
NFA	*79.8%*	*75.7%*	*76.8%*	*82.8%*	*90.1%*	*92.7%*	*90.5%*
Invested capital	*88.6%*	*87.9%*	*88.4%*	*88.7%*	*87.5%*	*87.1%*	*86.6%*
Marketable securities	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Total assets	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
Short-term and long-term debt	*46.2%*	*43.0%*	*44.7%*	*45.1%*	*42.0%*	*42.1%*	*41.4%*
Other liabilities	*3.4%*	*3.1%*	*3.3%*	*3.5%*	*3.6%*	*3.6%*	*3.6%*
Debt/equity-like securities	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Equity	*39.1%*	*41.8%*	*40.4%*	*40.1%*	*41.9%*	*41.5%*	*41.6%*
Total supplied capital	*88.6%*	*87.9%*	*88.4%*	*88.7%*	*87.5%*	*87.1%*	*86.6%*
Total liabilities and equity	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Appendix 3: Sales Forecast by Segment

Sales (in thousands)							
Items	**2012**	**2013**	**2014**	**2015**	**2016E**	**2017E**	**2018E**
Net Revenue	$11,131	13,770	14,584	11,688	12,507	12,858	$13,657
Growth		*23.7%*	*5.9%*	*-19.9%*	*7.0%*	*2.8%*	*6.2%*
Casino	9,008	11,387	12,004	9,083	8,101	8,019	8,501
Growth		*26.4%*	*5.4%*	*-24.3%*	*-10.8%*	*-1.0%*	*6.0%*
% of sales	*80.9%*	*82.7%*	*82.3%*	*77.7%*	*64.8%*	*62.4%*	*62.2%*
Rooms	1,154	1,381	1,540	1,470	1,904	2,304	2,604
Growth		*19.6%*	*11.6%*	*-4.6%*	*29.6%*	*21.0%*	*13.0%*
% of sales	*10.4%*	*10.0%*	*10.6%*	*12.6%*	*15.2%*	*17.9%*	*19.1%*
Food and Beverage	629	730	779	758	772	776	778
Growth		*16.2%*	*6.6%*	*-2.7%*	*1.9%*	*0.5%*	*0.3%*
% of sales	*5.6%*	*5.3%*	*5.3%*	*6.5%*	*6.2%*	*6.0%*	*6.0%*
Mall	397	481	554	564	590	605	612
Growth		*21.3%*	*15.0%*	*2.0%*	*4.6%*	*5.0%*	*6.0%*
% of sales	*3.6%*	*3.5%*	*3.8%*	*4.8%*	*4.7%*	*4.7%*	*4.5%*
Convention, Retail & other	497	515	549	540	570	577	581
Growth		*3.7%*	*6.5%*	*-1.7%*	*5.6%*	*1.2%*	*0.7%*
% of sales	*4.5%*	*3.7%*	*3.8%*	*4.6%*	*4.6%*	*4.5%*	*4.3%*
Promotional Allowances	(554)	(725)	(842)	(726)	570	577	581
Growth		*30.9%*	*16.2%*	*-13.8%*	*-178.5%*	*1.2%*	*0.7%*
% of sales	*-5.0%*	*-5.3%*	*-5.8%*	*-6.2%*	*4.6%*	*4.5%*	*4.3%*

Appendix 3: Ratios

Ratios						
Profitability						
Gross margin	35.8%	37.9%	36.7%	36.4%	35.7%	35.1%
Operating (EBIT) margin	24.8%	28.1%	24.6%	24.5%	24.3%	25.7%
Net profit margin	16.7%	19.5%	16.8%	17.5%	17.8%	19.2%
Activity						
NFA (gross) turnover	0.79	0.85	0.68	0.71	0.71	0.75
Total asset turnover	0.61	0.65	0.54	0.61	0.65	0.68
Liquidity						
Op asset / op liab	2.00	2.00	1.52	0.80	0.57	0.71
NOWC Percent of sales	17.1%	18.4%	16.4%	3.0%	-6.2%	-7.0%
Solvency						
Debt to assets	43.0%	44.7%	45.1%	42.0%	42.1%	41.4%
Debt to equity	102.7%	110.8%	112.5%	100.2%	101.4%	99.6%
Other liab to assets	3.1%	3.3%	3.5%	3.6%	3.6%	3.6%
Total debt to assets	46.1%	48.0%	48.6%	45.6%	45.7%	45.0%
Total liabilities to assets	58.2%	59.6%	59.9%	58.1%	58.5%	58.4%
Debt to EBIT	2.86	2.44	3.30	2.72	2.67	2.37
EBIT/interest	12.68	15.28	11.48	11.23	13.39	13.59
Debt to total net op capital	48.9%	50.6%	50.9%	48.0%	48.3%	47.8%
ROIC						
NOPAT to sales	23.3%	26.3%	22.4%	22.3%	22.0%	23.1%
Sales to IC	0.70	0.73	0.61	0.70	0.74	0.79
Total	16.2%	19.3%	13.6%	15.5%	16.3%	18.2%
Total using EOY IC	16.1%	19.4%	14.0%	16.0%	16.4%	18.1%
ROE						
5-stage DuPont ROE	**2013**	**2014**	**2015**	**2016E**	**2017E**	**2018E**
EBIT / sales	24.8%	28.1%	24.6%	24.5%	24.3%	25.7%
Sales / avg assets	0.61	0.65	0.54	0.61	0.65	0.68
EBT / EBIT	92.1%	93.5%	91.3%	91.1%	92.5%	92.6%
Net income /EBT	73.4%	74.1%	75.0%	78.6%	79.3%	80.5%
ROA	10.3%	12.6%	9.1%	10.7%	11.6%	13.1%
Avg assets / avg equity	2.47	2.43	2.49	2.44	2.40	2.41
ROE	25.4%	30.7%	22.6%	26.2%	27.7%	31.6%
3-stage						
Net income / sales	16.7%	19.5%	16.8%	17.5%	17.8%	19.2%
Sales / avg assets	0.61	0.65	0.54	0.61	0.65	0.68
ROA	10.3%	12.6%	9.1%	10.7%	11.6%	13.1%
Avg assets / avg equity	2.47	2.43	2.49	2.44	2.40	2.41
ROE	25.4%	30.7%	22.6%	26.2%	27.7%	31.6%
Payout Ratio	49.9%	56.8%	105.4%	104.8%	104.3%	94.4%
Retention Ratio	50.1%	43.2%	-5.4%	-4.8%	-4.3%	5.6%
Sustainable Growth Rate	12.7%	13.3%	-1.2%	-1.3%	-1.2%	1.8%

Appendix 4: Cash Flow Statement

Free Cash Flow	2012	2013	2014	2015	2016E	2017E	2018E
NOPAT	$2,114	$3,208	$3,839	$2,613	$2,785	$2,828	$3,159
Growth		*51.7%*	*19.7%*	*-31.9%*	*6.6%*	*1.5%*	*11.7%*
NWC*	(563)	(837)	(916)	(947)	(976)	(1,003)	(1,065)
Net fixed assets	17,686	17,209	17,164	17,378	17,867	18,369	18,209
Total net operating capital*	$17,123	$16,372	$16,247	$16,431	$16,891	$17,366	$17,144
Growth		*-4.4%*	*-0.8%*	*1.1%*	*2.8%*	*2.8%*	*-1.3%*
- Change in NWC*		(274)	(79)	(31)	(29)	(27)	(62)
- Change in NFA		(477)	(45)	215	489	502	(160)
FCFF*		$3,959	$3,964	$2,430	2,325	$2,353	$3,381
Growth			*0.1%*	*-38.7%*	*-4.3%*	*1.2%*	*43.7%*
- After-tax interest expense	232	253	251	228	248	211	232
FCFE**		$3,706	$3,712	$2,202	$2,077	$2,142	$3,148
Growth			*0.2%*	*-40.7%*	*-5.7%*	*3.1%*	*47.0%*
FCFF per share		$4.81	$4.92	$3.05	$2.92	$2.95	$4.24
Growth			*2.1%*	*-38.0%*	*-4.3%*	*1.2%*	*43.7%*
FCFE per share		$4.51	$4.61	$2.76	$2.61	$2.69	$3.95
Growth			*2.2%*	*-40.0%*	*-5.7%*	*3.1%*	*47.0%*
FCFF per share		$3.50	$5.03	$4.70	$5.07	$3.67	$3.78
Growth			*44.0%*	*-6.5%*	*7.7%*	*-27.6%*	*3.0%*
FCFE per share		$2.62	$5.01	$3.76	$3.33	$3.41	$3.49
Growth			*91.5%*	*-24.9%*	*-11.4%*	*2.2%*	*2.4%*

Appendix 5: 3-stage DCF Model

First Stage	2017	2018	Second Stage 2019	2020	2021	2022	2023
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*2.8%*	*6.2%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
NOPAT / Sales (S)	*22.0%*	*23.1%*	*23.3%*	*23.4%*	*23.5%*	*23.3%*	*23.2%*
S / NWC	*(12.82)*	*(12.82)*	*(12.82)*	*(12.82)*	*(12.82)*	*(12.82)*	*(12.82)*
S / NFA (EOY)	*0.70*	*0.75*	*0.77*	*0.78*	*0.80*	*0.81*	*0.80*
S / IC (EOY)	*0.74*	*0.80*	*0.82*	*0.83*	*0.85*	*0.86*	*0.85*
ROIC (EOY)	*16.3%*	*18.4%*	*19.1%*	*19.4%*	*20.1%*	*20.1%*	*19.8%*
ROIC (BOY)		*18.2%*	*19.7%*	*20.3%*	*20.7%*	*21.1%*	*21.3%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$12,858	$13,657	$14,476	$15,345	$16,266	$17,241	$18,276
NOPAT	$2,828	$3,159	$3,373	$3,591	$3,822	$4,017	$4,240
Growth		*11.7%*	*6.8%*	*6.5%*	*6.5%*	*5.1%*	*5.5%*
- Change in NWC	-27	-62	-64	-68	-72	-76	-81
NWC	*-1003*	*-1065*	*-1129*	*-1197*	*-1269*	*-1345*	*-1426*
Growth NWC		*6.2%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
- Change in NFA	502	-160	591	873	659	954	1559
NFA EOY	*18,369*	*18,209*	*18,800*	*19,673*	*20,332*	*21,286*	*22,845*
Growth NFA		*-0.9%*	*3.2%*	*4.6%*	*3.3%*	*4.7%*	*7.3%*
Total investment in operating capital	475	-222	527	805	587	878	1478
Total net operating capital	17366	17144	17671	18476	19063	19941	21419
FCFF	$2,353	$3,381	$2,846	$2,786	$3,235	$3,140	$2,762
% of sales	*18.3%*	*24.8%*	*19.7%*	*18.2%*	*19.9%*	*18.2%*	*15.1%*
Growth		*43.7%*	*-15.8%*	*-2.1%*	*16.1%*	*-3.0%*	*-12.0%*
- Interest (1-tax rate)	211	232	246	261	277	293	311
Growth		*10.1%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
FCFE w/o debt	$2,142	$3,148	$2,599	$2,525	$2,958	$2,846	$2,450
% of sales	*16.7%*	*23.1%*	*18.0%*	*16.5%*	*18.2%*	*16.5%*	*13.4%*
Growth		*47.0%*	*-17.4%*	*-2.9%*	*17.2%*	*-3.8%*	*-13.9%*
/ Number of Shares	796.8	796.8	796.8	796.8	796.8	796.8	796.8
FCFE	$2.69	$3.95	$3.26	$3.17	$3.71	$3.57	$3.08
Growth		*47.0%*	*-17.4%*	*-2.9%*	*17.2%*	*-3.8%*	*-13.9%*
* Discount factor	0.89	0.79	0.71	0.63	0.56	0.50	0.44
Discounted FCFE	$2.39	$3.13	$2.30	$1.99	$2.08	$1.78	$1.37
Third Stage							
Terminal value P/E							
Net income	$2,293	$2,616	$3,127	$3,330	$3,546	$3,724	$3,929
% of sales	*17.8%*	*19.2%*	*21.6%*	*21.7%*	*21.8%*	*21.6%*	*21.5%*
EPS EPS	$2.88	$3.28	$3.92	$4.18	$4.45	$4.67	$4.93
Growth		*14.1%*	*19.5%*	*6.5%*	*6.5%*	*5.0%*	*5.5%*
Terminal P/E							20.00
* Terminal EPS							$4.93
Terminal value							$98.62
* Discount factor							0.44
Discounted terminal value							$43.84

Summary

First stage	$5.53	Present value of first 2 year cash flow
Second stage	$9.53	Present value of year 3-7 cash flow
Third stage	$23.07	Present value of terminal value constant growth
Value (P/E)	**$58.89**	= value at beginning of fiscal year 2017

Appendix 6: LVS Comparable Companies

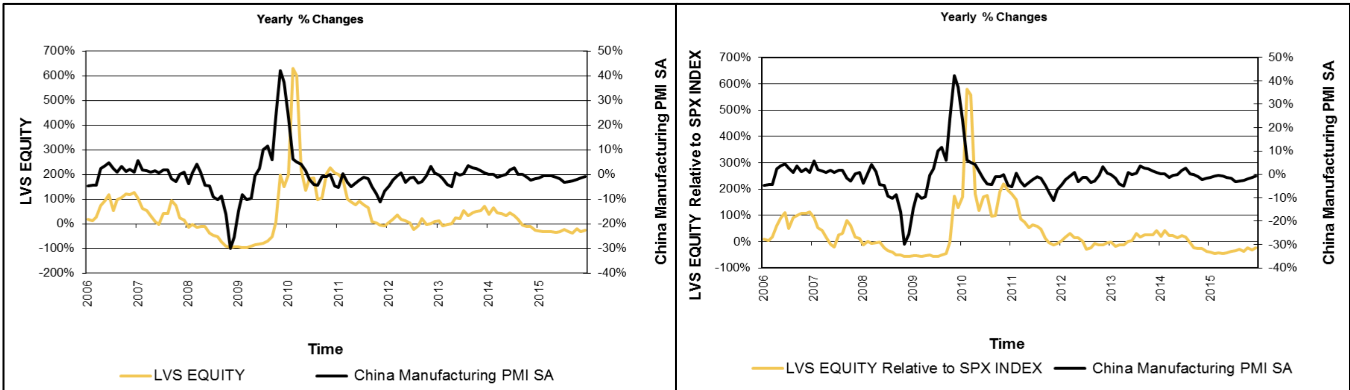
		Current	Market	Price Change						Earnings Growth								LT Debt/	S&P	LTM Dividend	
Ticker	Name	Price	Value	1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2014	2015	2016	2017	Pst 5yr	Beta	Equity	Rating	Yield	Payout
LVS	LAS VEGAS SANDS CORP	$53.41	$42,450	(1.2)	(14.8)	(7.2)	22.8	21.4	21.8	6.6	24.9%	26.2%	-29.8%	-4.9%	12.3%	37.6%	1.78	151.2%	B	5.39%	137.1%
CZR	CAESARS ENTERTAINMENT CORP	$8.50	$1,249	2.4	13.3	14.1	10.5	6.1	7.7		-98.5%	-14.5%	-305.5%	-142.0%	-96.2%		0.10	-256.0%	D	0.00%	
MGM	MGM RESORTS INTERNATIONAL	$28.83	$16,530	1.2	0.4	10.8	27.4	28.0	26.9	26.2	184.9%	-3.1%	164.5%	-239.0%	16.7%		1.68	206.5%	C	0.00%	
WYNN	WYNN RESORTS LTD	$86.51	$8,802	(0.8)	(15.2)	(11.2)	(4.6)	26.0	25.0	7.3	65.2%	0.1%	-73.3%	88.5%	18.5%	6.0%	1.85	-7045.5%	B	2.31%	85.5%
MPEL	MELCO CROWN ENTMT LTD	$15.90	$8,644	0.4	(19.1)	(1.3)	26.4	(5.6)	(5.4)	11.9	64.1%	-4.1%	-82.3%	100.1%	25.6%		1.80	116.2%		4.52%	309.2%
PENN	PENN NATIONAL GAMING INC	$13.79	$1,152	(0.6)	3.8	1.6	(1.1)	(15.0)	(13.9)	5.0	-21.1%	-77.0%	-100.4%	9900.0%	2.0%		1.76	-913.7%	C	0.00%	
27-HK	GALAXY ENTERTAINME	$4.36	$18,621	2.3	(12.2)	15.8	47.0	38.0	38.2	15.2		3.3%	-58.1%	38.5%	5.6%	33.8%	1.38			0.86%	
880-HK	SJM HOLDINGS LTD.	$0.78	$4,436	3.1	(3.2)	6.7	29.1	12.6	9.9	-2.7		-196.4%	379.9%	-100.1%	-40.0%	-8.8%	1.26			3.45%	59.4%
Average			$12,735	0.8	(5.9)	3.7	19.7	13.9	13.8	9.9	36.6%	-33.2%	-13.1%	1205.1%	-6.9%	17.1%	1.45	-1290.2%		2.07%	147.8%
Median			$8,723	0.8	(7.7)	4.1	24.6	17.0	15.9	7.3	44.5%	-3.6%	-65.7%	16.8%	8.9%	19.9%	1.72	-69.9%		1.58%	111.3%
SPX	S&P 500 INDEX	$2,239		(0.5)	1.8	3.3	6.7	8.5	9.5			7.6%	1.0%	7.7%	12.4%						

		2015		P/E							2015	2015			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2013	2014	2015	TTM	NTM	2016	2017E	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
LVS	http://www.sands.com	30.9%	6.69	19.1	15.2	21.6	26.1	20.9	22.7	20.2	16.8%	3.63	22.8%	11.8%	15.2	12.5	11.3	11.7%	2.2%	11.3%	$7.98
CZR	http://www.caesarscorporate.com	-224.3%	-0.47	-0.4	-0.4	0.2	-0.2	-12.5	-0.5	-13.3	127.2%	0.27	6.4%	116.2%	13.9	-0.1		146.0%	2.5%	-12.0%	-$17.96
MGM	http://www.mgmresorts.com	-7.6%	2.67	-90.1	-93.0	-35.2	64.1	22.5	25.3	21.7	-5.1%	1.80	13.8%	-2.6%	23.9	8.7	8.0	18.6%	10.9%	8.8%	$10.81
WYNN	http://www.wynnresorts.com	-145.8%	-65.68	12.1	12.0	45.1	37.0	22.4	23.9	20.2	4.8%	2.16	13.0%	2.4%	21.3	12.5	11.0	28.5%	2.1%	-0.5%	-$1.32
MPEL	http://www.melco-crown.com	3.2%	2.61	13.8	14.4	81.6	68.4	41.7	40.8	32.4	2.7%	2.18	5.3%	1.3%	115.0	15.8	14.0	4.5%	4.6%	8.5%	$6.10
PENN	http://www.pngaming.com	-0.2%	-2.08	-1.4	-5.9	1379.0	14.7	18.6	13.8	13.5	0.0%	0.41	18.1%	0.0%	12.9	3.1	5.7	1.1%	0.6%	2.9%	-$6.64
27-HK	http://www.galaxyentertainment.com	10.0%	3.34	14.5	14.1	33.5			24.2	22.9	8.4%	2.83		10.3%	23.3	17.5	16.5			21.5%	$1.31
880-HK	http://www.sjmholdings.com	-11774.1%	1.45	0.1	-0.1	0.0	17.2		15.7	26.1	-9181.6%	1.13		9.6%	6.7	9.3	11.4			-3.1%	$0.54
Average		-1513.5%	-6.43	-4.0	-5.5	190.7	32.4	18.9	20.7	18.0	-1128.4%	1.80	13.3%	18.6%	29.0	9.9	11.1	35.1%	3.8%	4.7%	
Median		-3.9%	2.03	6.1	6.0	27.6	26.1	21.6	23.3	21.0	3.7%	1.98	13.4%	6.0%	18.3	10.9	11.3	15.2%	2.4%	5.7%	
spx	S&P 500 INDEX			20.6	19.2	19.0			17.6	15.7											

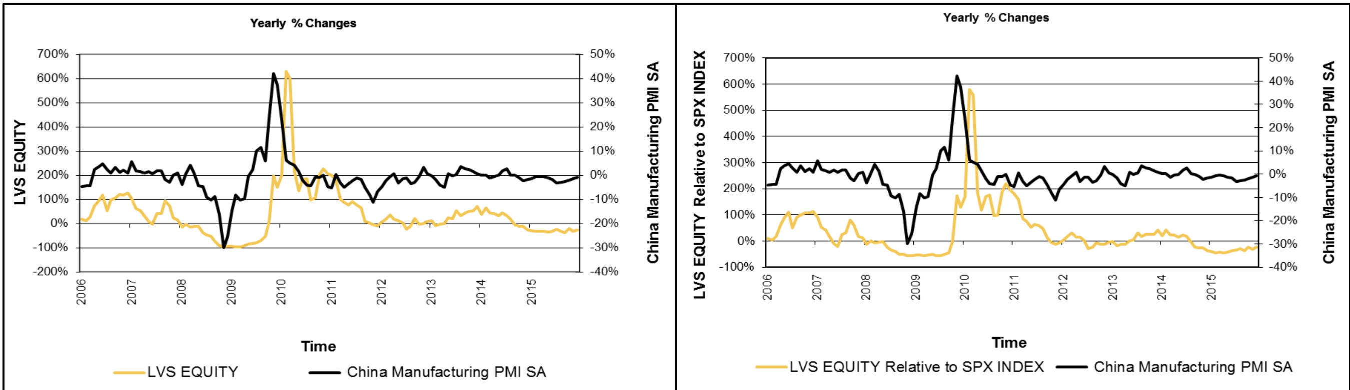
Appendix 7: LVS hotel operations

Macau Operations:			
	2015	2014	Change
The Venetian Macau			
Total room revenues	$213,660	$258,863	17.46%
Occupancy rate	84%	91.30%	7.30%
Average daily room rate	$243	$270	10.00%
Revenue per available room	$204	$246	17.07%
Sands Cotai Central			
Total room revenues	$272,729	$320,875	15.00%
Occupancy rate	83.10%	88.50%	6.10%
Average daily room rate	$157	$176	10.80%
Revenue per available room	$131	$156	16.03%
Four Seasons Macau			
Total room revenues	$42,284	$47,755	11.46%
Occupancy rate	82.00%	87.00%	5.75%
Average daily room rate	$376	$400	6.00%
Revenue per available room	$308	$348	11.49%
Sands Macau			
Total room revenues	$22,735	$24,066	5.53%
Occupancy rate	99.30%	98.60%	-0.71%
Average daily room rate	$330	$238	-38.66%
Revenue per available room	$218	$235	7.23%
Singapore Operations:			
Marina Bay Sands			
Total room revenues	$359,332	$383,954	6.41%
Occupancy rate	96.30%	99.00%	2.73%
Average daily room rate	$404	$431	6.26%
Revenue per available room	$389	$427	8.90%
U.S. Operations:			
Las Vegas Operating Properties			
Total room revenues	$543,994	$491,493	100.00%
Occupancy rate	91.80%	88.00%	-4.32%
Average daily room rate	$233	$222	3.60%
Revenue per available room	$214	$196	100.00%
Sands Bethlehem			
Total room revenues	$15,140	$13,414	99.99%
Occupancy rate	92%	83%	-9.71%
Average daily room rate	$151	$146	5.48%
Revenue per available room	$138	$122	100.00%

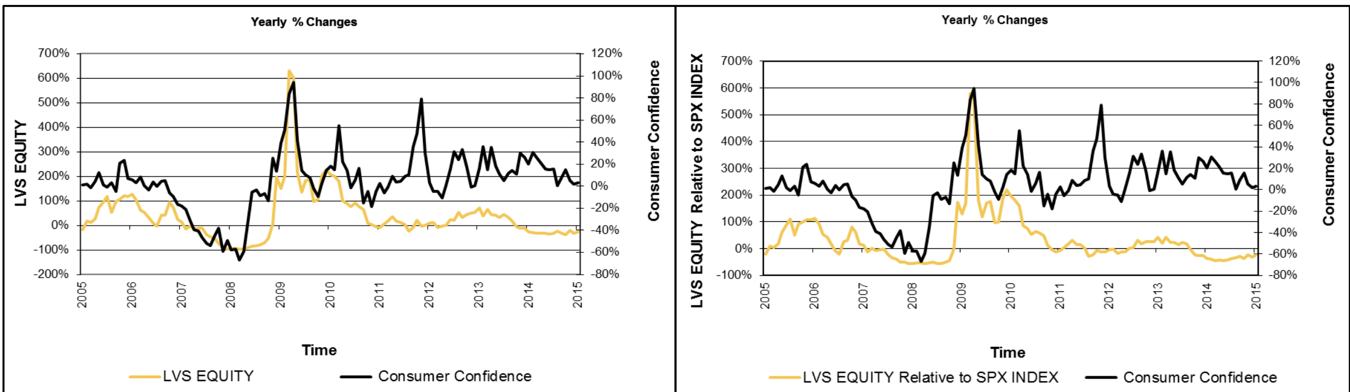
Appendices 8 and 9: Absolute price of LVS versus ISM and relative price of LVS to SPX versus ISM



Appendices 10 and 11: Absolute price of LVS versus the China PMI and relative price of LVS to SPX versus China PMI



Appendices 12 and 13: Absolute price of LVS versus Consumer Confidence (left) and relative price of LVS versus ISM



Apppendix 14: Porter's 5 Forces

Threat of New Entrants – Very Low

The barriers to entry in the hotel and gaming industry are very significant. Policies and regulations are the largest barrier to entry. Additionally, entering the gaming industry involves an extremely high startup costs. The cost of building properties, providing transportation, and establishing contracts to purchase and lease gaming systems from casino game equipment companies are some of the largest costs associated with entering into this market.

Threat of Substitutes – High

Domestically, there are many gaming companies vying for market share with very little product differentiation. The only benefits to these firms is brand recognition, client service quality, and the development of new hotels and casinos. While the Singapore market is limited to only two casino options, markets such as Las Vegas and Macau allow consumers to simply shift to other floors or casinos should they desire a different gaming experience.

Supplier Power – Moderate

There are a considerable amount of suppliers that provide for the resorts in the gaming industry. The most important suppliers in this industry are involved with consumer services. These companies are often holding companies that manage gaming rooms, as well as the gaming systems, in the hotels and casinos within the gaming market.

Buyer Power – High

The gaming industry is very competitive. As resorts compete for consumer business domestically, the buyers have the power to decide between a wide variety of locations, ammenities, and services. While the resorts ultimately have the final say in determining room rates, offers and promotions from competitors in their space often impact the prices. Firms must provide games, entertainment, and ammenities that appeal to their clients, while also differentiating their operations from competitiors.

Intensity of Competition – Very High

In the United States, the competiton among gaming peers is very significant. Many of the integrated resorts in the Las Vegas area compete for trade show and convention business. Hotel/casino facilities face reduction in average room rates should competitors expand/renovate facilities without an increase in demand.

Outside of the United States, specificially in the case of Las Vegas Sands, the intensity of competiton is lower. Las Vegas Sands holds a large portion of the market share in both Macau and Singapore, which provide more than 85% of its revenues. With competitors expanding into its target markets, LVS's concentrated location could present substantial risk.

Appendix 15: SWOT Analysis of Las Vegas Sands

Strengths:

- The firm maintains a large portion of the gaming market share in its target markets
- LVS has one of the best balance sheets in the industry, with low debt compared to its competitors
- LVS is the only firm among its comps with a “B” or better credit rating
- Las Vegas sands is diversified in its geographic location
- In Singapore, the firm operates as a duopoly with Genting Singapore

Weaknesses:

- LVS has only one subconcession of the three provided by the Macau government. The Macau gaming commission has the opportunity to revoke the subcommission, within only a year notice
- The principal stockholder family owns 54% of the outstanding stock as of December 31, 2015
- The firm owns 70.1% of the issued and outstanding shares of its subsidiary, Sands China Limited (SCL). Certain officers and directors of LVS serve in management positons for SCL and may have conflicting fiduciary obligations to shareholders.

Opportunities:

- Significant potential for growth in both the tourism market and the Chinese economy provide the firm with a significant number of clients
- Las Vegas Sands has planned expansions into other Asian locations
- Further developments and addition of mass-market attractions and ammenities may lead to further market share growth

Threats:

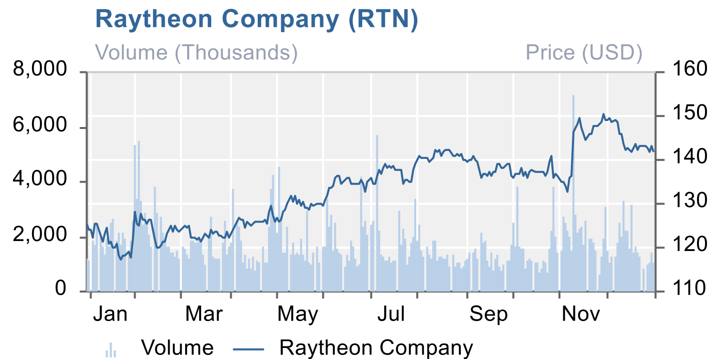
- The Macau government maintains the authority to revoke the LVS subcomission, or prevent LVS from renewing the agreement
- Legalization of casino gaming across the United States poses a threat to Las Vegas Sands, as does the increase in internet gambling

Analyst: Justin Brant

Recommendation	BUY
Target (today's value)	$162.00
Current Price	$144.81
52 week range	$119.38 - $152.58

Aerospace & Defense

Raytheon Company



Share Data	
Ticker:	RTN
Market Cap. (Billion):	$42.52
Inside Ownership	0.2%
Institutional Ownership	78.1%
Beta	0.80
Dividend Yield	2.02%
Payout Ratio	38.7%
Consensus Long-Term Growth Rate	8.6%

	2014	2015	2016E	2017E	2018E
Sales (billions)					
Year	$22.8.3	$23.2.5	$24.4.4	$25.97	$27.57
Gr %	-2.9%	1.8%	5.1%	6.2%	6.2%
Cons	-	-	$24.42	$11.48	$12.50
EPS					
Year	$7.19	$6.80	$7.67	$7.69	$8.69
Gr %	16.5%	-5.4%	12.8%	0.3%	13.0%
Cons	-	-	$7.46	$7.46	$7.41

Ratio	2014	2015	2016E	2017E	2018E
ROE (%)	21.2%	21.0%	21.0%	21.4%	20.8%
Industry	37.8%	49.5%	49.5%	61.3%	116.4%
NPM (%)	9.5%	8.9%	8.9%	9.1%	8.4%
Industry	7.6%	7.6%	7.6%	7.6%	7.5%
A. T/O	0.85	0.81	0.81	0.82	0.83
ROA (%)	8.1%	7.2%	7.2%	7.4%	7.0%
Industry	7.1%	7.0%	7.0%	7.1%	7.3%
A/E	2.85	2.83	2.73	2.65	2.55

Valuation	2015	2016E	2017E	2018E
P/E	16.3	30.3	22.7	20.3
Industry	20.0	42.0	23.9	22.0
P/S	2.34	4.45	3.70	3.40
P/B	5.2	7.7	5.6	5.6
P/CF	9.9	13.5	12.6	11.4
EV/EBIT	13.5	15.2	18.5	15.4

Performance	Stock	Industry
1 Month	-3.1%	-0.2%
3 Month	5.9%	10.8%
YTD	2.3%	1.3%
52-week	16.6%	27.0%
3-year	63.5%	21.5%

Contact: Justin Brant
Email: jmbrant@uwm.edu
Phone: 414-254-4698

Summary:
I recommend a buy rating with a target of $162. Continued expansions within international markets in addition to increased defense spending will fuel Raytheon's growth in the coming years. Raytheon possesses a global growth business model that is hard to imitate. The election of Donald trump and geopolitical drivers will be sure to see renewed government defense spending across the planet. The stock is undervalued based on DCF analysis. My price target of $162 includes the current dividend yield (2.02%) and implies a 11.55% upside.

Key Drivers:

- International aerospace & defense sales will increase due to growing geopolitical instability.
- Increased Department of Defense spending will have a positive impact on Raytheon's Revenue.
- U.S. Presidential Election Results will drive growth opportunities for Raytheon.

Valuation:

Raytheon was valued using multiples and a 3-stage discounted cash flow model. Based on earnings multiples, the stock is expensive relative to other firms and is worth $125. Relative valuation shows Raytheon to be slightly overvalued based on its fundamentals versus those of its peers in the aerospace and defense industry. Price to sales valuation yielded a price of $134. A detailed DCF analysis values Raytheon slightly higher, at $166.71; I give this value a bit more weight because it incorporates assumptions that reflect Raytheon's long term growth. Finally, a scenario analysis yields a price of $161. As a result of these valuations, I value the stock at $162.00.

Risks:

Threats to the firm include cuts in defense spending, global currency fluctuations, production delays, Forcepoint integration setbacks, and higher oil prices affecting international sales.

Company Overview

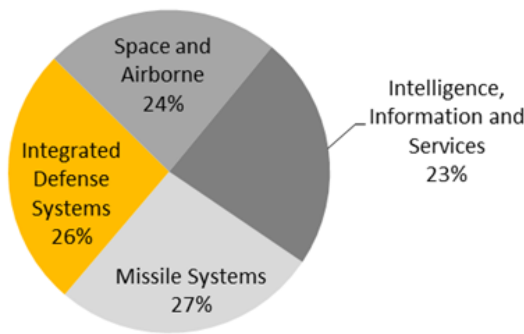
Raytheon Company (RTN) is a technology and innovation leader specializing in defense, civil government, and cybersecurity solutions. Founded in 1922, Raytheon is headquartered in Waltham, Massachusetts and employs approximately 61,000 people worldwide. From its founding, Raytheon has been at the forefront of developing and implementing defense and radar systems. In addition to these systems, Raytheon is the world's leading missile supplier. Furthermore, Raytheon provides a wide range of mission support services. This company is one of the world's top-five defense contractors and is the world's leading producer of guided missiles.

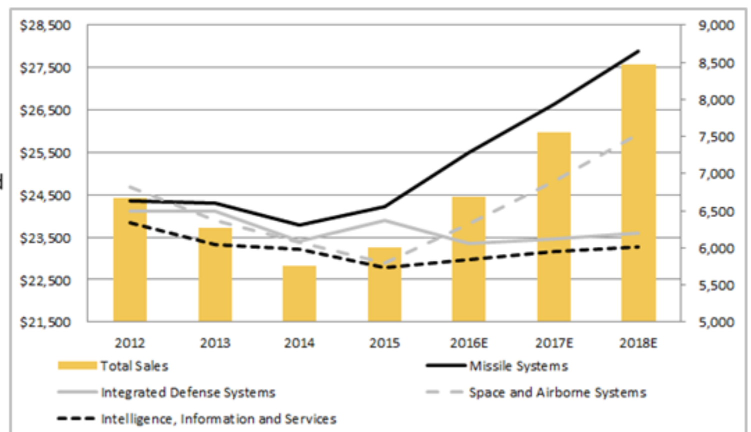
For the first half of 2016, Raytheon generated approximately 68% of its revenue from the U.S. government and 32% of its revenue internationally. Raytheon operates its company through five main segments:

CAGR for Raytheon's sales since 2001 is 2.32%

- Missile Systems; develops and supports a broad range of advanced weapon systems. This includes missiles, smart munitions, close-in weapon systems, projectiles, kinetic kill vehicles, directed energy effectors, and advanced combat sensor solutions. This segment's net sales grew by nearly 4% from 2014 to 2015 and is expected to finish 2016 with 11% growth.
- Integrated Defense Systems: comprises of air and missile defense, radar solutions, and a variety of other systems. Sales in this segment grew in 2015 by nearly 5% and decreased 5% in 2016.
- Space and Airborne: designs and develops integrated sensor and communication systems for advanced missions in addition to precision guidance systems along with electronic warfare systems. Net sales in this segment decreased by 4.5% in 2015 and will increase nearly 9% in 2016.
- Forcepoint: a newly reorganized segment, combines Raytheon's cybersecurity technologies and Websense's TRITON platform. This provides defense-grade cybersecurity solutions to domestic and international customers. Raytheon reported net sales of $328 million in this segment for 2015 and expects this number to grow as more systems come online.
- Intelligence, Information, and Services: provides a full range of technical and professional services to the U.S. federal government, in addition to intelligence, defense, and commercial customers worldwide. The net sales in this segment decreased by nearly 4% in 2015 and is expected to increase by 2% in 2016.

Figures 1 and 2: Revenue sources for RTN, EOY 2015 (left) and Revenue history since 2011 with 5 year CAGR (right)





Source: Company 10K

Business/Industry Drivers

Raytheon's future success is dependent on several contributing factors from both a company-specific and economic viewpoint; the following are the most important business drivers:

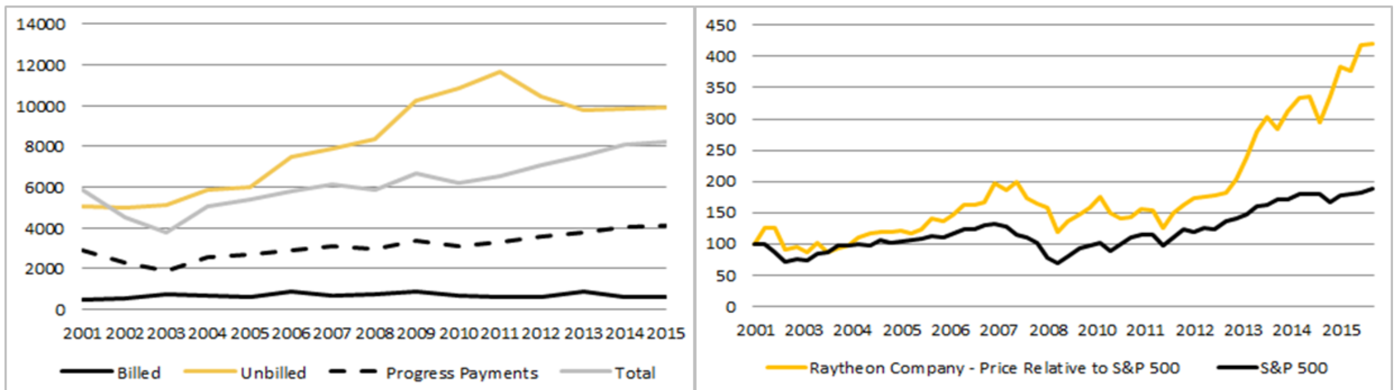
1) U.S. Department of Defense (DoD) spending
2) International growth
3) Forcepoint
4) United States presidential election
5) Competition

U.S. Department of Defense (DoD) Spending

DoD Spending is projected to continue to increase for FY17

Raytheon is highly reliant on U.S. government and the Department of Defense, which contribute to 68% of net sales. The United States has been engaged in the longest period of continuous warfare in its history. This began after the events of 9/11, and the Department of Defense saw a drastic increase in its budget during the early stages of Operation Iraqi Freedom and Operation Enduring Freedom. However, the drawdowns in Afghanistan and Iraq starting in 2010 caused Congress to reduce military spending.

Figures 3 and 4: Number of DoD contracts (left) and RTN relative to S&P500 since 2001 (right)



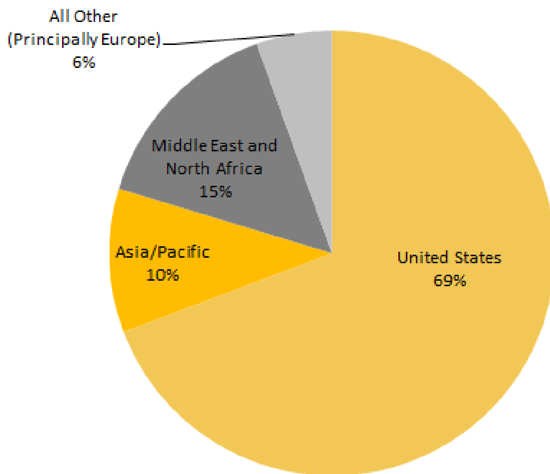
Source: company 10K, FactSet

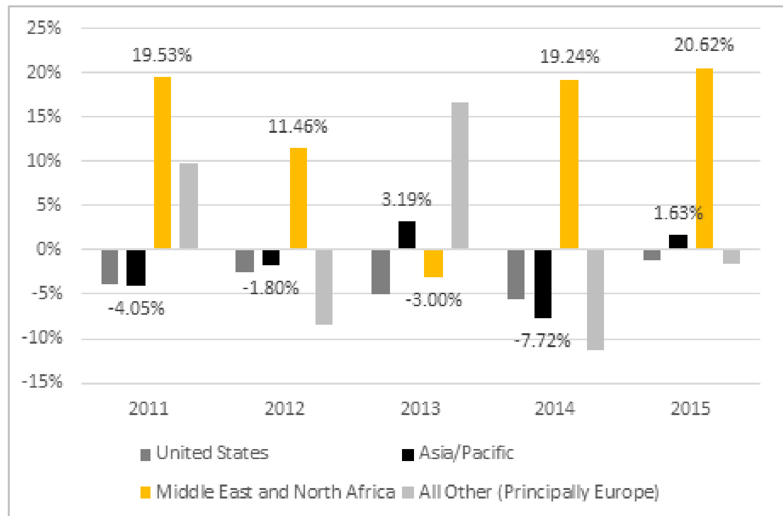
Since 2004, the increase in defense spending caused Raytheon to outperform the S&P 500. Despite the government budget cuts in 2014, the stock has continued to outperform. Systems such as missile defense, space and airborne systems, which Raytheon sells, have not fallen. Furthermore, Congress voted to increase defense spending in FY16 in response to geopolitical issues, which the American people see as threats. These issues include the Russian incursion into Ukraine, the growing threat of the Islamic State, and increasing belligerency with North Korea, which continues its atomic testing program.

The U.S. military's shift to the Asia/Pacific region will increase growth

The U.S. government is also shifting its focus to the Asia/Pacific region for military training and operations. This change in focus led to defense upgrades to the pre-existing U.S. Naval fleet and the U.S. Air Force. Upgrades to these forces will increase Raytheon's integrated defense system segment revenue opportunities. The integrated defense system segment makes many of the radar and defensive elements for U.S. Navy ships. Raytheon's missile systems segment also benefits from this shift through opportunities with the U.S. Air Force. There are improved prospects for the Small Diameter Bomb II, Stinger missile product line, and the AIM120AMRAAM air-to-air missile products.

Figures 5 and 6: 2015 revenue by % total (left) and YOY sales growth by region (right)





Source: Company reports

Geopolitical tensions create opportunities for increased revenue for Raytheon.

International Growth

Like many of its competitors, Raytheon has a large sales exposure in the United States, which leaves it vulnerable to cuts in U.S. defense spending. However, Raytheon has been following its international model, which looks at countries as markets. This approach appears to be paying off for the time being. International revenue was up 3% in 2015 and continues to increase in 2016. Boeing and Bae Systems have more international revenue exposure revenue than Raytheon. Despite this, Raytheon still has more international exposure than most of its competition.

More countries want missile defenses to protect themselves from rogue states. This rise in international growth can also be attributed to rising geopolitical tensions across the globe. This can be explained by a variety of examples; one of which is increasing business opportunities with the Polish government due to the rise in Russian aggression towards its neighbors over the past several years. Although government-to-government negotiations are still ongoing, Raytheon anticipates a multi-billion dollar opportunity in 2017 with Poland's largest defense contractor, PNC, in 2017. Product lines related to this opportunity are Raytheon's highly successful Patriot Missile System and their NASAMS short-range air defense system. This being said, European markets are experiencing a slowdown in demand as GDP growth and high operating costs are an issue for the continent.

Shifting focus towards the Middle East, Qatar, and Saudi Arabia have presented lucrative opportunities for Raytheon. The company has secured contracts to provide both nations with missile defense systems, including the Patriot line of missile systems. Sales growth increased by 2% in 2015 in the Middle East and North African markets. This sales growth is substantial considering oil output in the region has slowed.

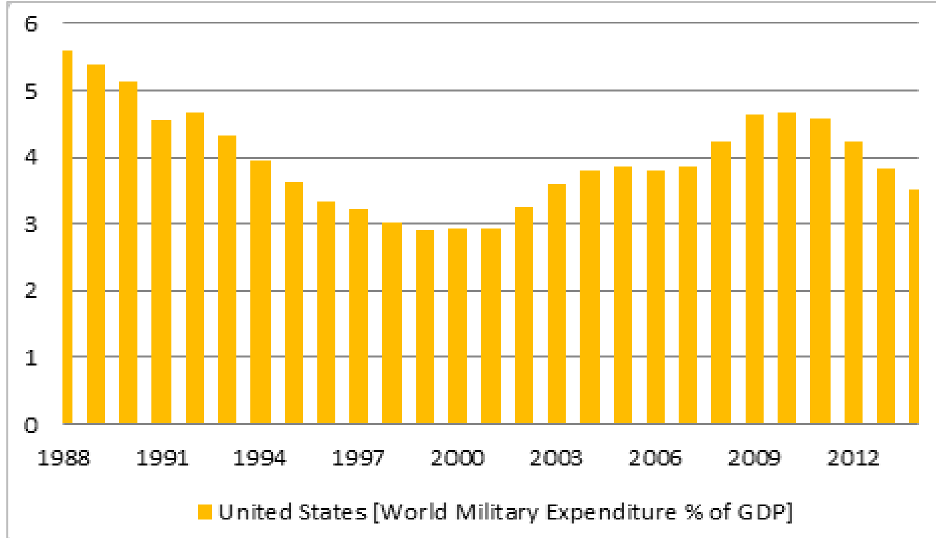
Last, sales in the Asia/Pacific region increased almost 2% in 2015. This number is an indicator of countries' increased reliance in Raytheon's ability to provide defense systems capable of protecting them. This is due to the aggressive Chinese foreign policy in the region. However a threat to this, like in Europe, could be slow economic growth.

Forcepoint

A newly formed segment, Forcepoint was integrated in 2015 and is experiencing its first full year as a part of Raytheon. Forcepoint provides information technology security products and related services designed to protect commercial and government organizations along with their customers and other users from external and internal threats.

Past presidential elections have had an impact on the defense budget.

Figure 7: U.S. defense spending as a % of GDP during election years



Source: FactSet

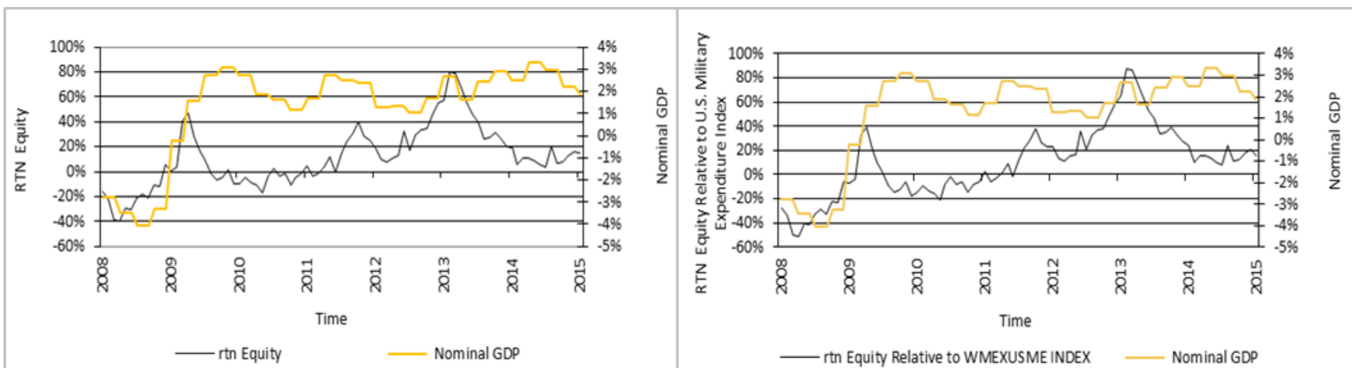
U.S. Presidential Election

Raytheon appears to outperform the S&P500 as U.S. GDP rises.

This year's United States presidential election impacted Raytheon as well as its competitors by setting the stage for defense budgets for FY18 and beyond. Historically, defense spending has increased with Republican presidents, and has decreased under Democratic presidents. This is not always the case, as noted by the increase in defense spending shortly after the 2008 election.

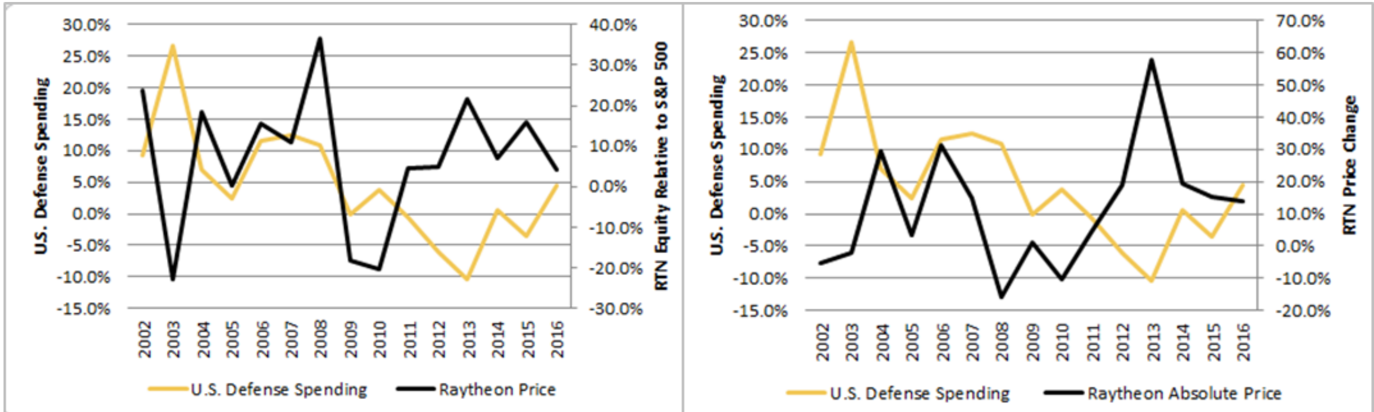
The defense budget for FY17 is projected to be larger than 2016, and I believe it is likely to stay this way. Revenues beyond FY17 will be affected by election of Donald Trump. Future defense spending will likely see a boost as Trump has been adamant about increasing the U.S. military size and budget. His focus will be on upgrading systems that have been neglected due to the insurgent warfare the United States has been facing for the past decade and a half.

Figure 8 and 9: Raytheon correlation to nominal GDP (right) and to U.S. defense spending (left)



Source: Bloomberg

Figure 10 and 11: Raytheon correlation to U.S. defense spending compared by relative (left) and absolute (right) price.

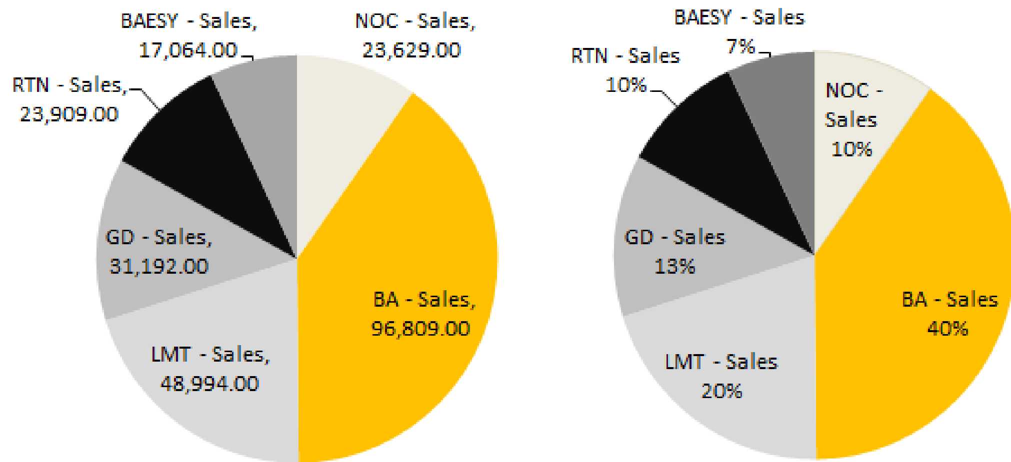


Source: FactSet, U.S. Department of Defense

<u>Competition</u>

As with most stocks in the Aerospace and Defense industry, Raytheon shares the competitive advantage that the industry has many barriers to new competition. Because of these barriers, Raytheon's competitors seldom change: Boeing (BA), Lockheed Martin (LMT), General Dynamics (GD), Bae Systems (BAESY), and Northrop Grumman (NOC).

Figure 12 and 13: Comparison of Raytheon competitors based on net sales (left) and based on market value (right)



Source: FactSet

Additionally, Raytheon benefits by producing missile and missile defense systems, and components in competitors' missile defense systems. Lockheed Martin works with Raytheon on the Javelin, a lightweight shoulder-fired missile launcher.

Figure 14: Raytheon and competitors revenue streams and growth

	Raytheon	Boeing	Lockheed Martin	General Dynamics	Bae Systems	Northrop Grumman
Ticker	RTN	BA	LMT	GD	BAESY	NOC
Percent of Sales, Defense	98.9%	23.6%	80.2%	65.6%	82.0%	99.1%
U.S. Sales	70.0%	40.9%	79.0%	73.9%	35.6%	85.8%
International Sales	30.0%	59.1%	21.0%	26.1%	64.4%	14.2%
5 Year Sales CAGR	-1.6%	8.4%	0.1%	-0.6%	-4.5%	-7.5%
5 Year Avg Net Margin	8.4%	5.5%	6.8%	6.6%	4.9%	8.1%

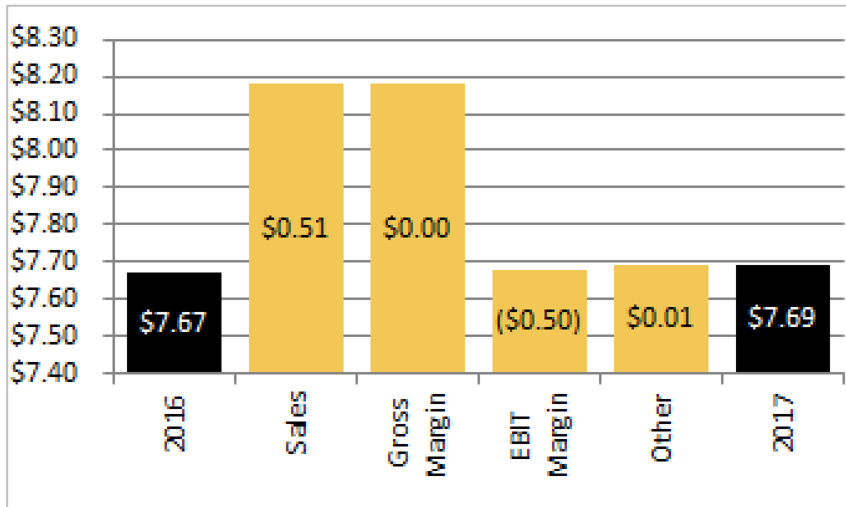
Source: FactSet

With the election of Donald Trump, the likelihood of the defense spending being cut has decreased. However if defense spending were to be cut, companies which rely more on defense sales will suffer the most. This can be seen by the 5 year sales CAGR shown above. Raytheon's larger exposure to international sales can help it perform better if the U.S. defense budget were cut. Furthermore, the companies with a higher exposure to defense sales have a notably better 5 year average margin.

Financial Analysis

I anticipate EPS to grow $0.02 in FY 2017. Rising sales will boost EPS by $0.51; however, rising research and development expenses will lead to increases in selling and administrative expenses. This will likely result in falling EBIT margins that will reduce EPS by $0.50. Raytheon is willing to take the hit because, with government contracts, the lowest bidder is typically the winner and to be more competitive.

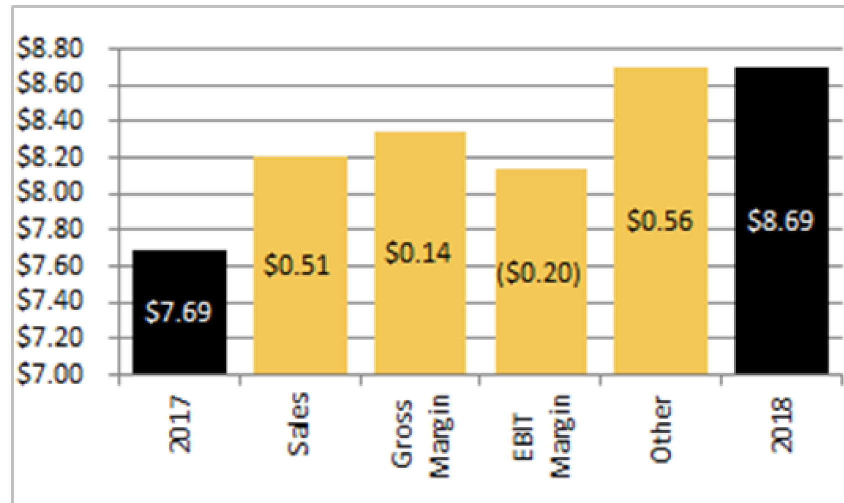
Figure 15: Quantification of 2017 EPS drivers



Source: Company Reports, IMCP

I expect 2018 EPS to increase from $7.69 to $8.66 for a gain of $0.97 per share. Raytheon's sales will increase by 6.2% stemming from a demand for missile systems and integrated defense systems. While gross margin will grow $0.14, EBIT margin will fall $0.20 as SG&A and R&D continue to rise as a percent of sales. Other will increase EPS by $0.56 due to the repurchase of 5.9 million shares.

Figure 16: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

I am slightly more optimistic than consensus estimates for 2017 and 2018, particularly in 2018. I believe Raytheon will be able to outperform other companies in the Aerospace and Defense segment due to increasing orders of the Patriot missile defense system as more countries are looking to protect their sovereignty. Still, I believe that international sales will drop by 0.5% of overall sales in 2017 and 2018 due to increased sales to the U.S. government as a result of President Trump's proposal to modernize America's nuclear weapons and deterrence systems.

Figure 17: EPS and YoY growth estimates in $Millions

	2017E	2018E
Revenue Estimate	$25,971	$27,525
YoY Growth	6.20%	6.20%
Sales-Consenus	$25,204	$26,268
Eps-Estimate	$7.69	$8.69
YoY Growth	0.25%	13.0%
Eps- Consensus	$7.35	$8.38
YoY Growth	-1.5%	14.00%

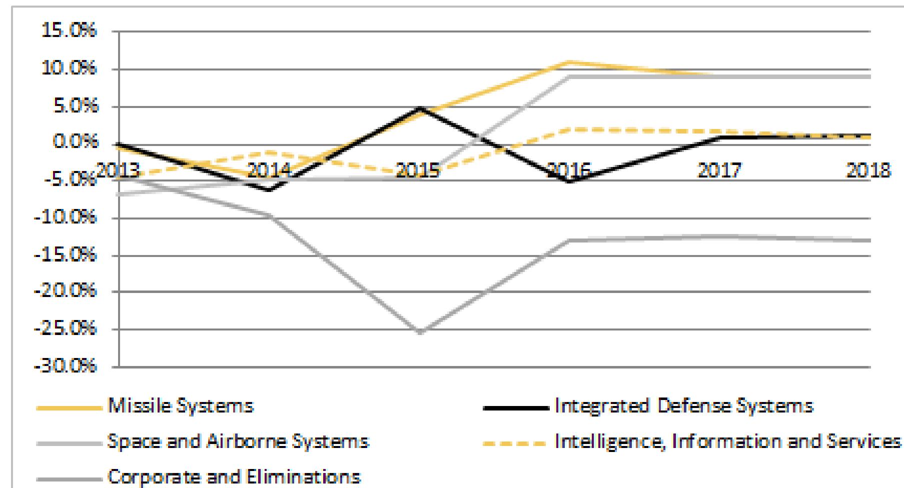
Source: FactSet, IMCP

Revenues

Raytheon's revenue is closely tied to U.S. defense spending. This is shown through the decline in revenue since 2010 as defense spending fell. However, revenue has risen in 2015 due to increased international sales. I believe the greatest revenue sources will come from Raytheon's Missile Systems and Integrated Defense Systems segment.

The Missile systems segment will see an increased demand for land-to-air missiles such as the Patriot system, as well as air-to-air missiles such as the AIM-120 AMRAAM missile. Furthermore, the Integrated Defense Systems segment also benefits from increased missile defense system orders. Also, the Space and Airborne Systems segment will see an increase in revenue as U.S. and foreign governments' defense spending increases. The reason for this growth in the United States is upgrading and outfitting the U.S. Navy and Air Force with new radars and other sensors.

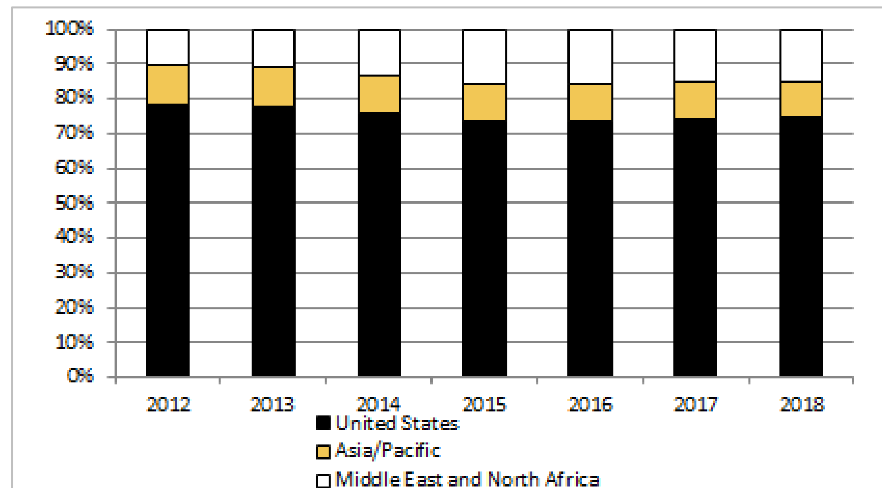
Figure 18: Raytheon segment revenues, 2013-2018E



Source: Company Reports, IMCP

International growth will be another main driver in revenue growth over the next two years. The rise in geopolitical tensions and concern about security will influence foreign governments to spend more on defense initiatives. The two segments that will benefit from this increase will be Raytheon's Missile Systems and Integrated Defense Segments for the reasons listed above.

Figure 19: Revenue Growth by Geography, 2012-2018E



Source: Company Reports, IMCP

Forcepoint was integrated in May 2015 and has an operating margin of 9.1% for that year.

Operating Income and Margins

Raytheon records its operating expenses under cost of sales-products, cost of sales-services, and general and administrative expenses. Thus far, operating margins have fluctuated due to changes in contracts with the government and other performance such as Estimate at Completion. Additionally, the company had incurred increased R&D costs associated with its Forcepoint segment. As this segment is increasingly integrated, these costs will start to decrease. However, in 2017 I am projecting nearly double digit growth in SG&A.

Figure 20: Operating income with SG&A growth

	2013	2014	2015	2016E	2017E	2018E
Sales	$23,706	$22,826	$23,247	$24,444	$25,971	$27,575
Direct Costs	18,532	17,295	17,574	18,235	19,375	20,516
Gross Income	$5,174	$5,531	$5,673	$6,209	$6,596	$7,059
Gross Margin	21.83%	24.23%	24.40%	25.40%	25.40%	25.60%
Operating Expenses						
SG&A	2,236	2,352	2,660	2,835	3,220	3,502
Growth	-4.2%	5.2%	13.1%	6.6%	13.6%	8.7%

Source: Company Reports, IMCP

Shown below are the individual segment margins for Raytheon. Not included is the Forcepoint segment because of its recent creation. Intersegment contracts have decreased material and subcontractor costs; however, segments such as the Missile systems segment have lost revenue due to a decreased defense budget.

Figure 21: Segment operating margins

	2013	2014	2015
Integrated Defense	17.2%	16.0%	17.2%
Intelligence, Information, Services	8.5%	8.4%	10.4%
Missile Systems	12.6%	12.7%	13.2%
Space and Airborne Systems	14.4%	13.9%	13.7%

Source: Company Reports, IMCP

Return on Equity

Raytheon has a below average ROE of 20.7% when compared to the industry average of 49.5% however, it has an above average ROA. This is due to Raytheon being less leveraged than its peers. I believe ROE looking forward two years will increase to 21.1% as the company increases its asset efficiency offsetting falling margins. However, I expect ROA to decrease in 2017 due to a lower EBIT margin projected in that year. With the increase in net income, Raytheon's ROE will increase to 21.1%. Additionally, Raytheon has the option to increase its borrowing in order to fund some of its contracts. If that were to happen, this additional debt will raise the leverage ratio and increase ROE. Currently, I project leverage to decline.

Figure 22: ROE breakdown, 2013-2018E

5-stage DuPont	2013	2014	2015	2016E	2017E	2018E
EBIT / sales	12.4%	13.9%	13.0%	13.8%	13.0%	12.9%
Sales / avg assets	0.9	0.85	0.82	0.83	0.86	0.90
EBT / EBIT	93.8%	93.8%	92.5%	92.8%	92.3%	92.7%
Net income /EBT	72.4%	75.2%	74.4%	73.3%	72.3%	75.5%
ROA	7.6%	8.4%	7.3%	7.7%	7.5%	8.1%
Avg assets / avg equity	2.72	2.57	2.84	2.78	2.69	2.60
ROE	20.6%	21.5%	20.7%	21.5%	20.1%	21.1%

Source: Company Reports

Figure 23: Free cash flows without cash and debt 2012 – 2018E

Free Cash Flow	2012	2013	2014	2015	2016E	2017E	2018E
NOPAT	$2,045	$2,077	$2,337	$2,221	$2,429	$2,431	$2,650
Growth		*1.6%*	*12.5%*	*-5.0%*	*9.4%*	*0.1%*	*9.0%*
NWC*	-700	-185	-192	486	489	519	551
Net fixed assets	17,440	16,151	17,437	19,469	19,555	19,527	19,149
Total net operating capital*	$16,740	$15,966	$17,245	$19,955	$20,044	$20,047	$19,701
Growth		*-4.60%*	*8.00%*	*15.70%*	*0.40%*	*0.00%*	*-1.70%*
- Change in NWC*		515	(7)	678	3	31	32
- Change in NFA		(1,289)	1,286	2,032	86	(28)	(378)
FCFF*		$2,851	$1,058	($489)	2,340	$2,428	$2,996
Growth			*-62.9%*	*-146.3%*	*-578.1%*	*3.8%*	*23.4%*
- After-tax interest expense	144	128	144	167	174	187	194
FCFE**		$2,723	$914	($656)	$2,166	$2,241	$2,803
Growth			*-66.4%*	*-171.8%*	*-430.2%*	*3.5%*	*25.1%*
FCFF per share		$8.82	$3.39	$ (1.61)	$7.83	$8.29	$10.46
Growth			*-61.50%*	*-147.30%*	*-587.50%*	*5.90%*	*26.20%*
FCFE per share		$8.42	$2.93	$ (2.15)	$7.25	$7.65	$9.79
Growth			*-65.20%*	*-173.50%*	*-436.70%*	*5.60%*	*27.90%*

Source: Company Reports, IMCP

Raytheon's free cash flow has been rather consistent over the last several years. This firm is committed to using free cash flow to purchase back shares and increase the dividend to shareholders. The firm paid repurchased 6.2 million shares over the past year, which is roughly 2% of the shares outstanding. I believe that share buybacks and dividend increases will continue over the next two years. I forecast that NOPAT will grow at a much faster pace than total net operating capital over the next two years, and Raytheon's revolving credit facility gives it the ability to meet any funding shortfalls that may arise.

This free cash flow model is modeled without cash and debt. I expect both FCFF and FCFE to decline in 2015 and 2016 as the result of purchasing Forcepoint. This decreased marketable securities and cash, which was used to purchase the company in 2015. However, this should rebound significantly in 2017 as capital activity is projected to decline once again.

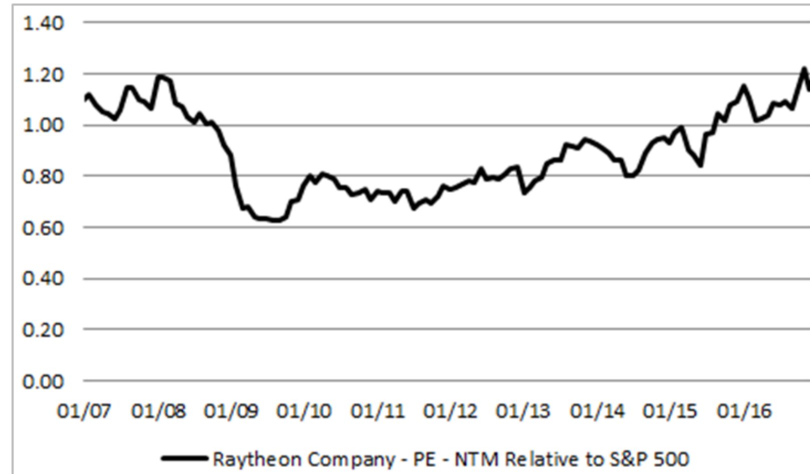
Valuation

Raytheon 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 $125. However, due to the volatility of Raytheon's earnings the past few years, as well as the effect of recent nonrecurring expenses, this metric may be unreliable. Relative valuation shows Raytheon to be slightly overvalued based on its fundamentals versus those of its peers in the aerospace and defense industry. Price to sales valuation yielded a price of $134. A detailed DCF analysis values Raytheon slightly higher, at $166.71; I give this value a bit more weight because it incorporates assumptions that reflect Raytheon's long term growth. Finally, a scenario analysis yields a price of $161. As a result of these valuations, I value the stock at $162.00.

Trading History

Raytheon is currently trading near its five-year high relative P/E to the S&P 500. Most analysts believe that earnings growth will increase in the future. Raytheon's current NTM P/E is at 17 compared to its five year average of 15.5. While I expect some regression towards that number in the future, I do not think that is likely to be the case in the near term.

Figure 24: RTN NTM P/E relative to S&P 500



Source: FactSet

Assuming the firm maintains a 17 NTM P/E at the end of 2016, it should trade at $131 by today.

- Price = P/E x EPS = 17 x $7.69 = $131

Discounting $131 back to today at an 8.8% cost of equity (explained in Discounted Cash Flow section) yields a price of $120. Given Raytheon's potential for earnings growth and continued profitability, this seems to be an unusually low valuation. However, this could make sense because Raytheon has not reached its earnings growth potential yet.

Relative Valuation

Raytheon is currently trading at a P/E slightly lower than its peers, with a P/E TTM of 19.2 compared to an average of 20. Raytheon's P/B ratio is significantly lower than those of its peers; however, it's NPM is on par with or better than its peers. The reason for the lower P/B is that the firm has less leverage resulting in a lower ROE. The firm has better downside protection and more potential for growth through its larger international presence and product lines.

Figure 25: Raytheon 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	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
RTN	RAYTHEON CO	$142.00	$41,698	(1.0)	(5.0)	4.3	4.5	12.9	14.0	8.6	-3.9%	-5.4%	12.8%	0.3%	13.0%	7.0%	0.59	51.0%	A	2.06%	38.7%
BA	BOEING CO	$155.68	$96,080	(0.0)	3.4	18.2	19.9	6.3	7.7	11.1	38.7%	0.8%	-1.1%	27.7%	9.9%	10.7%	1.13	470.3%	A-	2.80%	63.7%
BAESY	BAE SYSTEMS PLC	$29.24	$23,213	0.5	(2.6)	7.4	4.3	(2.5)	(0.7)	6.3		0.0%	-18.2%	7.8%	6.3%	-0.2%	0.68			3.79%	
GD	GENERAL DYNAMICS CORP	$172.66	$52,578	(0.3)	(1.5)	11.3	24.0	24.0	25.7	7.3	5.6%	22.4%	4.7%	5.5%	7.5%	5.9%	0.81	34.3%	A	1.76%	31.7%
LMT	LOCKHEED MARTIN CORP	$249.94	$73,227	(0.3)	(5.8)	4.3	0.7	13.7	15.1	8.6	-7.3%	2.2%	49.0%	-25.5%	14.5%	9.0%	0.53	615.8%	A+	2.71%	50.5%
NOC	NORTHROP GRUMMAN CORP	$232.58	$40,995	(0.0)	(6.8)	8.7	4.6	22.4	23.2	8.3	-1.2%	6.6%	12.7%	3.4%	11.2%	8.8%	0.57	110.8%	A	1.50%	29.0%
Average			$54,632	(0.2)	(3.1)	9.0	9.7	12.8	14.2	8.4	6.4%	4.4%	10.0%	3.2%	10.4%	6.9%	0.72	256.4%		2.44%	42.7%
Median			$47,138	(0.1)	(3.8)	8.0	4.5	13.3	14.6	8.4	-1.2%	1.5%	8.7%	4.4%	10.6%	7.9%	0.63	110.8%		2.39%	38.7%
SPX	S&P 500 INDEX	$2,239		(0.5)	1.8	3.3	6.7	8.5	9.5			8.7%	0.2%	3.4%	6.6%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017E	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
RTN	http://www.raytheon.com	21.5%	3.98	19.7	20.9	18.5	19.2	19.9	18.5	16.3	9.2%	1.71	12.6%	13.6%	14.2			4.3%	5.1%	-1.6%	$35.65
BA	http://www.boeing.com	218.1%	46.13	21.1	20.9	21.2	23.7	17.1	16.6	15.1	4.8%	1.02	4.8%	32.5%	13.7	15.1	11.7	-2.6%	2.6%	8.4%	$3.38
BAESY	http://www.baesystems.com	44.8%	6.78	12.4	12.4	15.1			14.1	13.2	6.6%	1.00		16.2%	12.8	14.0	10.3			-4.7%	$4.31
GD	http://www.generaldynamics.com	25.6%	4.65	23.3	19.0	18.2	18.4	17.4	17.2	16.0	9.2%	1.67	13.7%	20.5%	10.9	14.0	11.0	2.7%	2.3%	-0.6%	$37.16
LMT	http://www.lockheedmartin.com	215.3%	31.52	22.3	21.8	14.6	19.1	20.6	19.6	17.2	10.8%	1.57	11.2%	26.7%	15.2	15.4	10.7	5.3%	4.5%	0.1%	$7.93
NOC	http://www.northropgrumman.com	35.9%	7.13	23.9	22.4	19.9	19.8	20.1	19.2	17.3	8.6%	1.71	12.8%	15.9%	13.1	13.8	9.3	3.9%	6.5%	-7.5%	$32.62
Average		93.5%	16.70	20.4	19.6	17.9	20.0	19.0	17.5	15.8	8.2%	1.45	11.0%	20.9%	13.3	14.4	10.6	2.7%	4.2%	-1.0%	
Median		40.3%	6.96	21.7	20.9	18.3	19.2	19.9	17.8	16.2	8.9%	1.62	12.6%	18.4%	13.4	14.0	10.7	3.9%	4.5%	-1.1%	

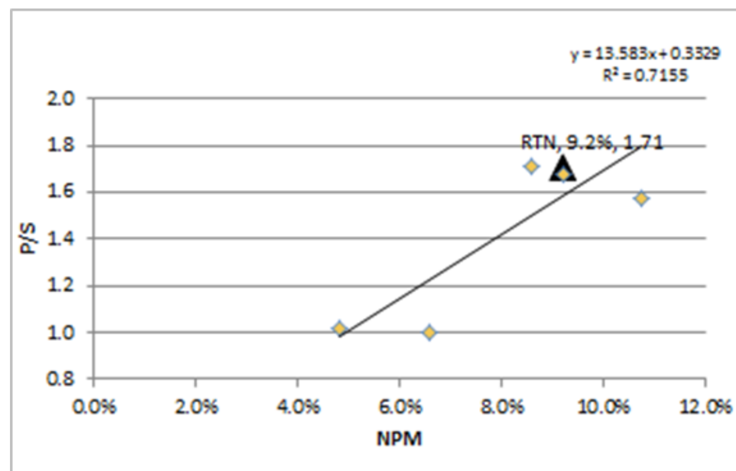
Source: FactSet

A more thorough analysis of P/S and net profit margin is shown in figure 26. The calculated R-squared of the regression indicates that over 80% of a sampled firm's P/S is explained by its net profit margins. Raytheon has a higher P/S margin than all but one of its peers and its net profit margin is higher than the average of its peers. While operating margins are expected to decline, net margins are roughly stable from 2015-2018. Synergies with the new Forcepoint segment could result in upside surprise, and I do expect gross margins to increase modestly. .

- Estimated P/S = Estimated 2017 NPM (8.7%) x 13.583 + 0.3329 = 1.51
- Target Price = Estimated P/S (1.51) x 2017E Sales per share (88.66) = $134.29

Discounting back to the present at a 8.8% cost of equity leads to a target price of $123 using this metric.

Figure 26: P/S vs Net Profit Margin



Source: FactSet

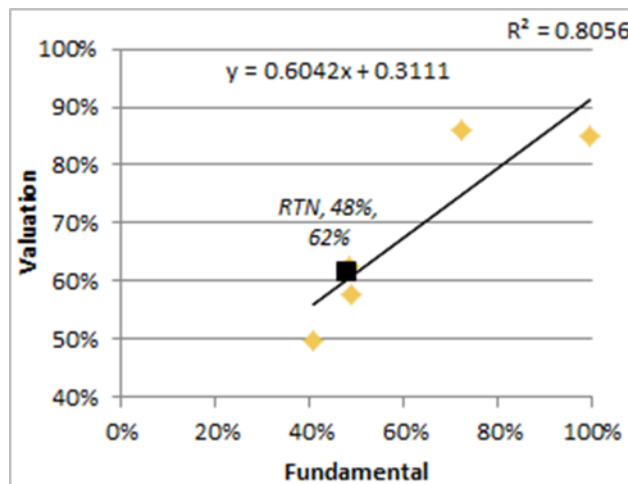
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. An equal weighting of 2016 ROE and 2016 NPM was compared to a composite utilizing 40% P/B, 30% P/S, 15% P/CF, and 15% EV/EBT. The regression line had an R-squared of .69. One can see that Raytheon is above the line, so it is expensive based on its fundamentals.

Figure 27: Composite valuation, % of range

		Fundamentals		Valuation					
	Weight	50.0%	50.0%	40.0%	30.0%	15.0%	15.0%		
Ticker	Name	2016 ROE	2016 NPM	P/B	P/S	P/CF	EV/EBT	Fund	Value
RTN	RAYTHEON CO	10%	86%	9%	100%	95%	93%	48%	62%
BA	BOEING CO	100%	45%	100%	60%	98%	90%	72%	86%
BAESY	BAE SYSTEMS PLC	21%	61%	15%	58%	90%	84%	41%	50%
GD	GENERAL DYNAMICS CORP	12%	86%	10%	98%	90%	72%	49%	58%
LMT	LOCKHEED MARTIN CORP	99%	100%	68%	92%	100%	100%	99%	85%
NOC	NORTHROP GRUMMAN CORP	16%	80%	15%	100%	90%	86%	48%	63%

Source: IMCP

Figure 28: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis (see appendix 6)

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

For the purpose of this analysis, the company's cost of equity was calculated to be 8.8% 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 2.45%.
- A ten year beta of 1.05 was utilized since the company has higher risk than the market.
- A long term market rate of return of 8.5% was assumed, since historically, the market has generated an annual return of about 8.5%.

Given the above assumptions, the cost of equity is 8.8% (2.45 + 1.05 (8.5 – 2.45)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $7.65 and $9.79, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $15.30 per share. Thus, stage one of this discounted cash flow analysis contributes $15.30 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 8.8% cost of equity. I assume 6.4% sales growth in 2017, rising 0.4% a year until 2021, and then leveling back to 6.2% in 2023. The ratio of sales to NWC and NFA turnover will remain at 2019 levels. Also, the NOPAT margin is expected to rise 10% in 2023 from 9.4% in 2017. Finally, after-tax interest is expected to rise 6.8% in 2020 and 6.0% in 2021 as the result of borrowing for operations.

Figure 29: FCFE and discounted FCFE, 2015 – 2021

	2017	2018	2019	2020	2021	2022	2023
FCFE	$7.65	$9.79	$4.96	$5.21	$5.51	$6.52	$7.81
Discounted FCFE	$7.03	$8.27	$3.85	$3.72	$3.61	$3.93	$4.33

Added together, these discounted cash flows total $19.44.

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $7.69 in 2017 to $14.01 in 2023.

Figure 30: EPS estimates for 2015 – 2021

	2017	2018	2019	2020	2021	2022	2023
EPS	$7.69	$8.69	$9.46	$10.42	$11.52	$12.75	$14.01

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 from 2015-2017. Therefore, a P/E ratio of 17 is assumed at the end of Raytheon's terminal year. With the election of Donald Trump, the trend is positive and Raytheon will command a higher P/E ratio compared to the market. One competitive advantage Raytheon has is its ability to capitalize on this increase in spending through a broad range of products in all of its segments.

Given the assumed terminal earnings per share of $14.01 and a price to earnings ratio of 17, a terminal value of $238.21 per share is calculated. Using the 8.8% cost of equity, this number is discounted back to a present value of $131.97.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $166.71 is calculated (15.30 + 19.44 + 131.97). Given Raytheon's current price of $145.22, this model indicates that the stock is slightly undervalued.

Scenario Analysis

Raytheon is a relatively stable company that is not that hard to value. Since its revenue stream comes from defense spending, sales will not fluctuate as much as other stocks in the industrial sector. I valued Raytheon under two scenarios by changing five key factors and running the scenarios through the DCF model to produce two different discounted values for the beginning of 2017.

Bull Case – Raytheon would experience an increased sales growth as well as a lowered beta while its gross margin and EBIT margin rise in the new environment. This could be the case if there is

increased demand for products, such as the Patriot System, while material prices and subcontracting costs decrease. This scenario could occur if geopolitical instability rises at an increasing rate.

Figure 31: Bull case assumptions

Expectations	2017	2018	2019	2020	2021	2022	2023
Beta	0.90						
Sales Growth	6.20%	6.20%	6.80%	7.20%	7.60%	8.00%	8.00%
Gross margin	26%	26.20%					
EBIT Margin	13.60%	13.80%					
P/E	19						

Bear Case – Raytheon would experience decreased sales growth as well as a beta of 1.00 while its gross margin and EBIT margin decrease. This decrease could be due to rising costs of materials with falling global demand as countries cut their defense budgets. However, this case is highly unlikely due to the rise in geopolitical tensions and the election of Donald Trump as President of the United States.

Figure 32: Bear case assumptions

Expectations	2017	2018	2019	2020	2021	2022	2023
Beta	1.00						
Sales Growth	6.20%	6.20%	5.00%	5.00%	5.00%	5.00%	5.00%
Gross margin	24.90%	25.10%					
EBIT Margin	12.40%	12.00%					
P/E	15						

Figure 33: Scenario analysis

Bull Case	
Vale (P/E) beginning 2017	$ 199.42
Base Case	
Vale (P/E) beginning 2017	$ 166.71
Bear Case	
Vale (P/E) beginning 2017	$ 117.46

A valuation of Raytheon stock was reached using the same discounted cash flow method outlined in the previous section. The average of these three scenarios reveals a target price of $161.

One can see from this analysis that Raytheon is sensitive to changes in gross margin and its EBIT margin. It is more likely to see increased revenue growth as opposed to a decrease due to the current political climate both in the United States and abroad. My estimates are optimistic for the bull case and very optimistic for the base case. Raytheon could increase sales through M&A; however, this is highly unlikely due to its recent creation of Forcepoint after an acquisition in 2015. Sales will be likely to continue to grow at the same pace as defense spending.

Business Risks

Although I have many reasons to be optimistic about Raytheon, there are several good reasons to be cautious.

Cuts to U.S. defense spending:

Nearly 70% of Raytheon's sales are from the U.S. government and about 64% of those are to the Department of Defense. Raytheon's financial results are largely dependent on its ability to perform on U.S. government contracts. These contracts are subject to uncertain levels of funding and timing, as well as termination. If the U.S. government or the Department of Defense were to cut their budgets, it would have a significant impact on Raytheon's revenue.

Future success depends on innovation:

In order to be successful in the future, Raytheon needs to continue to invest significant financial resources to develop new offerings and technologies or modify existing ones. Failure of this technology to gain market acceptance could significantly reduce revenues and harm business. Additionally, competitors could develop new technology or offerings that might cause Raytheon's existing technology and offerings to become obsolete.

Geopolitical and economic factors:

Approximately 30% of Raytheon's revenue comes from international sources which are subject to geopolitical and economic risks. Furthermore, Raytheon's international sales are subject to U.S. laws, regulations, and policies. Failure to abide by these laws, regulations, and policies could be detrimental to contracts. Additionally, U.S. and other nations' foreign policies, which are ever-changing, could inhibit business.

Low oil prices could slow international sales:

International sales are a crucial part of Raytheon's growth plan. A significant portion of these foreign governments are from the Middle East and are heavily reliant on oil sales. If the price of oil goes down any further, this could have an impact on their spending, which could affect how much they can allocate to defense.

Appendix 1: Income Statement (in millions)

Income Statement							
Items	**2012**	**2013**	**2014**	**2015**	**2016E**	**2017E**	**2018E**
Sales	$24,414	$23,706	$22,826	$23,247	$24,444	$25,971	$27,575
Direct costs	19,092	18,532	17,295	17,574	18,235	19,375	20,516
Gross Margin	5,322	5,174	5,531	5,673	6,209	6,597	7,059
SG&A, R&D, and other	2,333	2,236	2,352	2,660	2,835	3,220	3,502
EBIT	2,989	2,938	3,179	3,013	3,373	3,376	3,557
Interest	210	181	196	226	242	260	260
EBT	2,779	2,757	2,983	2,787	3,132	3,116	3,297
Taxes	878	808	790	733	877	873	841
Income	1,901	1,949	2,193	2,054	2,255	2,244	2,456
Other	1	(47)	(51)	(20)	(39)	(10)	(33)
Net income	1,900	1,996	2,244	2,074	2,294	2,254	2,490
Basic Shares	333	323	312	305	299	293	286
EPS	$5.70	$6.17	$7.19	$6.80	$7.67	$7.69	$8.69
DPS	$1.98	$2.18	$2.39	$2.67	$2.83	$3.00	$3.17

Appendix 2: Balance Sheet (in millions)

Balance Sheet							
Items	**2012**	**2013**	**2014**	**2015**	**2016E**	**2017E**	**2018E**
Cash	3,188	3,296	3,222	2,328	2,962	3,483	4,484
Operating assets ex cash	5,202	5,519	5,560	6,612	6,551	6,571	6,508
Operating assets	8,390	8,815	8,782	8,940	9,513	10,054	10,991
Operating liabilities	5,902	5,704	5,752	6,126	6,062	6,051	5,956
NOWC	2,488	3,111	3,030	2,814	3,451	4,003	5,035
NOWC ex cash (NWC)	-700	-185	-192	486	489	519	551
NFA	17,440	16,151	17,437	19,469	19,555	19,527	19,149
Invested capital	$19,928	$19,262	$20,467	$22,283	$23,006	$23,530	$24,184
Marketable securities	856	1,001	1,497	872	872	872	872
Total assets	$26,686	$25,967	$27,716	$29,281	$29,940	$30,453	$31,012
Short-term and long-term debt	$4,734	$4,731	$5,325	$5,330	$5,529	$5,529	$5,529
Other liabilities	7,860	4,335	6,918	7,495	7,373	7,373	7,373
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	8,190	11,197	9,721	10,330	10,976	11,500	12,154
Total supplied capital	$20,784	$20,263	$21,964	$23,155	$23,878	$24,402	$25,056
Total liabilities and equity	$26,686	$25,967	$27,716	$29,281	$29,940	$30,453	$31,012

Appendix 3: Sales Forecast

Sales							
Items	2012	2013	2014	2015	2016E	2017E	2018E
Sales	$24,414	$23,706	$22,826	$23,247	24,444	25,971	27,575
Growth		-2.90%	-3.70%	1.80%	5.10%	6.20%	6.20%
Missile Systems	6,639	6,599	6,309	6,556	7,277	7,932	8,646
Growth		-0.60%	-4.40%	3.90%	11.00%	9.00%	9.00%
% of sales	27.20%	27.80%	27.60%	28.20%	29.80%	30.50%	31.40%
Integrated Defense Systems	6,492	6,489	6,085	6,375	6,056	6,117	6,193
Growth		0.00%	-6.20%	4.80%	-5.00%	1.00%	1.30%
% of sales	26.60%	27.40%	26.70%	27.40%	24.80%	23.60%	22.50%
Space and Airborne Systems	6,823	6,371	6,072	5,796	6,318	6,893	7,527
Growth		-6.60%	-4.70%	-4.50%	9.00%	9.10%	9.20%
% of sales	27.90%	26.90%	26.60%	24.90%	25.80%	26.50%	27.30%
Intelligence, Information and Services	6,335	6,045	5,984	5,733	5,848	5,953	6,012
Growth		-4.60%	-1.00%	-4.20%	2.00%	1.80%	1.00%
% of sales	25.90%	25.50%	26.20%	24.70%	23.90%	22.90%	21.80%
Corporate and Eliminations	-1,875	-1,798	-1,624	-1,213	-1,055	-923	-804
Growth		-4.10%	-9.70%	-25.30%	-13.00%	-12.50%	-12.90%
% of sales	-7.70%	-7.60%	-7.10%	-5.20%	-4.30%	-3.60%	-2.90%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
United States	18,182	17,260	16,285	16,097	17,111	18,310	19,578
Growth		-5.10%	-5.60%	-1.20%	6.30%	7.00%	6.90%
% of sales	74.50%	72.80%	71.30%	69.20%	70.00%	70.50%	71.00%
Asia/Pacific	2,510	2,590	2,390	2,429	2,444	2,708	2,757
Growth		3.20%	-7.70%	1.60%	0.60%	10.80%	1.80%
% of sales	10.30%	10.90%	10.50%	10.40%	10.00%	10.40%	10.00%
Middle East and North Africa	2,470	2,396	2,857	3,446	3,667	3,714	3,943
Growth		-3.00%	19.20%	20.60%	6.40%	1.30%	6.20%
% of sales	10.10%	10.10%	12.50%	14.80%	15.00%	14.30%	14.30%
All Other (Principally Europe)	1,252	1,460	1,294	1,275	1,222	1,247	1,296
Growth		16.60%	-11.40%	-1.50%	-4.10%	2.00%	4.00%
% of sales	5.10%	6.20%	5.70%	5.50%	5.00%	4.80%	4.70%

Appendix 4: Ratios

Ratos							
Items	2012	2013	2014	2015	2016E	2017E	2018E
Profitability							
Gross margin	21.80%	21.80%	24.20%	24.40%	25.40%	25.40%	25.60%
Operating (EBIT) margin	12.20%	12.40%	13.90%	13.00%	13.80%	13.00%	12.90%
Net profit margin	7.80%	8.40%	9.80%	8.90%	9.40%	8.70%	9.00%
Activity							
NFA (gross) turnover		1.41	1.36	1.26	1.25	1.33	1.43
Total asset turnover		0.9	0.85	0.82	0.83	0.86	0.9
Liquidity							
Op asset / op liab	1.42	1.55	1.53	1.46	1.57	1.66	1.85
NOWC Percent of sales		11.80%	13.50%	12.60%	12.80%	14.30%	16.40%
Solvency							
Debt to assets	17.70%	18.20%	19.20%	18.20%	18.50%	18.20%	17.80%
Debt to equity	57.80%	42.30%	54.80%	51.60%	50.40%	48.10%	45.50%
Other liab to assets	29.50%	16.70%	25.00%	25.60%	24.60%	24.20%	23.80%
Total debt to assets	47.20%	34.90%	44.20%	43.80%	43.10%	42.40%	41.60%
Total liabilities to assets	69.30%	56.90%	64.90%	64.70%	63.30%	62.20%	60.80%
Debt to EBIT	1.58	1.61	1.68	1.77	1.64	1.64	1.55
EBIT/interest	14.23	16.23	16.22	13.33	13.96	12.99	13.69
Debt to total net op capital	23.80%	24.60%	26.00%	23.90%	24.00%	23.50%	22.90%
ROIC							
NOPAT to sales		8.80%	10.20%	9.60%	9.90%	9.40%	9.60%
Sales to IC		1.21	1.15	1.09	1.08	1.12	1.16
Total		10.60%	11.80%	10.40%	10.70%	10.40%	11.10%
Total using EOY IC	10.30%	10.80%	11.40%	10.00%	10.60%	10.30%	11.00%
ROE							
5-stage							
EBIT / sales		12.40%	13.90%	13.00%	13.80%	13.00%	12.90%
Sales / avg assets		0.9	0.85	0.82	0.83	0.86	0.9
EBT / EBIT		93.80%	93.80%	92.50%	92.80%	92.30%	92.70%
Net income /EBT		72.40%	75.20%	74.40%	73.30%	72.30%	75.50%
ROA		7.60%	8.40%	7.30%	7.70%	7.50%	8.10%
Avg assets / avg equity		2.72	2.57	2.84	2.78	2.69	2.6
ROE		20.60%	21.50%	20.70%	21.50%	20.10%	21.10%
3-stage							
Net income / sales		8.40%	9.80%	8.90%	9.40%	8.70%	9.00%
Sales / avg assets		0.9	0.85	0.82	0.83	0.86	0.9
ROA		7.60%	8.40%	7.30%	7.70%	7.50%	8.10%
Avg assets / avg equity		2.72	2.57	2.84	2.78	2.69	2.6
ROE		20.60%	21.50%	20.70%	21.50%	20.10%	21.10%
Payout Ratio		35.40%	33.20%	39.20%	36.90%	39.00%	36.50%
Retention Ratio		64.60%	66.80%	60.80%	63.10%	61.00%	63.50%
Sustainable Growth Rate		13.30%	14.30%	12.60%	13.60%	12.20%	13.40%

Appendix 5: 3-stage DCF Model

3 Stage Discounted Cash Flow							
	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*6.2%*	*6.2%*	*6.4%*	*6.8%*	*7.2%*	*6.8%*	*6.2%*
NOPAT / S	*9.4%*	*9.6%*	*9.7%*	*9.8%*	*9.8%*	*9.9%*	*10.0%*
S / NWC	*50.00*	*50.00*	*50.00*	*50.00*	*50.00*	*50.00*	*50.00*
S / NFA (EOY)	*1.33*	*1.44*	*1.44*	*1.44*	*1.44*	*1.44*	*1.44*
S / IC (EOY)	*1.30*	*1.40*	*1.40*	*1.40*	*1.40*	*1.40*	*1.40*
ROIC (EOY)	*12.1%*	*13.5%*	*13.6%*	*13.7%*	*13.8%*	*13.9%*	*14.0%*
ROIC (BOY)		*13.2%*	*14.4%*	*14.6%*	*14.8%*	*14.8%*	*14.9%*
Share Growth		*-2.2%*	*-2.2%*	*-2.2%*	*-2.2%*	*-2.2%*	*-2.2%*
Sales	$25,971	$27,575	$29,339	$31,334	$33,591	$35,875	$38,099
NOPAT	$2,431	$2,650	$2,843	$3,060	$3,307	$3,560	$3,810
Growth		*9.0%*	*7.3%*	*7.7%*	*8.1%*	*7.6%*	*7.0%*
- Change in NWC	31	32	35	40	45	46	44
NWC EOY	*519*	*551*	*587*	*627*	*672*	*717*	*762*
Growth NWC		*6.2%*	*6.4%*	*6.8%*	*7.2%*	*6.8%*	*6.2%*
- Chg NFA	-28	-378	1226	1385	1567	1586	1545
NFA EOY	*19,527*	*19,149*	*20,375*	*21,760*	*23,327*	*24,913*	*26,458*
Growth NFA		*-1.9%*	*6.4%*	*6.8%*	*7.2%*	*6.8%*	*6.2%*
Total inv in op cap	3	-346	1261	1425	1612	1632	1589
Total net op cap	20047	19701	20961	22387	23999	25630	27220
FCFF	$2,428	$2,996	$1,582	$1,635	$1,695	$1,928	$2,221
% of sales	*9.3%*	*10.9%*	*5.4%*	*5.2%*	*5.0%*	*5.4%*	*5.8%*
Growth		*23.4%*	*-47.2%*	*3.4%*	*3.7%*	*13.7%*	*15.2%*
- Interest (1-tax rate)	187	194	194	207	219	219	219
Growth		*3.5%*	*0.0%*	*6.8%*	*6.0%*	*0.0%*	*0.0%*
FCFE w or w/o debt	$2,241	$2,803	$1,388	$1,428	$1,476	$1,708	$2,002
% of sales	*8.6%*	*10.2%*	*4.7%*	*4.6%*	*4.4%*	*4.8%*	*5.3%*
Growth		*25.1%*	*-50.5%*	*2.9%*	*3.3%*	*15.8%*	*17.2%*
/ No Shares	292.9	286.4	280.1	273.9	267.9	262.0	256.3
FCFE	$7.65	$9.79	$4.96	$5.21	$5.51	$6.52	$7.81
Growth		*27.9%*	*-49.4%*	*5.2%*	*5.7%*	*18.4%*	*19.8%*
* Discount factor	0.92	0.84	0.78	0.71	0.66	0.60	0.55
Discounted FCFE	$7.03	$8.27	$3.85	$3.72	$3.61	$3.93	$4.33
Third Stage							
Terminal value P/E							
Net income	$2,254	$2,490	$2,649	$2,853	$3,088	$3,340	$3,591
% of sales	*8.7%*	*9.0%*	*9.0%*	*9.1%*	*9.2%*	*9.3%*	*9.4%*
EPS	$7.69	$8.69	$9.46	$10.42	$11.52	$12.75	$14.01
Growth		*13.0%*	*8.8%*	*10.1%*	*10.6%*	*10.6%*	*9.9%*
Terminal P/E							17.00
* Terminal EPS							$14.01
Terminal value							$238.21
* Discount factor							0.55
Discounted terminal value							$131.97

Summary		
First stage	$15.30	Present value of first 2 year cash flow
Second stage	$19.44	Present value of year 3-7 cash flow
Third stage	$131.97	Present value of terminal value P/E
Value (P/E)	**$166.71**	= value at beg of fiscal yr 2017

Appendix 6: 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	2014	2015	2016	2017	Pst 5yr	Beta	Equity	Rating	Yield	Payout
RTN	RAYTHEON CO	$145.22	$42,643	2.3	(3.1)	5.9	7.7	16.6	2.3	8.6	-3.9%	16.5%	-5.4%	3.1%	10.3%	7.0%	0.59	51.0%	A	2.06%	38.7%
BA	BOEING CO	$156.97	$96,877	0.8	3.1	18.6	21.0	8.6	0.8	11.1	38.7%	23.6%	0.8%	-1.2%	28.6%	10.7%	1.13	470.3%	A-	2.80%	63.7%
BAESY	BAE SYSTEMS PLC	$28.94	$22,977	(1.0)	(3.8)	6.0	2.9	(1.8)	(1.0)	6.0		363.6%	15.0%	9.7%	7.8%	-0.2%	0.68			3.79%	
GD	GENERAL DYNAMICS CORP	$175.45	$53,428	1.6	(1.8)	13.4	24.1	27.7	1.6	7.3	5.9%	11.2%	22.4%	4.7%	5.5%	5.9%	0.81	34.3%	A	1.76%	31.7%
LMT	LOCKHEED MARTIN CORP	$253.31	$74,214	1.3	(5.3)	5.3	1.6	16.7	1.3	8.6	-7.3%	22.8%	2.2%	49.0%	-26.0%	9.0%	0.53	615.8%	A+	2.71%	50.5%
NOC	NORTHROP GRUMMAN CORP	$234.89	$41,402	1.0	(6.4)	9.2	5.9	24.4	1.0	8.3	-1.2%	16.8%	6.6%	12.7%	3.0%	8.8%	0.57	110.8%	A	1.50%	29.0%
Average			$55,257	1.0	(2.9)	9.7	10.5	15.4	1.0	8.3	6.4%	75.8%	6.9%	13.0%	4.9%	6.9%	0.72	256.4%		2.44%	42.7%
Median			$48,036	1.2	(3.5)	7.6	6.8	16.6	1.2	8.4	-1.2%	19.8%	4.4%	7.2%	6.6%	7.9%	0.63	110.8%		2.39%	38.7%
SPX	S&P 500 INDEX	$2,258		0.8	3.0	4.5	7.4	10.5	0.8			8.7%	0.2%	3.4%	6.6%						

		2015		P/E							2015	2015			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2013	2014	2015	TTM	NTM	2016	2017E	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
RTN	http://www.raytheon.com	19.1%	4.07	23.5	20.2	21.4	19.6	20.4	20.7	18.8	8.6%	1.83	12.6%	13.6%	14.2			4.5%	5.1%	-1.6%	$35.65
BA	http://www.boeing.com	220.4%	46.51	26.3	21.3	21.1	23.9	17.3	21.4	16.6	4.8%	1.01	4.8%	32.5%	13.7	15.1	11.7	-2.6%	2.6%	8.4%	$3.38
BAESY	http://www.baesystems.com	40.8%	6.71	87.7	18.9	16.4			15.0	13.9	10.6%	1.74		16.2%	12.8	14.0	10.3			-4.7%	$4.31
GD	http://www.generaldynamics.com	24.4%	4.72	26.3	23.6	19.3	18.7	17.7	18.4	17.5	8.8%	1.70	13.7%	20.5%	10.9	14.0	11.0	2.4%	2.8%	-0.6%	$37.16
LMT	http://www.lockheedmartin.com	144.5%	31.95	27.7	22.6	22.1	19.4	20.9	14.8	20.0	7.3%	1.61	11.2%	26.7%	15.2	15.4	10.7	5.3%	4.5%	0.1%	$7.93
NOC	http://www.northropgrumman.com	31.9%	7.20	28.1	24.1	22.6	20.0	20.3	20.1	19.5	7.8%	1.76	12.8%	15.9%	13.1	13.8	9.3	3.8%	6.7%	-7.5%	$32.62
Average		80.2%	16.86	36.6	21.8	20.5	20.3	19.3	18.4	17.7	8.0%	1.61	11.0%	20.9%	13.3	14.4	10.6	2.7%	4.3%	-1.0%	
Median		36.3%	6.96	27.0	21.9	21.2	19.6	20.3	19.3	18.1	8.2%	1.72	12.6%	18.4%	13.4	14.0	10.7	3.8%	4.5%	-1.1%	
spx	S&P 500 INDEX			20.7	19.1	19.0			18.4	17.3											

Appendix 7: Porter's 5 Forces

Threat of New Entrants – Very Low

The aerospace and defense sector is very sensitive industry that makes it extremely difficult and in some situations impossible for new entrants to emerge. This industry is heavily regulated by the United States government, which for national security reasons does not do business with certain countries. Raytheon has a long history and good relationship with the United States government and many of its allied governments that would be difficult to integrate into for a fresh competitor.

Threat of Substitutes – Very Low

Raytheon is at the cutting edge of aerospace and defense contracting, spending large portions of revenue in R&D to make sure it stays competitive. While substitutes exist, they are generally made up of components that Raytheon has been subcontracted to make or they are developed in cooperation with Raytheon.

Supplier Power - Moderate

Raytheon is a specialized manufacturer and receives many of its components from outside suppliers. Purchasing these components can sometimes cost more because they are so specialized which impacts margins.

Buyer Power – Moderate

Most of Raytheon's customers are the United States government and foreign governments with less than 2% of sales coming from commercial customers. Despite Raytheon having few competitors that make the same products, there is still risk; government contracts options are unpredictable and can usually be revoked at any time by the government.

Intensity of Competition –High

Raytheon has the luxury of being an aerospace and defense contractor, which means there is low competition. With that being said, competition for contracts I very intense and contract awards can be unpredictable at times. This is evident through contract disputes that arise after a company wins a contract. These disputes will lead to court in some cases, unless the disputing company can work out a secondary deal on the contract.

Appendix 8: SWOT Analysis

Strengths	**Weakness**
Government Relationships Advanced Products Offensive and Defensive Products	Production Delays Material Costs Rely on U.S. government
Opportunities	**Threats**
Geopolitical Tensions International Sales Increase in Defense Spending	Peace Defense Cuts Contract Competition

Diversified Machinery

Cummins

Recommendation	HOLD
Target (today's value)	$83
Current Price	$139.98
52 week range	$79.88 - $147.10

Share Data	
Ticker:	CMI
Market Cap. (Billion):	$23,523
Inside Ownership	2.7%
Inst. Ownership	84.2%
Beta	1.2
Dividend Yield	3.00%
Payout Ratio	57.0%
Cons. Long-Term Growth Rate	1.7%

	'14	'15	'16E	'17E	'18E
Sales (billions)					
Year	$19.2	$19.1	$17.4	$17.1	$17.9
Gr %		-0.6%	-8.9%	-1.6%	4.2%
Cons	-	-	$17.3	$17.0	$17.8
EPS					
Year	$9.04	$7.86	$6.39	$6.53	$7.11
Gr %		-13.1%	-18.6%	2.2%	8.8%
Cons	-	-	$8.09	$7.92	$9.17

Ratio	'14	'15	'16E	'17E	'18E
ROE (%)	21.6%	18.5%	18.5%	19.1%	18%
Industry	20.6%	18.7%	18.7%	17.3%	16.2%
NPM (%)	8.6%	7.3%	7.3%	7.8%	7.7%
Industry	5.6%	5.1%	5.1%	4.4%	5.5%
A. T/O	1.26	1.24	1.24	1.15	1.11
ROA (%)	10.8%	9.1%	9.1%	8.9%	8.5%
Industry	4.9%	4.5%	4.5%	4.2%	5.0%

Valuation	'15	'16E	'17E	'18E
P/E	10.2	19.5	16.9	17.4
Industry	11.6	27.3	19.0	40.1
P/S	0.87	1.32	1.33	1.36
P/B	2.2	3.5	3.2	3.1
P/CF	8.4	10.8	13.0	11.9
EV/EBITDA	13.1	7.6	12.1	12.8

Performance	Stock	Industry
1 Month	-3.6%	8.7%
3 Month	6.6%	23.8%
YTD	55.3%	14.9%
52-week	53.3%	14.8%
3-year	-2.3%	12.3%

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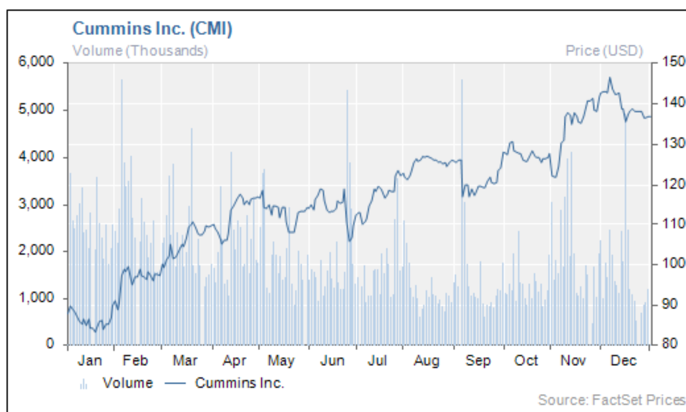


Summary: I recommend a hold rating with a target of $83. Although CMI has an opportunity to improve efficiency and increase margins, declining demand and high restructuring costs are problematic. This uncertainty seriously offsets my optimism that CMI can improve in upcoming years. The stock is fairly valued based on relative and DCF analysis.

Key Drivers:

- International: CMI non-U.S. sales have declined. The increase in U.S. percent of sales lowers currency and geopolitical risks, helping to maintain consistent net income results.
- Construction Markets: Over 50% of CMI's Engine segment sales come from global construction markets. Lower demand has caused the firm to restructure and cut cost to improve profit margin and maintain EPS.
- Oil and Gas Markets: 71% of CMI's Engine and Component segment sales are to oil and gas customers. Which have been suffering from depressed prices.
- Company Restructuring: CMI spent $90 million on restructuring costs in 2015. Restructuring actions are expected to provide a net benefit of $160 million; so far CMI has seen no returns.

Valuation: Using a relative valuation approach, Cummins appears to be over-valued in comparison to competitors and the industrial production segment. Due to an ability to fine tune long-term forecasts, DCF analysis provides the best way to value the stock. A combination of the approaches suggests that Cummins is fairly overvalued, as the stock's value is about $83 and the shares trade at $139.98.

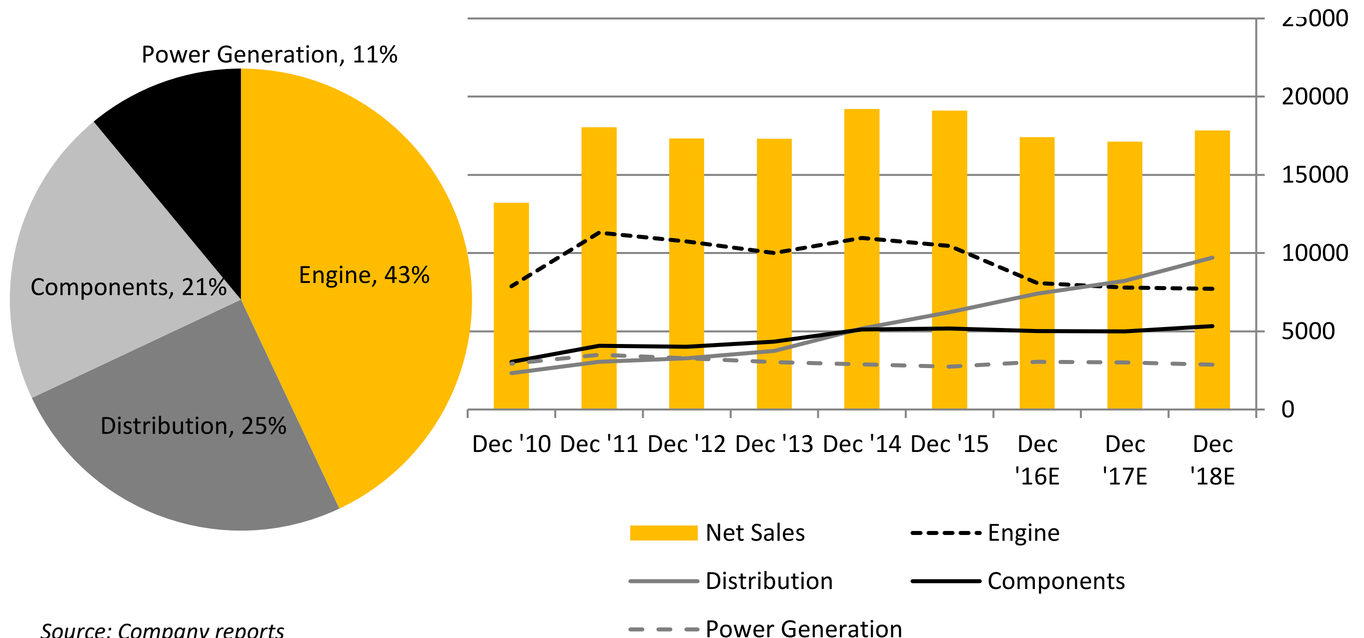
Risks: Threats to the business include low market demand, restructuring implications, low demand in the North American truck industry, and a decrease in research and development.

Company Overview

Cummins Inc. (CMI) functions as a diesel engine manufacturing company. It provides designing, manufacturing, distributing, and servicing of diesel and natural gas engines as well as engine related technologies including fuel systems, controls, air handling, filtration, emission solutions, and electrical power generation systems. CMI serves customers consisting of original equipment manufacturers and distributers worldwide through both company owned and independent distributor locations. The company organizes into four segments:

- Engine: manufactures a line up of diesel and natural gas-powered engines for on and off highway use marked under both the Cummins brand name and pertinent customer brand names. CMI engines power heavy- and medium-duty truck, bus, recreational vehicle, light-duty automotive, agricultural, construction, mining, marine, oil and gas, rail, and governmental equipment. The Engine Segment accounted for 43% of the company's net sales in 2015 and shrunk in sales by 4.9% from 2014 to 2015.
- Distribution: consists of 17 company-owned distributor and 10 joint ventures throughout 90 countries and territories in 233 locations where personnel sell and distribute Cummins-branded products, related services, and broader solutions including maintenance contracts, engineering services, and customized products. The Distribution Segment accounted for 25% of the company's net sales in 2015 and increased in sales 27.5% and 16.9% from 2013 to 2014 and 2014 to 2015, respectively.
- Components: consists of four business segments that supply products that complement its Engine Segment: Filtration, Turbo Technologies, Emission Solutions, and Fuel Systems. The Components Segment accounted for 21% of the company's net sales in 2015 and grew 1% in sales from 2014 to 2015.
- Power Generation: consists of Commercial Products and Projects, Consumer and Power Electronics and Generator Technologies. This segment participates and has leadership in a wide variety of markets including mining, marine, oil & gas, rail, defense, commercial & industrial, data centers, telecom, healthcare, and individual consumers. The Power Generation Segment accounted for 11% of the company's net sales in 2015 and shrunk in sales by 0.6% from 2014 to 2015.

Figures 1 and 2: Revenue Sources for CMI, year-end 2015 (left) and Revenue history since 2010



Source: Company reports

Business/Industry Drivers

Though multiple factors may contribute to Cummins future earnings, the following are the most important business drivers:

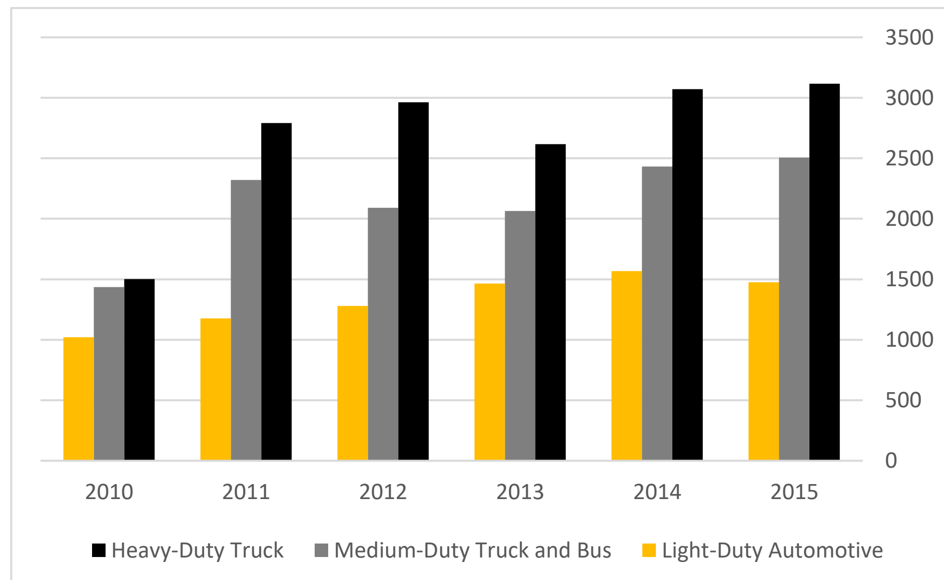
1) Construction
2) International
3) Oil and Gas Markets
4) PACCAR Sales
5) Company Restructuring
6) Research and Development

Construction

CMI has experienced slow growth in Engine Segment Sales.

Heavy- and medium-duty truck and bus sales accounted for 54% of CMI's total Engine Segment sales in 2015. These sales are affected by several factors. Recently, lower global demand in construction markets has contributed to a decrease in industrial engine sales in North American and International markets. The company also experienced low growth of heavy-duty truck and medium-duty truck and bus sales since 2011. This contrasts to better growth in light-duty automotive sales over the past five years, which is consistent with the improvement in auto sales.

Figure 3: Engine Segment Sales by Market

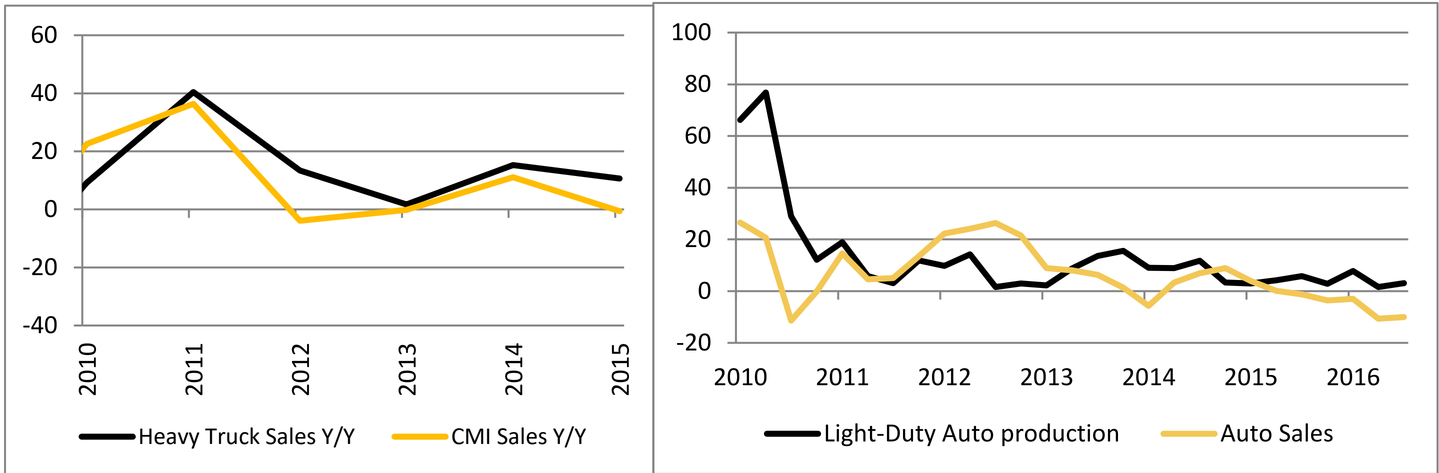


Source: Company Reports

Engine shipments fell 27% in North America, Europe, and China.

Heavy- and medium-duty trucks are used primarily for construction. CMI's 2015 engine shipments fell 27% in North America, Europe, and China. The company's success is largely dependent on its ability to restructure in correspondence to the decrease in demand.

Figures 4 and 5: % change in Sales, CMI vs. United States Heavy Truck (Left) and Light-Duty Auto Production vs. Auto Sales



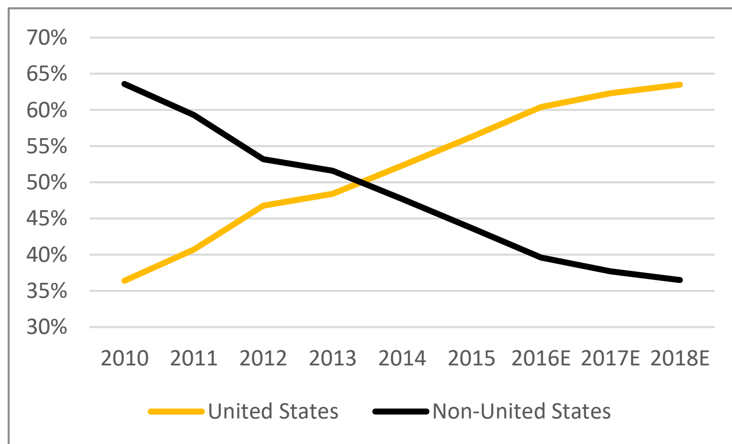
Source: FactSet

United States percentage of Sales continues to increase as international declines

<u>International</u>

CMI's U.S. versus non-U.S. percentage of sales has shifted. In 2010, 64% of sales were obtained outside of the U.S., by 2015, non-U.S. sales accounted for 44%. While this may limit opportunity, it also lowers currency and geopolitical risks; over the past three years, the U.S. dollar has risen and emerging markets have been weak. In 2015, international revenues declined by 11 percent due to low sale in Brazil and Europe caused by declines in on-highway market demand, construction, and commercial marine market.

Figure 6: % of CMI Sales, United States vs. Non-United States



Source: Company Reports

The large shift in sales relates to the closure of a German plant as well as week international market demand and the impact of a stronger U.S. dollar on foreign currency fluctuations of 4%. Currency impacts were present with the Euro, Brazilian real, Australian dollar, Canadian dollar, British pound and Indian rupee.

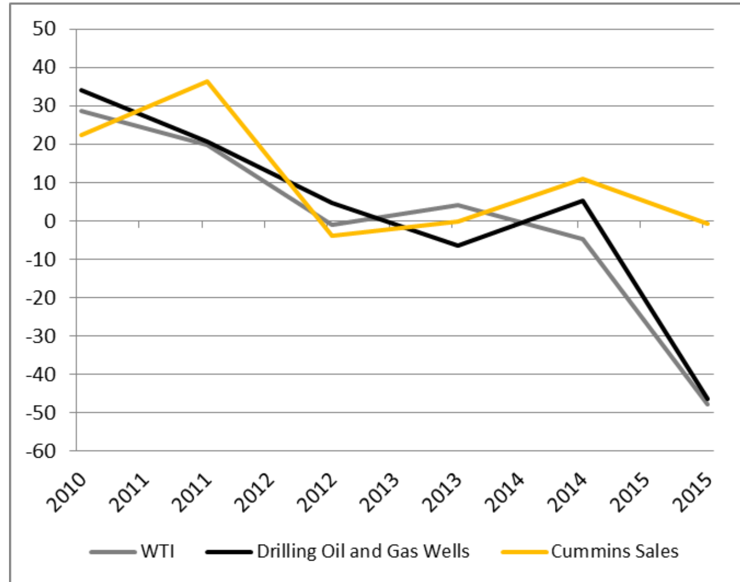
An increase in U.S. sales, of 7% in 2015 was driven by greater demand in North American on-highway markets and consolidation of North American distributors. Distribution segment sales increased $1.5 billion since 2013 to $5.2 billion. It is expected to rise 11-19% in 2016-18.

Demand for oil and gas markets is weak due to low crude oil prices.

Oil and Gas Markets

Oil and gas customers contribute to CMI's Engine and Components Segments (71% of revenues). They purchase CMI's range of diesel and natural gas powered engines and over 8,300 filtration products.

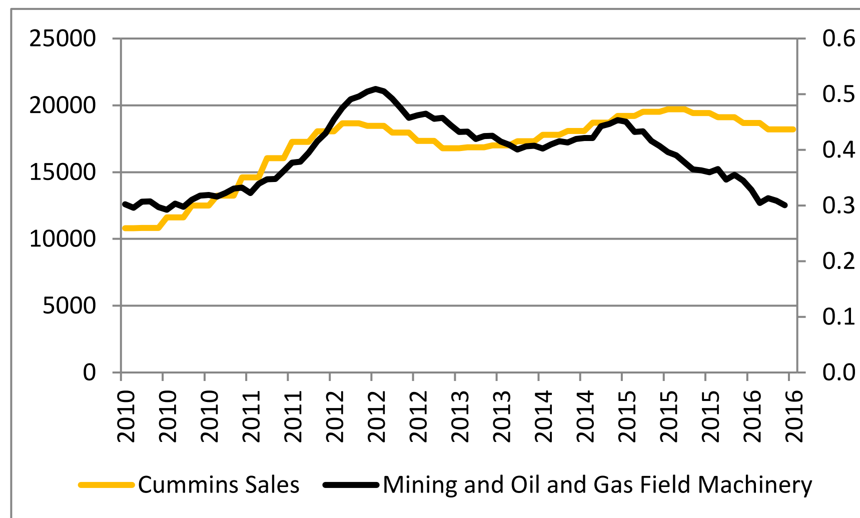
Figure 7: CMI Sales vs. WTI vs. Drilling Oil and Gas Wells



Source: FactSet

Demand for oil and gas markets is weak as a result of low crude oil prices. Prices remain low after rebounding from trough levels. The charts below show that CMI's sales are highly dependent in the oil market and industrial production.

Figure 8: CMI Sales vs. Mining and Oil and Gas Field Machinery



Source: FactSet

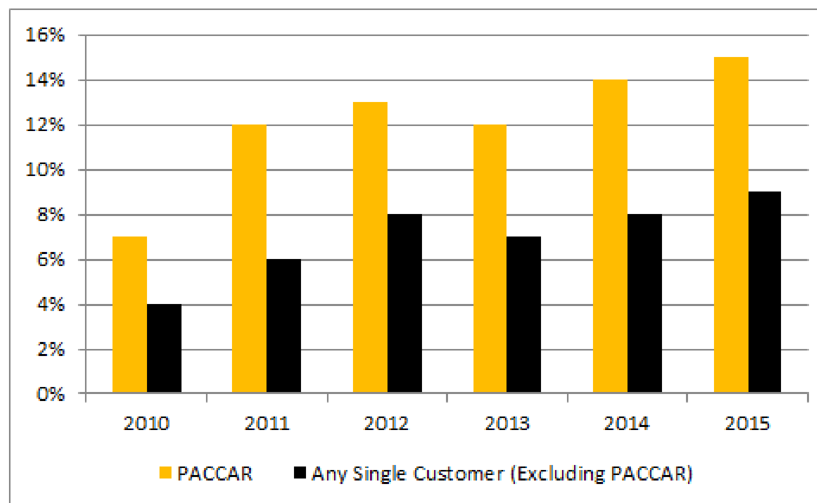
PACCAR Sales

In 2015, PACCAR accounted for 15% of CMI's sales.

PACCAR has been Cummins largest customer for over five years, growing from over 10% of CMI's sales in 2011 to 15% in 2015. PACCAR designs and manufactures light-, medium- and heavy-duty trucks powered by an assortment of CMI's engines. The firm also takes part in its own designing and manufacturing of diesel engines and truck components. PACCAR distributes products globally in more than 100 companies from almost 2,000 locations. The firm is currently focused on expanding into Asia; half of its revenues and profits are generated from outside the U.S.

Cummins maintains long-term supply agreements with PACCAR for one mid-range and two heavy-duty engines. These agreements supply PACCAR with specific engines for particular vehicle models. The success of CMI's operations and financial position relies largely on both maintaining this key customer and based on PACCAR's success.

Figure 9: % of CMI Sales, PACCAR vs. any single customer (excluding PACCAR)

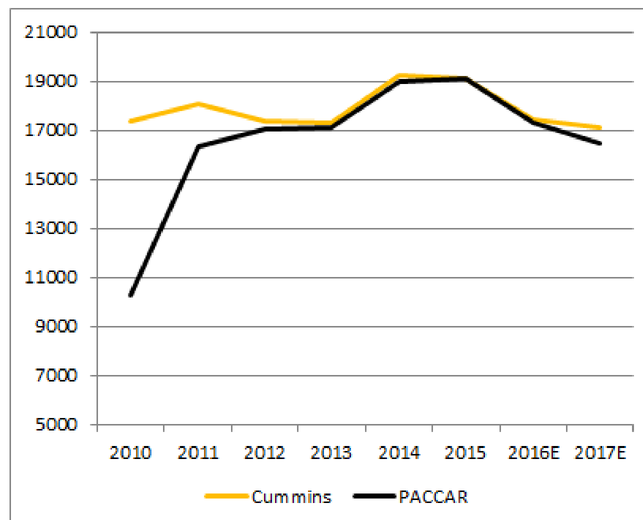


Source: PACCAR Company Reports

PACCAR saw revenues decline 670 million in its trade and parts division in 2016 vs. 2015.

PACCAR's 2016 net sales and revenues for its trucks and parts amounted to $15.8 billion, compared to $17.9 billion in 2015. The decrease resulted from lower demand in truck markets. The firm saw a decrease in truck sales of $2.0 billion, compared to $55 million drop in parts, from 2015 to 2016.

Figure 10: Total Revenue, CMI vs. PACCAR



Source: FactSet

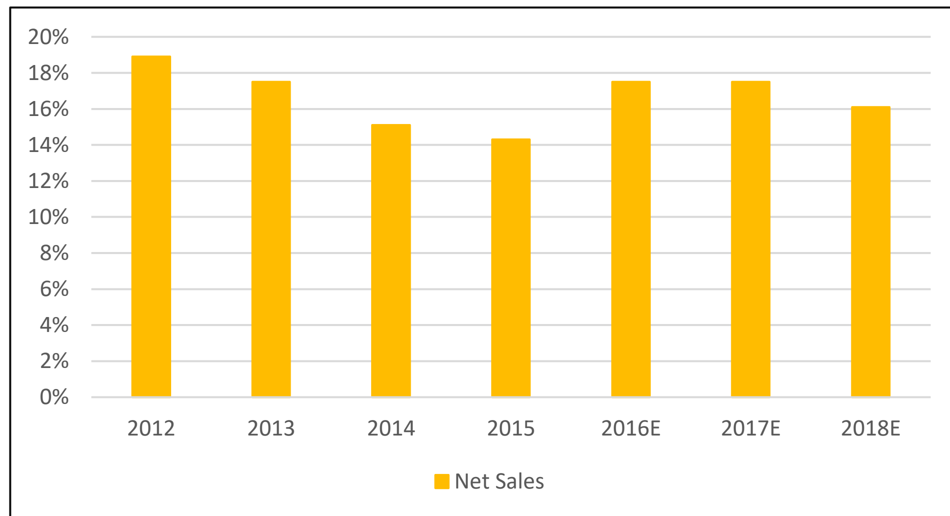
Company Restructuring

CMI recognized 90 million in restructuring and other charges in 2015.

Cummins announced and began the execution of restructuring in the fourth quarter of 2015 as a reaction to declining demand during the second half of 2015. The company plans to release 1,900 employees, 3.5% of the total 55,000 worldwide. The firm expects to benefit expected realized savings of $160 million, 40% under realized cost of sales, 40% in selling, general and administrative expenses, and 20% in research, development and engineering expenses. $160 million in savings equals 0.9% of predicted 2017 sales causing a 0.5 increase in EPS. CMI has decreased its workforce by 1,700 as of December 31, 2015 and completed the majority of the remaining 200 in April 2016. Although sales declined in 2015, a focus on cost has led to a higher gross margin.

Currently, the company has not realized any net expense reduction from their restructuring measures. Although, I do expect EBIT margins to rise from 8.3% in 2015 (8.6% in 2014) to 9.0% in 2018. They have accounted for $90 million in restructuring actions and other charges, $26 million in the Engine Segment, $23 million in the Distribution Segment, $13 million in their Components Segment, $19 million in the Power Generations Segment, and $9 million under Non-segmented. The Power Generation Segment accounted for 21% of Cummins total restructuring costs but makes up only 11% of CMI's net sales and 7% of its earnings before income and tax. The division's large portion of restructuring costs was mainly due to the closure of a plant in Germany. In total, the Power Generation Segment's headcount reduced by 250 employees. Most of the termination costs were paid in 2015. This segment has been continually declining as a percent of sales so this exit is just continuing the current trend.

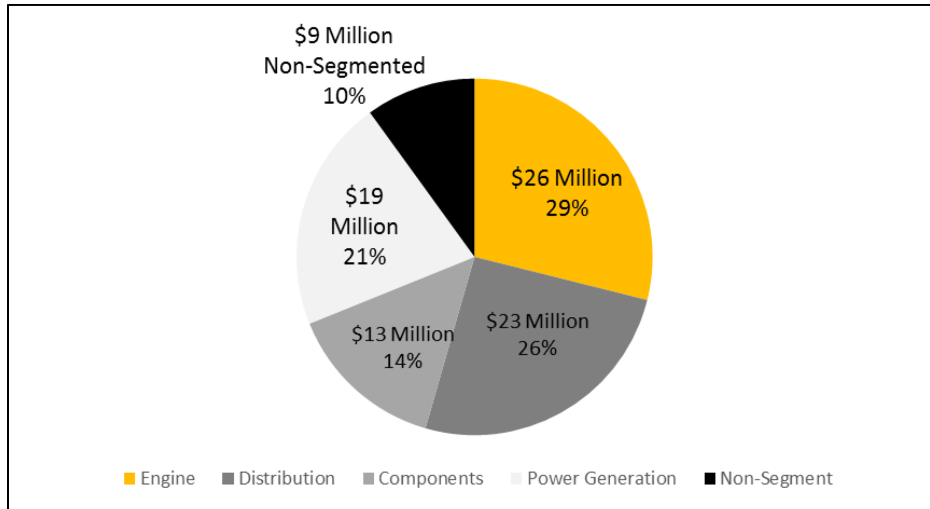
Figure 11: Power Generation Segment % of Net Sales compared to EBIT



Source: Company Reports

The restructuring could present difficulties as management continues to adjust to market demand. CMI could also accrue unexpected costs and experience delays with restructuring benefits which would negatively affect predicted savings. Restructuring may result in negative publicity and a loss of investor trust as well as missed opportunities in emerging markets.

Figure 12: Comparison of Restructuring Actions and Other Charges by Segment



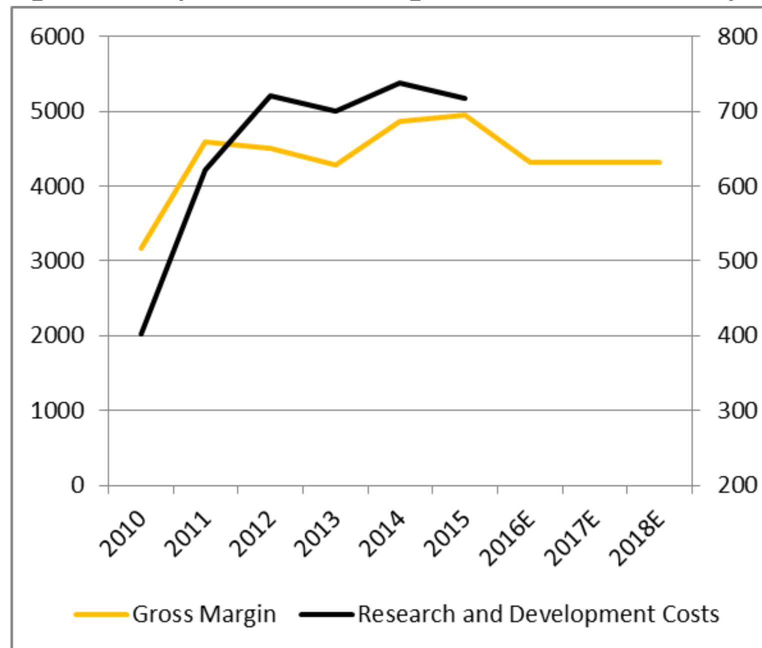
Source: Company Reports

Research and Development

CMI decreased research and development cost by $19 million from 2015 to 2016.

Research and development focuses on product improvements, innovations, and maintaining environmental standards. This greatly improves the value and longevity of products as standards continually change. Cummins dedicated $718 million to research, development, and engineering expenses in 2015, down from the $737 million they expensed in 2014. CMI will continue to invest in future critical technologies and products as well as its ability to maintain future emission requirements. The restructuring of the Power Generation Segment accounted for $4 million of the $19 million decrease and pertains to the 1,900 workman decrease in workman for CMI. The firm's research and development budget has typically coincided with profits, which implies that the firm is not necessarily forward looking and research and development is considered discretionary in nature. Although, research and development is nearly equivalent to net profit margin so it is an important item and the $19 cut is small.

Figure 13: Comparison of Gross Margin and Research and Development Costs



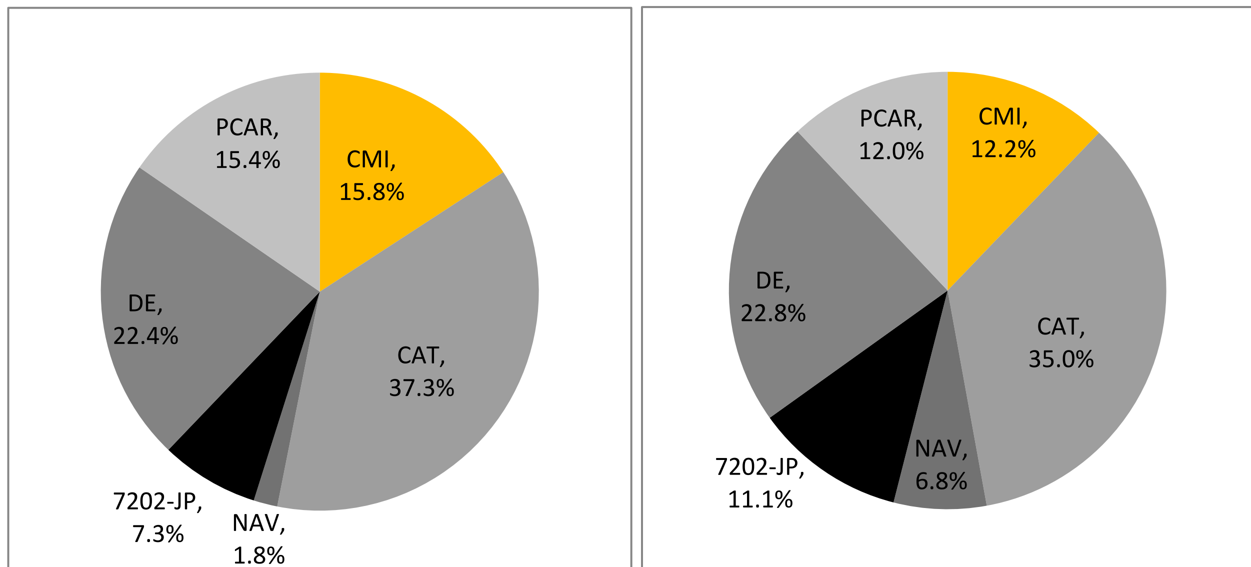
Source: Company Reports

Competitor Analysis

Industrial production is a highly specialized industry. There are many barriers to entry, requiring a large amount of capital, advanced and improving technology, and many environmental standards to meet. It is important that these firms maintain a strong brand name, invest in research and development, and maintain all environmental and industrial standards. Companies can gain a sustained competitive advantage by producing technologically advanced products and building brand name and loyalty. Consumers are loyal to their brands, but can often double as a competitor to a firm. It is important for companies to produce high quality components at reasonable prices or their customers may decide to manufacture their own components.

CMI's main competitors are Caterpillar Inc. (CAT), Deere & Company (DE), PACCAR Inc. (PCAR), Isuzu Motors (7202-JP), and Navistar International Corporation (NAV). These competitors, along with others, consist of independent engine manufacturers and OEMs which produce their own engines and components for their products. Comparing CMI's percentage of total market capitalization against percentage of sales, the firm maintains the largest difference at 3.4%, which reflects its above average net profit margin (figure 26).

Figures 14 & 15: Comparison of CMI comps by market cap (left) and sales



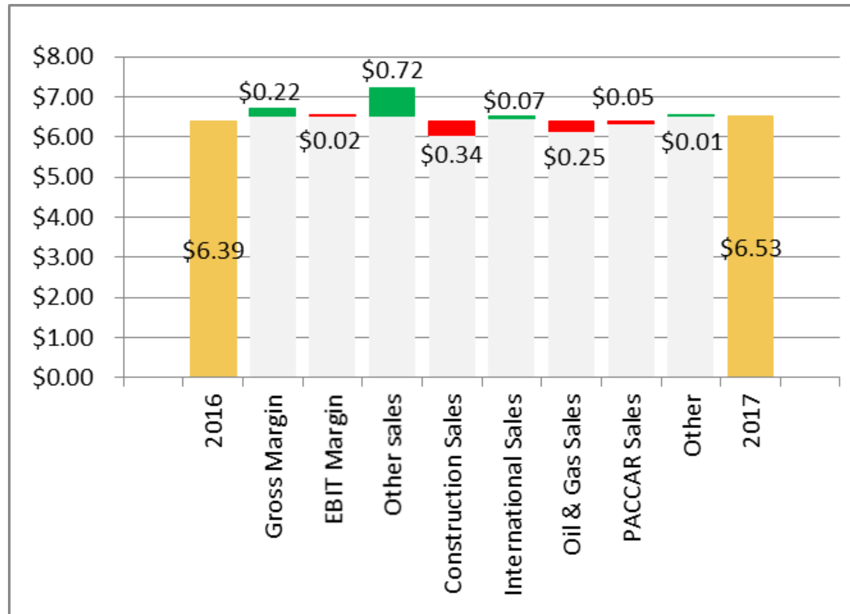
Source: Company Reports

Financial Analysis

$6.53 anticipated EPS growth

I anticipate EPS to grow to $6.53 in FY2017. Overall, declining sales took away $0.08 from EPS. Declining revenues in the Engine and Components segments due to weak demand in construction and oil and gas markets will decrease EPS by $0.34 and $0.25, respectively. A decrease in PACCAR sales should reduce EPS by $0.05. This is almost offset by other sales ($0.72) which are rising due to greater demand in North American markets and consolidation. Restructuring efforts are boosting margins and adding $0.20 net ($0.22 through gross margin and higher SG&A/sales costing $0.02). Other impacts on EPS net to $0.01. This includes changes in the tax rate, other income, interest expense, and share buybacks. Buybacks added 0.28 to EPS.

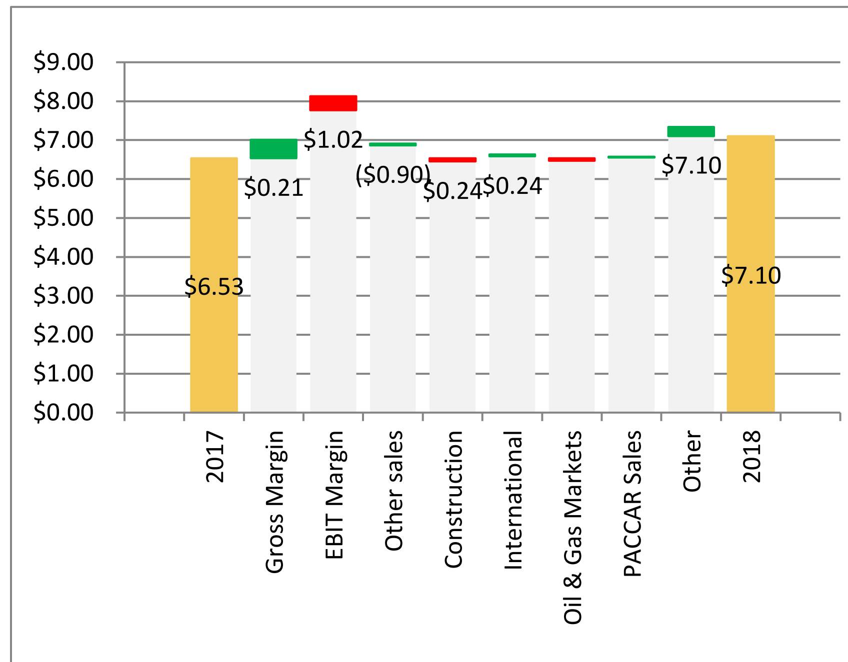
Figure 16: CMI Drivers effect on EPS, 2016 to 2017



Source: Company Reports, individual computations

I expect 2018 EPS to incrase $0.58 to $7.11. Overall, declining sales took away $0.07 from EPS. Declining revenues in the Engine and Components segments due to weak demand in construction and oil and gas markets will decrease EPS by $0.08 and $0.06, respectively. A upturn in PACCAR sales should increase EPS by $0.05. This is offset by other sales ($0.05) which are rising due to greater demand in North American markets and consolidation. Restructuring efforts tapper in boosting margins, adding $0.12 net ($0.48 through gross margin and higher SG&A/sales costing $0.36). Other impacts on EPS net to $0.24. This includes changes in the tax rate, other income, interest expense, and share buybacks.

Figure 17: CMI Drivers effect on EPS 2017 to 2018



Source: Company Reports, individual computations

I am less optimistic than the consensus estimates for 2017, I predict lower EPS driven primarily by CMI's restructuring attempts; I predict the firm will see delayed results and not as much improvement as consensus.

Figure 18: EPS and YoY growth estimates

	FY 2017E	FY 2018E
Revenue - Estimate	$17,129	$17,847
YoY Growth	-2%	4%
EPS - Estimate	6.53	7.11
YoY Growth	-24%	8%
EPS - Consensus	7.89	8.96
YoY Growth	-3%	12%

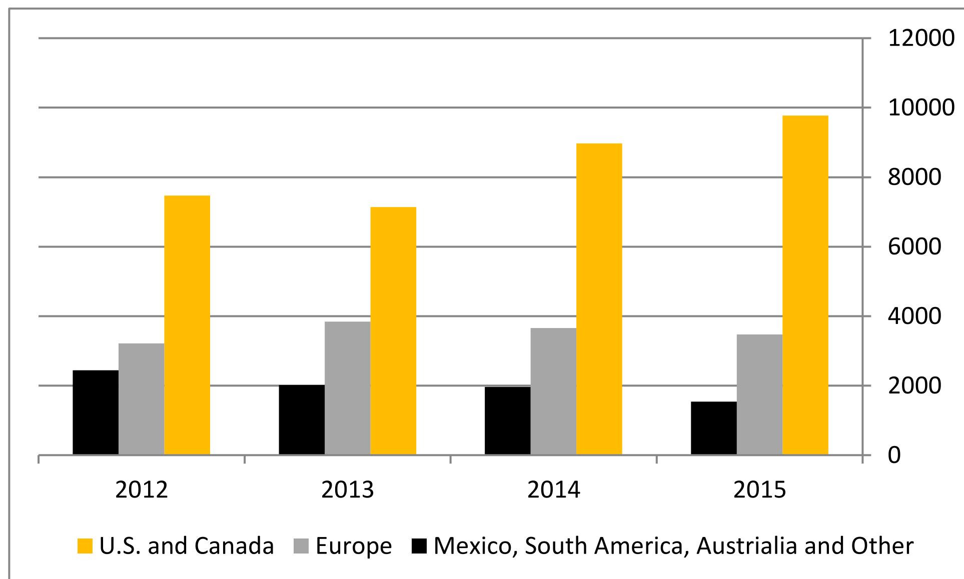
Source: Factset, IMCP

Revenues

CMI revenue has declined after a recent peak in 2014. I expect the trend to continue in 2016 and 2017 before rising modestly in 2018. This is driven by lower demand in construction, oil and gas, and international markets, decreasing Engine, Distribution, and Power Generation segment sales. The decline in revenue will be ofset by restructering efforts, mainly benefiting Power Generation through cost decrease and higher focused sales. Research and development cost cutting will produce an initial benefit to net income in 2016 and 2017; however, the company will see a decrease in sales growth in years beyond 2018 due to poor investment in future technologes.

Weak international demand and foreign currency fluctuation prompted CMI's restructuring efforts and could result in missed opportunies; however, PACCAR, CMI's largest customer, has seen an increase in U.S. and Canada Truck sales over the past four years, which made up 77% of its total revenues in 2014 and 2015. PACCAR's heavy focus on its truck segment may offset CMI's missed foreign opportunities and lower research and development related opportunities.

Figure 19: PACCAR Truck sales by geographical region

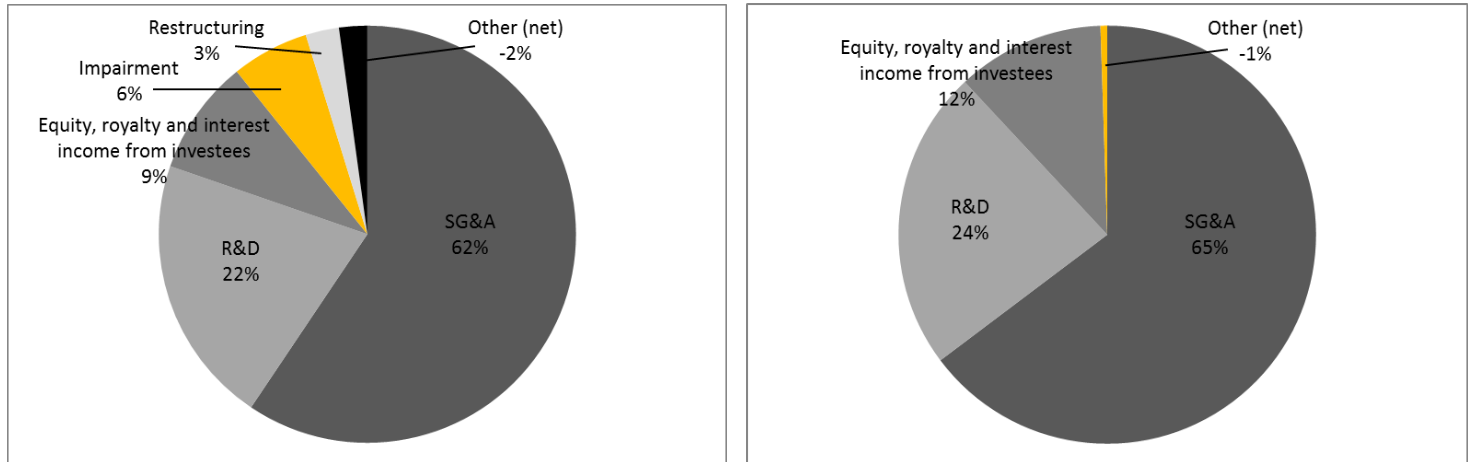


Source: Company Reports

Operating Income and Margins

CMI saw a 13% decrease in operating income from 2014 to 2015 due to $90 million in restructuring actions and a $211 million impairment charge of light-duty diesel assets. Light-duty automotive sales have remained constant over the past three years; however, CMI experienced multiple customer delays and cancelations of its light-duty diesel engine programs. This resulted in low growth and the necessity of restructuring which increased operating expenses, slightly offset by research and development cost reduction.

Figures 20 & 21: Composition of 2015 (right) and 2014 operating expenses



Source: Company Reports

Operating income should increase as restructuring actions begin paying off, I predict this will occur in late 2017 and throughout 2018 (EBIT margin rises from 8.3% to 9.0%), but the firm could see a more immediate increase in operating income should CMI reduce research and development more rapidly than I expect.

Figure 22: Select financial data

	2014	2015	2016E	2017E	2018E
Sales	19,221	19,110	17,410	17,129	17,847
Growth	*11.1%*	*-0.6%*	*-8.9%*	*-1.6%*	*4.2%*
Direct costs	14,360	14,163	13,092	12,813	13,046
Gross Margin	4,861	4,947	4,318	4,317	4,801
SG&A, R&D, and other	3,202	3,366	2,850	2,809	3,195
EBIT	1,659	1,581	1,468	1,507	1,606
Margin	*8.6%*	*8.3%*	*8.4%*	*8.8%*	*9.0%*
Tax Rate	47.7%	37.4%	45.0%	45.0%	45.0%
NOPAT	867	989	807	829	883
Margin	*4.5%*	*5.2%*	*4.6%*	*4.8%*	*5.0%*

Source: Factset, Company Reports

Return on Equity

ROE has declined over the past three years; however, ROE should see improvement tied to better asset utilization efficiency and lower interest as a percent of sales. The company will also see greater financial leverage as asset growth is negative and the firm reduces equity through stock buybacks. CMI will decrease assets due to low market demand.

Figure 23: ROE breakdown

5-stage DuPoint	2013	2014	2015	2016E	2017E	2018E
Operating Margin	8.1%	8.6%	8.3%	8.4%	8.8%	9.0%
Asset Turnover	126.9%	126.1%	123.7%	117.4%	121.1%	133.9%
Interest Burden	92.9%	88.1%	93.8%	91.8%	92.4%	93.3%
Tax Burden	114.2%	112.9%	94.3%	85.7%	81.5%	78.4%
ROA	10.9%	10.8%	9.1%	7.8%	8.0%	8.8%
Equity Multiplyer	183.8%	191.0%	195.0%	198.5%	206.4%	219.5%
ROE	20.0%	20.7%	17.7%	15.4%	16.6%	19.3%

Source: Factset, Company Reports, IMCP

Free Cash Flow

CMI's free cash flow has been extrmely volatile over the past several years. 2015 shows an increse in FCF due to a drop in net working capital and lower NFA investment. I forecast a dip and then consistant growth in NOPAT over the next few years. Low networking capital and NFA growth will boost FCF. CMI repurchas shares through the 2012 repurchase program and continues to do so through identical plans set in 2014, 2015, and 2016. Share buybacks are expected to use up all FCF in 2017-18.

Figure 24: Free cash flows

Free Cash Flow	2012	2013	2014	2015	2016E	2017E	2018E
NOPAT	$943	$827	$867	$989	$807	$829	$883
Growth		*-12.3%*	*4.8%*	*14.1%*	*-18.4%*	*2.7%*	*6.6%*
NWC*	2,431	2,439	2,726	2,357	1,915	1,833	1,963
Net fixed assets	5,381	6,089	6,709	7,187	8,291	8,565	7,759
Total net operating capital*	$7,812	$8,528	$9,435	$9,544	$10,206	$10,398	$9,723
Growth		*9.2%*	*10.6%*	*1.2%*	*6.9%*	*1.9%*	*-6.5%*
- Change in NWC*		8	287	(369)	(442)	(82)	130
- Change in NFA		708	620	478	1,104	274	(805)
FCFF*		$111	($40)	$880	146	$637	$1,558
Growth			*-136.0%*	*-2297.9%*	*-83.5%*	*337.9%*	*144.6%*
- After-tax interest expense	51	59	103	61	66	63	59
FCFE**		$52	($143)	$819	$79	$575	$1,499
Growth			*-375.0%*	*-672.7%*	*-90.4%*	*627.1%*	*160.9%*

* NWC excludes cash
** No adjustment is made for debt

Source: Factset, Company Reports

Valuation

CMI was valued using multiples and 3-stage discounting cash flow model. Based on earnings multiples, the stock is over valued compared is worth $117. Price to book valuation yielded a price of $128. A detailed DCF analysis values CMI drastically lower, at $84. I give this value higher importance

because it includes assumptions that reflect Cummin's market adaptations. As a result of these valuations, I value the stock at $95.

Trading History

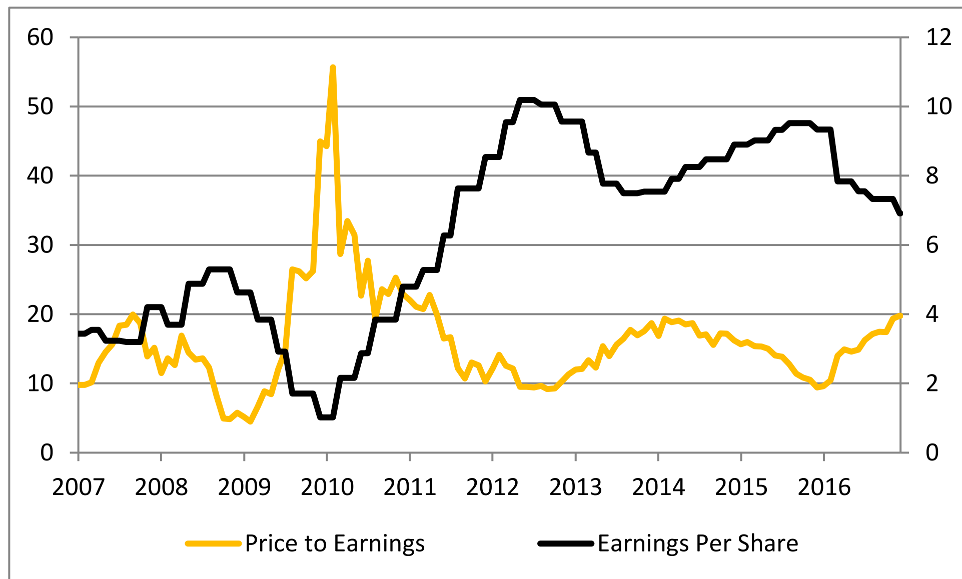
CMI is trading slightly higher than in the previous four years relative to past P/E ratios. This is a result of a decline in earnings per share and a possitive future construction market outlook. CMI's current LTM P/E is at 19.9 compared to a five year average of 14.8. I expect P/E to surpass the five year average and remain high until earnings rebound.

Assuming the firm maintains a 19.93 LTM P/E at the end of 2017, it should trade at $130.14 by the end of the year.

- Price = P/E x EPS = 16.5 x $6.53 = $107.75

Discounting $107.75 back to today at a 11.51% cost of equity (explained in Discounted Cash Flow section) yields a price of $116.71.

Figure 25: CMI P/E and EPS LTM



Source: Factset

Relative Valuation

Cummins is currently trading at a P/E that is average to its peers, with a P/E TTM of 20.2 compared to the average of 20.0. Investors must have faith in the restrcturing plans. The entire group trades above the S&P 500's P/E, so the market expects an economic rebound for this cyclical industry. CMI's P/S and P/B ratios are slightly above average of the group, this is a reflection of CMI's higher than average ROE and net margin compared to competitors.

Figure 26: CMI 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	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
CMI	CUMMINS INC	$139.79	$22,998	2.3	(2.2)	9.3	23.8	58.8	2.3	1.7	14.6%	-11.4%	0.1%	-11.4%	-2.6%	8.2%	1.14	23.0%	B+	2.93%	57.0%
CAT	CATERPILLAR INC	$93.99	$54,991	1.3	(1.2)	6.5	22.9	38.3	1.3	3.3	71.9%	-29.7%	-27.0%	-29.7%	-5.2%	-3.6%	1.49	151.0%	A-	3.32%	175.0%
NAV	NAVISTAR INTERNATIONAL CORP	$31.84	$2,563	1.5	3.5	37.8	162.7	260.2	1.5	0.0	-111.6%	-48.0%	-70.0%	-48.0%	-118.5%	-171.8%	2.58	-75.4%	C	0.00%	
7202-JP	ISUZU MOTORS	$12.55	$10,583	0.0	8.1	24.1	16.2	12.7	0.0	8.0	-8.9%	-0.9%	-13.4%	-0.9%	-7.8%	17.8%	1.34	25.3%		2.16%	25.8%
DE	DEERE & CO	$104.05	$32,651	1.0	2.5	21.9	28.6	36.4	1.0	9.5	-6.7%	-16.6%	-33.1%	-16.6%	-7.1%	-6.2%	0.70	364.4%	B+	2.33%	49.9%
PCAR	PACCAR INC	$65.32	$22,399	2.2	3.5	11.1	26.0	37.8	2.2	8.5	114.4%	-13.5%	18.1%	-13.5%	-10.5%	29.3%	1.36	122.2%	B+	1.50%	58.5%
Average			$24,364	1.4	2.4	18.5	46.7	74.0	1.4	5.2	12.3%	-20.0%	-20.9%	-20.0%	-25.3%	-21.1%	1.44	101.8%		2.04%	73.3%
Median			$22,699	1.4	3.0	16.5	24.9	38.1	1.4	5.7	4.0%	-15.1%	-20.2%	-15.1%	-7.4%	2.3%	1.35	73.8%		2.24%	57.0%
SPX	S&P 500 INDEX	$2,258		0.8	3.0	4.5	7.4	10.5	0.8			#REF!	1.0%	0.6%	11.9%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017E	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
CMI	http://www.cummins.com	22.2%	3.39	15.3	15.3	17.3	20.2	17.6	17.3	17.7	7.9%	1.20	10.5%	15.3%	7.6	11.4	10.5	-4.8%	2.8%	7.6%	$41.20
CAT	http://www.Caterpillar.com	17.4%	3.51	14.8	14.8	28.8	53.4	31.1	28.8	30.4	5.8%	1.17	10.3%	5.0%	16.0	11.2	7.5	-5.4%	1.8%	2.0%	$26.74
NAV	http://www.navistar.com	3.5%	-0.49	-4.2	-4.2	-26.8	-26.8	231.5	-26.8	144.7	-1.8%	0.25	3.1%	5.0%	23.3	6.8	12.7	-1.3%	5.5%	-10.3%	-$64.95
7202-JP	http://www.isuzu.co.jp	14.6%	1.58	9.4	9.4	10.9	11.4	12.5	10.9	11.8	6.2%	0.68	8.2%	12.5%	6.3	7.2	6.2	6.0%	6.0%	6.4%	$7.93
DE	http://www.deere.com	27.9%	5.02	12.1	12.1	21.6	21.6	23.2	21.6	23.3	7.0%	1.27	10.8%	5.0%	20.6	9.0	8.0	-12.9%	1.5%	-3.7%	$20.71
PCAR	http://www.paccar.com	22.7%	3.28	17.1	17.1	16.7	39.8	18.6	16.7	18.7	8.1%	1.17	12.0%	14.5%	9.6	14.9	8.8	-11.2%	7.9%	13.2%	$19.90
Average		18.0%	2.72	10.7	10.7	11.4	20.0	55.7	11.4	41.1	5.5%	0.96	9.2%	9.5%	13.9	10.1	9.0	-5.0%	4.2%	2.5%	
Median		19.8%	3.34	13.4	13.4	17.0	20.9	20.9	17.0	21.0	6.6%	1.17	10.4%	8.7%	12.8	10.1	8.4	-5.1%	4.2%	4.2%	
spx	S&P 500 INDEX				19.3	19.1			19.0	17.0											

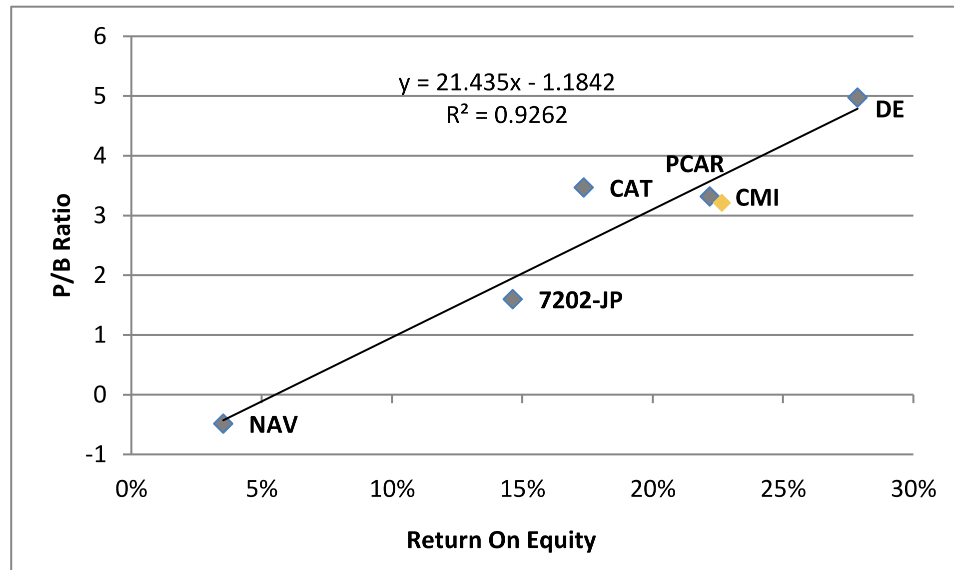
Source: Factset, IMCP

A more thorough analysis of P/B and ROE is shown below. The calculated R-squared of the regression indicates that over 92% of a sampled firm's P/B is explained by its 2016 ROE. CMI has a near median P/B and ROE, and according to this measure is slightly undervalued.

- Estimated P/B = Estimated 2016 ROE (22.2%) x 21.435 – 1.1842 = 3.57
- Target Price = Estimated P/B (3.39) x 2016E BVPS (41.2) = $139.67

Discounting back to the present at a 11.51% cost of equity leads to a target price of $128.29 using this metric.

Figure 27: P/B vs 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 was converted to a percentile before calculating the composite score. 10% weighted to long term growth rate and 2016 NTM Earnings Growth coupled with a 60% weighting of 2016 ROE and 20% weighting of NPM was used for the fundamental

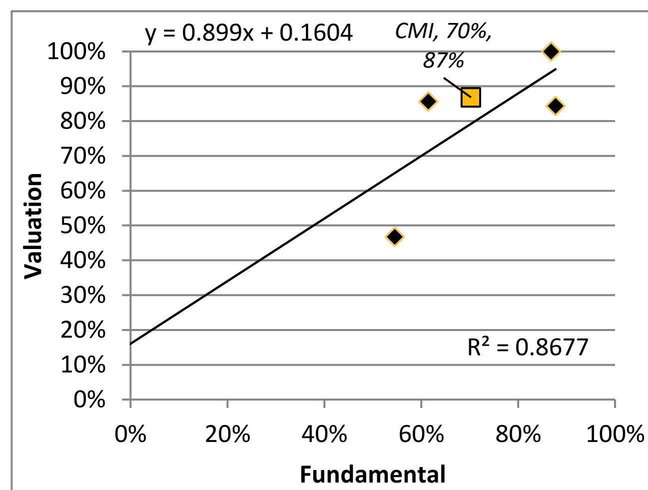
composite. This was compared to 30% weight for P/B and 70% weight for P/S for the value composite. The regression line had an R-squared of 0.87. One can see that CMI is above the line, so it is expensive based on its fundamentals and competitors.

Figure 28: Composite valuation, % of max

		Fundamental Factors				Value Factors	
		10%	10%	60%	20%	30%	70%
		Earnings Growth		2016			
Ticker	Name	LTG	NTM	ROE	NPM	P/B	P/S
CMI	CUMMINS INC	18%	13%	80%	97%	68%	95%
CAT	CATERPILLAR INC	35%	63%	62%	71%	70%	92%
NAV	NAVISTAR INTERNATIONAL CORP	0%	-97%	13%	-22%	-10%	20%
7202-JP	ISUZU MOTORS	84%	-8%	53%	77%	32%	53%
DE	DEERE & CO	100%	-6%	100%	87%	100%	100%
PCAR	PACCAR INC	89%	100%	81%	100%	65%	93%

Source: Factset,

Figure 29: Composite relative valuation



Source: Factset,

<u>Discounted Cash Flow Analysis</u>

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

For the purpose of this analysis, the company's cost of equity was calculated to be 11.51% 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 2.45%.
- An estimated beta of 1.2 was utilized since the company has higher risk than the market. As seen in figure 25, its earnings are very volatile.
- 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 11.51% (2.45 + 1.2 (10.0 – 2.45)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $3.52 and $9.65, respectively.

Discounting these cash flows, using the cost of equity calculated above, results in a value of $10.92 per share. Thus, stage one of this discounted cash flow analysis contributes $10.92 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 11.51% cost of equity. I assume 5% sales growth in 2019, rising to 7% through 2021, and then normalized to 5% in 2023. The ratio of NWC to sales and NFA turnover will remain at 2018 levels. Also, the NOPAT margin is expected to match 2018. Finally, after-tax interest is expected to rise 2.1% per year as the result of modest increases in borrowing.

Figure 30: FCFE and discounted FCFE

	2017	2018	2019	2020	2021	2022
FCFE	$ 3.52	$ 9.65	$ 2.49	$ 2.07	$ 1.59	$ 2.59
Discounted FCFE	$ 3.16	$ 7.76	$ 1.80	$ 1.34	$ 0.92	$ 1.35

Source: IMCP

Added together, these discounted cash flows total $7.14

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $6.53 in 2017 to $8.47 in 2021.

Figure 31: EPS estimates

	2017	2018	2019	2020	2021	2022	2023
EPS	$ 6.53	$ 7.11	$ 5.69	$ 6.22	$ 6.94	$ 7.75	$ 8.47

Source: IMCP

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. 8.47 in EPS is considered a "normal" EPS so it must be multiplied by a "normal" P/E to determine the terminal value. For this, I am assuming a P/E of 16.5, which is about the five year average and below the S&P 500's current P/E.

Given the assumed terminal earnings per share of $8.47 and a price to earnings ratio of 16.5, a terminal value of $139.81 per share is calculated. Using the 11.51% cost of equity, this number is discounted back to a present value of $65.21.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $83.27 is calculated ($10.92 + $7.14 + $65.21). Given CMI's current price of $139.81, this model indicates that the stock is highly overvalued.

Scenario Analysis

CMI's valuation is based on many metrics and reactions to industry and stock drivers. With this evaluation I predict a P/E of 16.5, a beta equaling 1.2, and as a result, a value of $83.27. This is based on normalized EPS from 2018 to 2023.

In a bullish scenario CMI's P/E would rise to 22, a high of the past few years. Beta would equal market risk at 1, a very optimistic but reasonable outlook considering the company's various attempts to flex with demand. These estimates, coupled with higher sales growth rate, would result in a value of $119.64.

In a bearish scenario CMI's P/E could shrink to as low as 10, predicted based on average historical lows. Beta would equal 1.4, up 0.2 from the base. These changes, along with a sales growth matching 2018 estimates, would result in a value of $53.27.

Business Risks

Although Cummins has potential for growth, there are several reasons why I find the stock currently overvalued and at risk of a declining EPS.

Decrease in Research and Development:

CMI decreased its research and development costs in 2015 in an attempt to increase net income; however, this could negatively effect future growth.

Continued Low Market Demand:

Cummin's experienced low sales growth due to a decline in market demand. As a result the company had to write off $60 million in loss contingiencies and decided to discontinue its light-duty automotive engine production. The firm could miss an opportunity if light-duty automotive markets recover.

Restructuring Challenges:

The firm began restructuring in 2015, incurring $90 million in restructuring expenses with no realized gain. Restructuring could present future cost obstacles that would further raise operating expenses. The company could fail to gain the expected $160 million due to unpredictable market demand and varying direct benefit of restructuring on earnings.

Low Demand in North American Truck Industry:

CMI began consolidation efforts to its U.S. plants and its U.S. percent of sales has risen 20% since 2010. This increased focus on U.S. sales could lead to missed global expansion opportunies, relating in particular to China and Europe's increasing construction markets.

Appendix 1: Sales Forecasts by Segment and Region

Sales forcasts (in millions)	2012	2013	2014	2015	2016E	2017E	2018E
Sales	17,334	$17,301	$19,221	$19,110	$17,410	$17,129	$17,847
Growth		*-0.2%*	*11.1%*	*-0.6%*	*-8.9%*	*-1.6%*	*4.2%*
Engine	10,733	10,013	10,962	10,449	8,077	7,794	7,716
Growth		*-6.7%*	*9.5%*	*-4.7%*	*-22.7%*	*-3.5%*	*-1.0%*
% of sales	*61.9%*	*57.9%*	*57.0%*	*54.7%*	*46.4%*	*45.5%*	*43.2%*
Distribution	3,277	3,749	5,174	6,229	7,413	8,228	9,709
Growth		*14.4%*	*38.0%*	*20.4%*	*19.0%*	*11.0%*	*18.0%*
% of sales	*18.9%*	*21.7%*	*26.9%*	*32.6%*	*42.6%*	*2.0%*	*54.4%*
Components	4,012	4,342	5,118	5,172	5,017	4,992	5,331
Growth		*8.2%*	*17.9%*	*1.1%*	*-3.0%*	*-0.5%*	*6.8%*
% of sales	*23.1%*	*25.1%*	*26.6%*	*27.1%*	*28.8%*	*29.1%*	*6.0%*
Power Generatio	3,268	3,031	2,896	2,740	3,041	3,002	2,872
Growth		*-7.3%*	*-4.5%*	*-5.4%*	*11.0%*	*-1.3%*	*-4.3%*
% of sales	*18.9%*	*17.5%*	*15.1%*	*14.3%*	*17.5%*	*17.5%*	*16.1%*
Intersegment elir	(3,956)	(3,834)	(4,929)	(5,480)	(6,138)	(6,886)	(7,782)
Growth		*-3.1%*	*28.6%*	*11.2%*	*12.0%*	*12.2%*	*13.0%*
% of sales	*-22.8%*	*-22.2%*	*-25.6%*	*-28.7%*	*-35.3%*	*-40.2%*	*-43.6%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
United States	8,107	8,382	10,058	10,757	10,516	10,667	11,340
Growth		*3.4%*	*20.0%*	*6.9%*	*-2.2%*	*1.4%*	*6.3%*
% of sales	*46.8%*	*48.4%*	*52.3%*	*56.3%*	*60.4%*	*62.3%*	*63.5%*
China	1,056	1,194	1,446	1,928	2,289	3,011	4,070
Growth		*13.1%*	*21.1%*	*33.3%*	*18.7%*	*31.5%*	*35.2%*
% of sales	*6.1%*	*6.9%*	*7.5%*	*10.1%*	*12.6%*	*14.9%*	*16.9%*
All Other	8,171	7,725	7,717	6,425	4,701	3,911	3,491
Growth		*-5.5%*	*-0.1%*	*-16.7%*	*-26.8%*	*-16.8%*	*-10.7%*
% of sales	*47.1%*	*44.7%*	*40.1%*	*33.6%*	*27.0%*	*22.8%*	*19.6%*

Source: Company Reports

Appendix 2: Income Statement

Income Statement	2011	2012	2013	2014	2015	2016E	2017E	2018E
Revenue	18048	17334	17301	19221	19110	17410	17129	17129
Cost of goods sold	13459	12826	13021	14360	14163	13092	12813	12813
Gross profit	4589	4508	4280	4861	4947	4318	4317	4317
Operating expenses								
Selling, general & administrative	1837	1900	1817	2095	2092	2850	2809	2809
Research, development and egineering expense	629	728	713	754	735			
Equity, royalty and interest income	416	384	361	370	315			
Impairment of light-duty diesel assets	0	0			211			
Restructuring actions and other charges	0	0			90			
Other operating expense, net	142	-10	-10	-17	-77			
Earnings before interest &tax	1565	1506	1399	1659	1581	1468	1507	1507
Interest income	34	25	27	23	24			
Interest expense	44	32	41	64	65	121	114	114
Other income, net	24	0	32	110	9			
Earnings before tax	1463	1449	1299	1462	1483	1347	1394	1394
Taxes	533	725	531	698	555	606	627	627
Net income	930	724	768	764	928	741	766	766
Less: Net income for noncontrolling interests	93	98	105	85	71	73	68	62
Net income attributable to CMI	837	626	663	679	857	667	699	705
Earnings per share								
Basic	$ 9.58	$ 8.69	$ 7.93	$ 9.04	$ 7.86	$ 6.39	$ 6.53	$ 6.53

Source: Company Reports

Appendix 3: Balance Sheet

Balance Sheet							
	2012	2013	2014	2015	2016E	2017E	2018E
Cash	1369	2699	2301	1711	329	-700	-1038
Operating assets ex cash	5551	5790	6661	6136	5745	5653	5889
Operating assets	6920	8489	8962	7847	6074	4952	4851
Operating liabilities	3120	3351	3935	3779	3830	3820	3926
NOWC	3800	5138	5027	4068	2244	1132	925
NOWC ex cash (NWC)	2431	2439	2726	2357	1915	1833	1963
NFA	5381	6089	6709	7187	8291	8565	7759
Invested capital	9181	11227	11736	11255	10535	9697	8684
Marketable securities	247	150	93	100	100	100	100
Total assets	12548	14728	15764	15134	14465	13617	12711
Short-term and long-term deb	714	1689	1663	1600	1500	1420	1340
Other liabilities	1740	1818	2073	2005	2005	2005	2005
Debt/equity-like securities							
Equity	6974	7870	8093	7750	7130	6372	5439
Total supplied capital	9428	11377	11829	11355	10635	9797	8784
Total liabilities and equity	12548	14728	15764	15134	14465	13617	12711

Source: Company Reports

Appendix 4: Ratios

Ratios	2012	2013	2014	2015	2016E	2017E	2018E
Profitability							
Gross margin	25.5%	24.7%	25.3%	25.9%	24.8%	25.2%	26.9%
Operating (EBIT) margin	8.7%	8.1%	8.6%	8.3%	8.4%	8.8%	9.0%
Net profit margin	9.5%	8.6%	8.6%	7.3%	6.3%	6.2%	6.2%
Activity							
NFA (gross) turnover		3.0	3.0	2.8	2.2	2.0	2.2
Total asset turnover		1.3	1.3	1.2	1.2	1.2	1.4
Liquidity							
Op asset / op liab	2.2	2.5	2.3	2.1	1.6	1.3	1.2
NOWC Percent of sales		25.8%	26.4%	23.8%	18.1%	9.9%	5.8%
Solvency							
Debt to assets	5.7%	11.5%	10.5%	10.6%	10.4%	10.4%	10.5%
Debt to equity	10.2%	21.5%	20.5%	20.6%	21.0%	22.3%	24.6%
Other liab to assets	13.9%	12.3%	13.2%	13.2%	13.9%	14.7%	15.8%
Total debt to assets	19.6%	23.8%	23.7%	23.8%	24.2%	25.2%	26.3%
Total liabilities to assets	44.4%	46.6%	48.7%	48.8%	50.7%	53.2%	57.2%
Debt to EBIT	0.5	1.2	1.0	1.0	1.0	0.9	0.8
EBIT/interest	18.6	14.0	8.4	16.1	12.1	13.2	14.9
Debt to total net op capital	0.1	0.2	0.1	0.1	0.1	0.1	0.2
ROIC							
NOPAT to sales		4.8%	4.5%	5.2%	4.6%	4.8%	5.0%
Sales to IC		1.7	1.7	1.7	1.6	1.7	1.9
Total		8.1%	7.6%	8.6%	7.4%	8.2%	9.6%
Total using EOY IC	10.3%	7.4%	7.4%	8.8%	7.7%	8.5%	10.2%
ROE							
5-stage							
EBIT / sales		8.1%	8.6%	8.3%	8.4%	8.8%	9.0%
Sales / avg assets		1.3	1.3	1.2	1.2	1.2	1.4
EBT / EBIT		92.9%	88.1%	93.8%	91.8%	92.4%	93.3%
Net income /EBT		114.2%	112.9%	94.3%	81.0%	76.5%	73.7%
ROA		10.9%	10.8%	9.1%	7.4%	7.6%	8.4%
Avg assets / avg equity		1.83751	1.910167	1.950262	1.989215	2.079858	2.228982
ROE		20.0%	20.7%	17.7%	14.7%	15.8%	18.7%

Appendix 4: Ratios continued

3-stage						
Net income / sales	8.6%	8.6%	7.3%	6.3%	6.2%	6.2%
Sales / avg assets	1.3	1.3	1.2	1.2	1.2	1.4
ROA	10.9%	10.8%	9.1%	7.4%	7.6%	8.4%
Avg assets / avg equity	1.83751	1.910167	1.950262	1.989215	2.079858	2.228982
ROE	20.0%	20.7%	17.7%	14.7%	15.8%	18.7%
Payout Ratio	28.3%	31.0%	44.5%	59.6%	65.6%	67.9%
Retention Ratio	71.7%	69.0%	55.5%	40.4%	34.4%	32.1%
Sustainable Growth Rate	14.3%	14.3%	9.8%	5.9%	5.4%	6.0%

Source: IMCP

Appendix 5: 3-stage DCF Model

	Year						
	1	2	3	4	5	6	7
	First Stage		**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*-1.6%*	*4.2%*	*5.0%*	*6.0%*	*7.0%*	*6.0%*	*5.0%*
NOPAT / S	*4.8%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
S / NWC	*9.35*	*9.09*	*9.09*	*9.09*	*9.09*	*9.09*	*9.09*
S / NFA (EOY)	*2.00*	*2.30*	*2.30*	*2.30*	*2.30*	*2.30*	*2.30*
S / IC (EOY)	*1.65*	*1.84*	*1.84*	*1.84*	*1.84*	*1.84*	*1.84*
ROIC (EOY)	*8.0%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*
ROIC (BOY)		*8.5%*	*9.5%*	*9.6%*	*9.7%*	*9.6%*	*9.5%*
Share Growth		*-4.9%*	*-2.0%*	*-3.0%*	*-4.0%*	*-5.0%*	*-4.0%*
Sales	$17,129	$17,847	$18,739	$19,863	$21,254	$22,529	$23,656
NOPAT	$829	$883	$928	$983	$1,052	$1,115	$1,171
Growth		*6.6%*	*5.0%*	*6.0%*	*7.0%*	*6.0%*	*5.0%*
- Change in NWC	-82	130	98	124	153	140	124
NWC	*1833*	*1963*	*2061*	*2185*	*2338*	*2478*	*2602*
Growth NWC		*7.1%*	*5.0%*	*6.0%*	*7.0%*	*6.0%*	*5.0%*
- Chg NFA	274	-805	388	489	605	554	490
NFA EOY	*8,565*	*7,759*	*8,147*	*8,636*	*9,241*	*9,795*	*10,285*
Growth NFA		*-9.4%*	*5.0%*	*6.0%*	*7.0%*	*6.0%*	*5.0%*
Total inv in op cap	192	-675	486	613	757	695	614
Total net op cap	10398	9723	10209	10821	11579	12273	12887
FCFF	$637	$1,558	$441	$371	$295	$420	$557
% of sales	*3.7%*	*8.7%*	*2.4%*	*1.9%*	*1.4%*	*1.9%*	*2.4%*
Growth		*144.6%*	*-71.7%*	*-16.0%*	*-20.5%*	*42.7%*	*32.5%*
- Interest (1-tax rate)	63	59	62	65	69	72	76
Growth		*-5.5%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
FCFE w or w/o debt	$575	$1,499	$379	$305	$226	$349	$482
% of sales	*3.4%*	*8.4%*	*2.0%*	*1.5%*	*1.1%*	*1.5%*	*2.0%*
Growth		*160.9%*	*-74.7%*	*-19.5%*	*-26.0%*	*54.2%*	*38.2%*
/ No Shares	163.3	155.3	152.2	147.7	141.8	134.7	129.3
FCFE	$3.52	$9.65	$2.49	$2.07	$1.59	$2.59	$3.73
Growth		*174.3%*	*-74.2%*	*-17.0%*	*-22.9%*	*62.3%*	*44.0%*
* Discount factor	0.90	0.80	0.72	0.65	0.58	0.52	0.47
Discounted FCFE	$3.16	$7.76	$1.80	$1.34	$0.92	$1.35	$1.74

Third Stage							
Terminal value P/E							
Net income	$1,066	$1,104	$865	$918	$984	$1,043	$1,095
% of sales	*6.2%*	*6.2%*	*4.6%*	*4.6%*	*4.6%*	*4.6%*	*4.6%*
EPS	$6.53	$7.11	$5.69	$6.22	$6.94	$7.75	$8.47
Growth		*8.8%*	*-20.0%*	*9.4%*	*11.6%*	*11.7%*	*9.4%*
Terminal P/E							16.50
* Terminal EPS							$8.47
Terminal value							$139.81
* Discount factor							0.47
Discounted terminal value							$65.21

Summary		
First stage	$10.92	Present value of first 2 year cash flow
Second stage	$7.14	Present value of year 3-7 cash flow
Third stage	$65.21	Present value of terminal value P/E
Value (P/E)	**$83.27**	= value at beg of fiscal yr 2017

Source: IMCP, Company Reports

Appendix 6: Porters 5 forces

Threat of New Entrants – Relatively low

Barriers to entry into the industrial production industry will make it difficult for competitors to start new businesses. Capital requirements for engine and truck producers remain high. New entrants also face challenges against brand loyalty, technological advancement requirements, and meeting environmental fuel standards.

Treat of Substitutes – Moderate

Many engine sales go to companies which produce both components and OEM vehicles. These customers could choose to source their production based on cost efficiency and consumer brand recognition.

Supplier Power – Relatively low

CMI produces many of its own engine components, preventing supplier power.

Buyer Power – High

Many of CMI's sales are linked to deals and agreements with buyers. In these situations, buyers can back out leaving the company with many specialized engines of previous year's models that run the risk of not meeting future fuel emission standards.

Intensity of Competition – Low

Even though there are a few engine and component producers, most companies in the industry specialize in certain makes and models, lowering the risk of competition. Brand loyalty also lowers competition.

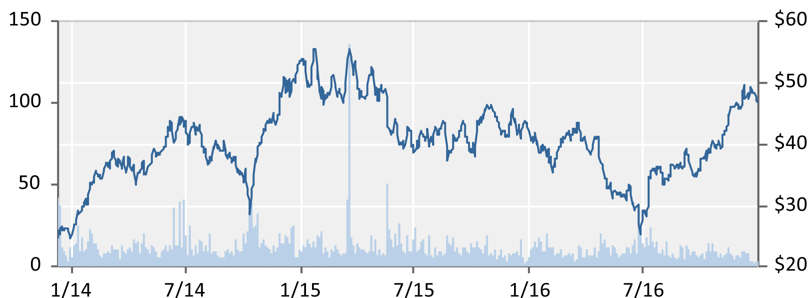
Appendix 7: SWOT Analysis

Strengths	Weaknesses
Market adaptation Specialization of products Customer loyalty	Rely on local economies Compete on price Changing emission laws
Opportunities	**Threats**
Margin expansion Decrease foreign currency effects Restructuring	Buyer's sourcing Low market demand International uncertainty

Recommendation	NEUTRAL
Target (today's value)	$50
Current Price	$46.30
52 week range	$24.85 - $50.64

Major Airline

American Airlines Group, Inc.



Source: FactSet Prices

Share Data	
Ticker:	AAL
Market Cap. (Billion):	$24.19
Inside Ownership	1.0%
Institutional Ownership	77.6%
Beta	1.38
Dividend Yield	0.86%
Payout Ratio	4.3%
Consensus Long-Term Growth Rate	-5.9%

	'14	'15	'16E	'17E	'18E
Sales (billions)					
Year	$42.7	$41.0	$38.9	$40.3	$42.8
Gr %		-3.9%	-5.0%	3.5%	6.1%
Cons	-	-	$40.1	$40.0	$41.0
EPS					
Year	$4.02	$11.39	$5.54	$5.03	$5.94
Gr %		183.4%	-51.4%	-9.2%	18.1%
Cons	-	-	$5.70	$5.58	$4.49

Ratio	'14	'15	'16E	'17E	'18E
ROE (%)	-96.6%	198.8%	61.1%	59.0%	64.9%
Industry	19.2%	62.8%	33.4%	22.8%	25.1%
NPM (%)	6.8%	18.6%	7.9%	6.2%	6.2%
Industry	5.8%	13.1%	11.1%	8.2%	8.4%
A. T/O	1.00	0.89	0.78	0.77	0.77
ROA (%)	6.7%	16.6%	6.1%	4.8%	4.8%
Industry	6.0%	11.5%	9.1%	6.4%	6.8%
A/E	-14.33	11.97	9.97	12.41	13.58

Valuation	'15	'16	'17E	'18E
P/E	6.2	4.4	10.4	9.2
Industry	12.6	9.4	12.0	10.5
P/S	0.72	0.65	0.59	0.57
P/B	7.5	5.7	3.8	3.9
P/CF	4.4	4.1	5.2	5.1
EV/EBITDA	9.7	5.9	9.1	8.9

Performance	Stock	Industry
1 Month	0.5%	6.4%
3 Month	27.5%	32.4%
YTD	10.2%	16.7%
52-week	9.1%	15.1%
3-year	88.4%	118.9%

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Email: pgodager@uwm.edu
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Summary: I recommend a neutral rating with a target of $50. AAL has the opportunity to further increase efficiency and margins through it continued integration with US Airways and the expected increase in passenger revenue per available seat mile in 2017. An increase in the price of oil, economic instability, and the continued popularity of ultra-discount carrier may provide serious headwinds for AAL. The stock is moderately undervalued based on multiples and DCF analysis, but it has a few positive catalysts.

Key Drivers:

- Oil: Jet fuel accounted for approximately 21.6% of operating costs for AAL, down from over 30% historically. Management at AAL has an aversion to entering into fuel hedging contracts so AAL reaps the benefit of low prices. Jet fuel cost to the company typically follows trends in Brent oil. Fuel costs are up over the past year.
- International Operations: Operating primarily in the U.S., approximately 30% of AAL's revenue is still earned internationally. Foreign exchange rates and foreign economic activity greatly impact AAL's ability to generate a profit with international operations. AAL has a large presence in Latin America and is the premier major U.S. airline with flights to Cuba. AAL is a member of the Oneworld Alliance.
- Operating Efficiency: AAL began integrating US Airways in 2013 and is currently refining the synchronistic abilities of merging the two firms. Bankruptcy and mergers have been common in the airlines industry during past economic downturns. AAL has recovered exceptionally well from filing bankruptcy in 2011 and has increased EBIT margins consistently each year since merging with US Airways in 2013.
- Competition: AAL competes domestically with major and ultra-low cost carriers in a regional arena. AAL is developing basic/premium economy options in order to compete with these airlines, and this is set to debut in Q1 2017. AAL's success relies on its ability to maintain margins, especially while competing with low-cost fares.

Valuation: Using a relative valuation approach, American Airlines appears to be fairly valued in comparison to the airline industry. Due to greater ability to forecast long-term inputs, I prefer DCF analysis. A combination of the approaches suggests that AAL is moderately undervalued, as the stock's value is about $50 and the shares trade at $46.30.

Risks: Threats to the business include declining passenger yield, high fixed cost structure leading to vulnerabilities in sustained economic downturns, geopolitical events, inefficiencies from the US Airways integration, increased tax and fee structure, increased low-cost competition, and higher oil prices.

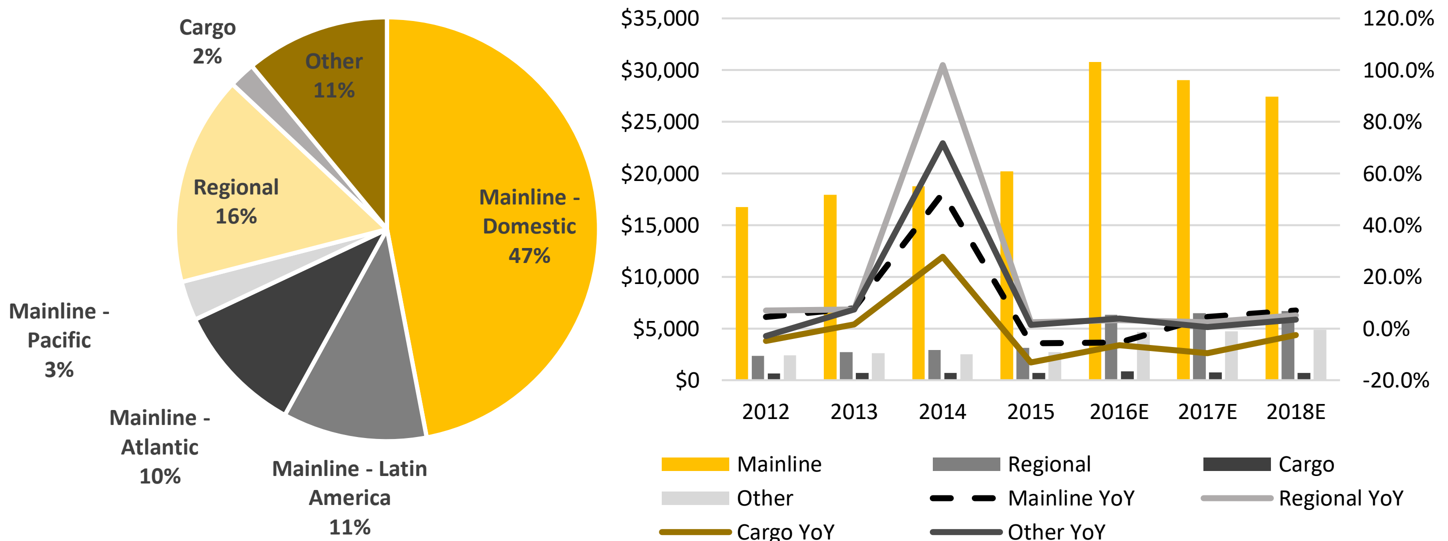
Company Overview

American Airlines Group, Inc. (AAL) is the largest U.S. airline transporting passengers and freight within the U.S. and abroad through its Latin American, Atlantic, and Pacific routes. AAL conducts more than 6,700 flights daily out of hubs in Charlotte, Chicago, Dallas/Fort Worth, Los Angeles, Miami, New York, Philadelphia, Phoenix, and Washington D.C.. AAL maintains the trade name "American Eagle" for three subsidiaries, Envoy Air Inc, PSA Airlines Inc. and Piedmont Airlines Inc, in addition to holding contracts with regional carriers to provide a feeder system from uneconomical markets into AAL hubs. AAL utilizes a "wheel-and-spoke" model for air transportation. AAL formed through the merger of U.S. Airways and AMR Corporation on December 9, 2013, and concluded the final US Airways flight on October 16, 2015. The merger was preceded by a bankruptcy filed by AMR Corporation on November 29, 2011. AAL has a reputation for quality travel at moderate industry pricing. AAL has focused on promoting its brand though loyalty programs and cross-marketing campaigns with Oneworld alliance members. AAL is headquartered in Dallas/Fort Worth, Texas.

AAL generates 70.8% of its revenue from its mainline operations, 15.8% from its regional affiliates, 11.5% from airport services and other revenues, and 1.9% from cargo revenue. AAL reports revenues earned from its segments in four categories:

- ***Mainline Passenger:*** AAL's main fleet branded as "American" flying out of the major hubs, both domestic and international. Mainline revenues experienced a 10% compound annual growth rate over the past four years, with negative growth rates in 2015 and 2016. Projected growth rates are 4.0% and 7.0% in 2017 and 2018, respectively.
- ***Regional Passenger:*** AAL's subsidies and regional affiliates under the tradename "American Eagle." Typically, the flights have higher margins than its mainline fleet. Regional revenues experienced a 22.9% compound annual growth rate over the past four years. Projected growth rates are 3.0% and 5.0% in 2017 and 2018, respectively.
- ***Cargo:*** AAL transports cargo worldwide through the use of international affiliates and hubs. Cargo revenues experienced a 0.1% compound annual growth rate over the past four years, with negative growth rates in 2015 and 2016. Projected growth rates are -5.0% and -2.5% in 2017 and 2018, respectively.
- ***Other:*** Consisting of other related operating expenses. The largest portion in this category is the AAdvantage loyalty program associated with Citibank, Barclaycard US, and MasterCard credit card agreements. Other revenues experienced a 17.5% compound annual growth rate over the past four years. Projected growth rates are 12.0% and 11.7% in 2017 and 2018, respectively.

Figures 1 & 2: Revenue Sources for AAL, EOY 2015 (left) and Revenue History Since 2009 (right)



Source: Company reports, 10-K 2015

Business/Industry Drivers

Though several factors may contribute to American's future success, the following drivers have the largest impact on the industry and business:

1) Oil Pricing
2) International Operations
3) Operational Efficiency
4) Competitor Analysis
5) Macroeconomic Factors

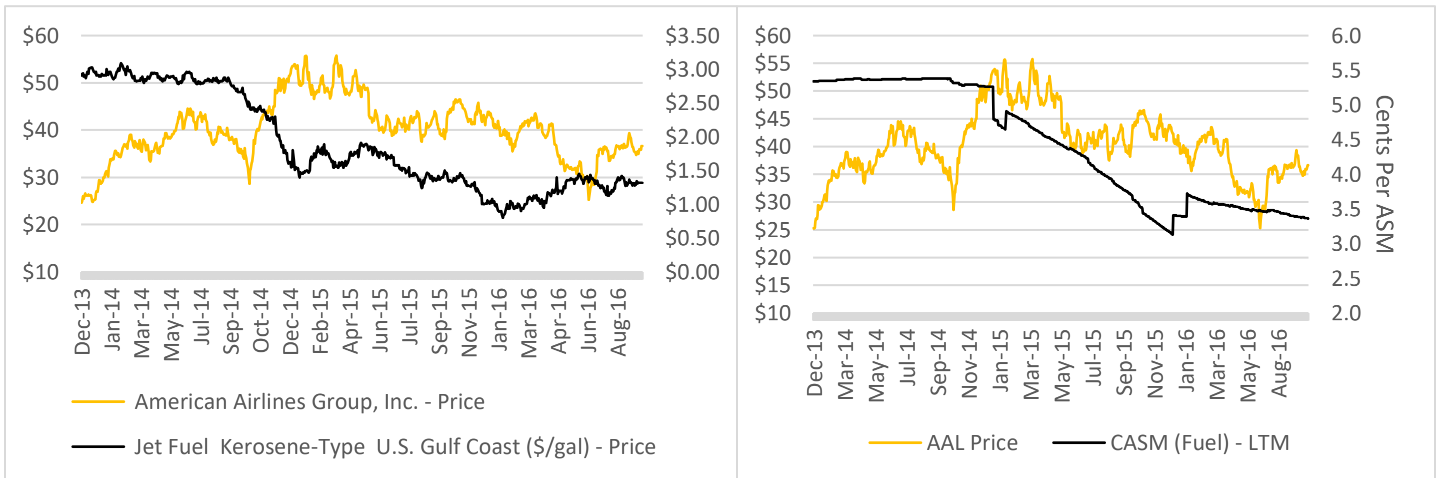
In summary, a one cent change in average jet fuel prices impacts EPS by approximately $0.06. Costs per available seat mile increases have decreased EPS by approximately $0.97 in 2016. The increase in labor costs reduced EPS by $1.27. International routes have returned a combined $1.88 to EPS. Loyalty program and credit card agreement changes will contribute $0.23 in 2016 to EPS and grow to $1.13 in 2018. In 2016, integration costs associated with the U.S. Airways merger reduced EPS by $1.13.

Oil Pricing

AAL will not hedge fuel costs in order to take advantage of the current low prices.

In 2015, fuel costs constituted 17.9%, down from 27.6% in 2014, of the mainline operating expenses. The reduction in fuel costs contributed $3.17 to EPS (34786 x (27.6% - 17.9%) x (1 – 0.372) / 668.393). The cost of jet fuel per gallon decreased 40.9% in the same time period while AAL did not materially decrease consumption. AAL estimates for each cent increase in the cost per gallon of jet fuel operational expenses increase by $44 million. The benefits from the decrease in the price of fuel was offset by a decrease in yield from passenger revenues and increase in labor costs. The decrease in passenger yield decreased EPS by $2.35. The increase in labor costs decreased EPS by $1.27. Jet fuel coincides with the price of Brent crude oil.

Figures 3 & 4: AAL Price v. Price of Jet Fuel per Gallon (left) and Mainline Fuel CASM v. AAL Price (right)



Source: Factset

Industry Fleet Age

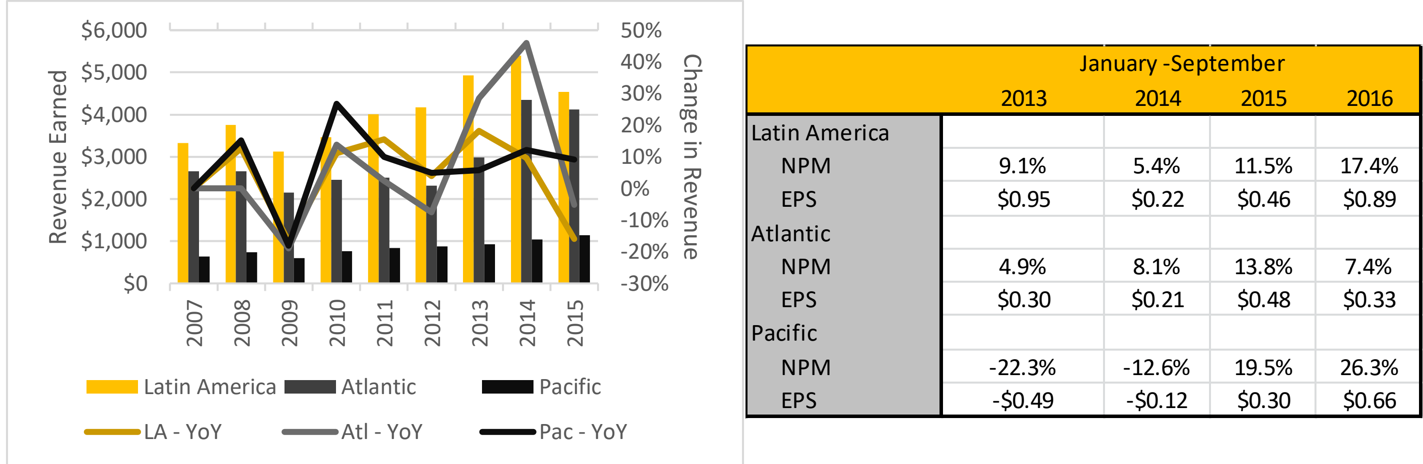
AAL – 10.4 yr
LUV – 12.0 yr
UAL – 14.1 yr
DAL – 17.1 yr

Source: www.airfleets.net

Unless executive management believes the cost of jet fuel will increase 30-50% in a short time period, AAL will not enter into fuel hedging agreements. Competitors have entered into fuel hedging agreements and have not realized the low cost of jet fuel between 2015 and 2016. In the short-term, AAL management's decision is beneficial in comparison to AAL's competitors. As oil prices have a high volatility due to unstable geopolitical situations in the supply chain, the chance of fuel costs going up are of constant concern.

AAL has the youngest fleet of the major airlines in the U.S. and has orders for up to 500 new fuel-efficient planes through 2023. The airplane renovation and replacement program affects up to 40% of AAL's fleet. Beginning in 2013, management expects the majority of capital expenditure to be complete prior to 2018. This will further decrease the fuel portion of cost per available seat mile and increase operating margins. The firm reduced fuel consumption by 33 million gallons by decreasing in capacity along low demand routes and increasing capacity along high demand routes. Using the current jet fuel price of $1.53 per gallon, this reduced consumption lead to an increase in $0.06 to EPS (33M x 1.532 x (1 - 0.372) / 553.540). The new capital expenditures towards upgraded airplanes may allow for AAL to secure new routes and increase free cash flow.

Figures 5, 6, & 7: International Revenues, Absolute & Percent Change (left), Net Profit Margin & EPS Contribution by Region (right)



	January -September			
	2013	2014	2015	2016
Latin America				
NPM	9.1%	5.4%	11.5%	17.4%
EPS	$0.95	$0.22	$0.46	$0.89
Atlantic				
NPM	4.9%	8.1%	13.8%	7.4%
EPS	$0.30	$0.21	$0.48	$0.33
Pacific				
NPM	-22.3%	-12.6%	19.5%	26.3%
EPS	-$0.49	-$0.12	$0.30	$0.66

Source: Bloomberg/USDOT

International Travel

Approximately 30% of AAL's revenues are from international routes, primarily in Latin America, Europe, and Asia. U.S. Airline industry passenger traffic and number of flights have increased in 2016, while load factor has decreased. According to the USDOT, AAL's operating revenues for the first nine months of 2016 from international routes has increase by 10.6% compared to 2015. The largest international regional growth has come from the Pacific region.

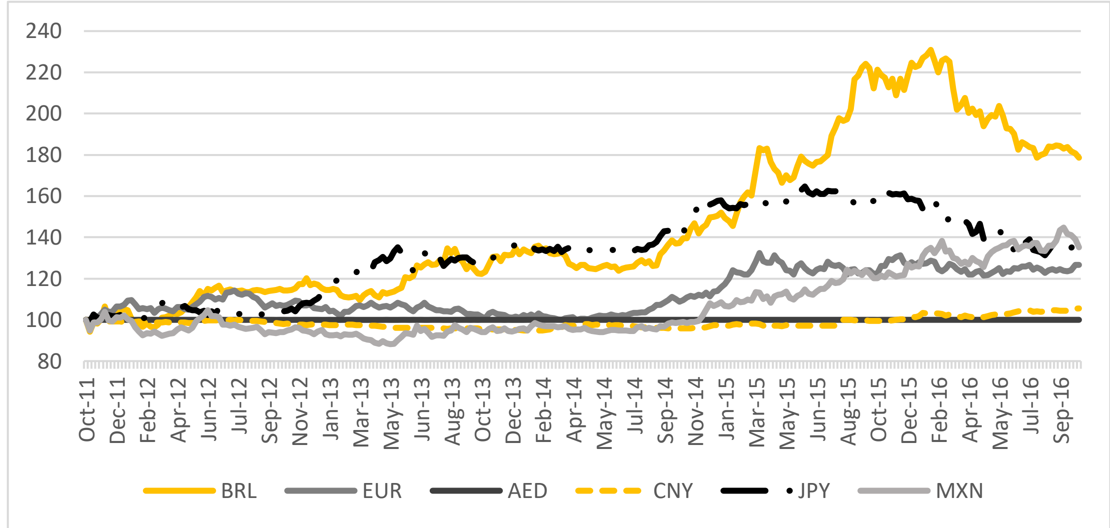
Economic and political events may affect the demand of travel into and out of the countries AAL operates flights. Due to international agreements, foreign airlines cannot travel between airports within foreign countries, but can travel from one country to another. With developed countries pivoting to institute greater control over greenhouse gas production, global airlines are constantly under pressure to decrease emissions and face increased taxes or fees in relation to carbon-allowances. These policies can have a detrimental effect on profit margins as costs cannot easily be passed onto customers due to the competitive pricing structure of the airline industry.

Figure 8: American Airline Routes

Source: American Airlines

Foreign currency valuation relative to the U.S. dollar improved or remained unchanged after falling in 2015, leading to reduced yields. In regards to regions AAL services, Brazil, China, Japan, the United Arab Emirates, and Europe are the most notable. In 2015, the Brazilian Real depreciated up to 70%, but in 2016 it has rebounded. The economic shock from BREXIT and potential continued flight of countries from the E.U. may result in continued depreciation of the Euro as the U.K. and E.U. determine exactly how to proceed. The U.A.E. Dirham is pegged to the dollar, providing the least volatile yields.

Figure 9: Relative Currency/USD Value



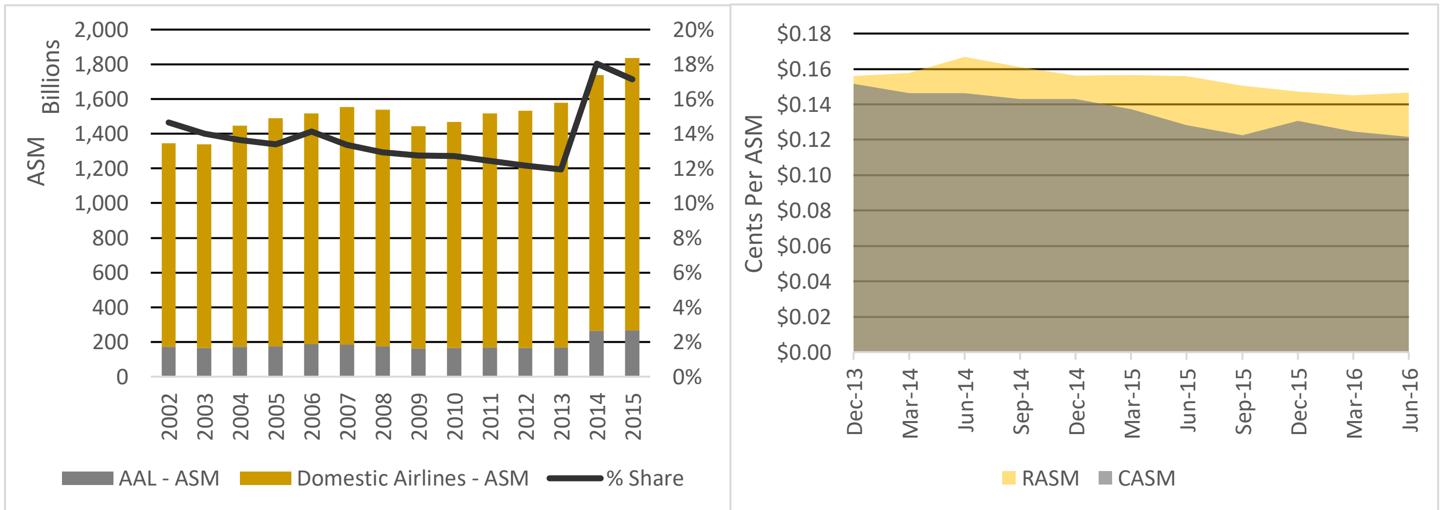
Source: FactSet

The American Airlines and US Airways merger created the largest U.S. airline according to revenue.

<u>Operating Efficiency</u>

With the completion of US Airways integration in 2015, AAL management has pivoted their focus from synchronizing the companies' systems toward increasing competitive efficiencies. One major process with the merger was a seamless transition of the ticketing and flight scheduling systems. The synergies allowed for relatively stable operating costs per available seat mile (CASM) excluding fuel in 2015. Although CASM decreased 3.4% in the first three quarters of 2016 compared to 2015, the majority of this reduction came from fuel related expenses. ASM increased by 2.2% in 2016, while applicable costs increased by 3.6%. This equated to a decrease of $0.97 to EPS in 2016 (207726 x (239372/203282) x ($0.1005 – 0.0975) x (1 – 0.372) / 553.540).

Figures 10 & 11: AAL ASM to Aggregate ASM (left) and Quarterly RASM to CASM (right)

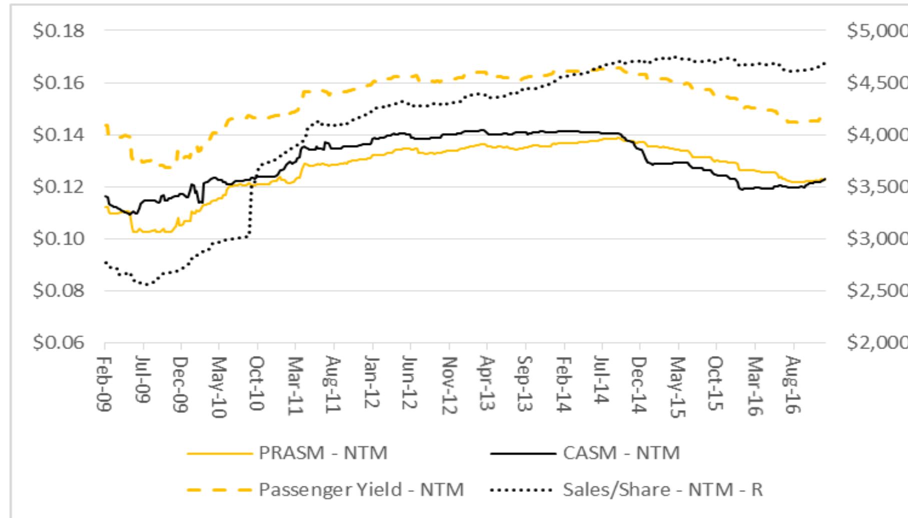


Source: FactSet/USDOT/Company Reports

As of December 31, 2015, AAL has approximately $12B in NOL carryforward tax benefits.

American Airlines filed for bankruptcy in November 2011, allowing for cost restructuring in addition to net operating loss carryforwards. The majority of cost savings came from labor costs through renegotiating labor contracts. Approximately 82% of AAL's workforce has union representation. Labor costs decreased from an industry high of 33.2% of sales in 2011 to 21.5% in 2013; accounting for approximately $1.5B in savings, or $3.61 towards EPS (1500 * (1-0.372) / 261.07). The bankruptcy and US Airways merger was a boom for investors and executives, while the majority of cost came to the employees. An investor acquiring American Airlines immediately before bankruptcy announcement with a holding period through October 2016 would have realized a return of 103.1% and a geometric mean return of 8.3% (1:0.0665 of AMR to AAL shares within 120 days of December 6, 2013).

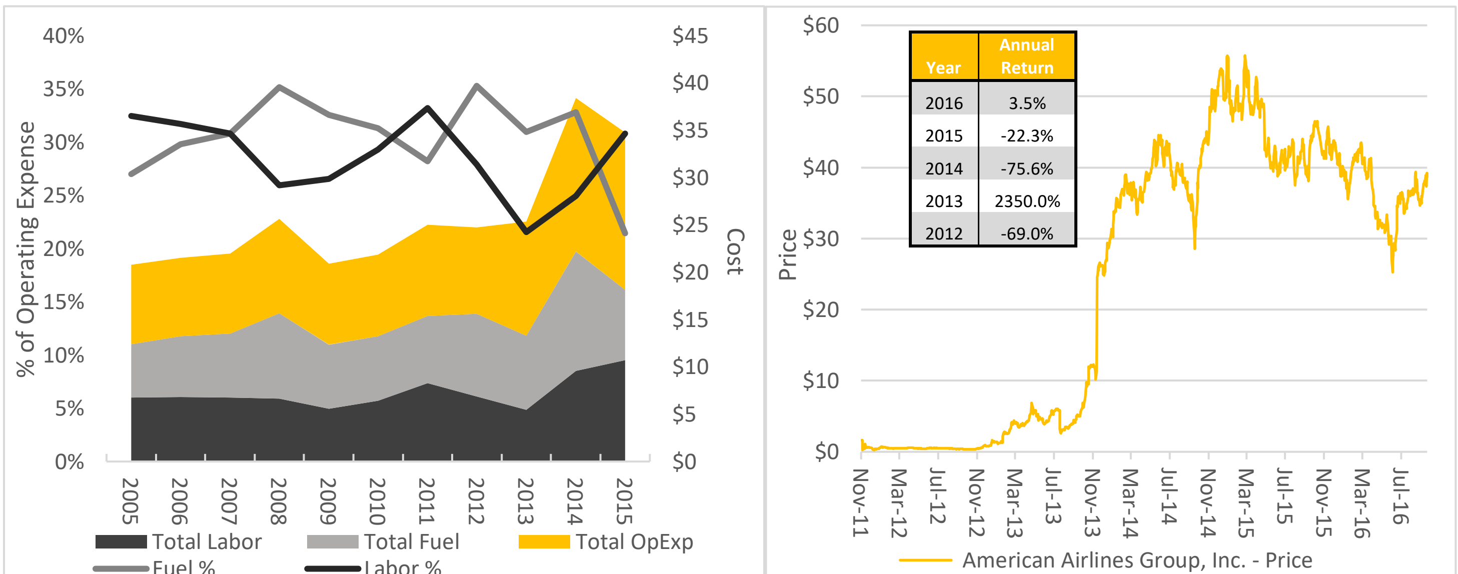
Figure 12: Industry Metrics, Feb 2009 – Dec 2016



Source: Factset

The industry has seen headwinds arise from increased capacity and reduced yields in 2016. In 2015 and 2016, capacity has increased by 4.3% and 4.0% respectively. Yield decreased from 20.2% in 2014 to 19.1% in 2015 and 16.7% in 2016. The decrease in fuel prices has alleviated the potential loss to AAL. In H1 2016, AAL's capacity as measured by ASM increased by 2.7% since H1 2015. In the same period, AAL's load factor decreased 0.6%, and CASM excluding fuel increased by 2.0%. 2016 Q2 was the second best Q2 in the company's history with after-tax income with $950M.

Figures 13 & 14: Operating Revenue Percentages (left) and Price of A.A. from Bankruptcy Declaration to Present



Year	Annual Return
2016	3.5%
2015	-22.3%
2014	-75.6%
2013	2350.0%
2012	-69.0%

Source: Factset/Company Reports, 10-K 2004-15/Google Finance

From 2000 to 2016, 14 mergers and 58 bankruptcies have occurred within the airline industry.

Competitor Analysis

A period of consolidation has occurred in the US Airline industry in the past 15 years. The three main major airlines in the U.S. are AAL, Delta Airlines, and United Airlines. AAL was the most recent major airline to declare bankruptcy (Chapter 11). Among regional U.S. airlines, the largest companies are Southwest Airlines, Spirit Airlines, Alaska Airlines, and JetBlue. Competitively, regional airlines typically have higher operating and profit margins compared to major airlines due to the scope of operations being much more localized so each company is better able to control costs. Low profit margins, high debt to equity, and government regulations keep barrier to entry high for new carriers. Airlines face major headwinds during economic downturns, and an indicator of financial strength during these times is cash burn rate. AAL leads its competitors with approximately $7.5B in cash and short-term investments, or approximately 19% of sales.

Margin Increase
2011 – 2016

Gross: 13.76 – 34.10

EBITDA: 4.76 – 21.71

Source: Factset

All U.S. carriers have pivoted their strategy from an all-inclusive travel experience towards al a carte service. From in-flight meals to carry-on baggage, carriers are attempting to increase revenue streams by charging passengers as needed. The strategy allows the carrier to quote low cost flights in order to cater to price sensitive customers and increase load factor, advertising a sort of price flexibility to passengers. Now that the integration of US Airways is mostly complete, AAL management has expressed a desire to create a differentiated “economy – basic” and “economy – premium” seating for coach classes in order to compete with other airlines within the next 12 months. In 2016, AAL spent $1B in integration expenses with expectations to be fully integrated by 2019. These expenses decreased EPS by $1.13 (1B x (1-0.372) / 553.540).

Figure 15: Competitor Statistics 2015

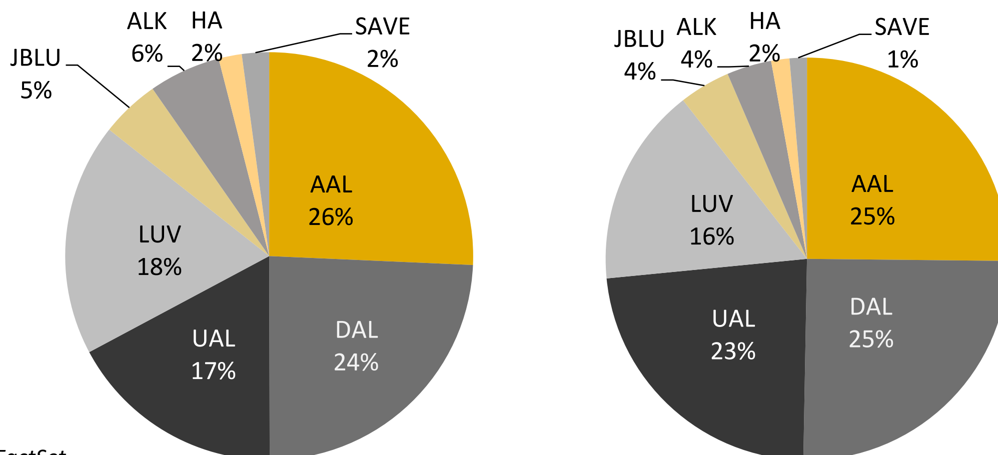
Airline	Op Margin	P/Sales	CF/Share	Current	CFO/CL	On-Time	Cancellations
AAL	17.79%	0.71	9.09	0.73	45.93	79.06%	1.48%
DAL	20.69%	1.01	9.85	0.52	45.19	85.65%	0.49%
UAL	15.82%	0.57	15.89	0.63	48.27	79.43%	1.25%
LUV	22.87%	1.45	4.84	0.54	43.72	79.75%	1.34%
SAVE	24.19%	1.35	6.53	2.2	101.45	69.69%	1.90%

Source: Factset/USDOT

Aside from building brand loyalty, frequent flier programs bring in additional revenue streams.

Airlines have developed relationships with credit card companies to create frequent flyer mile programs in order to build brand loyalty. AAL was the first carrier to offer these benefits to passengers and currently partners with Barclaycard US, Citibank, and MasterCard. In addition to frequent flyer miles, major airlines build customer loyalty through airport lounges for exclusive passengers or exclusive credit card holders. These benefits are able to sway customer purchasing behaviors, increasing potential margins. AAL changed its AAdvantage program benefits from a miles traveled method to a per dollar spent method. This change is estimated to bring in additional pretax revenue $200M in 2H 2016, $550M in 2017, and $800M in 2018. Due to the change, EPS will increase $0.23 in 2016, $0.69 in 2017, and $1.13 in 2018.

Figures 16 & 17: Comparison of AAL Comps by Enterprise Value (left) and Revenue (right



Source: FactSet

Macroeconomic Trends

The airline industry is cyclical in nature and positively correlated with consumer confidence and the ISM. The airline industry is negatively correlated with the unemployment rate. Generational lifestyle habits will increasingly shape the airline industry into the future. As AAL has only been trading since December 2013, the composite used in computing correlations contains DAL, UAL, AAL, LUV, ALK, JBLU, SAVE, and HA in order to encompass approximately 90% of the airline industry.

Millennials prioritize international travel with limited discretionary income compared to previous generations.

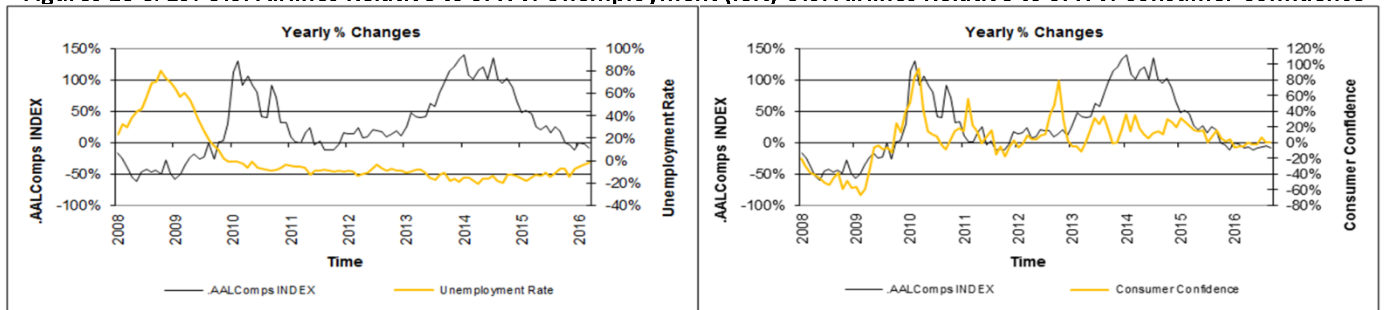
Millennial travel behaviors and technological savvyness will continue to change the business landscape in the coming decades. Millennials (18-35) outnumber the Babyboomers as the largest generation in the U.S. As Millenials continue to enter the workforce, their discretionary spending will increase in proportion to their purchasing power. While being four times less likely than non-Millennials to be loyal to an airline brand, the Boston Consulting Group estimates Millennials to encompass 54% of business travel by 2025. As of 2013, Millennials accounted for 35% of business travel. Approximately 75% of Millennials aged 18-24 report wanting to travel abroad for leisure and report spending a larger proportion of discretionary income on travel compared to other generations.

The airlines industry has a beta of 1.12 and 0.218 R^2 to Y/Y% changes in consumer confidence. In relation to the S&P 500, the airlines industry's relative performance has a correlation of 0.645 and 0.417 R^2 to changes in consumer confidence. If consumers believe the economy is doing well and feel secure in their ability to pay all of their necessary expenses, they allocate more discretionary income to vacations.

The airlines industry has a beta of -1.08, correlation of -0.534, and 0.286 R^2 to the changes in U.S. unemployment rate. In relation to the S&P 500, the airlines industry's relative performance has a correlation of -0.401 and 0.161 R^2 to the U.S. unemployment rate. A large portion of airline industry revenue comes from business travelers. Absolute levels of business travel increase when employment levels increase. Additionally, as more individuals are employed, they are able to travel for leisure. Finally, during times of duress, as businesses are reducing employees they are also reducing travel budgets.

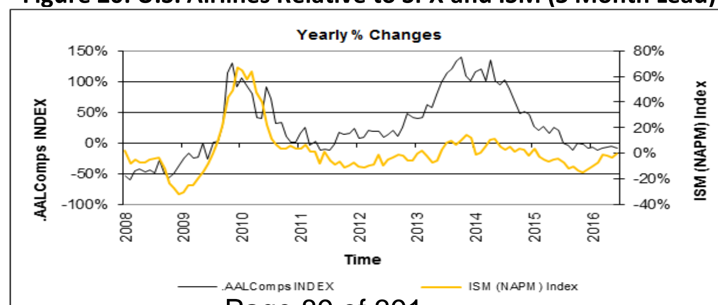
With 3 months of lead time, the airlines industry has a beta of 1.64 and 0.342 R^2 to Y/Y% changes in the ISM (NAPM). In relation to the S&P 500, the airlines industry's relative performance has a correlation of 0.494 and 0.245 R^2 to ISM (NAPM). When manufacturing increases, businesses have higher income and are able to afford the expedited and relatively expensive transportation of cargo and personnel via air carriers.

Figures 18 & 19: U.S. Airlines Relative to SPX v. Unemployment (left) U.S. Airlines Relative to SPX v. Consumer Confidence



Source: Bloomberg

Figure 20: U.S. Airlines Relative to SPX and ISM (3 Month Lead)

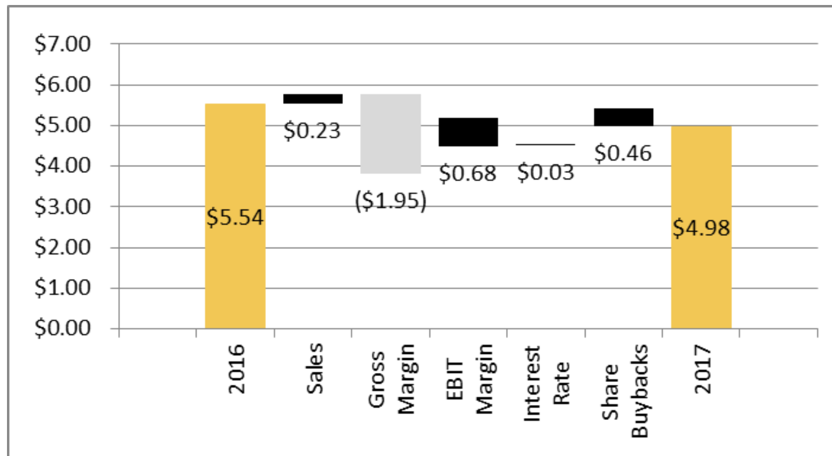


Financial Analysis

I anticipate EPS to decrease from $5.54 in FY2016 to $4.98 in FY 2017. Declining gross margins should decrease earnings by $1.95, offset by a $0.23 per share increase due to sales growth, $0.68 per share increase due to EBIT margin, and $0.49 per share increase due to debt interest rate reductions and share buyback programs. The forecasted restructuring of debt and drop in interest rates from 4% interest rate to 3.5% increases EPS by $0.03. Finally, I forecasted an additional $1.5B in share repurchases compared to AAL management's current agreement of $1.1B. This cash utilization assumption is in line with current cash and cash equivalent levels and above the $6.5B minimum level set forth by management. The increase in share buybacks increases EPS by $0.46.

EPS is expected to decline in 2017 and rise in 2018.

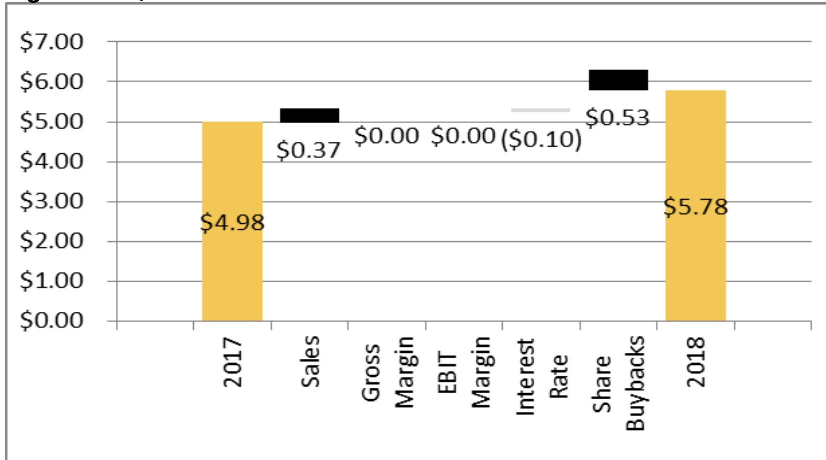
Figure 21: Quantification of 2017 EPS drivers



Source: Company Reports, IMCP

I expect 2018 EPS to increase $4.98 to $5.78. American Airlines will lose $0.10 of earnings from increased interest payments through raising debt, but gain $0.37 and $0.53 from increased sales in and from share buybacks. I anticipate unchanged gross margin and net profit margin. Managements' current share repurchase agreement goes through 2017. I expect the increased cash flow from operations to be applied to share repurchase programs as management has expressed preference to share repurchases over increasing dividend payments.

Figure 22: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

I am slightly more optimistic than consensus estimates for 2017 due to aggressive share repurchase programs. However, I anticipate stronger growth in 2018 driven primarily by AAL's major capital expenditures occurring in 2017, freeing up additional cash flow to be directed towards shareholders.

Figure 23: EPS and YoY growth estimates

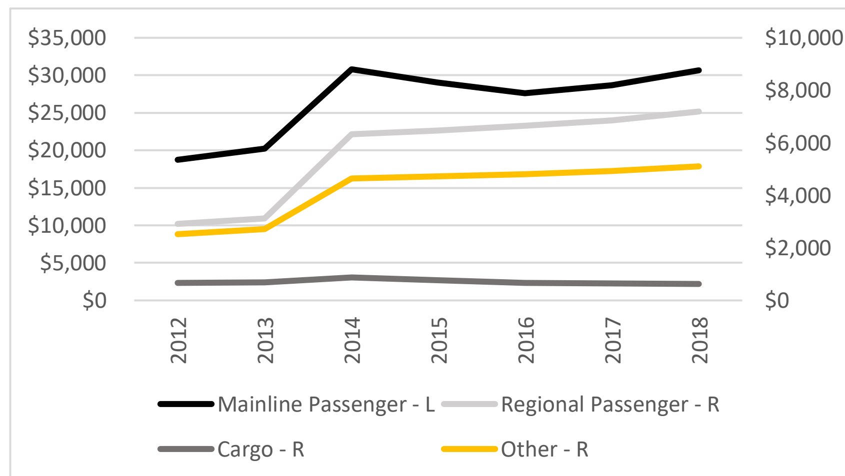
	2017E	2018E
Revenue - Estimate	$40,302	$42,760
YoY Growth	3.5%	6.1%
Revenue - Consensus	$41,448	$42,978
YoY Growth	3.3%	3.7%
EPS - Estimate	$4.98	$5.78
YoY Growth	-10.1%	16.1%
EPS - Consensus	$4.69	$5.37
YoY Growth	-17.7%	14.5%

Source: Factset, IMCP

Revenues

American Airlines revenues peaked in 2014 after merging with US Airways. Upon entering integration efforts, AAL mainline sales decreased in 2015 and 2016 while regional revenues have increased over the same time period. I expect mainline passenger revenues to increase in 2017 due to the completion of major merger activities increasing operational efficiencies and the introduction of low cost economy class ticket prices.

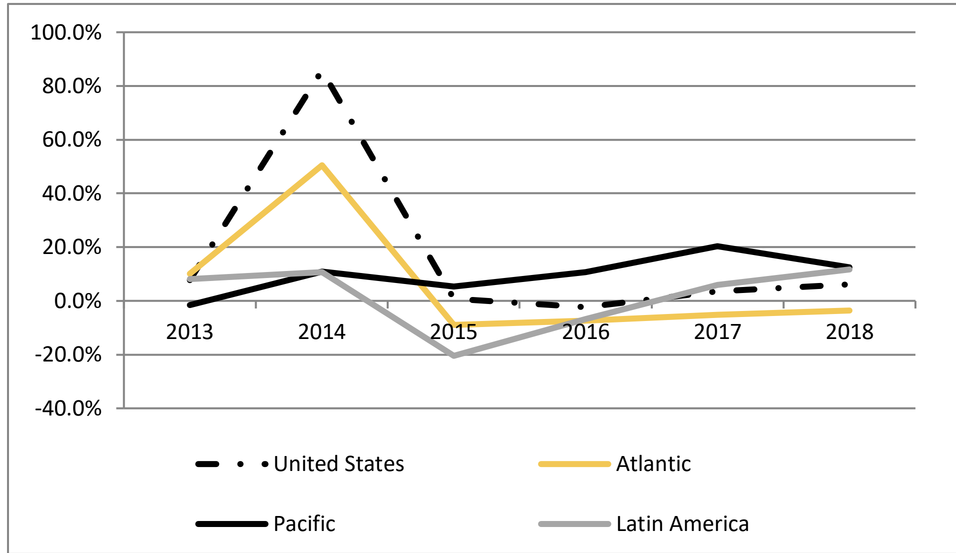
Figure 24: American Airlines segment revenues, 2012 – 2018E



Source: Company Reports, IMCP

International traffic will between Latin America may be bolstered by the anticipated strengthening of Latin American economies, American Airlines being the sole major U.S. airline with flights to Cuba, and an increase in travel to Pacific nations. Given strong anti-immigration and closed borders rhetoric during the 2016 elections, international travel to the U.S. from foreign nationals may decline if limitations are enacted. Any sanctions would primarily affect Atlantic and Latin American routes. High profile terror attacks in European countries throughout 2016 could also lower Atlantic travel.

Figure 25: American Airlines geographic revenue growth, 2013 – 2018E

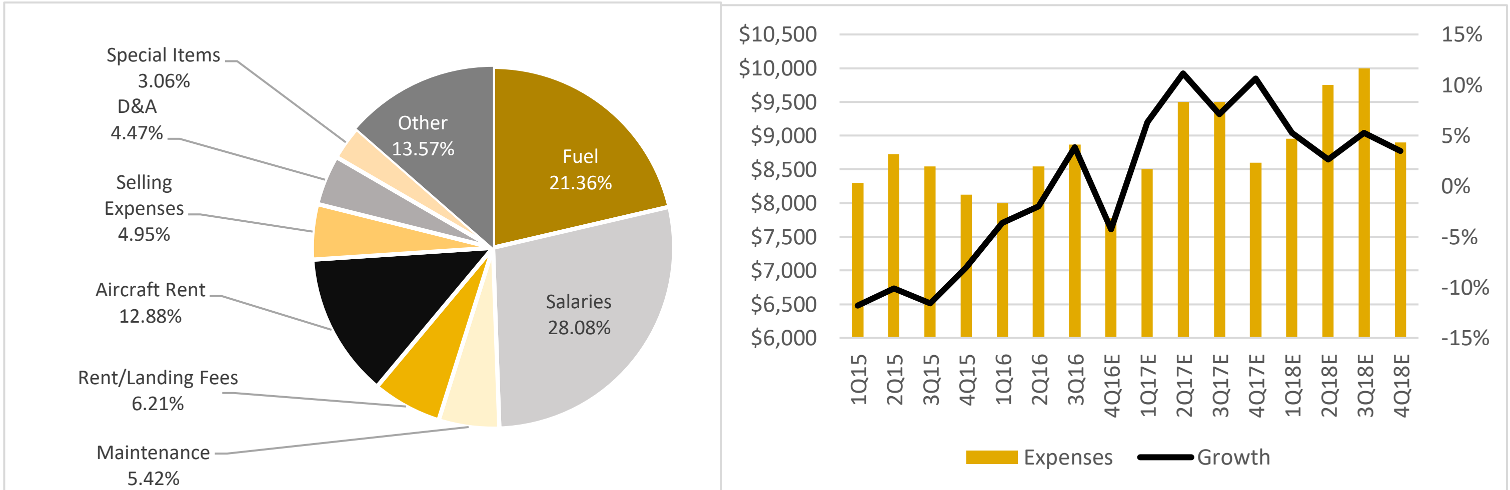


Source: Company Reports, IMCP

Operating Income and Margins

Operating expenses are composed primarily of labor expense and fuel expense. Other operating expenses include ground and cargo handling, crew travel, aircraft food and catering, passenger accommodation, airport security, and assorted fees. Aircraft rent contains capacity purchases from third-party regional carriers. I expect most of the savings from AAL's profit maximizing initiatives to come out of the aircraft rent, selling, and maintenance expenses. As fuel is dictated by market value and management does not participate in hedging activities, this expense will vary along with oil prices. Labor agreements have been reached with all unionized employees employed by AAL with increased expenses expected for 2016 and 2017.

Figures 26 & 27: Composition of 2015 operating expenses (left) and operating expenses vs YoY operating expense growth



Source: Company Reports

Fuel costs have increased in 2016 and are expected to increase in 2017 and 2018. Historically, fuel costs have been approximately 30% of expenses. The decreasing age of AAL's fleet will mitigate the increase in fuel costs due to increased fuel efficiency, increased revenue potential with new seating arrangements, reduced maintenance requirements, and decreased need to rent capacity from third party airlines.

Figure 28: AAL operating margins, 2014 – 2018E

	2014	2015	2016E	2017E	2018E
Sales	$42,650	$40,990	$38,941	$40,302	$42,760
Direct Costs	$37,106	$33,422	$31,437	$32,753	$34,842
Fuel	$12,601	$7,856	$6,070	$7,083	$8,076
Growth		*-37.7%*	*-22.7%*	*16.7%*	*14.0%*
Labor	$9,648	$10,711	$11,782	$12,268	$13,023
Growth		*11.02%*	*10.00%*	*4.12%*	*6.15%*
Gross Income	$5,544	$7,568	$7,504	$7,549	$7,918
Gross Margin	*13.00%*	*18.46%*	*19.27%*	*18.73%*	*18.52%*
Operating Expenses	$1,476	$2,111	$1,748	$2,713	$2,787
Operating Income	$4,068	$5,457	$5,756	$4,836	$5,131
Operating Margin	*9.54%*	*13.31%*	*14.78%*	*12.00%*	*12.00%*

Source: Company Reports

Return on Equity

American Airlines has had an unusual change in ROE during 2014 due to an almost $8B negative equity balance from the merger with US Airways and resulting stock distributions. In 2015, nearly $3B in tax credits from the net operating losses over the past few years resulted in abnormally high ROE for 2015. AAL retains the opportunity to utilize approximately $12B in tax credits which may result in similarly high ROE in future years. Without accounting for tax credits, I expect ROE to normalize in 2016 and be primarily driven by AAL's leverage ratio.

Figure 29: ROE breakdown, 2013 – 2018E

5-Stage DuPont	2013	2014	2015	2016E	2017E	2018E
Tax Burden Ratio	-386.1%	89.7%	164.9%	62.8%	62.8%	62.8%
Interest Burden Ratio	36.2%	79.0%	84.6%	84.7%	82.4%	81.9%
Operating Profit Ratio	4.9%	9.5%	13.3%	14.8%	12.0%	12.0%
Asset Turnover Ratio	81.3%	99.8%	89.5%	77.9%	76.6%	77.4%
Financial Leverage Ratio	-6.138	-14.332	11.970	9.974	12.411	13.577
ROA	*-5.58%*	*6.74%*	*16.61%*	*6.13%*	*4.76%*	*4.78%*
ROE	34.2%	-96.6%	198.8%	61.1%	59.0%	64.9%

Source: Company Reports

I expect ROE to remain stable, but ROA will decrease in 2016 as net income rises less than assets due to capital expenditures related to new aircraft. This decrease will be met with increased borrowing at low rates secured with the airplanes as collateral. ROE is stable in 2017 as the increase in the leverage ratio offsets the impact of ROA decreasing from 6.13% to 4.76%. AAL has a comfortable debt to asset ratio for an airline, with a massive amount of cash reserves to ensure liquidity during times of economic duress. Due to this liquidity, I expect AAL to increase cash reserves as a percentage of additional debt taken on. The sales revenue weighted-average cash and short-term investments to current liability ratio of the top four U.S. airlines is 0.39 while AAL's ratio is 0.51. Finally, I conservatively anticipated a decrease in AAL's operating profit ratio due to the potential increase in fuel costs and labor negotiations.

Free Cash Flow

Figure 30: Free cash flows 2010 – 2016E

Free Cash Flow	2010	2011	2012	2013	2014	2015E	2016E
NOPAT	$152,493	$145,489	$241,718	$60,254	$59,329	$66,975	$93,293
Growth		*-4.6%*	*66.1%*	*-75.1%*	*-1.5%*	*12.9%*	*39.3%*
NWC*	48,064	115,277	(26,482)	167,228	160,410	135,138	127,279
Net fixed assets	1,414,100	1,544,520	1,679,577	1,530,431	1,340,195	1,383,756	1,219,143
Total net operating capital*	$1,462,164	$1,659,797	$1,653,095	$1,697,659	$1,500,605	$1,518,893	$1,346,422
Growth		*13.5%*	*-0.4%*	*2.7%*	*-11.6%*	*1.2%*	*-11.4%*
- Change in NWC*		67,213	(141,759)	193,710	(6,818)	(25,272)	(7,859)
- Change in NFA		130,420	135,057	(149,146)	(190,236)	43,561	(164,613)
FCFF*		($52,144)	$248,420	$15,690	$256,383	$48,687	$265,765
Growth			*-576.4%*	*-93.7%*	*1534.1%*	*-81.0%*	*445.9%*
- After-tax interest expense	2,210	2,351	4,707	5,626	7,508	14,182	16,461
FCFE**		($54,495)	$243,713	$10,064	$248,875	$34,505	$249,304
Growth			*-547.2%*	*-95.9%*	*2372.9%*	*-86.1%*	*622.5%*
FCFF per share*		($0.60)	$3.03	$0.20	$3.57	$0.75	$4.33
Growth			*-604.9%*	*-93.3%*	*1656.4%*	*-79.0%*	*477.9%*
FCFE per share**		($0.63)	($2.97)	$0.13	$3.47	$0.53	$4.06
Growth			*371.4%*	*-104.4%*	*2569.2%*	*-84.7%*	*666.0%*

Source: Company Reports, IMCP

AAL's free cash flow has been volatile over the last several years due to the firm's reorganization post-merger with US Airways. The firm has raised its debt by an estimated $6.5B, or 38.95%, since 2013 while cutting other liabilities in half from $20.8B to $10.6B. At the same time, AAL began a fleet renewal program ordering up to 500 airplanes through 2021. As of 3Q 2016, AAL's fleet contains 922 aircraft. The firm has utilized over $9B to repurchase approximately 200M shares. In the second half of 2014, AAL began to pay a quarterly dividend of $0.10 per share. I forecast that NOPAT will grow at a much slower pace than net operating capital over the next two years, and AAL's cash and cash equivalent accounts of $6.75B give it the ability to meet any funding shortfalls that may arise. With the firm's aggressive share repurchase program, I fully expect management to continue to utilize excess cash in a similar manner for the next two years.

I expect FCFF (ex-cash) to decline 25.5% in 2017 as the result of a 3.0% increase in net fixed assets and a further decrease by 27.2% in 2018 due to a 5.6% increase in net fixed assets. Taking cash and debt into consideration, I forecast FCFE to increase 6.1% in 2018 due to the majority of the fleet purchase program occurring by 2017.

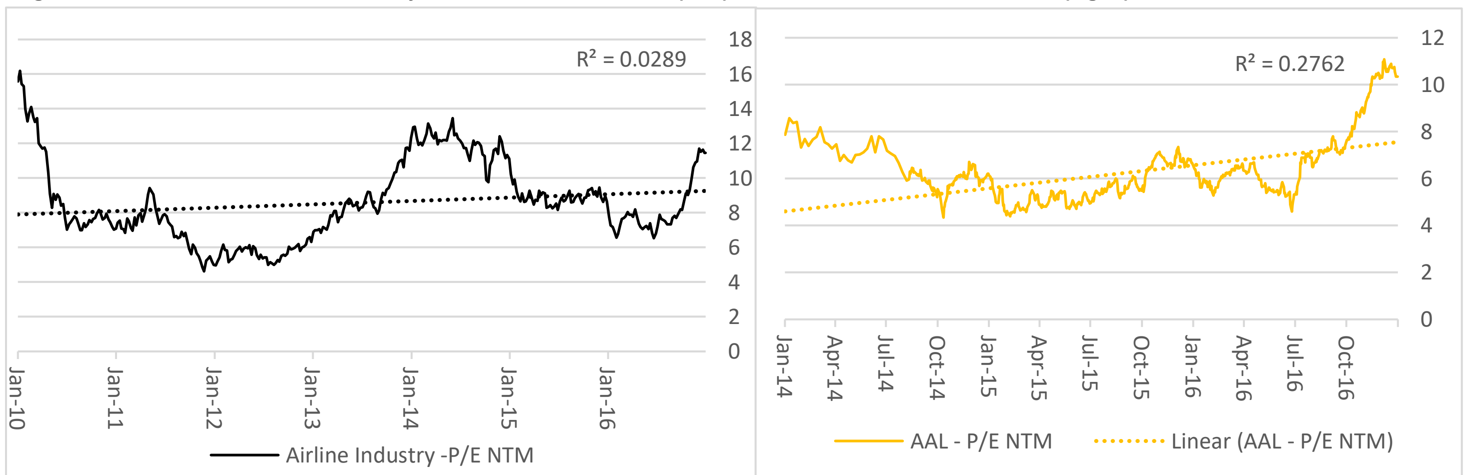
Valuation

AAL was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is slightly under-valued relative to other firms and is worth $48; however, due to the volatility of AAL's earnings the past few years, as well as the effect of recent nonrecurring expenses and revenues, this metric may be unreliable. Relative valuation shows AAL to be fairly-valued based on its fundamentals versus those of its peers in the airline industry. A detailed DCF analysis values AAL slightly higher, at an average of $51; I give this value a bit more weight because it incorporates assumptions that reflect AAL's ongoing changes integral to operations. As a result of these valuations, I value the stock at $50.

Trading History

The U.S. airline industry is currently trading above its seven year linear NTM P/E of 9.5 at 11.45. This is the result of recent stock price appreciation last seen in Q1 and Q4 2015 while earnings have decreased from the same time periods. Most analysts believe the airline industry to fare well in the next two years with low fuel prices and stable economic indicators. AAL's current NTM P/E is at 10.35 compared to the linear NTM P/E of 7.5. I anticipate some reversion to the industry mean of 9.5. The market's optimism is reflected in the higher P/E ad indicates expectations that earnings will rebound. The upward trend in P/E reflects the market's view that the industry has improved in addition to generally higher multiples for the overall market.

Figures 31 & 32: U.S. Airline Industry NTM P/E, 2010 – 2017 (left) & AAL NTM P/E, 2014 – 2017 (right)



Source: Factset

Assuming the firm maintains a 9.5 NTM P/E at the end of 2017, it should trade at $54.91 by the end of 2017.

- Price = P/E x EPS = 9.5 x $5.78 = $54.91

Discounting $54.91 back to today at a 14.25% cost of equity (explained in Discounted Cash Flow section) yields a price of $48.06.

Relative Valuation

American Airlines is currently trading at a P/E much lower than its peers, with a P/E TTM of 5.0 compared to an average of 10.7. Investors are unwilling to pay a premium for AAL because it is the latest airline to go through bankruptcy and still must fully complete all merger activities. EPS were inflated by 60.6% in 2015 due to the net operating loss tax credits. Additionally, AAL's P/S ratios are significantly lower than those of its peers – roughly half the average for the group. However, AAL's P/B is 78% above the industry average. This is a reflection of AAL's relatively high Debt to Equity ratio (and high ROE as a result) and moderately high net margin compared to its competitors.

Figure 34: AAL 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
AAL	AMERICAN AIRLINES GROUP INC	$46.30	$24,191	(0.8)	0.4	22.8	57.9	9.3	(0.8)	-9.4	-51.7%	183.3%	-51.4%	-9.2%	18.1%		0.97	490.7%		0.86%	4.3%
DAL	DELTA AIR LINES INC	$49.48	$36,839	0.6	2.4	23.8	34.6	(2.4)	0.6	8.8	-20.6%	86.9%	5.4%	-22.4%	7.0%	51.7%	0.91	51.7%		1.37%	9.8%
UAL	UNITED CONTINENTAL HLDGS INC	$72.71	$23,124	(0.2)	5.0	36.5	75.8	26.9	(0.2)	-7.5	-17.1%	363.8%	-54.7%	-31.4%	16.2%	66.2%	0.63	122.8%	B-	0.00%	0.0%
SAVE	SPIRIT AIRLINES INC	$57.09	$4,011	(1.3)	1.5	30.5	23.9	43.3	(1.3)	6.8	-8.3%	40.3%	0.9%	-9.6%	13.1%	10.0%	0.22	66.6%		0.00%	
LUV	SOUTHWEST AIRLINES	$49.98	$30,681	0.3	4.3	25.8	26.2	16.1	0.3	8.1	-1.8%	86.8%	27.9%	-33.2%	24.5%	39.9%	0.99	28.9%	B+	0.75%	10.0%
SKYW	SKYWEST INC	$36.55	$1,886	0.3	0.0	31.9	34.6	92.2	0.3		2.5%	230.9%	33.0%	24.4%	15.9%	6.0%	1.81	118.5%	B-	0.52%	6.3%
JBLU	JETBLUE AIRWAYS CORP	$22.39	$7,258	(0.1)	7.0	26.8	34.6	(1.1)	(0.1)	2.6	-13.4%	61.5%	15.2%	-13.7%	5.6%	45.8%	0.59	44.5%	B	0.00%	
ALK	ALASKA AIR GROUP INC	$88.00	$10,938	(0.8)	3.7	31.2	49.8	9.3	(0.8)	-0.7	-4.1%	51.5%	11.1%	-7.7%	15.8%	31.0%	0.62	65.0%	B+	1.24%	14.3%
Average			$17,366	(0.3)	3.0	28.7	42.2	24.2	(0.3)	1.2	-14.3%	138.1%	-1.6%	-12.8%	14.5%	35.8%	0.84	123.6%		0.59%	7.5%
Median			$17,031	(0.2)	3.1	28.7	34.6	12.7	(0.2)	2.6	-10.8%	86.9%	8.3%	-11.6%	15.9%	39.9%	0.77	65.8%		0.64%	8.1%
SPX	S&P 500 INDEX	$2,258		0.8	3.0	4.5	7.4	10.5	0.8			1.0%	0.7%	11.7%	11.7%						

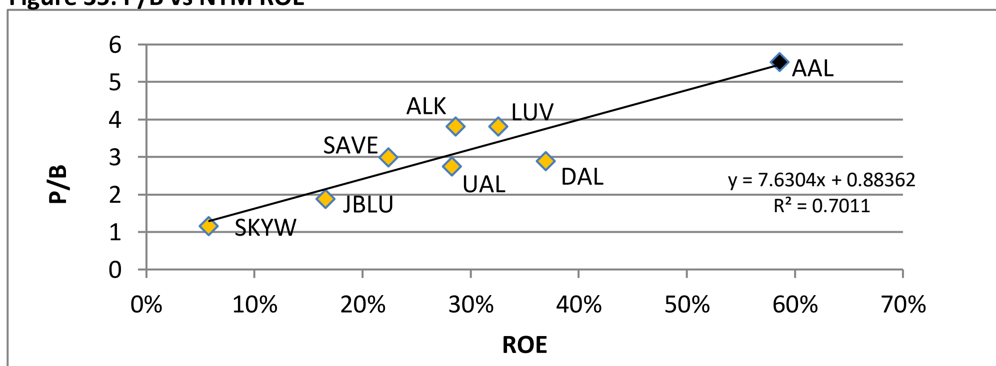
		2016		P/E							2016	2016			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2014	2015	2016	TTM	NTM	2017	2017E	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
AAL	http://www.aa.com	61.1%	5.47		11.5	4.1	5.0	10.3	9.2	7.8	14.9%	0.60	16.2%	35.6%	5.9	6.2	4.6	1.5%	2.5%	13.1%	$8.46
DAL	http://www.delta.com	37.0%	2.91		14.7	7.9	8.0	10.1	9.6	9.0	11.8%	0.93	20.0%	25.9%	5.2	5.6	5.9	1.0%	0.9%	5.0%	$16.99
UAL	http://www.unitedcontinentalholdir	28.3%	2.74		16.7	3.6	9.2	11.1	11.6	10.0	17.6%	0.63	15.2%	45.2%	4.7	14.1	5.2	0.7%	1.7%	10.3%	$26.55
SAVE	http://www.spirit.com	22.4%	2.94		18.4	13.1	13.9	15.2	14.4	12.7	13.5%	1.77	22.6%	21.4%	5.3			17.1%		22.3%	$19.40
LUV	http://www.southwest.com	32.6%	3.82		21.9	11.7	14.2	14.5	13.7	11.0	12.9%	1.51	23.2%	22.9%	6.4	8.8	8.5	2.6%	2.0%	10.4%	$13.07
SKYW	http://www.skywest.com	5.8%	1.16		66.5	20.1	12.8	12.5	12.1	10.5	3.0%	0.61	9.1%	3.9%	10.4	4.1	2.4	0.2%		2.3%	$31.39
JBLU	http://www.jetblue.com	16.6%	1.88		18.4	11.4	9.9	11.5	11.4	10.8	9.7%	1.10	20.4%	13.5%	7.0	4.9	5.5	6.8%	7.3%	11.2%	$11.88
ALK	http://www.alaskaair.com	28.6%	3.79		20.0	13.2	12.3	12.8	12.9	11.1	14.3%	1.89	24.8%	29.3%	7.2	7.9	6.6	12.7%	22.6%	7.9%	$23.23
Average		29.0%	3.09		23.5	10.6	10.7	12.2	11.9	10.4	12.2%	1.13	18.9%	24.7%	6.5	7.4	5.5	5.3%	6.2%	10.3%	
Median		28.5%	2.93		18.4	11.5	11.1	12.0	11.9	10.6	13.2%	1.02	20.2%	24.4%	6.1	6.2	5.5	2.0%	2.2%	10.3%	
SPX	S&P 500 INDEX			19.3	19.1	19.0			17.0	15.2											

Source: Factset

A more thorough analysis of P/B and ROE is shown in figure 35. The calculated R-squared of the regression indicates that over 70% of a sampled firm's P/B is explained by its NTM ROE. AAL has the highest P/B and ROE of this grouping, and according to this measure is fairly valued. Given the tailwinds that the airline industry has seen in Q4 2016, I believe that P/B and ROE will remain high for AAL in the coming months relative to the industry with a reversion to industry mean of 3.5 by 2023.

- Estimated P/B = Estimated 2016 ROE (61.1%) x 7.630 + 0.883 = 5.55
- Target Price = (Estimated P/B (5.55) / Current P/B (5.47)) x Current Price (46.30) = $46.97

Figure 35: P/B vs NTM ROE



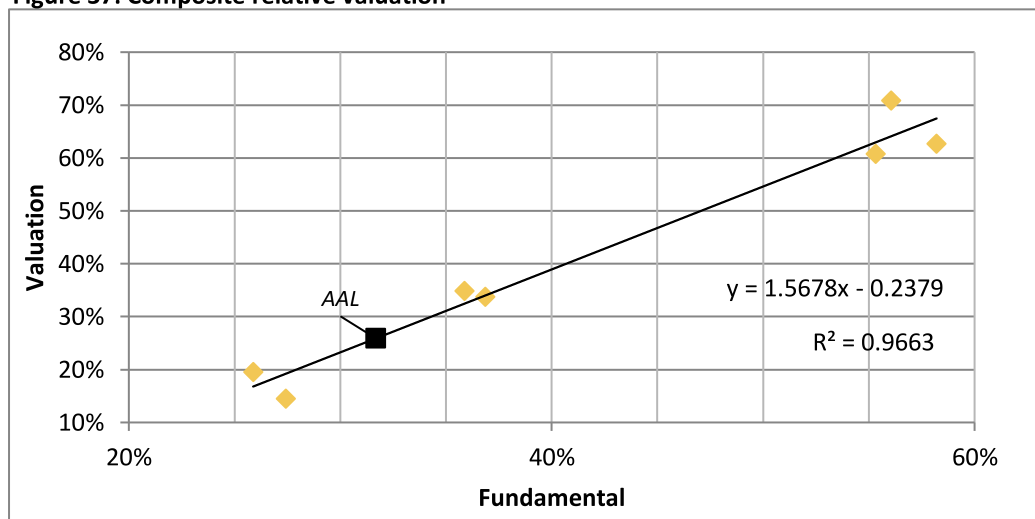
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. I applied the greatest fundamental weighting to equity/long term debt and NTM sales growth as airlines are highly levered and cyclical. I applied a larger weight to expected earnings growth in 2017 and 2018 to capture the market's perception of short-term earnings. One can see that AAL is on the line, so it is fairly valued based on its fundamentals with an R-squared of 0.966.

Figure 36: Composite valuation, % of range

		Fundamental Percent of Range					Valuation Percent of Range				
		20.0%	20.0%	25.0%	10.0%	25.0%	10.0%	10.0%	20.0%	35.0%	25.0%
		Earnings Growth		1/(LTD/	NPM	Sales Growth	P/E				EV/
Ticker	Name	2017	2018	Equity)	2016	NTM	NTM	2017	P/B	P/S	EBIT
AAL	AMERICAN AIRLINES GROUP INC	42%	66%	0%	81%	8%	7%	0%	100%	0%	21%
DAL	DELTA AIR LINES INC	19%	7%	53%	61%	5%	0%	5%	40%	25%	9%
UAL	UNITED CONTINENTAL HLDGS INC	3%	56%	19%	100%	3%	20%	44%	36%	2%	0%
SAVE	SPIRIT AIRLINES INC	41%	40%	40%	71%	100%	100%	100%	42%	91%	10%
LUV	SOUTHWEST AIRLINES	0%	100%	100%	68%	14%	83%	83%	61%	70%	30%
SKYW	SKYWEST INC	100%	55%	20%	0%	0%	45%	53%	0%	0%	100%
JBLU	JETBLUE AIRWAYS CORP	34%	0%	63%	46%	39%	27%	41%	17%	39%	40%
ALK	ALASKA AIR GROUP INC	44%	54%	41%	77%	74%	54%	70%	61%	100%	45%

Source: IMCP

Figure 37: Composite relative valuation



Source: IMCP

<u>Discounted Cash Flow Analysis</u>

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

For the purpose of this analysis, the company's cost of equity was calculated to be 14.25% 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 2.27%.
- A beta of 1.55 was utilized since the company has higher risk than the market.
  - Beta of 1.55 = weighted-average of largest four U.S. Airlines' 52 week betas relative to firm market capitalization as reported by Factset.
- 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 14.25% = (2.27 + 1.55 (10.0 – 2.27)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $3.05 and $2.01, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $4.21 per share. Thus, stage one of this discounted cash flow analysis contributes $4.21 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 14.25% cost of equity. I assume 3.0% sales growth 2023. The ratio of NWC to sales and NFA turnover to sales will remain at 2018 levels. Also, the NOPAT margin is expected remain the same at 7.5%. Finally, AAL management is expected to repurchase shares at 8% per year through 2020 and at 7% through 2023 down closer to a pre-merger level of 310,900,000.

Figure 38: FCFE and discounted FCFE, 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
FCFE	$3.05	$2.01	$4.07	$4.56	$5.05	$5.59	$6.19
Disc. FCFE	$2.67	$1.54	$2.73	$2.67	$2.59	$2.51	$2.44

Added together, these discounted cash flows total $17.15 (Stage 2 equals $12.94).

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $4.98 in 2017 to $9.84 in 2023.

Figure 39: EPS estimates for 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$4.98	$5.78	$6.47	$7.24	$8.02	$8.89	$9.84

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 the company's merger synergies materialize, its P/E ratio will converge near to the historical average the airline industry. Therefore, a P/E ratio of 9.5 is assumed at the end of AAL's terminal year. While this is high considering AAL had a P/E of less than 3 in July 2016, the major airlines in the U.S. have a historical average P/E of approximately 9.5 and 2023 reflects normalized EPS. As of December 2016, AAL traded at a high NTM P/E of 11.

Given the assumed terminal earnings per share of $9.84 and a price to earnings ratio of 9.5, a terminal value of $93.48 per share is calculated. Using the 14.25% cost of equity, this number is discounted back to a present value of $36.79.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $53.94 is calculated (4.21 + 12.94 + 36.79). Given AAL's current price of $46.69, this model indicates that the stock is undervalued.

Scenario Analysis

American Airlines' volatility in relation to economic cycles makes predictions difficult at best. As AAL has completed the majority of the legwork to fully integrate US Airways' assets into one comprehensive fleet, the market has been inefficient in pricing in future earnings and cost saving measures. I evaluated different scenarios for AAL based on major factors as they affect AAL's sales growth, gross margins, EBIT margin, operating efficiency, and P/E. The target price for a bull scenario is $60 driven primarily by 4% sales growth with a 1% decrease in net profit margin. The target price for a bear scenario is $35 with 3% sales reduction and 5% decrease in operating and profit margins.

Sales Growth – Strong growth assumes that AAL's premium economy beginning in January 2017 is able to secure market share from low-cost carriers while maintaining current customer base at current sales levels. This will reverse the negative revenue trend of 2015 and 2016. Additionally, strong sales growth assumes a strong world economy, primarily in the U.S., as well as currency appreciation in Latin American countries. Modest growth does not rely on strengthening foreign currencies, but would require a stable world economy as travel decreases during times of economic duress. Weak or declining sales growth results from stagnant or decreasing travel demand by businesses during periods of economic weaknesses. Increased use of price comparison websites would reduce sales revenues to AAL.

Gross Margin – Increases in fuel cost due to a decrease in supply of oil production would decrease gross margins. As OPEC recently announced a reduction in fuel production, fuel prices are expected to increase. This cost increase may be offset by increased production of non-OPEC countries exporting oil into the market when prices increase. If AAL management expects oil prices to increase rapidly, they may start to enter hedge contracts. All of AAL's employees are currently in labor agreements at the end of 2016. AAL's labor costs will stabilize in 2017 followed by $1.5B in pension liabilities coming to term in 2018. With the agreements in place, I do not predict volatile labor costs to effect margins. As some recent agreements are tentative until ratified, the effects of the agreements are uncertain.

Operating Efficiency – In 3Q 2016, AAL completed transitioning to a single system to schedule pilots and airplanes for routes and service. This is expected to increase operational efficiency by reducing lag times in service bays and allow for superior customer service by reducing the chance of delays. In the event this does not come to fruition, costs will increase or remain the same. The full extent of cost saving measures attributable to the merger has not been seen on financial reports.

Price to Earnings – The four major U.S. airlines have a price weighted average NTM P/E of approximately 9.5. Additionally, a regression of the past seven years indicates a NTM P/E of 9.5 for these airlines as well. AAL, for the time of December 2013 to the present, has a regression NTM P/E of approximately 7.5 and is currently trading at a NTM P/E of around 10. The market may be pricing in the expected decrease in earnings for 2017 and eventual rebound in 2018. If P/E decreases to AAL's three year P/E of 8, the stock would be overpriced using the above model.

In 2016, AAL was profitable despite a 5% decrease in sales from 2015 as EBIT margin improved. AAL has greatly reduced gross margin to SG&A in 2016. If gross margins improve while SG&A as a percent of sales is flat, the stock should greatly increase in value regardless of the rate of sales growth. If AAL is not able maintain its SG&A/sales ratio, however, the stock is at best fairly valued without exceptionally strong sales growth. These margins may become threatened depending on the popularity of AAL's upcoming basic and premium economy class seats.

I recommend watching AAL's ability to maintain its SG&A/sales ratio through 2017 and 2018. Other significant impacts to EPS would include decreased share repurchases. The above model assumes a 12% EBIT margin. If EBIT margin falls below 10%, I would be cautious in purchasing AAL.

Business Risks

Economic Downturns:

Airline industry revenues are greatly influence by the U.S. economy as well as other economies American Airlines and its partners operate in. Leisure and business travel is influenced by the ability of prospective customers to afford air travel. In the search for low fares, customers may turn to ultra-low cost carriers or choose not to travel by airplane. During times of economic duress, AAL is currently engaged in contracts restricting its ability to optimize all travel routes by culling aircraft in operation to meet traveler demand.

Fuel Prices:

Jet fuel is a primary cost associated with AAL's daily operations. The price of fuel has been volatile over the past several years, and may continue to be into the near future. Due to the highly competitive market place, AAL may not be able to raise rates in order to compensate for the increased cost of fuel for months at a time. Multiple factors influence the price at which AAL 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. Currently, American Airlines does not enter into hedging contracts and is fully exposed to the fluctuation of jet fuel prices.

With only a handful of aircraft suppliers, AAL's fleet renewal and retirement plans may be impacted negatively by airplane manufacturers inability to deliver the aircraft. AAL's fleet does contain older, less fuel efficient airplanes which would be expected to continue operations in this event.

Labor issues:

High labor costs due to labor agreements has in the past, and may in the future, affect profitability. All labor union represented workers are under a current agreement. In the event an employee union and AAL being unable to reach an agreement in the future, AAL employees are unable to strike with union support unless multiple events occur first. Congress can step into the negotiations to ensure employee strikes do not occur and business can resume uninterrupted.

Political Reforms and Taxes:

The airline industry is heavily taxed and is a major target in efforts around the world to curtain greenhouse gas emissions. Along certain routes, air travel is restricted due to government noise regulations at certain times of the night. In addition to government imposed taxes, airports impose fees on airlines per ticket sold and other fees. These fees periodically increase. All taxes and fees are difficult for airlines to pass onto customers due to the competitive environment and regulations dictating what fees are required to be included in the price of ticket.

Competitive Environment:

The airline industry is highly competitive with low margins, especially with the advent of ultra-low cost carriers, such as Spirit. In lieu of this, major airlines are enacting separate "al a carte" style tickets with reduced benefits in order to compete at lower prices, further sacrificing margins. Additionally, online travel pricing websites decrease revenues received by airlines.

In the event airline prices increase while gasoline prices remain relatively low, potential customers may elect to drive to destinations or take road trips as opposed to flying to their destinations. Business customers are less likely to switch to this alternative due to the hourly cost of an employee driving long distances.

Appendix 1: Income Statement

Income Statements (in millions)							
Items	**2012**	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**
Sales revenue	24855	26743	42650	40990	38941	40302	42760
Direct costs	23862	24491	37106	33422	31437	32753	34842
Gross Profit	993	2252	5544	7568	7504	7549	7918
SG&A, R&D, and other	624	941	1476	2111	1748	2713	2787
Earnings before interest & tax	369	1311	4068	5457	5756	4836	5131
Interest expense	606	836	856	841	878	852	931
Earnings before tax	-237	475	3212	4616	4878	3984	4200
Taxes	-569	-346	330	-2994	1813	1481	1561
Net operating profit after tax	332	821	2882	7610	3065	2503	2639
Other	2208	2655	0	0	0	0	0
Net income	-1876	-1834	2882	7610	3065	2503	2639
Dividends			148	278	224	201	183
Basic Shares	249.5	280.2	717.5	668.4	553.5	497.9	444.5
Earnings per share	$ (7.52)	$ (6.55)	$ 4.02	$ 11.39	$ 5.54	$ 4.98	$ 5.78
Dividends per share			$ 0.20	$ 0.40	$ 0.40	$ 0.40	$ 0.40

Appendix 2: Balance Sheets

Balance Sheet (in millions)							
Items	**2012**	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**
ASSETS							
Cash	1330	2175	1768	1085	1066	1190	1327
Operating assets ex cash	2330	4037	3673	3036	3793	4030	4276
Total operating assets	3660	6212	5441	4121	4859	5221	5603
Operating liabilities	(7592)	(12660)	(11727)	(11374)	(13213)	(13675)	(14509)
NFA	16438	27955	31475	38430	40353	41549	43857
Invested capital	12506	21507	25189	31177	31999	33094	34951
Marketable securities	3412	8111	6309	5864	6374	6874	7374
Total assets	23510	42278	43225	48415	51586	53643	56834
LIABILITIES & STOCKHOLDERS' EQUITY							
Short-term and long-term debt	8535	16799	17720	20561	23343	25343	27843
Other liabilities	10114	20806	11757	10845	10639	10539	10439
Debt/equity-like securities	0	0	0	0	0	0	0
Equity	(2731)	(7987)	2021	5635	4391	4086	4043
Total supplied capital	15918	29618	31498	37041	38373	39968	42325
Operating liabilities	7592	12660	11727	11374	13213	13675	14509
Total liabilities and equity	23510	42278	43225	48415	51586	53643	56834
Growth Statistics							
Cash		*63.5%*	*-18.7%*	*-38.6%*	*-1.7%*	*11.6%*	*11.5%*
Operating assets ex cash		*73.3%*	*-9.0%*	*-17.3%*	*24.9%*	*6.2%*	*6.1%*
Operating assets		*69.7%*	*-12.4%*	*-24.3%*	*17.9%*	*7.4%*	*7.3%*
Operating liabilities		*66.8%*	*-7.4%*	*-3.0%*	*16.2%*	*3.5%*	*6.1%*
NOWC		*64.0%*	*-2.5%*	*15.4%*	*15.2%*	*1.2%*	*5.3%*
NOWC ex cash (NWC)		*63.9%*	*-6.6%*	*3.5%*	*13.0%*	*2.4%*	*6.1%*
NFA		*70.1%*	*12.6%*	*22.1%*	*5.0%*	*3.0%*	*5.6%*
Invested capital		*72.0%*	*17.1%*	*23.8%*	*2.6%*	*3.4%*	*5.6%*
Marketable securities		*137.7%*	*-22.2%*	*-7.1%*	*8.7%*	*7.8%*	*7.3%*
Total assets		*79.8%*	*2.2%*	*12.0%*	*6.6%*	*4.0%*	*5.9%*
Short-term and long-term debt		*96.8%*	*5.5%*	*16.0%*	*13.5%*	*8.6%*	*9.9%*
Other liabilities		*105.7%*	*-43.5%*	*-7.8%*	*-1.9%*	*-0.9%*	*-0.9%*
Debt/equity-like securities							
Equity		*192.5%*	*-125.3%*	*178.8%*	*-22.1%*	*-6.9%*	*-1.1%*
Total supplied capital		*86.1%*	*6.3%*	*17.6%*	*3.6%*	*4.2%*	*5.9%*
Total liabilities and equity		*79.8%*	*2.2%*	*12.0%*	*6.6%*	*4.0%*	*5.9%*
Common Size							
Cash	*5.7%*	*5.1%*	*4.1%*	*2.2%*	*2.1%*	*2.2%*	*2.3%*
Operating assets ex cash	*9.9%*	*9.5%*	*8.5%*	*6.3%*	*7.4%*	*7.5%*	*7.5%*
Operating assets	*15.6%*	*14.7%*	*12.6%*	*8.5%*	*9.4%*	*9.7%*	*9.9%*
Operating liabilities	*32.3%*	*29.9%*	*27.1%*	*23.5%*	*25.6%*	*25.5%*	*25.5%*
NOWC	*-16.7%*	*-15.3%*	*-14.5%*	*-15.0%*	*-16.2%*	*-15.8%*	*-15.7%*
NOWC ex cash (NWC)	*-22.4%*	*-20.4%*	*-18.6%*	*-17.2%*	*-18.3%*	*-18.0%*	*-18.0%*
NFA	*69.9%*	*66.1%*	*72.8%*	*79.4%*	*78.2%*	*77.5%*	*77.2%*
Invested capital	*53.2%*	*50.9%*	*58.3%*	*64.4%*	*62.0%*	*61.7%*	*61.5%*
Marketable securities	*14.5%*	*19.2%*	*14.6%*	*12.1%*	*12.4%*	*12.8%*	*13.0%*
Total assets	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
Short-term and long-term debt	*36.3%*	*39.7%*	*41.0%*	*42.5%*	*45.3%*	*47.2%*	*49.0%*
Other liabilities	*43.0%*	*49.2%*	*27.2%*	*22.4%*	*20.6%*	*19.6%*	*18.4%*
Debt/equity-like securities	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Equity	*-11.6%*	*-18.9%*	*4.7%*	*11.6%*	*8.5%*	*7.6%*	*7.1%*
Total supplied capital	*67.7%*	*70.1%*	*72.9%*	*76.5%*	*74.4%*	*74.5%*	*74.5%*
Total liabilities and equity	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Appendix 3: Sales Forecast

Sales (in millions)							
Items	**2012**	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**
Sales	$24,855	$26,743	$42,650	$40,990	$39,724	$41,114	$43,621
Growth		*7.6%*	*59.5%*	*-3.9%*	*-3.1%*	*3.5%*	*6.1%*
Mainline Passenger	18,743	20,218	30,802	29,037	27,585	28,689	30,697
Growth		*7.9%*	*52.3%*	*-5.7%*	*-5.0%*	*4.0%*	*7.0%*
% of sales	75.4%	75.6%	72.2%	70.8%	69.4%	69.8%	70.4%
Regional Passenger	2,914	3,131	6,322	6,475	6,650	6,849	7,192
Growth		*7.4%*	*101.9%*	*2.4%*	*2.7%*	*3.0%*	*5.0%*
% of sales	11.7%	11.7%	14.8%	15.8%	16.7%	2.0%	16.5%
Cargo	675	685	875	760	677	643	627
Growth		*1.5%*	*27.7%*	*-13.1%*	*-10.9%*	*-5.0%*	*-2.5%*
% of sales	2.7%	2.6%	2.1%	1.9%	1.7%	1.6%	1.4%
Other	2,523	2,709	4,651	4,718	4,812	4,933	5,105
Growth		*7.4%*	*71.7%*	*1.4%*	*2.0%*	*2.5%*	*3.5%*
% of sales	10.2%	10.1%	10.9%	11.5%	12.1%	12.0%	11.7%
Geographical Markets							
United States	14,287	15,376	28,568	28,761	28,085	29,067	30,840
Growth		*7.6%*	*85.8%*	*0.7%*	*-2.3%*	*3.5%*	*6.1%*
% of sales	57.5%	57.5%	67.0%	70.2%	70.7%	70.7%	70.7%
Latin America	5,813	6,288	6,964	5,539	5,164	5,468	6,107
Growth		*8.2%*	*10.8%*	*-20.5%*	*-6.8%*	*5.9%*	*11.7%*
% of sales	23.4%	23.5%	16.3%	13.5%	13.0%	13.3%	14.0%
Atlantic	3,411	3,756	5,652	5,146	4,767	4,523	4,362
Growth		*10.1%*	*50.5%*	*-9.0%*	*-7.4%*	*-5.1%*	*-3.5%*
% of sales	13.7%	14.0%	13.3%	12.6%	12.0%	11.0%	10.0%
Pacific	1,344	1,323	1,466	1,544	1,708	2,056	2,312
Growth		*-1.6%*	*10.8%*	*5.3%*	*10.6%*	*20.3%*	*12.5%*
% of sales	5.4%	4.9%	3.4%	3.8%	4.3%	5.0%	5.3%

Appendix 4: Ratios

Ratios							
Items	**2012**	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**
Profitability							
Gross margin	4.0%	8.4%	13.0%	18.5%	19.3%	18.7%	18.6%
Operating (EBIT) margin	1.5%	4.9%	9.5%	13.3%	14.8%	12.0%	12.0%
Net profit margin	-7.5%	-6.9%	6.8%	18.6%	7.9%	6.2%	6.1%
Activity							
NFA (gross) turnover		1.20	1.44	1.17	0.99	0.98	0.99
Total asset turnover		0.81	1.00	0.89	0.78	0.76	0.75
Liquidity							
Op asset / op liab	0.48	0.49	0.46	0.36	0.37	0.39	0.46
NOWC Percent of sales		-19.4%	-14.9%	-16.5%	-20.0%	-20.7%	-19.1%
Solvency							
Debt to assets	36.3%	39.7%	41.0%	42.5%	45.3%	47.3%	49.5%
Debt to equity	-312.5%	-210.3%	876.8%	364.9%	531.6%	622.5%	710.5%
Other liab to assets	43.0%	49.2%	27.2%	22.4%	20.6%	19.7%	18.6%
Total debt to assets	79.3%	88.9%	68.2%	64.9%	65.9%	67.0%	68.1%
Total liabilities to assets	111.6%	118.9%	95.3%	88.4%	91.5%	92.4%	93.0%
Debt to EBIT	23.13	12.81	4.36	3.77	4.06	5.27	5.62
EBIT/interest	0.61	1.57	4.75	6.49	6.56	5.65	5.33
Debt to total net op capital	68.2%	78.1%	70.3%	65.9%	72.9%	76.6%	79.9%
ROIC							
NOPAT to sales		8.5%	8.6%	21.9%	9.3%	7.5%	7.5%
Sales to IC		1.57	1.83	1.45	1.23	1.23	1.22
Total		13.3%	15.6%	31.9%	11.4%	9.3%	9.2%
Total using EOY IC	-4.1%	10.5%	14.5%	28.9%	11.3%	9.1%	8.9%
ROE							
5-stage							
EBIT / sales		4.9%	9.5%	13.3%	14.8%	12.0%	12.0%
Sales / avg assets		0.81	1.00	0.89	0.78	0.76	0.75
EBT / EBIT		36.2%	79.0%	84.6%	84.7%	82.3%	81.2%
Net income /EBT		-386.1%	89.7%	164.9%	62.8%	62.8%	62.8%
ROA		-5.6%	6.7%	16.6%	6.1%	4.7%	4.6%
Avg assets / avg equity		(6.14)	(14.33)	11.97	9.97	12.43	13.74
ROE		34.2%	-96.6%	198.8%	61.1%	58.8%	63.3%
3-stage							
Net income / sales		-6.9%	6.8%	18.6%	7.9%	6.2%	6.1%
Sales / avg assets		0.81	1.00	0.89	0.78	0.76	0.75
ROA		-5.6%	6.7%	16.6%	6.1%	4.7%	4.6%
Avg assets / avg equity		(6.14)	(14.33)	11.97	9.97	12.43	13.74
ROE		34.2%	-96.6%	198.8%	61.1%	58.8%	63.3%
Payout Ratio		0.0%	5.1%	3.7%	7.3%	8.1%	7.2%
Retention Ratio		100.0%	94.9%	96.3%	92.7%	91.9%	92.8%
Sustainable Growth Rate		34.2%	-91.7%	191.5%	56.7%	54.1%	58.8%

Appendix 5: Cash Flow Statement

Cash Flow Statement (in millions)						
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**
Cash from Operatings (understated - depr'n added to net assets)						
Net income	-$1,834	$2,882	$7,610	$3,065	$2,489	$2,530
Change in Net Working Capital ex cash	$3,361	-$569	$284	$1,082	$179	$288
Cash from operations	$1,527	$2,313	$7,894	$4,147	$2,668	$2,818
Cash from Investing (understated - depr'n added to net assets)						
Change in NFA	-$11,517	-$3,520	-$6,955	-$1,923	-$996	-$1,022
Change in Marketable Securities	-$4,699	$1,802	$445	-$510	-$500	-$500
Cash from investing	-$16,216	-$1,718	-$6,510	-$2,433	-$1,496	-$1,522
Cash from Financing						
Change in Short-Term and Long-Term Debt	$8,264	$921	$2,841	$2,782	$2,000	$2,500
Change in Other liabilities	$10,692	-$9,049	-$912	-$206	-$100	-$100
Change in Debt/Equity-Like Securities	$0	$0	$0	$0	$0	$0
Dividends	$0	-$148	-$278	-$224	-$201	-$183
Change in Equity ex NI and Dividends	-$3,422	$7,274	-$3,718	-$4,085	-$2,607	-$2,500
Cash from financing	$15,534	-$1,002	-$2,067	-$1,733	-$908	-$283
Change in Cash	$845	-$407	-$683	-$19	$263	$1,013
Beginning Cash	$1,330	$2,175	$1,768	$1,085	$1,066	$1,329
Ending Cash	$2,175	$1,768	$1,085	$1,066	$1,329	$2,342

Appendix 6: 3-stage DCF Model

DCF Model							
	First Stage		Second Stage				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*3.5%*	*6.1%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
NOPAT / S	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*
S / NWC	*(4.18)*	*(4.18)*	*(4.18)*	*(4.18)*	*(4.18)*	*(4.18)*	*(4.18)*
S / NFA (EOY)	*0.97*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*
S / IC (EOY)	*1.26*	*1.27*	*1.27*	*1.27*	*1.27*	*1.27*	*1.27*
ROIC (EOY)	*9.5%*	*9.6%*	*9.6%*	*9.6%*	*9.6%*	*9.6%*	*9.6%*
ROIC (BOY)		*10.1%*	*9.9%*	*9.9%*	*9.9%*	*9.9%*	*9.9%*
Share Growth		*-9.2%*	*-8.0%*	*-8.0%*	*-7.0%*	*-7.0%*	*-7.0%*
Sales	$40,302	$42,760	$44,043	$45,364	$46,725	$48,127	$49,571
NOPAT	$3,039	$3,224	$3,321	$3,420	$3,523	$3,629	$3,738
Growth		*6.1%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
- Change in NWC	-225	-588	-307	-316	-326	-335	-346
NWC EOY	*-9645*	*-10233*	*-10540*	*-10857*	*-11182*	*-11518*	*-11863*
Growth NWC		*6.1%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
- Chg NFA	1196	2308	1316	1355	1396	1438	1481
NFA EOY	*41,549*	*43,857*	*45,172*	*46,527*	*47,923*	*49,361*	*50,842*
Growth NFA		*5.6%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Total inv in op cap	971	1720	1009	1039	1070	1102	1135
Total net op cap	31904	33623	34632	35671	36741	37843	38979
FCFF	$2,068	$1,505	$2,312	$2,381	$2,453	$2,526	$2,602
% of sales	*5.1%*	*3.5%*	*5.2%*	*5.2%*	*5.2%*	*5.2%*	*5.2%*
Growth		*-27.2%*	*53.7%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
- Interest (1-tax rate)	535	585	602	620	639	658	678
Growth		*9.2%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
FCFE w/o debt	$1,533	$920	$1,710	$1,761	$1,814	$1,868	$1,924
% of sales	*3.8%*	*2.2%*	*3.9%*	*3.9%*	*3.9%*	*3.9%*	*3.9%*
Growth		*-40.0%*	*85.9%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
/ No Shares	503.0	456.7	420.1	386.5	359.5	334.3	310.9
FCFE	$3.05	$2.01	$4.07	$4.56	$5.05	$5.59	$6.19
Growth		*-33.9%*	*102.1%*	*12.0%*	*10.8%*	*10.8%*	*10.8%*
* Discount factor	0.88	0.77	0.67	0.59	0.51	0.45	0.39
Discounted FCFE	$2.67	$1.54	$2.73	$2.67	$2.59	$2.51	$2.44
Third Stage							
Terminal value P/E							
Net income	$2,503	$2,639	$2,718	$2,800	$2,884	$2,970	$3,060
% of sales	*6.2%*	*6.2%*	*6.2%*	*6.2%*	*6.2%*	*6.2%*	*6.2%*
EPS	$4.98	$5.78	$6.47	$7.24	$8.02	$8.89	$9.84
Growth		*16.1%*	*12.0%*	*12.0%*	*10.8%*	*10.8%*	*10.8%*
Terminal P/E							9.50
* Terminal EPS							$9.84
Terminal value							$93.49
* Discount factor							0.39
Discounted terminal value							$36.79

Summary		
First stage	$4.21	Present value of first 2 year cash flow
Second stage	$12.94	Present value of year 3-7 cash flow
Third stage	$36.79	Present value of terminal value P/E
Value (P/E)	**$53.94**	= value at beg of fiscal yr 2017

Appendix 7: Comp Sheet

Ticker	Name	Current	Market	Price Change						Earnings Growth								LT Debt/	S&P	LTM Dividend	
		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
AAL	AMERICAN AIRLINES GROUP INC	$46.30	$24,191	(0.8)	0.4	22.8	57.9	9.3	(0.8)	-9.4	-51.7%	183.3%	-51.4%	-9.2%	18.1%		0.97	490.7%		0.86%	4.3%
DAL	DELTA AIR LINES INC	$49.48	$36,839	0.6	2.4	23.8	34.6	(2.4)	0.6	8.8	-20.6%	86.9%	5.4%	-22.4%	7.0%	51.7%	0.91	51.7%		1.37%	9.8%
UAL	UNITED CONTINENTAL HLDGS INC	$72.71	$23,124	(0.2)	5.0	36.5	75.8	26.9	(0.2)	-7.5	-17.1%	363.8%	-54.7%	-31.4%	16.2%	66.2%	0.63	122.8%	B-	0.00%	0.0%
SAVE	SPIRIT AIRLINES INC	$57.09	$4,011	(1.3)	1.5	30.5	23.9	43.3	(1.3)	6.8	-8.3%	40.3%	0.9%	-9.6%	13.1%	10.0%	0.22	66.6%		0.00%	
LUV	SOUTHWEST AIRLINES	$49.98	$30,681	0.3	4.3	25.8	26.2	16.1	0.3	8.1	-1.8%	86.8%	27.9%	-33.2%	24.5%	39.9%	0.99	28.9%	B+	0.75%	10.0%
SKYW	SKYWEST INC	$36.55	$1,886	0.3	0.0	31.9	34.6	92.2	0.3		2.5%	230.9%	33.0%	24.4%	15.9%	6.0%	1.81	118.5%	B-	0.52%	6.3%
JBLU	JETBLUE AIRWAYS CORP	$22.39	$7,258	(0.1)	7.0	26.8	34.6	(1.1)	(0.1)	2.6	-13.4%	61.5%	15.2%	-13.7%	5.6%	45.8%	0.59	44.5%	B	0.00%	
ALK	ALASKA AIR GROUP INC	$88.00	$10,938	(0.8)	3.7	31.2	49.8	9.3	(0.8)	-0.7	-4.1%	51.5%	11.1%	-7.7%	15.8%	31.0%	0.62	65.0%	B+	1.24%	14.3%
Average			$17,366	(0.3)	3.0	28.7	42.2	24.2	(0.3)	1.2	-14.3%	138.1%	-1.6%	-12.8%	14.5%	35.8%	0.84	123.6%		0.59%	7.5%
Median			$17,031	(0.2)	3.1	28.7	34.6	12.7	(0.2)	2.6	-10.8%	86.9%	8.3%	-11.6%	15.9%	39.9%	0.77	65.8%		0.64%	8.1%
SPX	S&P 500 INDEX	$2,258		0.8	3.0	4.5	7.4	10.5	0.8			1.0%	0.7%	11.7%	11.7%						

Ticker	Website	2016		P/E							2016	2016			EV/	P/CF	P/CF	Sales Growth			Book
		ROE	P/B	2014	2015	2016	TTM	NTM	2017	2017E	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
AAL	http://www.aa.com	61.1%	5.47		11.5	4.1	5.0	10.3	9.2	7.8	14.9%	0.60	16.2%	35.6%	5.9	6.2	4.6	1.5%	2.5%	13.1%	$8.46
DAL	http://www.delta.com	37.0%	2.91		14.7	7.9	8.0	10.1	9.6	9.0	11.8%	0.93	20.0%	25.9%	5.2	5.6	5.9	1.0%	0.9%	5.0%	$16.99
UAL	http://www.unitedcontinentalholdi	28.3%	2.74		16.7	3.6	9.2	11.1	11.6	10.0	17.6%	0.63	15.2%	45.2%	4.7	14.1	5.2	0.7%	1.7%	10.3%	$26.55
SAVE	http://www.spirit.com	22.4%	2.94		18.4	13.1	13.9	15.2	14.4	12.7	13.5%	1.77	22.6%	21.4%	5.3			17.1%		22.3%	$19.40
LUV	http://www.southwest.com	32.6%	3.82		21.9	11.7	14.2	14.5	13.7	11.0	12.9%	1.51	23.2%	22.9%	6.4	8.8	8.5	2.6%	2.0%	10.4%	$13.07
SKYW	http://www.skywest.com	5.8%	1.16		66.5	20.1	12.8	12.5	12.1	10.5	3.0%	0.61	9.1%	3.9%	10.4	4.1	2.4	0.2%		2.3%	$31.39
JBLU	http://www.jetblue.com	16.6%	1.88		18.4	11.4	9.9	11.5	11.4	10.8	9.7%	1.10	20.4%	13.5%	7.0	4.9	5.5	6.8%	7.3%	11.2%	$11.88
ALK	http://www.alaskaair.com	28.6%	3.79		20.0	13.2	12.3	12.8	12.9	11.1	14.3%	1.89	24.8%	29.3%	7.2	7.9	6.6	12.7%	22.6%	7.9%	$23.23
Average		29.0%	3.09		23.5	10.6	10.7	12.2	11.9	10.4	12.2%	1.13	18.9%	24.7%	6.5	7.4	5.5	5.3%	6.2%	10.3%	
Median		28.5%	2.93		18.4	11.5	11.1	12.0	11.9	10.6	13.2%	1.02	20.2%	24.4%	6.1	6.2	5.5	2.0%	2.2%	10.3%	
SPX	S&P 500 INDEX			19.3	19.1	19.0			17.0	15.2											

Appendix 8: Porter's 5 Forces

Threat of New Entrants – Low

The barriers to entry into the Airline industry are extensive and prohibitive to new startup airlines. In addition to acquiring high-cost capital, a myriad of government regulations, airport bureaucracy, technology systems, and low margins make for a restrictive climate for start-up companies.

Threat of Substitutes - Moderate

With the availability of automobiles, ships, and trains, the airline industry constantly competes for customers with cheaper substitutes. The major benefit air travel offers is shorter lead times, in either personal travel or cargo transport. Negative reports from the media, such as terrorist attacks and airplane accidents, have higher visibility and affect demand greater than in substitute industries.

Supplier Power - High

Fewer than a dozen aircraft manufacturers exist, increasing the ability for the supplier to control pricing. Airplanes are capital intensive to purchase, as well as build. Boeing can build a single 777 in approximately 83 days. Atypical suppliers include employee unions. In order to retain competent workers and skilled pilots, AAL has to negotiate labor terms when contracts expire.

Buyer Power – Very High

Consumers have a great degree of power over airlines due to low costs to switch and ease of comparison between companies. Recently, with low fuel prices, customers may elect to drive to a destination instead of fly. Personal travelers have preferences with airlines, but do not generally have loyalty to a single airline. AAL mitigates this through rewards programs with credit card partners. Business customers have less price elasticity in regards to traveling.

Intensity of Competition – Very High

American Airlines has major hubs in several large cities with direct flights between these hubs and regional flights to airports outside of the direct flights. Regional airlines may be able to substitute direct flights for a cheaper cost to the smaller airports. With the two main factors for customers' decision being cost and timeline, competing on these metrics will sway consumers to adopt a competitor. American Airlines was the first to offer frequent flier miles with a credit card in order to help establish customer loyalty. Other airlines have adopted similar programs in order to better compete, and some allow the transfer of miles between carriers. Aggressive discounting by one will usually cause others to follow suit, hurting profit margins for all participants.

Appendix 9: SWOT Analysis

Strengths	Weaknesses
High EBIT Margins Youngest Fleet Loyalty Programs	No Fuel Hedging Cyclical Increasing Labor Costs
Opportunities	**Threats**
Continued Cost Reductions New Economy Class Seating Stable Economic Environment	Currency Headwinds Ultra-low Cost Carriers Increased Gov't Regulations

Apparel Retail

Fossil Group, Inc.

Recommendation	NEUTRAL
Target (today's value)	$27.83
Current Price	$25.86
52 week range	$23.10- $51.93

Share Data	
Ticker:	FOSL
Market Cap. (Billion):	$1.27
Inside Ownership	14.5%
Inst. Ownership	104.7%
Beta	1.4
Dividend Yield	0.0%
Payout Ratio	0%
Cons. Long-Term Growth Rate	3.0%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$3.51	$3.23	$3.22	$3.25	$3.31
Gr %		-8.0%	-0.2%	0.9%	1.8%
Cons			$3.07	$3.07	$3.09
EPS					
Year	$7.31	$4.71	$1.78	$1.91	$2.28
Gr %		-35.6%	-62.3%	7.3%	19.9%
Cons			$1.83	$1.92	$2.26

Ratio	'13	'14	'15	'16	'17E
ROE (%)	17.9%	19.5%	20.7%	19.2%	18.1%
Industry	14.3%	11.3%	0.7%	17.3%	18.2%
NPM (%)	10.8%	12.1%	13.3%	15.8%	16.4%
Industry	8.3%	5.5%	2.7%	7.6%	10.1%
A. T/O	0.81	0.83	0.82	0.74	0.72
ROA (%)	8.7%	10.0%	10.9%	11.7%	11.7%
Industry	7.5%	5.4%	2.5%	6.5%	8.4%
A/E	21.5	20.9	19.5		

Valuation	'14	'15	'16	'17E
P/E	20.7	22.7	18.7	17.0
Industry	28.1	30.1	22.8	21.0
P/S	2.34	2.87	2.90	2.75
P/B	3.4	4.4	3.2	3.0
P/CF	18.8	24.2	18.1	
EV/EBITDA	12.2	13.0	15.5	15.4

Performance	Stock	Industry
1 Month	-19.3%	-0.2%
3 Month	-4.1%	10.8%
YTD	2.0%	1.3%
52-week	-27.9%	27.0%
3-year	-78.2%	21.5%

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Source: FactSet Prices

Summary: I recommend a neutral rating with a target of $27. FOSL has an opportunity to improve efficiency and increase margins, but declining revenues and competition create strong headwinds. These uncertainties offset my optimism that the core business can significantly improve. The stock is slightly undervalued based on relative and DCF analysis.

Key Drivers:

- International expansion: Over 50% of Fossil's net sales were derived from international operations during the past three fiscal periods. Currency has been a headwind in the recent past but higher margins for watch products in Asia and Europe helped offset clearance activities in the US.

- Competition: Fossil takes part in a highly competitive market with multiple high end luxury brands. Heavy discounting negatively impacted margins the last two years and I only see marginal improvements in sales and margins the next two years.

- Fashion trends and wearable technology: The greatest challenge FOSL is facing is its ability to penetrate the wearable technology market. The firm acquired Misfit in December 2015 to enter this market, but watch sales are down. Wearables have lower margins, therefore negatively affecting margins.

- Direct-to-consumer sales: As Fossil creates a greater online presence, it will be able to reduce costs due to physical locations. E-commerce sales are not allocated to various geographical segments because they are internally managed at the corporate level.

Valuation: Using a relative valuation approach, Fossil Group appears to be slightly undervalued in comparison to the luxury accessories industry. DCF analysis suggests a target price of $27.83. A combination of the approaches suggests that Fossil's stock value is about $27 and the shares trade at $25.86.

Risks: Threats to Fossil Group, Inc. would include inability to predict fashion trends, loss of major licensing agreements, loss of key manufacturing or distribution providers, competition, foreign currency fluctuations, and government regulations.

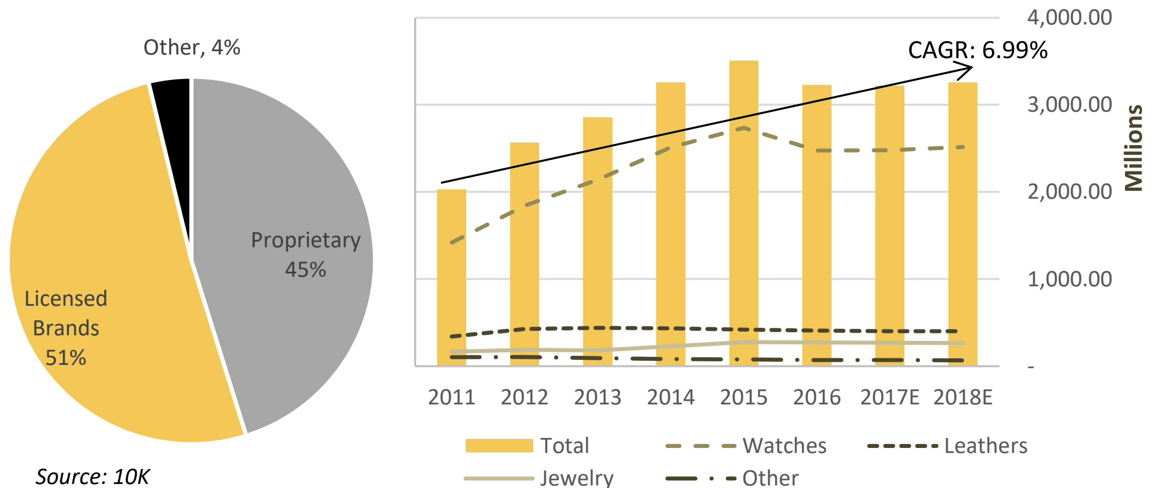
Company Overview

Fossil Group, Inc. is a luxury accessories retailer that specializes in vintage inspired women's and men's watches and jewelry, small leather goods, handbags, and other accessories. Fossil targets young men and women from the upper-middle class to the upper class for its proprietary brand. With a variety of licensing agreements, the company is able to target a wide range of economic classes. Domestically and internationally, Fossil products are sold in higher end department stores and specialty watch and jewelry stores. Over 380 stores are found in 150 countries worldwide with a heavy presence in North America, Asia, and Europe with e-commerce websites in Australia, France, Germany, Japan and the UK. Fossil is headquartered in Richardson, Texas and was formed in 1994.

Fossil is the parent company to its newly acquired timepiece brands including Skagen (April 2012) and Misfit (December 2015). Without the acquisition of Misfit it is possible that sales would have fallen due to inability to compete in the wearable technology's market. It also continues to develop, acquire, or license with Adidas, Michele, Chaps by Ralph Lauren, Diesel, DKNY, Emporio Armani, Karl Lagerfeld, Kate Spade New York, Michael Kors, Tory Burch, Burberry, Marc Jacobs, Relic, and Armani Exchange.

Fossil generates 100% of its revenue from retail operations in stores and direct-to-consumer operations. These retail operations sell watches, leathers, jewelry, and other accessories with its proprietary brand, licensed brands, as well as a small percentage of other private label brands for companies such as Target and Walmart. Sales have rose at a 59% rate from 2011-2015, but have since fallen. I anticipate flat sales the next two years.

Figure 1 and 2: Revenue sources for FOSL, EOY 2015 (left) and revenue history (right)



Source: 10K

Business/Industry Drivers

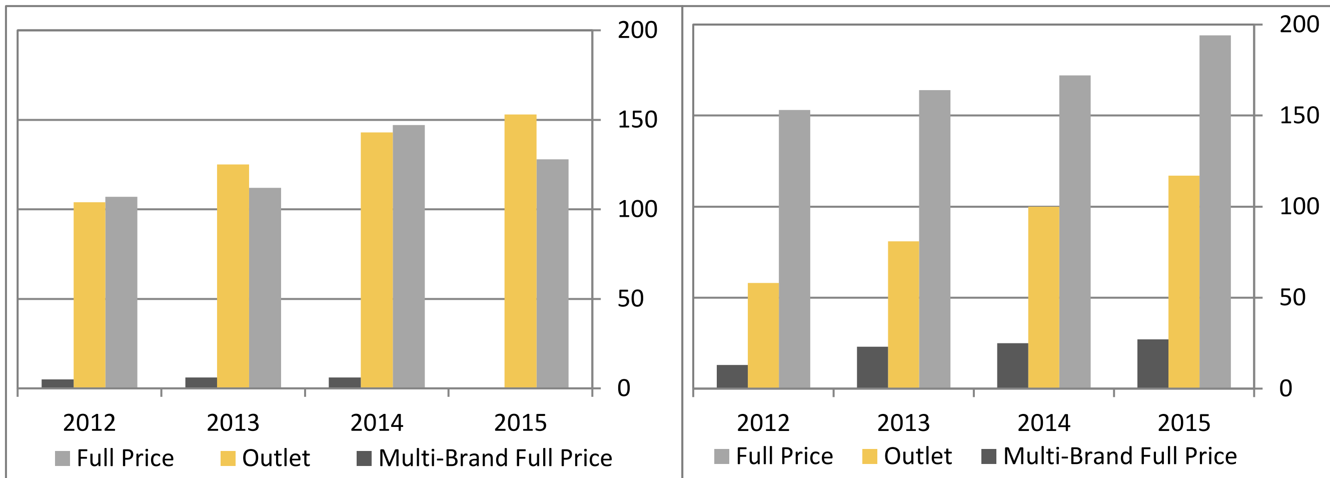
Fossil's success can be affected by multiple factors. The following are the most influential business drivers:

1) International sales, discounting, and margins
2) Fashion trends and wearable technology
3) Direct-to-consumer, e-commerce, and wholesale
4) Same store sales
5) Competitor analysis
6) Economic trends

International sales, discounting, and margins

Fossil plans to open 25 to 30 retail locations during the 2017 fiscal year and close roughly 30 stores. During the past five fiscal periods, the company has closed 60 stores but opened 151, with the majority located internationally. FOSL typically closes stores that are underperforming or ones that have lost existing real estate leases. Most new stores to open this fiscal year will be Fossil full-priced acccesory and outlet stores. FOSL generates 51% of its sales through its own stores and proprietary brands, and the store expansion represents 9% store growth and impacts of overall growth of 4.6% in fiscal 2017.

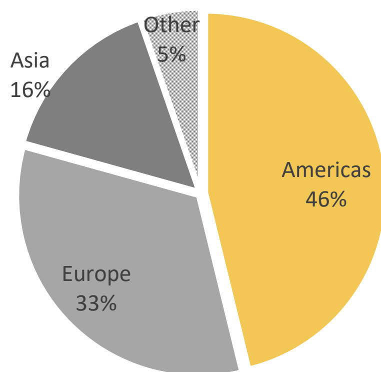
Figure 3 and 4: Type of FOSL locations in, US (left) and international (right)

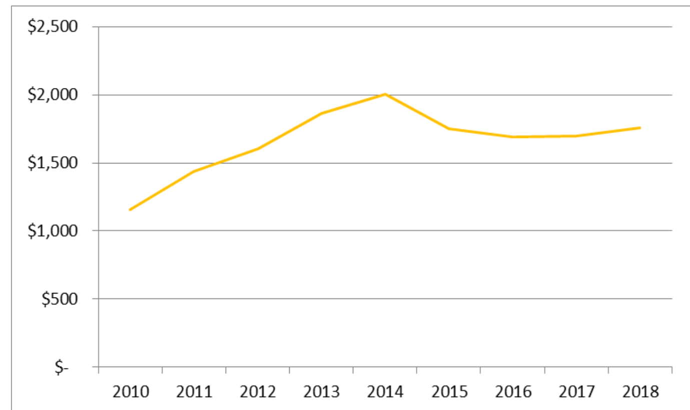


Source: 10K

FOSL is focusing on expansion and is concentrating primarily on international markets. In Asia and Europe, the company is concerned with opening full price retail stores, while in the Americas, the focus is on outlet locations. The company was opening stores faster than closing until 2015 when it slowed growth after reaching capacity of full priced stores in the Americas and Europe. Success of international expansion will come with risks, including currency and geopolitical uncertainty, and will depend on FOSL's ability to keep up with changing trends and the technology market. During fiscal year 2016, gross profit decreased due to changes in foreign currencies and a decrease in sales. Sales decreased in all segments and geographical locations during 2016. The decrease in sales is attributable to a sales decline in traditional watches and currency fluctuations. Fossil has been able to prove itself in international markets with its stylish and fashion forward accessories, and it charges a higher premium in international markets than in the US where it places a higher focus on discounting merchandise. Due to severe currency headwinds, operating margin in international locations are lower at 22.3% and 26.5% in the US. Gross margin fell from 57% to a projected 52.5% in fiscal 2017 (calendar 2016). Gross profit margin in the Americas was negatively impacted by lower margins because of the high discounting and lower margins on wearables. Europe has shown an expansion in profit margin but it has been offset by Asia, due to a weaker Japanese yen. Growth rates have been slowing for FOSL since 2013, with a spike in February, 2016. The US operations have seen a larger decline in sales, with constant currency, than international locations in 2016.

Figure 5 and 6: 2015 revenue by region (left), gross profit, in thousands (right)





Source: 10K

Fashion Trends and Wearable Technology

FOSL entered the wearable technology market after its acquisition of Misfit in 2015

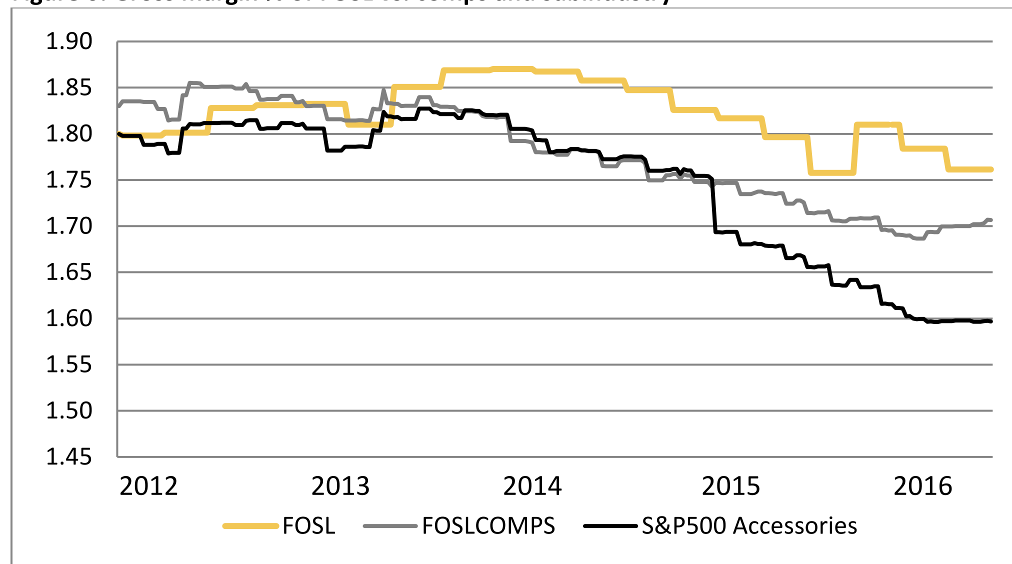
As an accessories retailer, it is crucial that Fossil adjusts to changing trends and styles. Timepiece sales have been slowing due to an increase in tech devices that offer customers with alternative options for telling time. In addition, retailers have been lagging behind in the technology department following the Apple Watch release in April 2015. Wearable technology is a quickly emerging and evolving segment in the market. FOSL has recently entered this market by targeting young adults with trendier wearable technology after its acquisition of Misfit, Inc. in December 2015 for $8.4 million. It is crucial that Fossil and its licensures are able to properly enter this market because it is an important trend in an apparel category that rarely evolves. Fossil, Kate Spade, and Michael Kors have taken initiative towards the wearable technology market. These brands are some of the first to sell smartwatches that are both functional, stylish, and professional looking. Since many consumers look to their watches as statement pieces, it is essential that it can be worn in all settings. Fitness brands, such as FitBit, specialize in styles that look sporty and active which is not the look that all consumers want to portray. Since the recent acquisition of Misfit, FOSL has not separated sales from wearable technology and its watch segment, but it has reported that the wearables have exceeded expectations in sales but have led to lower margins due to the new technology. FOSL also reported in Q3 2016 that these new products have positively driven growth. Apple and Samsung are also competitors in the wearable technology market.

Watches contributed to over 75% of consolidated net sales during the 2015 fiscal year; therefore, it is pertinent that Fossil keep up with changing technology, trends, and styles in order to stay profitable. Fossil has an advantage in the accessory market because during economic downturns consumers have reported spending more on accessories than apparel because it provides more "bang for their buck." Fossil's ability to reach multiple economic groups of consumers is a prime factor in its ability to stay profitable during periods of declining revenues.

FOSL produces a majority of its products through substantially owned entities in order to maintain control over supply chain operations

Most of the watch products are sourced from Asia through its Hong Kong subsidiary while the remaining are Swiss made. During 2015, approximately 59% of the jewelry products were manufactured by one of Fossil's majority owned entities, while the rest were manufactured by other factories located in China. During the year, handbags, small leather goods, and belts were completely outsourced. Fossil believes that outsourcing provides the opportunity to be more flexible with its ability to choose suppliers and also helps it avoid large capital expenditures.

Figure 6: Gross margin % of FOSL vs. comps and subindustry



Source: FactSet

Direct to Consumer, E-Commerce, and Wholesale

A most of FOSL's direct-to-consumer sales come from countries where it does not hold a physical presence

Fossil uses direct-to-consumer through retail stores and commercial websites. Since there is such a heavy focus on the licensed brands, there are a variety of websites to find the respective products. By investing in the direct-to-consumer aspect of the company, the brand is now able to raise awareness of the products and provide a location that all consumers are able to access in countries where there is no physical presence. FOSL operates websites in the US, Australia, France, Germany, Japan, and the UK. Each website features the selection of products available to those geographic regions. Fossil continues to create and open new websites to support the licensed brands. Management expects expansion of the e-commerce and direct-to-consumer segments of the business to lead to higher profitability levels.

Based on historical data, Fossil anticipates direct-to-consumer sales to increase profitability in the fourth quarter due to seasonality

FOSL recently focused on sending catalogs to domestic customers; distributing approximately 8 million during the 2015 fiscal year, 4.9 million more than the previous year. I anticipate the number of catalogs distributed will increase to roughly 10 million. During the year, the direct mail strategy was optimized to drive e-commerce and retail sales. The company catalogs serve as a key advertising product and communication device to enhance the brand and drive sales. It has stopped distributing catalogs internationally to focus solely on domestic sales.

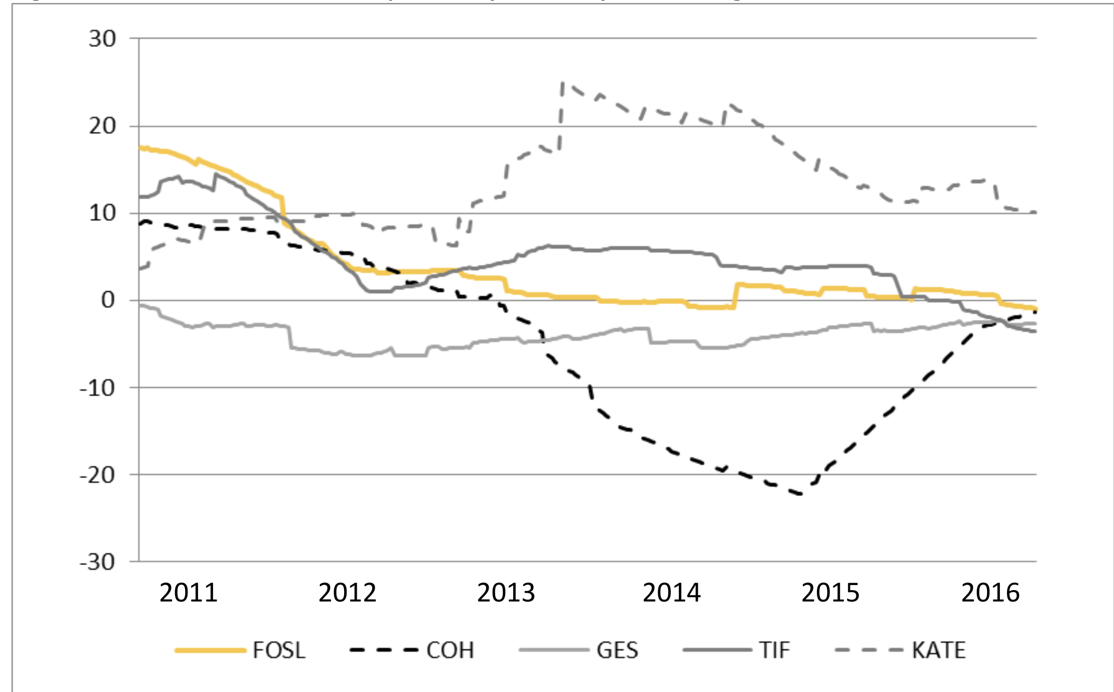
FOSL has a wholesale division which caters to companies including Amazon, Dillard's, JCPenny, Kohl's, Macy's, Neiman Marcus, Nordstrom, Saks Fifth Avenue, Target and Walmart. Fossil has seen sales declining as department stores falter. The companies in the areas that FOSL has a physical presence are the only ones which are able to use the wholesale segment to its advantage. FOSL does not provide access to wholesale products in countries that do not have physical retail locations. The wholesale division is in each of Fossil's three main geographical areas: Americas, Europe, and Asia.

I project SG&A expenses to rise as FOSL continues to incorporate more styles of wearable technology. In 2017 the company plans to add over 200 new wearable designs. These expenses will also rise due to restructuring expenses and a stronger US dollar.

Same Store Sales

Fossil's same store sales have been flat while most off the competition have seen significant losses since 2012. With FOSL's recent licensing for Kate Spade watches (2015), same store sales may rise because KATE has been significantly outperforming its competitors. Fossils current contract with Kate Spade will expire at the end of 2025.

Figure 7: Same store sales vs. competitors, year over year % change



Source: FactSet

Competitor Analysis

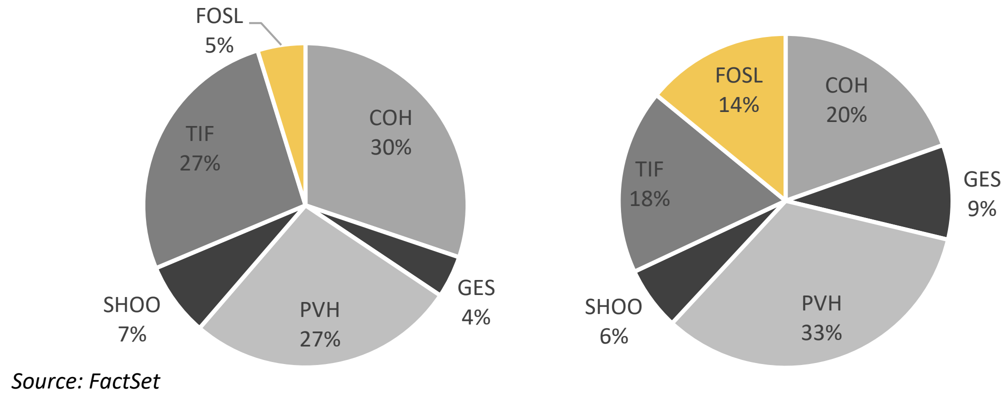
The apparel and accessories industry is a highly competitive and fragmented industry. It is crucial that a retailer is able to keep up with changing trends and styles; therefore, consumers have a considerable amount of power because of lack of switching costs. It is important that a company provides superior quality and a uniqueness that is consistent in all of its products. It is also important that a retailer creates an emotional bond with its customers in order to have a high brand identity. With a strong bond and brand identity, a company is able to keep old customers as well as attract new ones. Fossil has a large number of popular licensed brands as well as its proprietary brand.

FOSL will encounter new competition from tech companies, such as Apple and Samsung, as it enters the wearable technology market

Depicted below, Coach and Tiffany's have a higher market cap versus sales percentage which indicates that the market expects higher margins, growth, and/or lower risk. FOSL's margins were crushed in 2016 and the valuation reflects this. FOSL does not have this advantage. Tiffany's is a luxury accessories retailer that charges a high premium for its products. PVH, which includes brands such as Calvin Klein and Tommy Hilfiger, and TIF also have extremely high end products and long standing histories. FOSL's competitive advantage is diversity with its licensing brands and its ability to reach a wider group of consumers in multiple economic classes.

Figure 8 and 9: % total market cap (left) and retail sales (right)

FOSL: Fossil Group
TIF: Tiffany and Co.
COH: Coach
SHOO: Steve Madden
GES: Guess?
PVH: PVH Corp

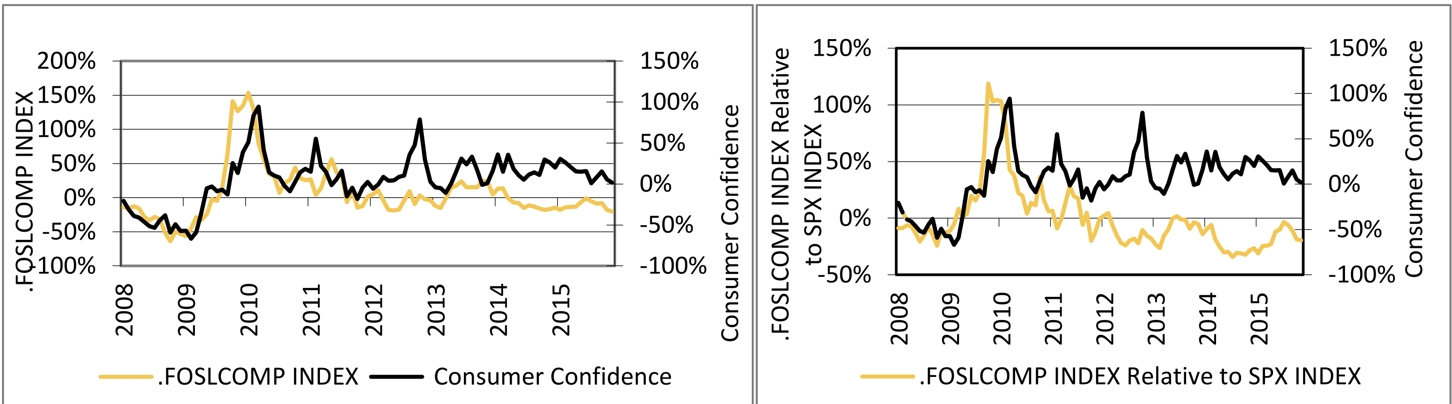


Source: FactSet

Macroeconomic Trends

The accessories and apparel sector is a competitive and cyclical business that is positively correlated with annual changes in consumer confidence and changes in the unemployment rate.

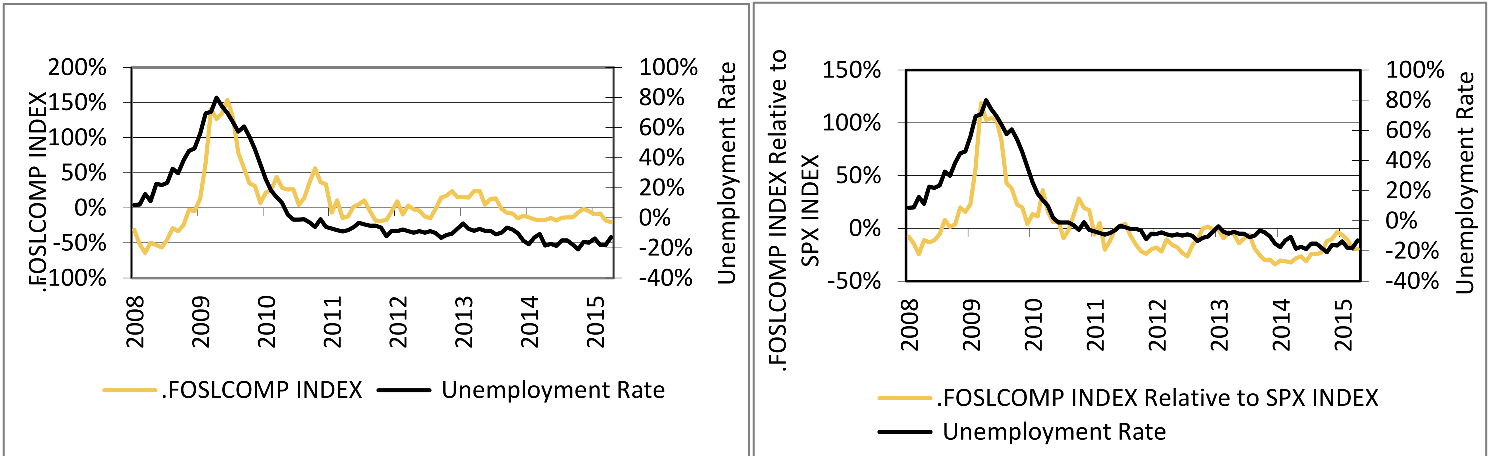
Figure 10 and 11: Consumer confidence compared to FOSL comps (left) and consumer confidence vs. FOSL comps relative to the S&P 500 index (right)



Source: Bloomberg, IMCP

FOSL and its competitor's performance relative to the S&P500 tracked closely with consumer confidence until 2011. The graph shows a 7 month lag with a 0.83 correlation. In 2011, the relationship broke down, likely as same store sales began to slow.

Figures 12 and 13: Unemployment rate, vs. FOSL comps (left) and Unemployment rate, vs. FOSL comps (right) relative to the S&P 500 index



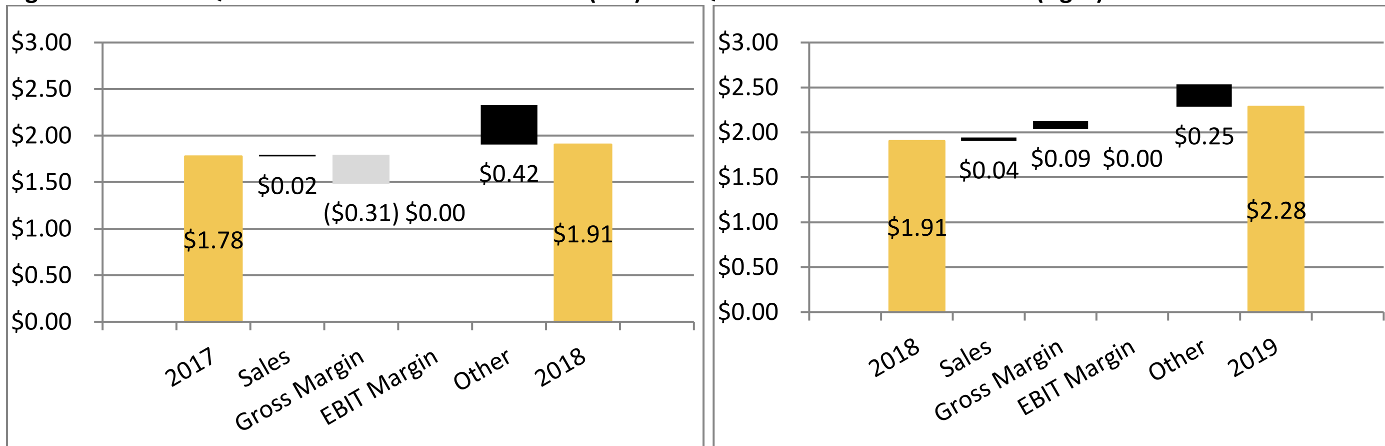
Source: Bloomberg, IMCP

Interestingly, FOSL and its competitors had its best performance on an absolute and relative basis when unemployment was high. Perhaps this is because high end retailers catering to the wealthy performed best the in last recession.

Financial Analysis

I anticipate EPS to grow to $1.91 in FY 2017 after falling to 1.78 in 2016 from $4.71 the prior year. The drop in 2016 was primarily due to a severe decline in margins as I expect sales to be flat. Less than 1% growth in international sales more than offsets 1% drop in US, and adds $0.02. A decrease of $0.31 from falling gross margin is due to increasing production costs in the wearable technology segment. In 2018, I anticipate that EPS will grow to $2.28 due to an increase in sales as the wearable technology segment becomes more popular. I am slightly more optimistic than the market for FY 2018 because I believe the new technology will be quickly accepted by consumers. Due to a higher premium charged for the wearable technology and new sales initiatives, I expect sales and gross margin to increase. Other in 2018 adds $0.42 due to a drop in the tax rate and share buy backs. 2019 share buy backs add most of the $0.25 increase to EPS. Note that fiscal 2017 refers to calendar 2016, 2018 fiscal to calendar 2017, etc.

Figure 14 and 15: Quantification of 2017 EPS Drivers (left) and Quantification of 2018 Drivers (right)



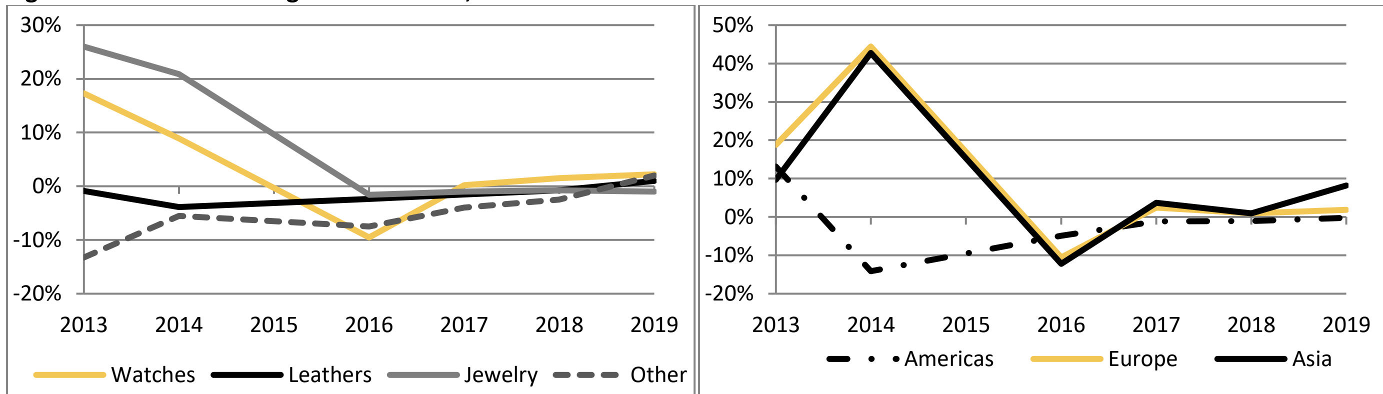
Source: Company Reports, IMCP

Revenues

Fossil's revenue has declined rapidly after peaking in 2013 and has slowly been increasing since its lowest point in 2014. The recent growth in Asia has significantly helped revenue. I expect sales in the Americas to be that due to high discounting at retail locations. Asia and Europe are expected to be flat in 2017, roughly 19%, before Asia rises 8 percent in 2018.

Revenue from the various segments of have been increasing steadily since its low in 2015. Watches were the worst category in 2015, but I expect it to perform the best of the four segments going forward; albeit, at one a 1-2% growth rate.

Figure 16 and 17: FOSL segment revenues, 2012-2019E



Source: Company Reports, IMCP

Estimates versus consensus

My revenue expectations for 2018 and 2019 are more aggressive than consensus because I believe it will take less time before its wearable technology segment becomes profitable than the market consensus. My earnings estimates also match consensus, which alongside my higher revenue assumptions, implies I am less optimistic on margins rebounding. My 2017 estimates are about $200 million higher than consensus because I believe some of the sales initiatives will pay off.

Figure 18: Estimated revenue and EPS vs. Consensus

	Estimates		Consensus	
	2018E	2019E	2018E	2019E
Revenue	$ 3,253	$3,312	$ 3,073	$ 3,094
YoY Growth	0.9%	1.8%	4.4%	-9.4%
EPS	$ 1.91	$ 2.28	$ 1.92	$ 2.26
YoY Growth	7%	20%	5%	18%

Source: Factset, IMCP

Return on equity

Figure 19: ROE Breakdown, 2014-2019E

3-stage DuPont	2014	2015	2016	2017E	2018E	2019E
Net income / sales	11.90%	11.02%	7.12%	2.65%	2.65%	2.93%
Sales / avg assets	1.60	1.59	1.42	1.38	1.42	1.46
ROA	19.06%	17.54%	10.14%	3.66%	3.75%	4.27%
Avg assets / avg equity	1.76	2.14	2.37	2.40	2.28	2.28
ROE	33.51%	37.55%	23.99%	8.79%	8.56%	9.72%

Source: Factset, IMCP

FOSL's ROE fell in 2016 and 2017 due to the severe decline in margins coupled with lower asset turnover due to the drop in sales. ROE will recover somewhat in 2018-2019 as margins and turnover rise modestly. Leverage will decline and limit ROE's improvement.

Free cash flow

Figure 20: Free cash flows 2013- 2019E

Free Cash Flow	2013	2014	2015	2016	2017	2018E	2019E
NOPAT	349	385	390	203	90	94	99
Growth		10%	1%	-48%	-56%	4%	6%
NWC*	563	681	748	687	693	699	712
Net fixed assets	698	751	723	913	868	876	892
Total net operating capital*	1261	1431	1471	1600	1561	1576	1604
Growth		14%	3%	9%	-2%	1%	2%
- Change in NWC*		118	67	-61	6	7	13
- Change in NFA		53	-28	190	-45	8	16
FCFF*		214.35	350.77	74.24	128.90	78.77	70.63
Growth			64%	-79%	74%	-39%	-10%
- After-tax interest expense	4	7	11	14	12	15	14
FCFE**		208	340	60	117	63	56
Growth			64%	-82%	94%	-46%	-11%

Source: Company Reports, IMCP

FOSL's has historically generated high free cash flows that has allowed it to invest into itself, most recently using it for stock repurchasing programs and new licensing opportunities. Fossil has been using a significant amount of its cash for its repurchasing programs, which I expect to continue at $100 million in 2018 and 2019 (about $0.12 to 0.13 per share EPS impact). I forecast that NOPAT and net operating capital will fall due to a decrease in sales in 2017, but both will grow modestly in 2018-19. Fossil does not pay dividends and does not plan to in the future.

I expect FCFF and FCFE to decrease over 39% in 2018 due to an increase in net fixed assets following a large decline in 2017.

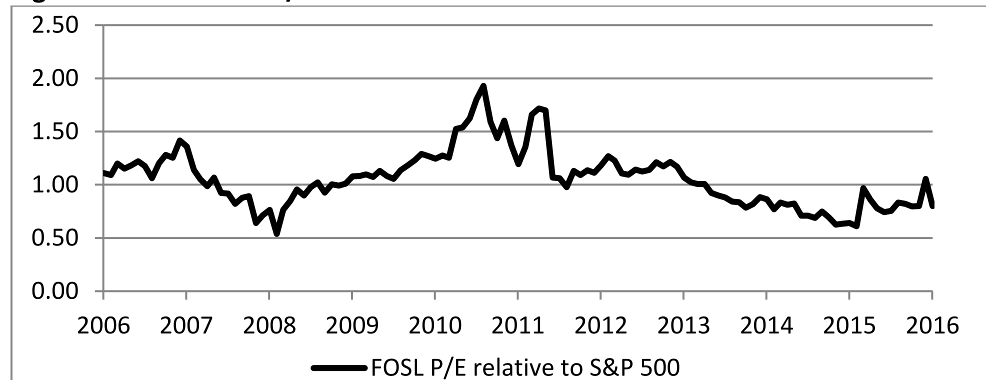
Valuation

FOSL was valued using multiples and a 3-stage discounting cash flow model. Based on these earnings multiples, the stock is cheap relative to other firms and is worth $30; however, due to depressed sales and margins, this metric may be less reliable. Relative valuation shows FOSL to be fairly valued based on its fundamentals versus its peers in the luxury accessories industry. Price to sales valuation yielded a price of $26. A detailed DCF analysis values FOSL, at $27.83. Finally, a probability weighted scenario analysis yields a price of $25. Because of these valuations, I value to stock at $25.

Trading History

FOSL is currently trading near its ten-year low relative to the S&P 500. This is a result of recent earnings depression. Fossil's current NTM P/E is 14.7 versus its five-year average of 8.5. However, its P/E is volatile, therefore I anticipate it to vary.

Figure 21: FOSL NTM P/E relative to S&P 500



Source: Factset

Assuming the firm maintains a 14.7 NTM P/E at the end of 2017, it should trade at $33.56 by the end of the year.

- Price = P/E x EPS = 14.7 x $ 2.28 = $33.56

Discounting $33.56 back to today, given a cost of equity of 11.5% (see discounted cash flow section), will yield a price of $30.06.

<u>Relative Valuation</u>

FOSL is currently trading at a P/E lower than its peers, with a P/E TTM of 12.9 versus the average of 16.1. The low P/E is due to decreasing sales, significant markdowns in the US, and lower margins. FOSL has the lowest P/S of 0.41 while the average of its comps is 1.19. It also has a P/B and ROE of roughly half of the average for its comparable companies.

Figure 21: FOSL 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	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
FOSL	FOSSIL GROUP INC	$24.90	$1,199	(1.7)	(3.7)	(6.0)	(21.2)	(23.6)	(3.7)	3.0	-15.9%	-36.5%	-59.4%	4.4%	8.9%	3.6%	0.74	71.7%	B+	0.00%	
COH	COACH INC	$35.98	$10,086	1.1	2.7	0.7	(16.5)	(2.9)	2.7	9.3	19.0%	-38.1%	3.1%	8.1%	-74.3%	-10.7%	0.62	21.0%	B+	3.85%	74.2%
GES	GUESS INC	$12.32	$1,039	0.2	1.8	(8.9)	(16.3)	(33.5)	1.8	3.7	-16.6%	-41.9%	-13.5%	-53.1%	51.1%	-20.8%	0.07	2.4%	B	7.44%	120.0%
GPS	GAP INC	$22.88	$9,126	1.3	2.0	(15.8)	(11.3)	(7.4)	2.0	3.7	19.7%	4.7%	-15.3%	-19.8%	5.6%	3.3%	0.61	48.4%	A+	4.10%	54.8%
PVH	PVH CORP	$92.28	$7,315	2.2	2.3	(12.9)	(8.7)	25.8	2.3	6.7	-0.3%	3.8%	-3.4%	-4.1%	8.3%	67.2%	0.70	68.9%	B+	0.17%	2.1%
TIF	TIFFANY & CO	$78.05	$9,714	(1.4)	0.8	6.6	21.0	22.3	0.8	9.1	6.0%	-8.8%	-3.1%	5.1%	9.5%	4.6%	1.88	30.5%	A-	2.26%	47.8%
SHOO	MADDEN STEVEN LTD	$33.70	$2,043	(0.7)	(5.7)	(1.0)	(3.8)	4.4	(5.7)	9.0	10.1%	5.1%	9.7%	8.4%	9.5%	9.2%	0.47	0.0%	B+	0.00%	
SIG	SIGNET JEWELERS LTD	$79.16	$5,510	(1.0)	(16.0)	(1.6)	(10.0)	(31.8)	(16.0)	9.3	16.2%	21.8%	8.0%	6.6%	8.5%	20.5%	1.07	59.3%		1.06%	15.2%
Average			$5,754	(0.0)	(2.0)	(4.9)	(8.3)	(5.9)	(2.0)	6.7	4.8%	-11.2%	-9.2%	-5.6%	3.4%	9.6%	0.77	37.8%		2.36%	52.3%
Median			$6,412	(0.3)	1.3	(3.8)	(10.6)	(5.2)	1.3	7.9	8.1%	-2.5%	-3.3%	4.7%	8.7%	4.1%	0.66	39.4%		1.66%	51.3%
SPX	S&P 500 INDEX	$2,281		(0.6)	1.9	7.3	4.9	17.6	1.9			7.7%	1.2%	7.6%	12.4%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017E	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
FOSL	http://www.fossilgroup.com	9.1%	1.23	3.5	5.9	16.8	12.1	14.4	13.0	12.0	2.9%	0.39	5.7%	13.4%	6.7	5.4	11.3	-0.9%	-1.1%	9.7%	$20.21
COH	http://www.coach.com	20.3%	3.70	11.6	18.7	18.2	19.8	16.6	16.8	65.4	12.4%	2.25	17.4%	13.3%	14.4	13.4	12.5	1.3%	4.5%	1.6%	$9.73
GES	http://www.guess.com	8.1%	1.04	6.5	11.1	12.8	16.4	19.7	27.4	18.1	3.7%	0.47	3.5%	7.7%	9.9	7.7	8.2	3.6%		-2.4%	$11.83
GPS	http://www.gapinc.com	35.6%	3.35	8.4	8.0	9.4	13.6	11.4	11.7	11.1	6.1%	0.58	9.8%	22.5%	6.7	6.3	8.5	-0.8%	-0.1%	1.5%	$6.83
PVH	http://www.pvh.com	11.7%	1.53	13.1	12.6	13.1	12.9	13.0	13.7	12.6	7.0%	0.91	8.1%	7.4%	11.5	8.4	11.8	1.1%	4.6%	11.6%	$60.33
TIF	http://www.tiffany.com	15.9%	3.34	18.6	20.4	21.0	21.9	20.7	20.0	18.3	11.6%	2.43	19.3%	12.5%	10.7	12.9	15.8	1.4%	3.7%	5.9%	$23.36
SHOO	http://www.stevemadden.com	17.0%	2.82	19.1	18.2	16.6	17.1	15.5	15.3	14.0	8.8%	1.46	11.0%	16.8%	10.7	11.8	13.0	3.2%	4.1%	17.2%	$11.93
SIG	http://www.signetjewelers.com	23.1%	2.47	14.1	11.5	10.7	12.0	10.3	10.0	9.2	8.0%	0.85	7.9%	10.9%	19.6	8.0	14.0	-1.1%	2.5%	13.8%	$32.06
Average		17.6%	2.44	11.9	13.3	14.8	15.7	15.2	16.0	20.1	7.5%	1.17	10.3%	13.1%	11.3	9.2	11.9	1.0%	2.6%	7.4%	
Median		16.4%	2.65	12.4	12.1	14.8	15.0	15.0	14.5	13.3	7.5%	0.88	8.9%	12.9%	10.7	8.2	12.2	1.2%	3.7%	7.8%	
spx	S&P 500 INDEX			21.0	19.5	19.3			18.0	16.0											

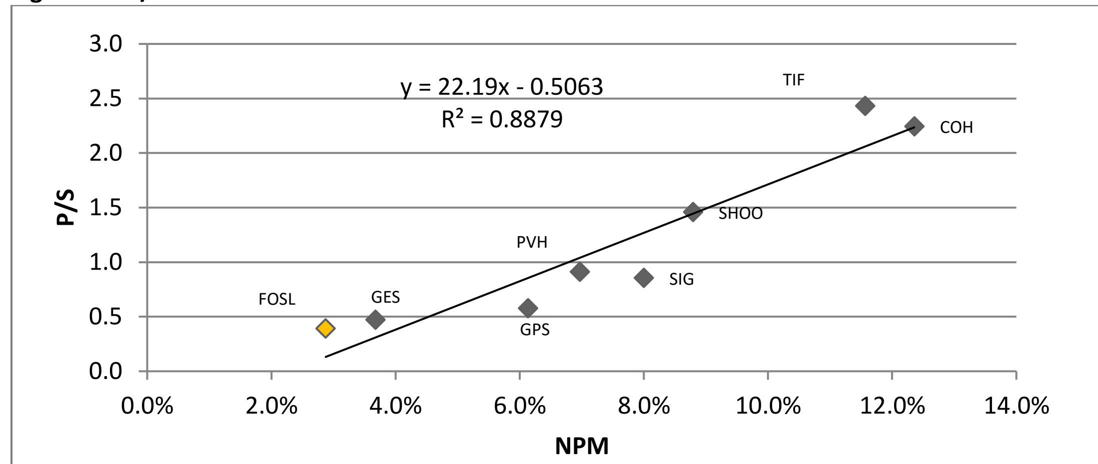
Source: Factset

An analysis of P/S and NPM is shown in the figure below. The calculated R-squared of the regression indicates that over 88% of a firm's P/S is explained by its NTM NPM. FOSL has the lowest P/S and NPM versus its competitors, and per this measure is undervalued.

- Estimated P/S = Estimated 2017 NPM (3.9%) x 22.19 – 0.5063 = 0.37
- Target Price = Estimated P/S (0.37) x SPS ($67.14)= $24.84

Discounting back to the present using an 11.5% cost of equity yields a target price of $5.45 using this model.

Figure 22: P/S vs NTM NPM



Source: IMCP

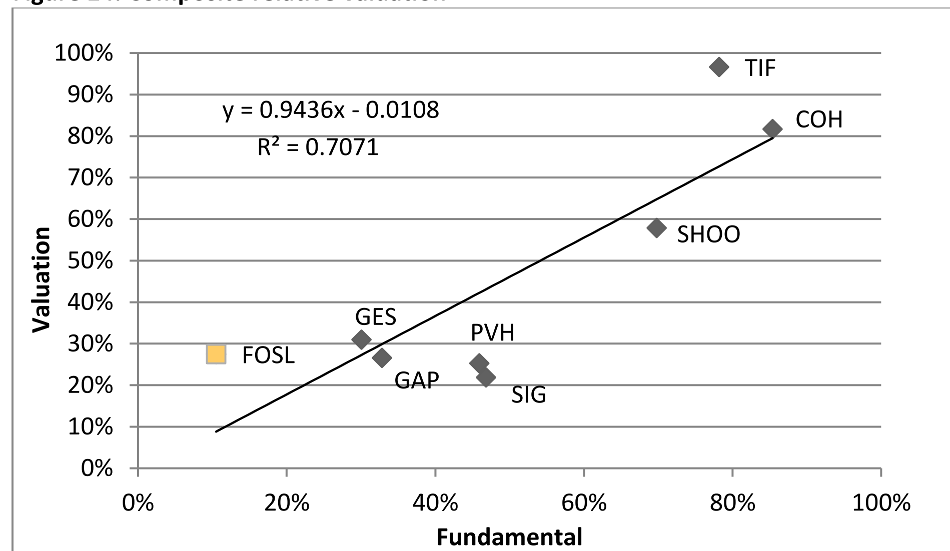
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile of the maximum before calculating the composite score. A varied weighting of long term growth rate, next twelve months, EPS growth, long term debt to equity, and 2016 net profit margin was compared to P/S. The regression line had an R-squared of .88. FOSL is directly above the line, therefore is fairly priced based on the fundamentals of this valuation.

Figure 23: Composite valuation, % of range

				Fundamental Percent of Range				Valuation Percent of Range				
		Weight		5.0%	10.0%	5.0%	60.0%	20.0%	25.0%	25.0%	25.0%	25.0%
		Weighted		Earnings Growth		1/	2016	es Grov		P/E		
Ticker	Name	Fund	Value	NTM	2017	Beta	NPM	NTM	NTM	2016	P/B	P/S
FOSL	FOSSIL GROUP INC	11%	28%	2%	93%	6%	0%	4%	40%	63%	7%	0%
COH	COACH INC	85%	82%	98%	100%	8%	100%	51%	61%	75%	100%	91%
GES	GUESS INC	30%	31%	0%	0%	100%	8%	100%	90%	29%	0%	4%
GPS	GAP INC	33%	27%	100%	54%	8%	34%	7%	10%	0%	87%	9%
PVH	PVH CORP	46%	25%	45%	80%	6%	43%	47%	25%	32%	18%	26%
TIF	TIFFANY & CO	78%	97%	62%	95%	0%	92%	53%	100%	100%	87%	100%
SHOO	MADDEN STEVEN LTD	70%	58%	74%	100%	11%	62%	91%	50%	62%	67%	52%
SIG	SIGNET JEWELERS LTD	47%	22%	90%	97%	3%	54%	0%	0%	11%	54%	23%

Source: IMCP

Figure 24: Composite relative valuation



Source: IMCP

<u>Discounted Cash Flow Analysis</u>

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

For the purpose of this analysis, the company's cost of equity was calculated to be 11.51% 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 2.44%.
- A five year beta of 1.2 was utilized because FOSL has about the same risk as its competitors in the same luxury accessories market, therefore I used the average beta of FOSL's competitors. Retail is cyclical, so a beta of great than 1.0 is justified.
- 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 11.51% (2.44 + 1.2 (10.0 – 2.44)).

Stage One – The model's first stage discounts fiscal years ending January, 2018 and 2019 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $1.40 and $1.33, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $2.32 per share. Therefore, stage one of this analysis contributes $2.32 to value.

Stage Two – The next stage of the model focuses on fiscal years ending January, 2020 to 2024. During this period, FCFE is calculated based on revenue growth, NOPAT margin and capital growth assumptions. The resulting cash flows are discounted using the company's 11.51% cost of equity. I assume 2% sales growth in 2020, continuing to rise at different rates between 3.0% to 4.5%, because it is a cyclical company that is dependent on discretionary income of consumers. The ratio of NWC to sales will remain at 2019 levels, and NFA turnover will rise from 3.71 to 5.0 in year 2024. After-tax interest is expected to rise 6% each year. This implies that NFA will fall 1%-5% per year as the firm decreases store investments.

Figure 25: FCFE and discounted FCFE, 2018-2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	1.40	1.33	3.14	3.20	3.53	3.92	4.39
Discounted FCFE	1.26	1.07	2.26	2.07	2.04	2.04	2.05

Added together, these discounted cash flows total $10.47.

Stage Three – Net income for the years 2020-2024 is calculated based upon the same margin and growth assumptions used to determine FCFE for stage two. EPS is expected to grow from $1.91 in 2018 to $5.08 in 2024.

Figure 26: EPS estimates for 2018-2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$1.91	$2.28	$2.51	$3.06	$3.67	$4.34	$5.08

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. A P/E ratio of 16.75 is assumed at the end of FOSL's terminal year. A higher multiple may be better calculate a fair value to more align with its competitors, but FOSL is the outlier when compared to its comps.

Given the assumed terminal earnings per share of $5.08 and a price to earnings ratio of 16.75, a terminal value of $42.04 per share is calculated. Using the 11.51% cost of equity, this number is discounted back to a present value of $19.61.

Total Present Value – given the above assumptions and utilizing a three-stage discounted cash flow model, an intrinsic value of $27.83 is calculated (2.32 + 10.47 + 19.61). Given FOSL's current price of $25.86, this model indicates that the stock is undervalued.

Scenario Analysis

FOSL is difficult to value with certainty because of cyclicality and uncertainty of how consumers will react to a change in brand identity. Furthermore, it is still not apparent how quickly the company will be able to improve margins on its wearable technology segment. My DCF model assumes margin expansion because I anticipate FOSL will improve production of wearable, therefore increasing margins. I valued FOSL under six scenarios by changing combinations of two key factors in the DCF model, above.

Sales Growth – Strong growth assumes that FOSL's brand is able to quickly draw in more customers and reverse the declining sales by 2019. Modest growth is the base assumption used in the prior DCF analysis, and I gave it a 40% probability. Poor growth assumes that the market does not take interest in FOSL's approach to new technology. I chose 30% for this scenario because although FOSL has experienced a decrease in sales, there is still opportunity for growth online and internationally.

Cost Savings – Moderate cost savings assumes that FOSL is able to continue to charge a premium and not have to increase additional heavy discounting. To do this, Fossil will need to continue to keep up with changing fashion trends and maintain superior quality. A stable gross margin assumes that FOSL will need to continue to heavily discount its merchandise to compete with its rivals. Margins have fallen with the increase in costs for the wearables segment, and if this area is not successful, will lead to more discounting.

Figure 27: Scenario Analysis

Sales	Cost Savings	DCF Value
High Growth	Moderate 0.7	$ 29.22
0.3	Stable .3	$ 26.83
Moderate Growth	Moderate 0.7	$ 29.28
0.4	Stable .3	$ 26.35
Weak Growth	Moderate 0.7	$ 29.58
0.3	Stable .3	$ 26.37

A valuation of FOSL stock was reached using the same discounted cash flow method outlined in the previous section. Each scenario's value was then multiplied by the scenario's probability to yield a probability-weighted value; the sum of these values is the likely price. This technique results in a target price of $25.65.

From this analysis, it is apparent that FOSL is more susceptible to changes in gross margin than revenue growth. Although Fossil does not have a fantastic gross profit margin, it is still able to remain profitable. If the company is able to improve margins the stock should significantly increase regardless of sales growth.

Business Risks

Changing fashion and product trends:

FOSL's success depends on its ability to predict consumers' preferences in a timely matter. The company must also keep up with new developments in wearable technology in order to receive market acceptance. Its inability to do so could result in a significant decrease in sales.

Loss of major licensing agreements:

Over half of sales are from the sales of products that are produced under license agreements, Michael Kors accounted for over 25% of sales in fiscal year 2015. If Fossil is unable to renew its existing agreements, it could result in a significant decrease in sales.

Competitive marketplace:

The accessories market is competitive in both the United States and internationally. Many competitors are larger and have greater control over omni-channel retailing. Fossil believes competition is alleviated due to high entry costs and brand recognition.

Foreign currency fluctuations:

Fossil produces many of its products in China, therefore changes in the Chinese yuan can have a significant impact on manufacturing costs. During the past three fiscal periods, over 50% of net sales were generated outside of the U.S. A weaker U.S. dollar generally creates positive effects for FOSL and the rise in the dollar has been a headwind.

Third party manufacturing:

A significant portion of products are assembled through a third party manufacturer in China. Any significant changes in that relationship could create a large disruption in the manufacturing and distribution of Fossil's products. Protectionist policies, if enacted by the Trump administration and Congress, could pose issues.

Appendix 1: Sales Forecast

Sales							
Items	**Jan-12**	**Jan-13**	**Jan-14**	**Jan-16**	**Jan-17**	**Jan-18**	**Jan-19**
Sales	2,859	$3,260	$3,510	$3,229	$3,223	$3,253	$3,312
Growth		*14.0%*	*7.7%*	*-8.0%*	*-0.19%*	*0.9%*	*1.8%*
Watches	2,143	2,513	2,737	2,476	2,481	2,518	2,575
Growth		*17.3%*	*8.9%*	*-9.5%*	*0.22%*	*1.5%*	*2.3%*
% of sales	*75.0%*	*77.1%*	*78.0%*	*76.7%*	*77.0%*	*77.4%*	*77.7%*
Leathers	440	436	419	409	403	400	404
Growth		*-0.9%*	*-3.9%*	*-2.4%*	*-1.50%*	*-0.8%*	*1.0%*
% of sales	*15.4%*	*13.4%*	*11.9%*	*12.7%*	*12.5%*	*2.0%*	*12.2%*
Jewelry	182	229	277	272	269	267	265
Growth		*26.0%*	*20.8%*	*-1.6%*	*-1.0%*	*-0.8%*	*-1.0%*
% of sales	*6.4%*	*7.0%*	*7.9%*	*8.4%*	*8.4%*	*8.2%*	*6.0%*
Other	94	82	77	72	69	67	68
Growth		*-13.3%*	*-5.5%*	*-7.5%*	*-4.0%*	*-2.5%*	*2.0%*
% of sales	*3.3%*	*2.5%*	*2.2%*	*2.2%*	*2.1%*	*2.1%*	*2.1%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Americas	1,799	2,035	1,748	1,662	1,643	1,626	1,623
Growth		*13.1%*	*-14.1%*	*-4.9%*	*-1.1%*	*-1.0%*	*-0.2%*
% of sales	*62.9%*	*62.4%*	*49.8%*	*51.5%*	*51.0%*	*50.0%*	*49.0%*
Europe	697	828	1,196	1,070	1,096	1,106	1,126
Growth		*18.8%*	*44.4%*	*-10.5%*	*2.4%*	*0.9%*	*1.8%*
% of sales	*24.4%*	*25.4%*	*34.1%*	*33.1%*	*34.0%*	*34.0%*	*34.0%*
Asia	362	397	566	497	516	520	563
Growth		*9.7%*	*42.8%*	*-12.2%*	*3.7%*	*0.9%*	*8.2%*
% of sales	*12.6%*	*12.2%*	*16.1%*	*15.4%*	*16.0%*	*16.0%*	*17.0%*

Appendix 2: Income Statement

Income Statement	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19
Sales	$2,859	$3,260	$3,510	$3,229	$3,223	$3,253	$3,312
Direct costs	1,252	1,398	1,509	1,475	1,531	1,574	1,597
Gross Margin	1,607	1,862	2,001	1,753	1,692	1,679	1,716
SG&A, R&D, and other	1,118	1,300	1,435	1,462	1,515	1,529	1,557
EBIT	489	562	567	291	177	150	159
Interest	5	10	16	20	24	25	23
EBT	484	552	551	271	153	125	136
Taxes	138	173	171	82	76	47	51
Income	346	379	379	189	77	78	85
Other	(9)	(9)	(7)	(40)	(8)	(8)	(12)
Net income	354	388	387	230	85	86	97
Basic Shares	60.959	57.401	52.882	48.800	48.127	45.205	42.444
EPS	$5.81	$6.76	$7.31	$4.71	$1.78	$1.91	$2.28

Appendix 3: Balance Sheet

Balance Sheet	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19
Cash	177	320	276	289	275	192	140
Operating assets ex cash	967	1,159	1,178	1,153	1,176	1,204	1,242
Operating assets	1,144	1,479	1,454	1,443	1,451	1,395	1,382
Operating liabilities	404	478	430	466	483	504	530
NOWC	740	1,001	1,024	976	968	891	852
NOWC ex cash (NWC)	563	681	748	687	693	699	712
NFA	698	751	723	913	868	876	892
Invested capital	$1,438	$1,752	$1,747	$1,889	$1,836	$1,767	$1,744
Marketable securities	-	-	-	-	-	-	-
Total assets	$1,842	$2,230	$2,177	$2,356	$2,319	$2,271	$2,274
Short-term and long-term debt	$78	$508	$627	$808	$794	$794	$794
Other liabilities	120	168	136	149	160	105	85
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	1,240	1,075	984	933	1,013	999	996
Total supplied capital	$1,438	$1,752	$1,747	$1,889	$1,967	$1,898	$1,875
Total liabilities and equity	$1,842	$2,230	$2,177	$2,356	$2,450	$2,402	$2,405

Appendix 4: Ratios

Ratios	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19
Profitability							
Gross margin	56.2%	57.1%	57.0%	54.3%	52.5%	51.6%	51.8%
Operating (EBIT) margin	17.1%	17.2%	16.1%	9.0%	5.5%	4.6%	4.8%
Net profit margin	12.4%	11.9%	11.0%	7.1%	2.7%	2.6%	2.9%
Activity							
NFA (gross) turnover		4.50	4.76	3.95	3.62	3.73	3.75
Total asset turnover		1.60	1.59	1.42	1.38	1.42	1.46
Liquidity							
Op asset / op liab	2.83	3.09	3.38	3.09	3.00	2.77	2.61
NOWC Percent of sales		26.7%	28.8%	31.0%	30.2%	28.6%	26.3%
Solvency							
Debt to assets	4.2%	22.8%	28.8%	34.3%	34.2%	35.0%	34.9%
Debt to equity	6.3%	47.3%	63.7%	86.7%	78.4%	79.5%	79.7%
Other liab to assets	6.5%	7.6%	6.2%	6.3%	6.9%	4.6%	3.7%
Total debt to assets	10.7%	30.3%	35.0%	40.6%	41.1%	39.6%	38.7%
Total liabilities to assets	32.7%	51.8%	54.8%	60.4%	62.0%	61.8%	62.0%
Debt to EBIT	0.16	0.90	1.11	2.78	4.48	5.31	4.99
EBIT/interest	94.74	58.82	35.64	14.55	7.31	6.08	6.91
Debt to total net op capital	5.4%	29.0%	35.9%	42.8%	43.2%	44.9%	45.5%
ROIC							
NOPAT to sales		11.8%	11.1%	6.3%	2.8%	2.9%	3.0%
Sales to IC		2.04	2.01	1.78	1.73	1.81	1.89
Total		24.2%	22.3%	11.2%	4.8%	5.2%	5.7%
Total using EOY IC	24.3%	22.0%	22.3%	10.8%	4.9%	5.3%	5.7%
ROE							
5-stage							
EBIT / sales		17.2%	16.1%	9.0%	5.5%	4.6%	4.8%
Sales / avg assets		1.60	1.59	1.42	1.38	1.42	1.46
EBT / EBIT		98.3%	97.2%	93.1%	86.3%	83.6%	85.5%
Net income /EBT		70.3%	70.2%	84.8%	55.9%	68.9%	71.3%
ROA		19.1%	17.5%	10.1%	3.7%	3.8%	4.3%
Avg assets / avg equity		1.76	2.14	2.37	2.40	2.28	2.28
ROE		33.5%	37.6%	24.0%	8.8%	8.6%	9.7%
3-stage							
Net income / sales		11.9%	11.0%	7.1%	2.7%	2.6%	2.9%
Sales / avg assets		1.60	1.59	1.42	1.38	1.42	1.46
ROA		19.1%	17.5%	10.1%	3.7%	3.8%	4.3%
Avg assets / avg equity		1.76	2.14	2.37	2.40	2.28	2.28
ROE		33.5%	37.6%	24.0%	8.8%	8.6%	9.7%
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		33.5%	37.6%	24.0%	8.8%	8.6%	9.7%

Appendix 5: 3-Stage DCF Model

	First Stage		Second Stage				
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*0.9%*	*1.8%*	*2.0%*	*3.0%*	*3.5%*	*4.0%*	*4.5%*
NOPAT / S	*2.9%*	*3.0%*	*3.6%*	*4.2%*	*4.8%*	*5.4%*	*6.0%*
S / NWC	*4.65*	*4.65*	*4.65*	*4.65*	*4.65*	*4.65*	*4.65*
S / NFA (EOY)	*3.71*	*3.71*	*3.97*	*4.23*	*4.49*	*4.74*	*5.00*
S / IC (EOY)	*2.06*	*2.06*	*2.14*	*2.21*	*2.28*	*2.35*	*2.41*
ROIC (EOY)	*5.9%*	*6.2%*	*7.7%*	*9.3%*	*11.0%*	*12.7%*	*14.5%*
ROIC (BOY)		*6.3%*	*7.6%*	*9.3%*	*11.0%*	*12.8%*	*14.7%*
Share Growth		*-6.1%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$3,253	$3,312	$3,379	$3,480	$3,602	$3,746	$3,914
NOPAT	$94	$99	$122	$146	$173	$202	$235
Growth		*6.3%*	*22.4%*	*20.2%*	*18.3%*	*17.0%*	*16.1%*
- Change in NWC	7	13	14	22	26	31	36
NWC EOY	*699*	*712*	*726*	*748*	*774*	*806*	*842*
Growth NWC		*1.8%*	*2.0%*	*3.0%*	*3.5%*	*4.0%*	*4.5%*
- Chg NFA	8	16	-41	-28	-20	-13	-7
NFA EOY	*876*	*892*	*851*	*823*	*803*	*790*	*783*
Growth NFA		*1.8%*	*-4.6%*	*-3.3%*	*-2.4%*	*-1.6%*	*-0.9%*
Total inv in op cap	15	29	-27	-6	6	18	29
Total net op cap	1576	1604	1577	1571	1578	1595	1625
FCFF	$79	$71	$149	$152	$167	$184	$206
% of sales	*2.4%*	*2.1%*	*4.4%*	*4.4%*	*4.6%*	*4.9%*	*5.3%*
Growth		*-10.3%*	*110.3%*	*2.5%*	*9.6%*	*10.6%*	*11.4%*
- Interest (1-tax rate)	15	14	15	16	17	18	19
Growth		*-6.5%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
FCFE w/o debt	$63	$56	$133	$136	$150	$166	$186
% of sales	*1.9%*	*1.7%*	*3.9%*	*3.9%*	*4.2%*	*4.4%*	*4.8%*
Growth		*-11.3%*	*137.0%*	*2.1%*	*10.0%*	*11.2%*	*12.0%*
/ No Shares	45.2	42.4	42.4	42.4	42.4	42.4	42.4
FCFE	$1.40	$1.33	$3.14	$3.20	$3.53	$3.92	$4.39
Growth		*-5.5%*	*137.0%*	*2.1%*	*10.0%*	*11.2%*	*12.0%*
* Discount factor	0.90	0.80	0.72	0.65	0.58	0.52	0.47
Discounted FCFE	$1.26	$1.07	$2.26	$2.07	$2.04	$2.04	$2.05
Third Stage							
Terminal value P/E							
Net income	$86	$97	$106	$130	$156	$184	$216
% of sales	*2.6%*	*2.9%*	*3.1%*	*3.7%*	*4.3%*	*4.9%*	*5.5%*
EPS	$1.91	$2.28	$2.51	$3.06	$3.67	$4.34	$5.08
Growth		*19.9%*	*9.7%*	*22.2%*	*19.8%*	*18.2%*	*17.1%*
Terminal P/E							16.75
* Terminal EPS							$5.08
Terminal value							$85.09
* Discount factor							0.47
Discounted terminal value							$39.68

Summary

First stage	$2.32	Present value of first 2 year cash flow
Second stage	$10.47	Present value of year 3-7 cash flow
Third stage	$39.68	Present value of terminal value P/E
Value (P/E)	**$52.47**	= value at beg of fiscal yr 2018

Appendix 6: SWOT Analysis

Strengths	Weaknesses
International presence Brand/licensing recognition Variety of price points	Consumer trends U.S. retail performance Dependency on major licenses
Opportunities	**Threats**
Global expansion Acquisitions and licensing New technology	Volatile currency Substitutes Highly competitive industry

Appendix 7: Porter's 5 Forces

Threat of New Entrants – Low

The barriers to enter the luxury accessories market include high startup costs and difficulty developing long-term relationships with customers. Fossil faces new threats from technology brands in the wearable technology market.

Threat of Substitutes - High

Fossil relies on its branding and quality to convince customers to pay a premium for its products. There are a large number of lower-cost substitutes and no switching costs.

Supplier Power – Low

Suppliers have little power due to a wide range of alternative suppliers. Since FOSL does not have long-term contracts, only long-term relationships, with suppliers there is little threat.

Buyer Power – Very High

Consumers carry the majority of power over retailers. There is a high number of substitutes and there is no cost to switch. There is little urgency to consistently buy new luxury accessories, so consumers have the opportunity to look for better prices.

Intensity of Competition – Very High

There are many national and international companies that occupy retail space in the same shopping centers, including online retailers, which are a threat to FOSL. The company has had to aggressively markdown prices in the United States due to an increase in competition and a decrease in foot traffic of physical retail locations. There is new threat from technology brands now that FOSL has entered the wearable technology market.

Analyst: Jacob Hornak

Department Stores

Kohl's Corporation

Recommendation	NEUTRAL
Target (today's value)	$50
Current Price	$42.01
52 week range	$54.37 - $88.58

Share Data	
Ticker:	KSS
Market Cap. (Billion):	$7.41
Inside Ownership	0.8%
Inst. Ownership	106.5%
Beta	0.73
Dividend Yield	4.76%
Payout Ratio	60.7%
Cons. Long-Term Growth Rate	4.3%

	'14	'15	'16E	'17E	'18E
Sales (billions)					
Year	$19.02	$19.20	$18.87	$19.01	$19.17
Gr %	0%	1%	-1.8%	0.8%	0.8%
Cons	-	-	$18.71	$18.93	$18.85
EPS					
Year	$4.45	$3.45	$3.28	$4.03	$4.05
Gr %	2.0%	-22.4%	-5.1%	22.9%	0.5%
Cons	-	-	$3.05	$4.25	$4.45

Ratio	'14	'15	'16E	'17E	'18E
ROE (%)	14.1%	14.1%	14.1%	11.5%	11.2%
Industry	19.8%	19.8%	19.8%	29.5%	32.4%
NPM (%)	4.0%	4.0%	4.0%	2.9%	2.8%
Industry	2.2%	2.2%	2.2%	1.8%	2.3%
A. T/O	1.32	1.41	1.42	1.45	
ROA (%)	6.0%	5.7%	5.0%	5.0%	
Industry	4.7%	4.7%	4.7%	3.2%	4.2%
D/A	35.2%	36.5%	35.7%	36.0%	

Valuation	'15	'16E	'17E	'18E
P/E	9.1	10.3	10.2	10.1
Industry	13.8	16.8	28.6	13.1
P/S	0.5	0.4	0.4	0.4
P/B	1.8	1.4	1.4	1.4
P/CF	5.6	3.9	4.4	4.3
EV/EBITDA	5.4	4.6	4.6	4.4

Performance	Stock	Industry
1 Month	-22.9%	-0.7%
3 Month	-5.2%	10.6%
YTD	-14.9%	1.7%
52-week	-15.6%	30%
3-year	-26.1%	22%

Contact: Jacob Hornak
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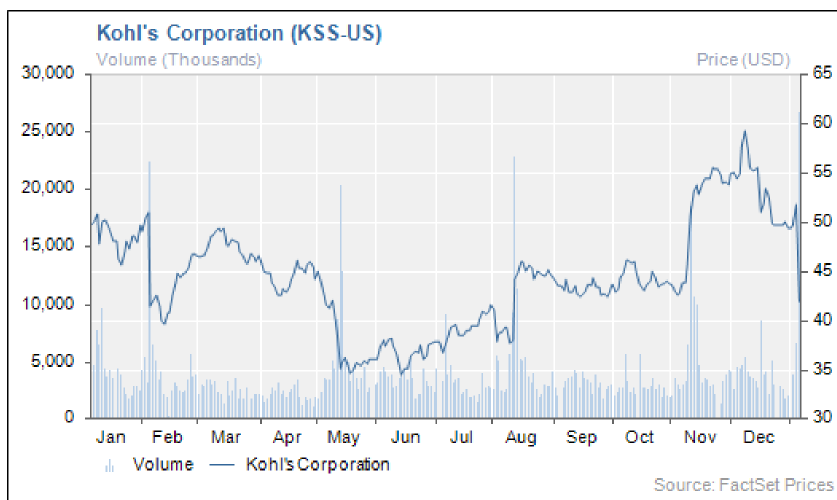


Summary: I recommend a neutral rating with a target of $50. Although KSS has an opportunity to dramatically improve online sales, declining revenues are a headwind. This uncertainty offsets my optimism that core business development can improve greatly. The stock is moderately undervalued based on relative and DCF analysis, but there are few short-term catalysts to realize this value.

Key Drivers:

- Number of locations: Adding or removing store locations currently affect Kohl's sales more than any other factor. Kohl's has reached maturity and its number of store locations remains flat.
- Same-store-sales: Kohl's is heavily reliant on its product selection and store experience to maintain its brand image. KSS recent struggle to grow SSS represents a loss in momentum. Its ability to charge premium prices is predicated upon its ability to remain a strong brand. Its most serious challenge is to broaden its appeal without losing its identity.
- Change in consumer spending habits: Kohl's operates in an extremely competitive environment in which consumers have become more value-conscious. It is imperative that Kohl's maintains an excellent shopping experience to maintain its margins that are higher than many of its competitors.
- Omni-channel offerings: Technology has altered the preferences of consumers in how they shop. Recently, Kohl's has focused on different methods in which consumers can shop, especially online; however, omni-channel offerings have only kept net sales steady.

Valuation: Using a relative valuation approach, Kohl's appears to be fairly valued in comparison to the department store sub-industry. DCF analysis suggests a target of $48.22. A combination of the approaches suggests that KSS is moderately undervalued, as the stock's value is about $50 and the shares trade at $42.01.

Risks: Threats to the business include declining sales, competition, and loss of brand identity.

Company Overview

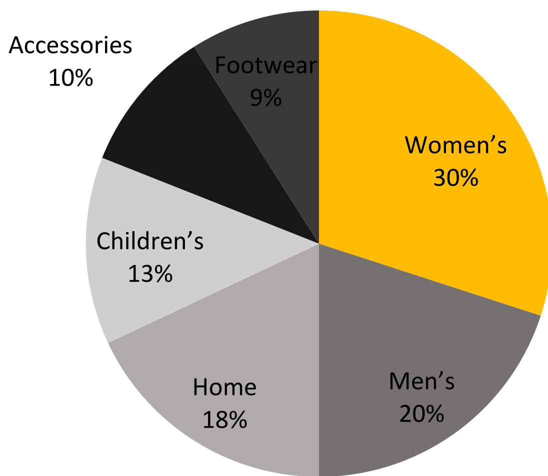
Kohl's Corporation (KSS) is a multiline retailer that sells a moderately priced variety of apparel, footwear, accessories, beauty, and home products. Kohl's merchandise consists of national brands as well as private-label and exclusive brands that fit all ages. The firm operates domestically in 49 states and has 782 locations in strip centers, 297 free standing locations, and 85 community and regional mall locations. Kohl's has developed and is focused on improving its omnichannel offerings as opposed to being a store-only retailer. Kohl's offers in-store, on-line (www.Kohls.com), mobile, social media, and other shopping options that provide the consumer with flexibility in how, when, and where they shop. Kohl's Corporation is headquartered in Menomonee Falls, Wisconsin.

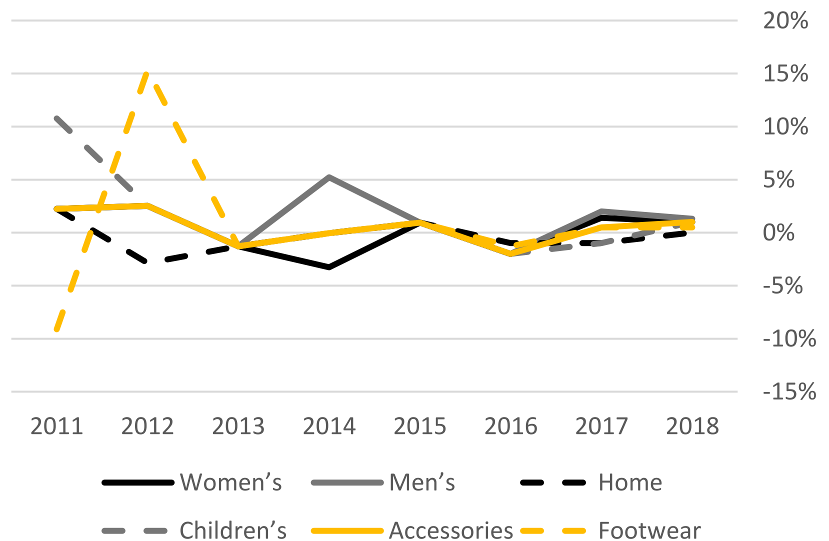
Kohl's Corporation generates revenue from its U.S. retail operations as well as a small amount from its U.S. credit card segment in partnership with Capital One. Kohl's runs stores and direct-to-consumer operations in six segments:

- Women's: Casual, formal, and workout. Tops, bottoms, undergarments, coats and jackets, swimwear, dresses, and beauty
- Men's: Casual, formal, and workout. Tops, bottoms, undergarments, coats and jackets, and swimwear
- Children's: Encapsulates both gender babies through juniors. Tops, bottoms, undergarments, coats and jackets, swimwear, dresses, toys, baby feeding and nursing, strollers, car seats, and other infant necessities
- Accessories: Jewelry, handbags and wallets, belts and suspenders, scarves & wraps, cold weather gear, hats, sunglasses, ties, hair accessories, cologne and perfume
- Footwear: Men's, women's, juniors, and baby's. Athletic, sneakers, casual, comfort, slippers, sandals, evening, flats, heels & pumps, wedges, wide-width shoes
- Home: Bedding, mattresses, bath, kitchen & dining, small appliances, home décor, seasonal décor, electronics

Growth in 2015 among all divisions was meager, and 2016 has only shown negative sales growth. While KSS has struggled to grow sales, the 2017 introduction of Under Armour should boost Men's, Women's, and footwear in the future.

Figures 1 and 2: Revenue Sources for KSS, year-end 2015 (left) and Revenue Growth by Segment History





Source: Company reports

Business/Industry Drivers

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

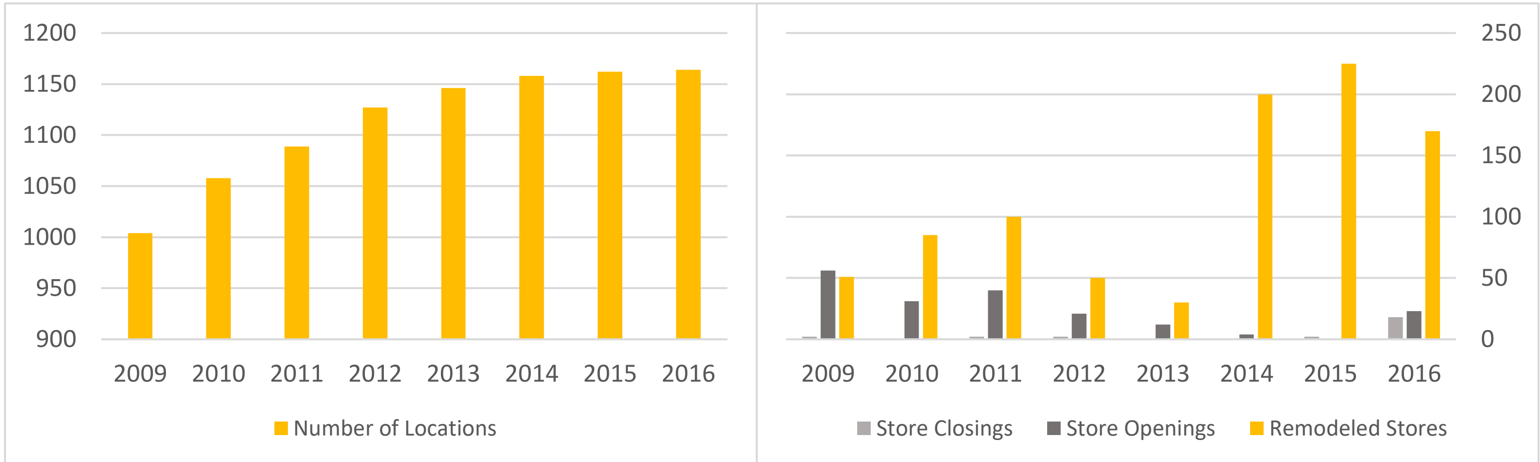
1) Number of locations
2) Same store sales and omni-channel offerings
3) Change in consumer spending habits
4) Macroeconomic trends

<u>Number of Retail Locations</u>

KSS location growth has plateaued over recent years

The number of Kohl's stores has plateaued the last five years; minimal stores have been cut, but minimal have been added. In 2016, 18 stores are closing; however, this is offset by a total of 23 new locations. Management has stated that it will continue to close underperforming operations; however, no guidance for future closings has been given. It is no secret though, that Kohl's has reached the mature state of the business life cycle.

Figures 3 and 4: Number of KSS locations BOY (left) and openings, closings, remodels



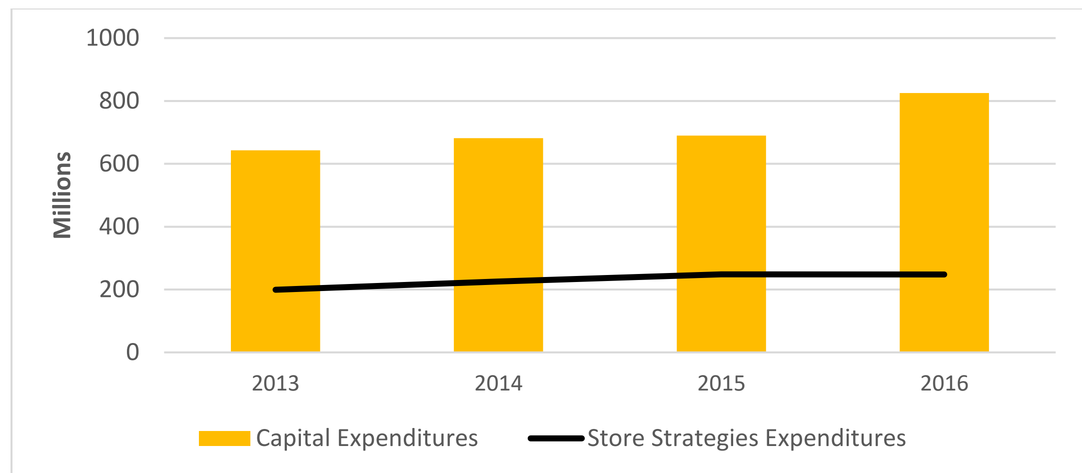
Source: Company reports

Nearly all the new locations that have been added and those that will be finished in fiscal year 2016 are unique. The new store locations include two Off-Aisle clearance centers and twelve FILA outlets that are considered "test" stores. These operations should appeal to a broader audience as general consumer spending habits have shown greater attraction to discounted merchandise in recent years. The FILA outlet stores are a play on the Kohl's' fastest growing merchandise segment: men's and women's sportswear. Having saturated most markets in the U.S. with traditional Kohl's locations, these new growth "tests" could serve to be a valuable growth addition to its portfolio.

Kohl's is opening new store formats as "tests" and investing heavily in store remodels

Perhaps more important than store openings and closings, there has been an emphasis on remodeling stores. Over the last three years, the firm has remodeled about one-third of its stores. Capital expenditures now run at the same rate as NOPAT. While store remodels have been incorporated in different varieties, the remodels have primarily revolved around the beauty line of business. The investment in remodeling is an approach towards creating the most enjoyable consumer experience possible through the implementation of new brands and visual appeal. Since the remodels have taken place, there has been a significant increase in beauty sales, resulting in Kohl's accessories segment to outperform company average sales.

Figure 5: Store Strategies Expenditures and Total Capital Expenditures



Source: Company reports

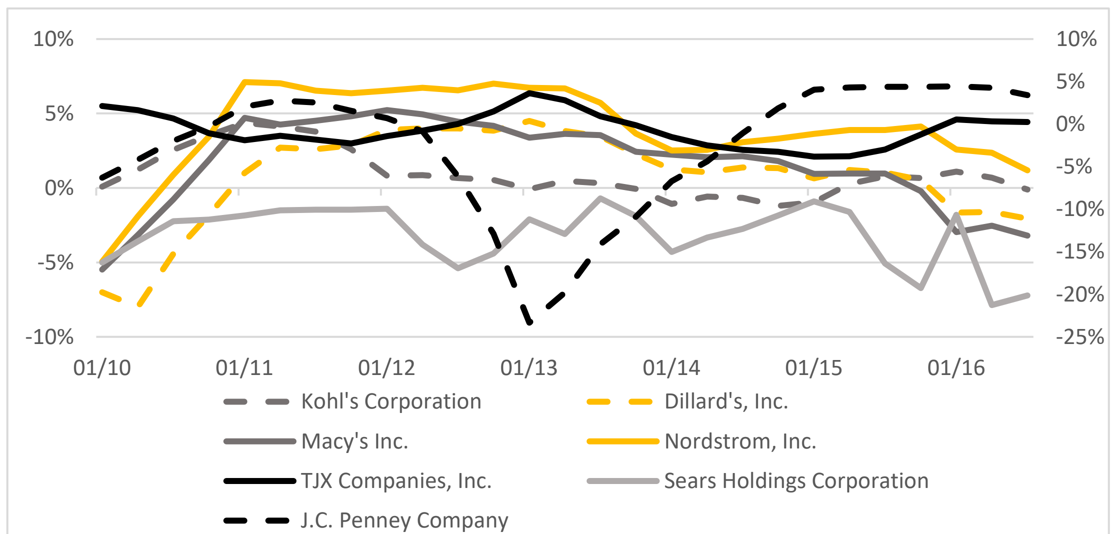
Store strategies expenditures, including remodeling, has been a large expenditure in recent years

Management has stated that remodels have led to an average growth rate in the mid-double-digits in the beauty and fine jewelry categories. While this growth is impressive, the handbags category more than offsets it and holds the accessories segment to negative growth.

Same Store Sales and Omni-channel Offerings

Department stores, such as Kohl's, create an effective shopping experience within their locations through proper inventory selection, merchandising, and customer service. While all three contribute greatly to a store's success, it is imperative that Kohl's, primarily a fashion-based retailer, accurately analyzes and predicts the next fashion trend of the whimsical consumer. Improper inventory selection leads to excess inventory, which is impending doom for a retailer. An effective way of measuring how well a department store's product is being accepted is same store sales growth (SSS). Kohl's SSS compared to its peers has been lackluster. The only other company that has consistently lagged behind Kohl's is Sears Holdings (SHLD), and it is in grave danger. Despite store closings and a substantial investment in store remodeling, Kohl's has struggled to reinvigorate its SSS performance.

Figure 6: Same Store Sales vs Competitors (J.C. Penny scale on right axis)



Source: FactSet

SHLD is the only company to have consistently underperformed KSS in SSS

Growth of e-commerce (e.g. Amazon) has been a big headwind for stores such as KSS. Many retailers have resorted to shutting down stores with poor SSS and have invested in their online-based selling platforms. Macy's, for example, plans to shut down 100 locations with underperforming SSS next year.

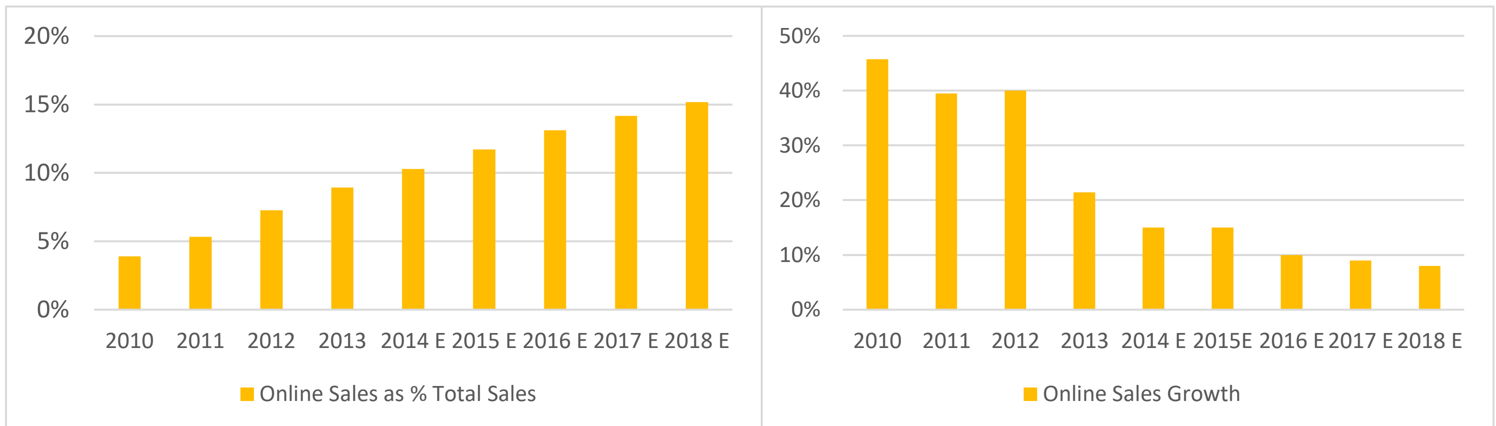
In order to adapt, Kohl's has placed a focus on its online offerings in the recent years. Kohl's has declared that complexity of its omni-channel offerings, or different methods of selling, have made it unfeasible to report "online" sales separate from "store" sales. In particular, Kohl's has difficulty distinguishing sales that are buy online and pick-up in store (BOPUS), especially because customers make additional purchases averaging 25% of the original BOPUS order while they pick up their items. Kohl's also stated that customers often pre-shop online before making purchases in store.

Prior to the 2014 release of BOPUS, Kohl's reported "online" sales separate from "store" sales. From 2010 to 2012, Kohl's experienced annual growth of 40% for online sales. Online sales made up 7% of total sales in 2012. In 2013, online sales growth slowed dramatically to 20% and made up 9% of total sales.

KSS stopped reporting online sales in 2014. I have estimated years 2014-2018.

I believe that BOPUS purchases should be recognized as online purchases, and any additional items that are purchased while picking up items in store should be considered "store" purchases. The notion that customers pre-shop online before making purchases in store is not a new circumstance. Taking this into consideration, I estimate that annual online sales growth has slowed to 10% in 2016, and online sales will have made up 13% of total sales.

Figure 7 and 8: Online Sales as % of Total Sales (left) and Online Sales Growth



Online sales are becoming a large portion of total sales. Management has stated that as this trend continues, they will scale down store sizes, but this is a long-term goal. As online sales grow, I forsee there to be increased investment in IT which will negatively impact EBIT margin.

Technology has created a number of new outlets for consumers to make purchases as well as changed consumer preferences for how they shop. Given the prevalence of the internet and mobile technology, consumers can make purchases anywhere and anytime they want. It is imperative that traditional retailers adapt accordingly to the changing environment.

Kohl's has begun to make the change from an in-store only experience to developing desireable online, mobile, social media, and other interactions. Omni-channel offerings include:

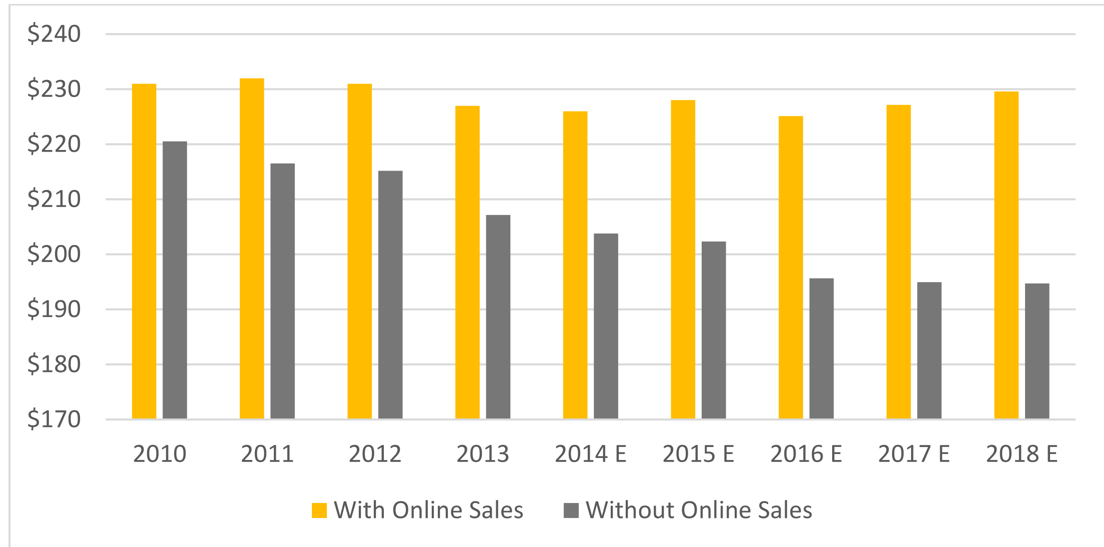
- Order online via in-store kiosks
- Order online and pick-up in any Kohl's store
- Order online and ship direct to consumer
- Kohl's app that grants exclusive coupon offerings

- Return online purchases in stores
- Ability to view, touch, and try on items before making online purchase

As I stated before, Kohl's does not differentiate between online and store sales. Given that the added omni-channel offerings in recent years have primarily been online-based, I have extrapolated past reported online sales and my estimates to create a measure of how much the implementation of these offerings and the adaption to the modern consumer has impacted Kohl's business. More detailed numbers can be found in Appendix 7.

Kohl's omni-channel offerings have kept net sales per selling square foot steady

Figure 14: KSS Net Sales Per Selling Square Foot



Source: Company Reports

As made clear by the graph above, Kohl's omni-channel offerings and focus on online-based selling have held up the company's net sales per selling square foot and is incredibly important to the consumer. While the impact of the omni-channel offerings has been significant, KSS still struggles to create sales growth. While sales growth has slowed for all competitors over the recent years, competitors continue to grow sales. Kohl's has been in an indefinite state of stalling for quite some time now and has a long way to go to compete against other retailers which are heavily investing in their omni-channel offerings.

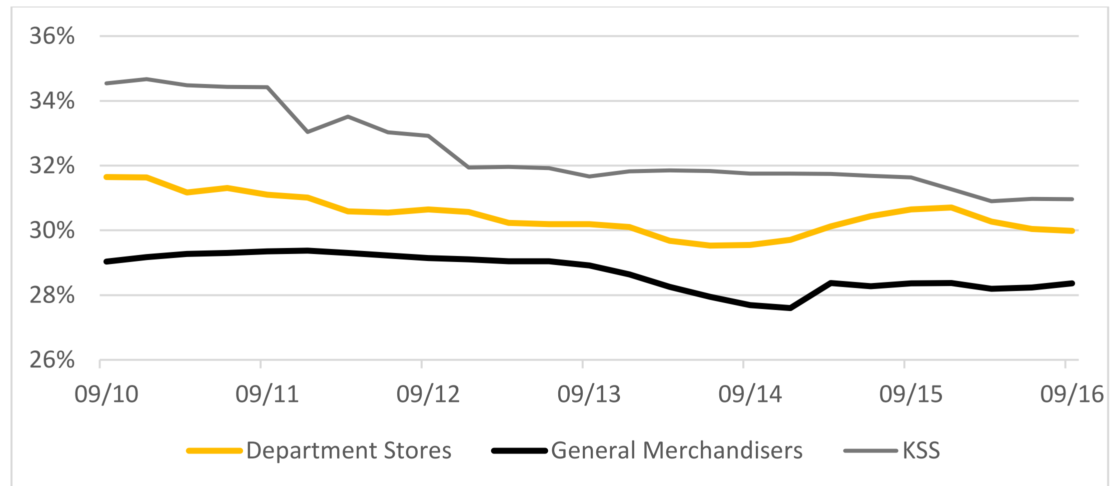
<u>Change in Consumer Spending Habits</u>

Since the Great Recession, both department stores and general merchandisers (also known as discount retailers) have experienced a slow, but steady decline in gross margins. This decline has come at a time when interest rates have been near zero, gasoline prices have come down, employment has improved, and inflation has been minimal. Despite the positive effects these trends have on a consumer's disposable income, the fall in retailers' markups seems to show no sign of reversal.

The decline in gross margin reflects the increase in competition within the market. Specialty retailers have increased their presence causing both department stores and general merchandisers to drive down prices in response. In addition to the adverse effect of brick and mortar store competition, online sales are driving up retailer shipping expenses. Amazon is also driving down prices as they dominate online sales. According to the U.S. Census Bureau, there was $430.6 billion in North American electronic shopping and mail-orders in 2015; Amazon's electronics and general merchandise sales make up an impressive 18% of that number largely due to its competitive pricing.

Department stores and general merchandisers have experienced a steady gross margin decline

Figure 9: Department Store and General Merchandiser Gross Margin

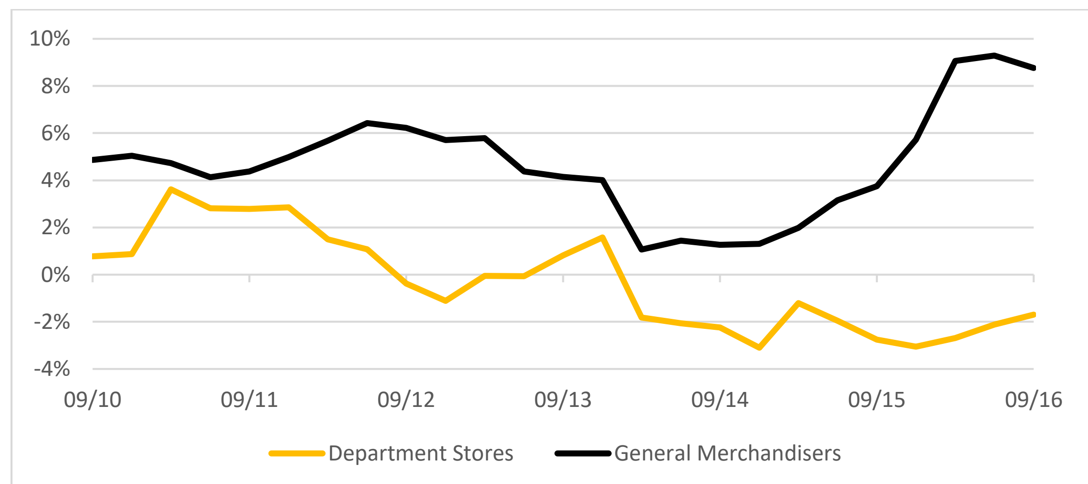


Source: FactSet, Company Reports

While gross margins have fallen for both department stores and general merchandisers, the general merchandisers have experienced a much healthier sales growth over the same period of time. The large spread between the sales growth represents the success of selling merchandise at a lower cost and higher volume. The consumer has become cautious and value-conscious. The opening of the Kohl's Off-Aisle clearance centers and FILA outlets should be a well-received concept give the current trend.

Department stores have lagged behind general merchandisers sales growth

Figure 10: Department Store and General Merchandiser Sales Growth



Source: FactSet

Macroeconomic Trends

Because Kohl's is a consumer discretionary company, its performance is significantly tied to the performance of the overall economy. As can be seen in figure 11, when consumer confidence rises and falls, Kohl's price typically rises or falls at a faster pace than the S&P 500. Consumer confidence has risen, but remains below prior peaks. On the other hand, unemployment and oil remain at favorable levels for consumer spending.

Figure 11: Relative Price of Target to S&P 500 Index vs. Consumer Confidence YOY

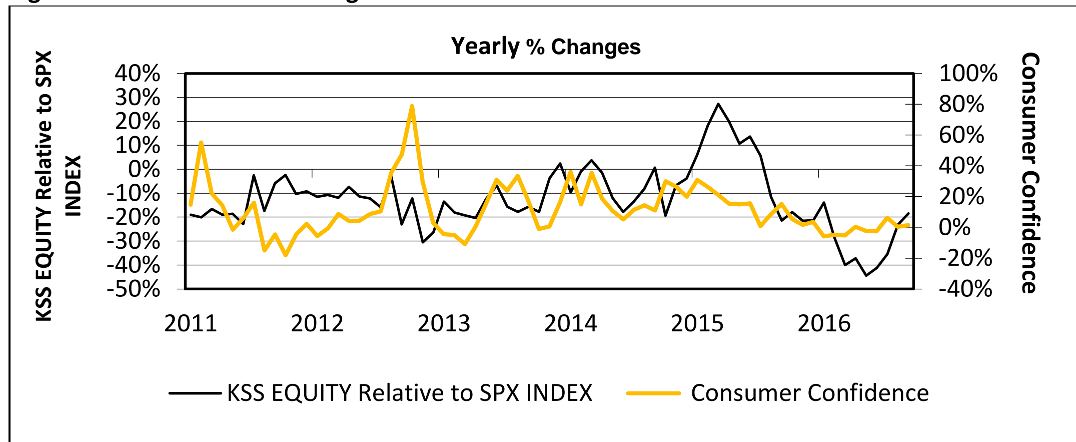


Figure 12: Relative Price of Target to S&P 500 Index vs. Unemployment Rate YOY

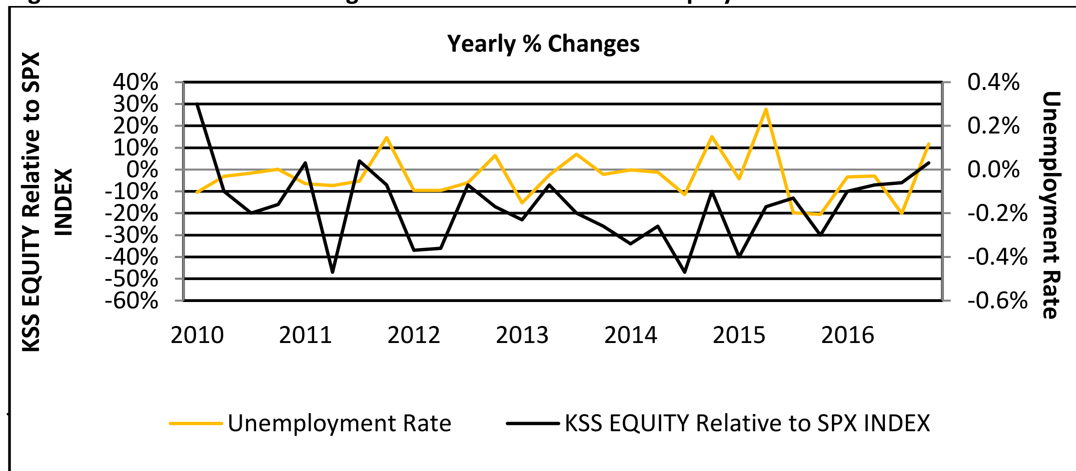
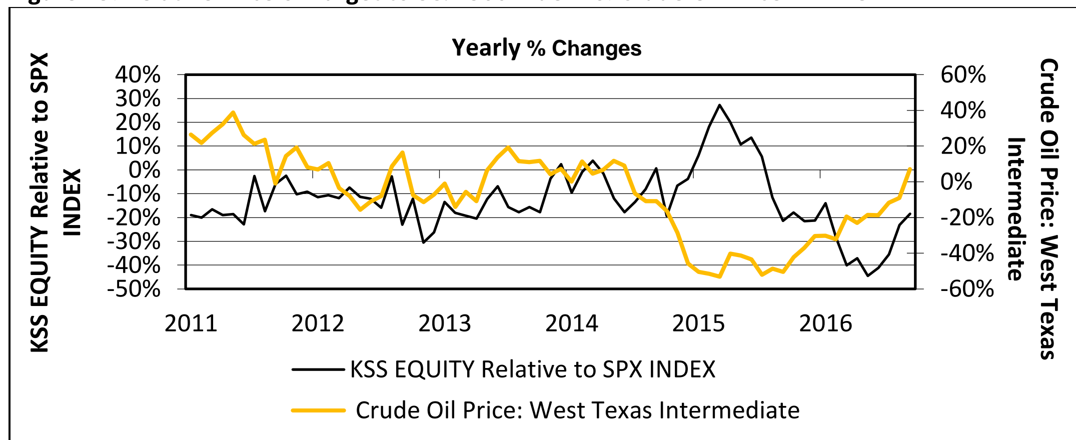


Figure 13: Relative Price of Target to S&P 500 Index vs. Crude Oil Price WTI YOY



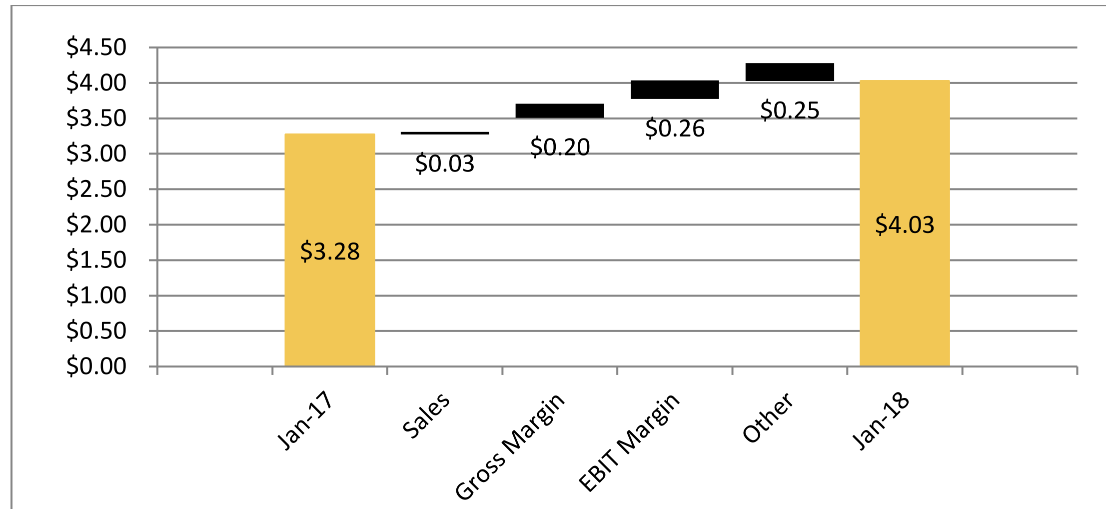
Source: Bloomberg

Figures 12 and 13 show that KSS outperforms when income rises as unemployment declines and oil prices fall. The converse is also true. Kohl's is in a position to benefit from continued low oil prices and high levels of employment

Financial Analysis

I anticipate EPS to grow to $4.03 in FY 2017. A slight growth in sales will increase earnings by $0.03 while gross margin increases modestly from better inventory management, adding $0.20. Further EBIT margin improvement due to declining SG&A/sales should create a gain of $0.26 in earnings. Lastly, I forecast that capital allocations towards share repurchases should add $0.25 to EPS.

Figure 15: Quantification of 2017 EPS drivers



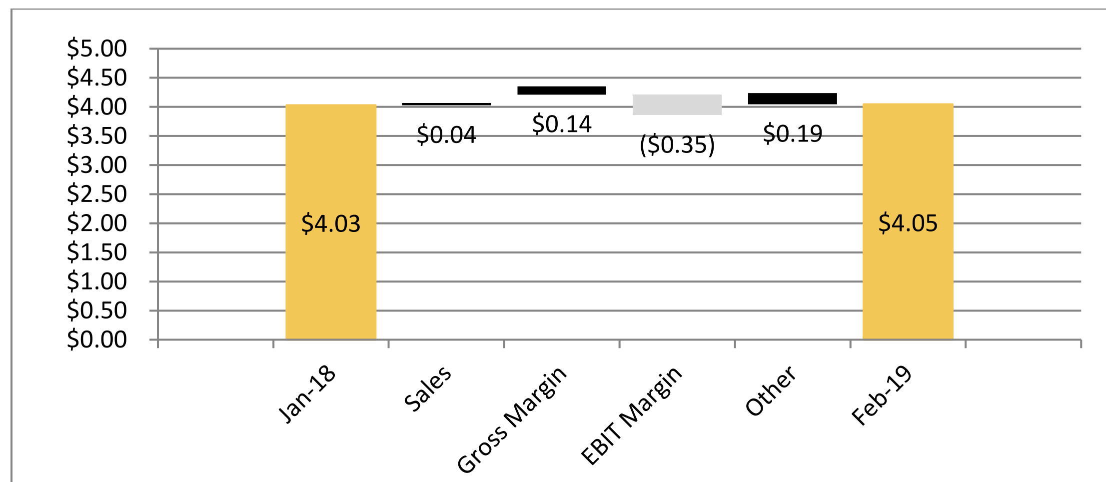
Source: Company Reports, IMCP

<u>Sales – Estimates vs. Consensus</u>
2017: $19,012 vs $18,933 cons.

<u>EPS – Estimates vs. Consensus</u>
2017: $4.03 vs. $4.25 cons.

I expect EPS to increase $0.02 to $4.05 in FY 2018. Kohl's should experience a small gain of $0.04 in earnings from increased sales. I anticipate expansion in gross margin from continued inventory improvement will increase EPS by $0.14. Both gains will be more than offset by a $0.35 decrease in EBIT margin as SG&A/sales rise (SG&A up $142 mil). Finally, capital allocations towards share repurchases should add $0.19.

Figure 16: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

Sales – Estimates vs. Consensus
2018: $19,170 vs $18,854 cons.

EPS – Estimates vs. Consensus
2018: $4.05 vs. $4.45 cons.

I am more pessimistic than consensus estimates for both 2017 and 2018, particularly due to a difference in EBIT margin estimates. I foresee higher SG&A costs as IT becomes a larger investment in order to create an effective online presence and shipping costs to rise while online sales increase.

Revenues

Kohl's revenue has leveled off significantly since peaking in 2012. I expect this trend to continue in 2017 and 2018 as I believe Kohl's has reached maturity. Kohl's has only added as many stores as it has shut down in recent years; as online sales become a larger part of its business, there is no longer a focus on new locations but adapting to the world of e-commerce. New stores will be smaller formats as a part of the adaption. Kohl's management has even stated that in the long-term, large stores will be downsized as extra space becomes a liability. While these trends are negative, lower capital tied up in stores could increase return on capital.

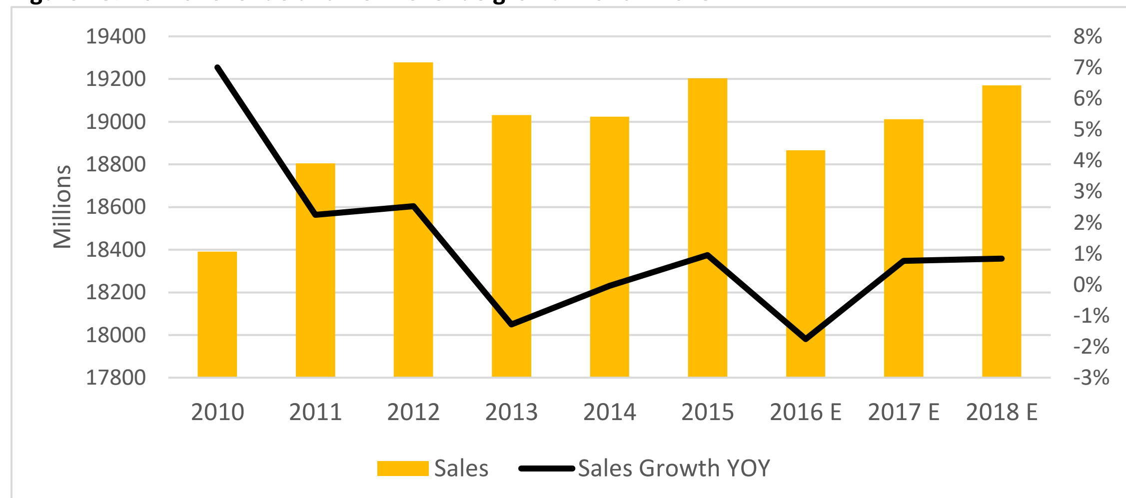
Kohl's is no longer relying on new store locations for revenue growth, but e-commerce instead

Figure 17: Locations and Same Store Sales 2012-2015

Year	2012	2013	2014	2015
Sales	$19,279	$19,031	$19,023	$19,204
Growth		-1%	0%	1%
Stores BOY	1127	1146	1158	1162
New stores	19	12	4	-2
Total stores EOY	1146	1158	1162	1160
Growth		1.0%	0.3%	-0.2%
Sales per store	$16.96	$16.52	$16.40	$16.54
Growth		-3%	-1%	1%
Sales per BOY store	$16.99	$16.53	$16.40	$16.54
SSS Growth		-3%	-1%	1%

Source: Company reports, IMCP

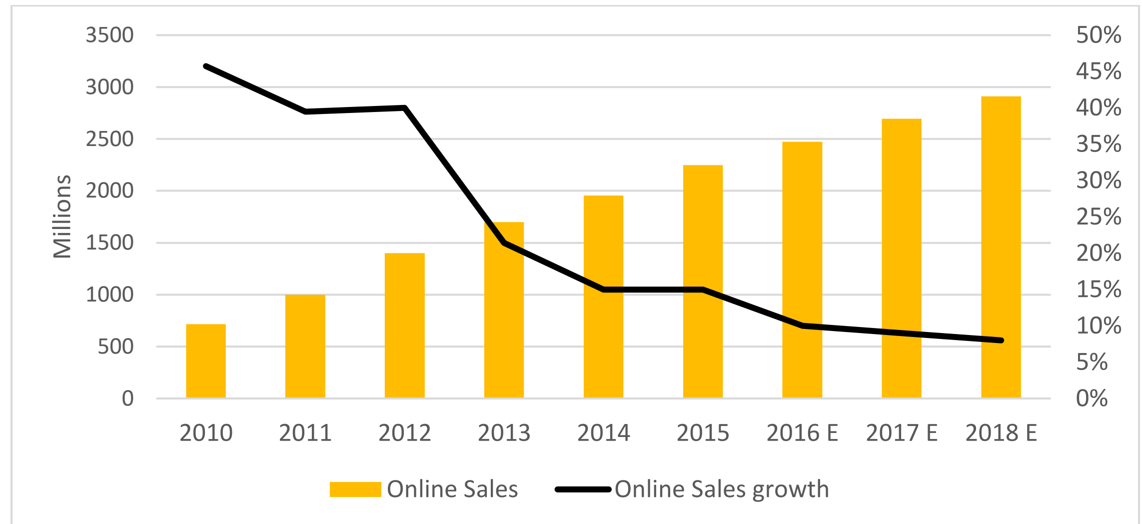
Figure 18: Kohl's revenue and YOY revenue growth 2010 – 2018E



Source: Company reports

While online sales become more prevalent, the rate at which Kohl's has grown them has significantly diminished. Kohl's is treading water; it is not expanding locations and online sales are only covering up declining store sales. I believe that Kohl's stopped recording online sales and store sales separate in 2014 for this reason. I don't think it is as difficult as management states it is to discern between an online and store sale. If Kohl's does not revitalize its online sales growth soon, it may be in grave danger. Many other companies are heavily investing in online presence and achieving superior growth rates.

Figure 19: Online Sales and YOY Online Sales Growth, 2010 – 2018E



Source: Company reports

I expect Kohl's to receive a sizeable boost in sales in 2017 and 2018 from its spring release of Under Armour items. This justifies my estimate of men's, women's, and footwear being the highest growing revenue segments in the future (see Appendix 3). Kohl's has stated that men's and women's active and wellness have experienced the greatest growth recently and that national brands are performing better than private and exclusive labels; I see the release of Under Armour a large and effective play given this trend. I expect that the release of Under Armour product in the spring could create a net sales gain of $150 Mil in 2017 and $200 Mil in 2018 when taking into consideration the time of its release and the cannibalization of other products.

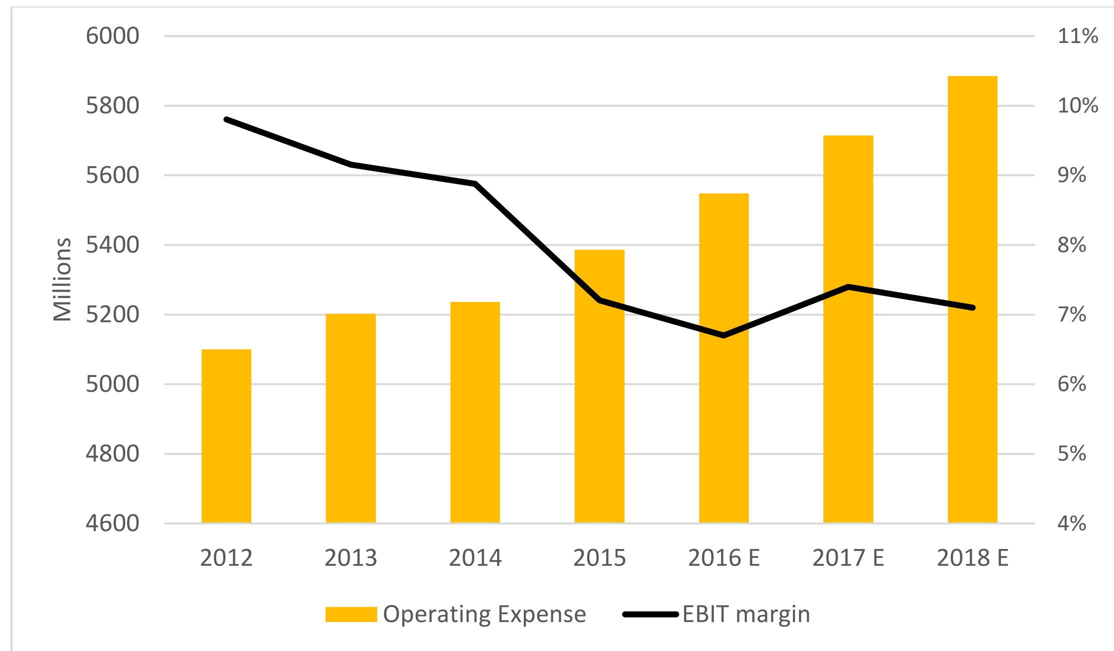
The accessories, home, and children's segments have lagged in 2016, and I only expect minimal growth from these segments in the next two years. I believe the lagging categories are due to poor product selection as store remodels, competitive prices, omni-channel offerings, and effective customer service contributes positively to Kohl's store experience.

<u>Operating Income and Margins</u>

Operating expenses are composed of selling, general and administrative expense, depreciation, and amortization. In 2015, there was a large increase in SG&A causing the jump in operating expenses. I do believe, though, that this growth in operating expenses will be the new norm (after a flat 2016) due to larger investments in IT wages as e-commerce continues to become more prevalent. I do not expect there to be large improvements in EBIT margin in years to come for these reasons. I do not see this as a downfall, though, as Kohl's must adapt to the changing environment.

IT wage inflation is expected to hold EBIT margin lower for longer

Figures 20: KSS Operating Expense vs. EBIT Margin



Source: Company reports, IMCP

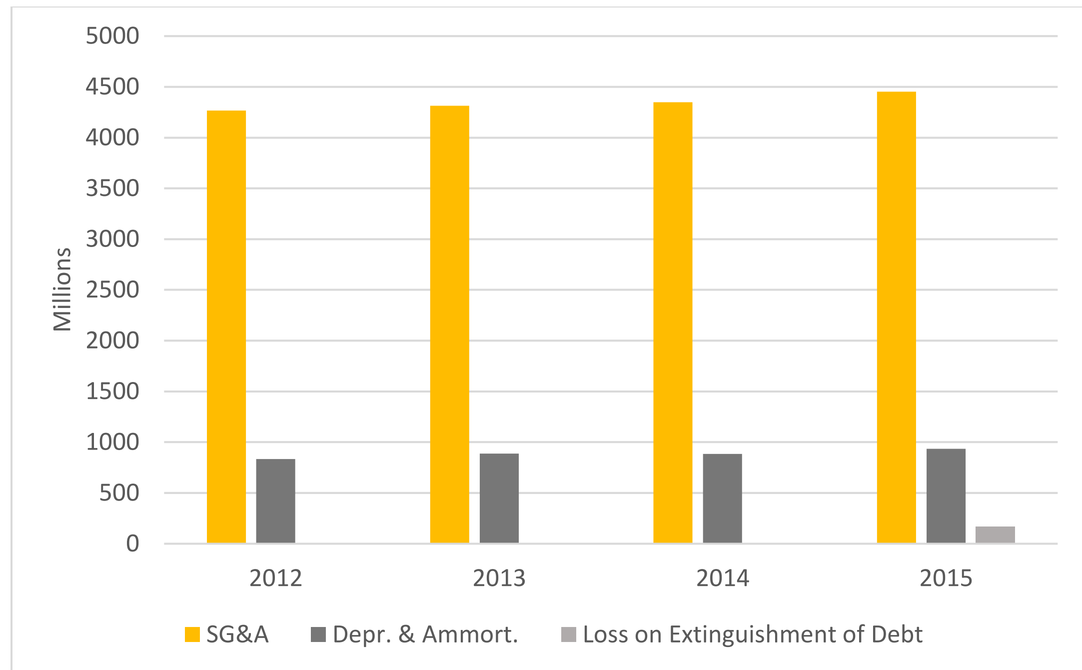
While EBIT margin remains low, I believe the higher operating expenses will be partially offset by higher gross margins. Kohl's has done a much better job managing inventory recently which reduces markdowns. Kohl's has reduced inventory in stores by nine percent over the third quarter and accounts payable to inventory ratio climbed 370 BPs to 44%. I view these numbers as impressive amounts and something that can continue to improve as I believe Kohl's has caught onto an effective process; Kohl's has begun re-fixturing larger 88,000 square feet stores to the same layouts as 66,000 square feet stores and has not experienced any reduction in sales in these locations. This way shelves aren't being filled just to be look full; shelves are filled and inventory is purchased with greater intent.

Figure 22: KSS Operating margins, 2012 – 2018E

	2012	2013	2014	2015	2016 E	2017 E	2018 E
Sales	19279	19031	19023	19204	18867	19012	19170
Direct costs	12289	12087	12098	12265	12056	12091	12154
Gross Income	6990	6944	6925	6939	6811	6920	7016
Gross Margin	36.3%	36.5%	36.4%	36.1%	36.1%	36.4%	36.6%
Operating Expenses	5100	5202	5236	5555	5547	5513	5655
EBIT	1890	1742	1689	1384	1264	1407	1361
EBIT margin	9.8%	9.2%	8.9%	7.2%	6.7%	7.4%	7.1%

Source: Company reports, IMCP

Figure 23: Composition of KSS Operating Expenses, 2012 – 2015



Source: Company Reports

Return on Equity

ROE has declined as margins fell; however, I expect it to rise in 2017 and 2018 back to normal levels as margins begin to recover and asset turnover and leverage rise. Modest sales growth and no net (after depreciation) asset growth will boost asset turns, and FCF is partly being used to buy shares which is boosting leverage.

Kohl's ROE will rise as margins, asset turns, and leverage rise

Figure 24: ROE breakdown, 2013 – 2018E

3-stage DuPont	2013	2014	2015	2016 E	2017 E	2018 E
Net income / sales	4.7%	4.6%	3.5%	3.2%	3.6%	3.5%
Sales / avg assets	1.35	1.33	1.37	1.41	1.46	1.51
ROA	6.3%	6.0%	4.8%	4.5%	5.3%	5.3%
Avg assets / avg equity	2.35	2.40	2.43	2.53	2.63	2.71
ROE	14.8%	14.5%	11.7%	11.3%	14.0%	14.3%

Source: Company reports, IMCP

Free Cash Flow

Figure 25: Free cash flows 2012 – 2018E

Free Cash Flow	2012	2013	2014	2015	2016 E	2017 E	2018 E
NOPAT	$1,194	$1,103	$1,086	$881	$805	$896	$867
Growth		-7.6%	-1.6%	-18.8%	-8.7%	11.3%	-3.3%
NWC*	1,752	1,724	1,424	1,782	1,490	1,407	1,323
Net fixed assets	9,186	9,086	8,753	8,530	8,203	8,090	7,988
Total net operating capital*	$10,938	$10,810	$10,177	$10,312	$9,693	$9,497	$9,310
Growth		-1.2%	-5.9%	1.3%	-6.0%	-2.0%	-2.0%
- Change in NWC*		(28)	(300)	358	(292)	(84)	(84)
- Change in NFA		(100)	(333)	(223)	(327)	(113)	(102)
FCFF*		$1,231	$1,719	$746	1,424	$1,092	$1,053
Growth			39.6%	-56.6%	90.8%	-23.3%	-3.6%
- After-tax interest expense	208	214	219	208	205	203	200
FCFE**		$1,017	$1,500	$538	$1,218	$889	$853
Growth			47.5%	-64.1%	126.4%	-27.0%	-4.0%
FCFF per share		$6.03	$8.81	$3.83	$7.78	$6.35	$6.39
Growth			46.0%	-56.6%	103.3%	-18.4%	0.7%
FCFE per share		$4.99	$7.69	$2.76	$6.66	$5.17	$5.18
Growth			54.3%	-64.1%	141.2%	-22.4%	0.2%

Source: Company reports, IMCP

In 2015, KSS free cash flow was significantly lower than prior years which can be attributed to lower NOPAT as well as an increase in net operating working capital caused by unnecessary inventory levels. I expect free cash flow to return to normal levels in the coming years as Kohl's does a better job managing inventory and experiences a decrease in net fixed assets as the company has slowed store expansion and depreciation takes over. Management has stated a desire to make a $600 Mil share repurchase in 2017 and 2018. I forecast that it will make this repurchase in 2017, but it may have to cut its buyback in 2018 as Kohl's continues to pay down debt and projected free cash flow will fall.

I expect both FCFF and FCFE to increase significantly (over 90%) in 2016 as the result of a 6% decrease in invested capital following a 1.3% gain in 2015. Free cash flow should decrease in proceeding years as I believe change in net fixed assets and net operating working capital will slow.

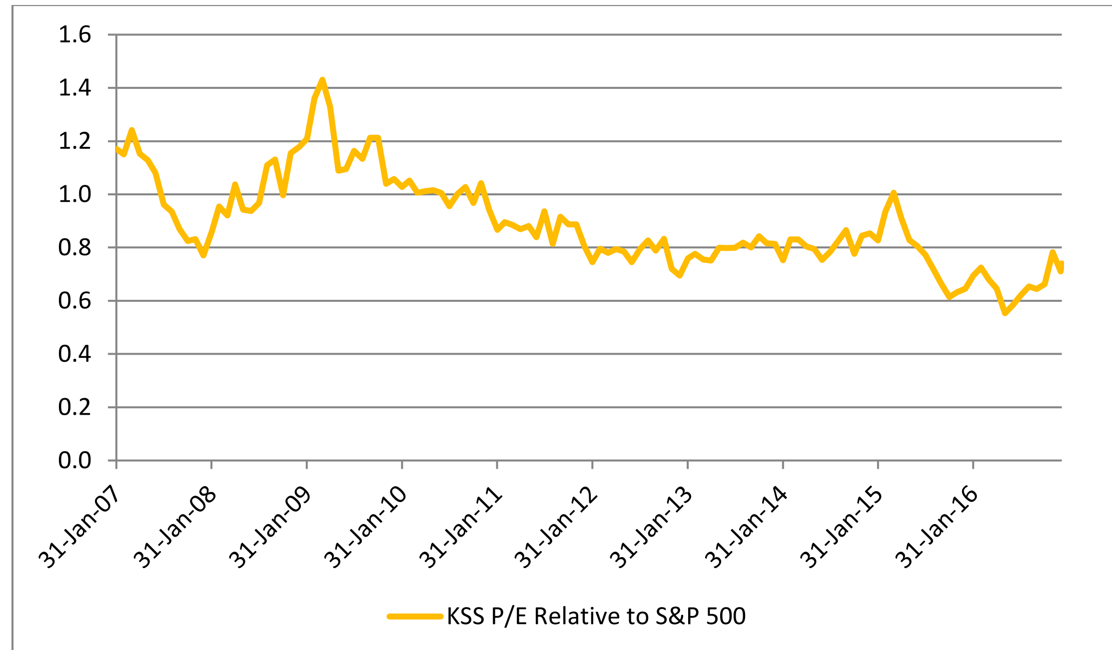
Valuation

Kohl's was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is slightly undervalued relative to other firms and is worth $48.17. Relative valuation shows Kohl's to be undervalued based on its fundamentals versus those of its department store peers. Price to book valuation yielded a price of $66.57, a seemingly steep number. A detailed DCF analysis values Kohl's at $48.22; I give this value a bit more weight because it incorporates assumptions that reflect Kohl's ongoing business changes. Finally, a probability-weighted scenario analysis yields a price of $47.34. As a result of these valuations, I value the stock at $50.

Trading History

Recently, Kohl's experienced a steep climb in P/E relative to the S&P 500; however, it is currently trading at a lower valuation than it has historically. I believe this is the result of the new optimism towards online retailers, such as Amazon, and the pessimism towards traditional brick-and-mortar retailers. Amazon trades at an astounding 85 times NTM earnings and 173 times TTM earnings.

Figure 26: KSS NTM P/E relative to S&P 500



Source: FactSet

Assuming a slight increase to a 13 NTM P/E at the end of 2017 (up from 11.1), KSS should trade at $52.65 by the end of the year.

- Price = P/E x EPS = 13 x $4.05 = $52.65

Discounting $52.65 back to today at a 9.3% cost of equity (explained in Discounted Cash Flow section) yields a price of $48.17. Given Kohl's potential for EPS to rise, this seems to be fair valuation.

Relative Valuation

Kohl's is currently trading at a NTM P/E slightly lower than its peers, with a NTM P/E of 11.1 compared to an average of 12.1. Investors are only willing to pay a discount P/E for KSS because it has only maintained its sales and earnings in recent years without demonstrating an ability to grow. Companies such as Nordstrom, Target, and TJ Maxx have demonstrated their ability to grow earnings and should continue to do so in the future. I believe Kohl's low P/B of 1.45 compared to the comps group average of 4.23 further demonstrates this point; investors believe Kohl's is only worth a modest amount more than its equity if it does not show consistent earnings growth. Also, KSS has a much lower ROE than its peer group.

Figure 27: KSS 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	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
KSS	KOHL'S CORP	$42.01	$7,414	(19.0)	(22.9)	(5.2)	14.3	(15.6)	(14.9)	4.3	17.8%	-18.4%	-11.8%	29.8%	4.5%	-0.9%	1.16	88.0%	B-	4.85%	60.7%
DDS	DILLARDS INC -CL A	$56.49	$1,887	(10.2)	(20.9)	(13.9)	(4.1)	(13.8)	(9.9)	-8.1	1.0%	-11.3%	-19.1%	-0.4%	-10.4%	20.9%	1.07	47.1%	B	0.45%	5.1%
M	MACY'S INC	$30.86	$9,433	(13.9)	(26.4)	(17.4)	(6.8)	(16.5)	(13.8)	6.6	52.0%	-23.7%	-22.7%	36.5%	-0.9%	10.8%	0.70	173.2%	B+	4.17%	69.6%
JWN	NORDSTROM INC	$45.56	$7,897	(6.9)	(20.3)	(14.0)	21.6	(8.8)	(4.9)	7.3	63.7%	-15.3%	-37.1%	58.1%	7.7%	2.9%	0.64	321.7%	A	3.09%	79.7%
JCP	PENNEY (J C) CO	$7.86	$2,423	(7.2)	(20.3)	(12.8)	(9.2)	9.6	(5.4)	-2.0	-155.2%	-33.6%	-101.2%	3100.0%	87.5%		0.86	396.3%	C	0.00%	
TGT	TARGET CORP	$72.56	$40,757	(1.7)	(5.7)	7.1	4.0	(3.0)	0.5	6.9	-2.2%	37.1%	-5.0%	10.6%	5.4%	5.9%	0.56	109.3%	A-	3.21%	41.9%
TJX	TJX COMPANIES INC	$76.15	$49,642	(0.6)	(1.5)	2.6	(0.6)	5.9	1.4	9.4	8.6%	5.7%	4.5%	8.6%	10.3%	15.1%	0.65	51.4%	A+	1.32%	29.0%
SHLD	SEARS HOLDINGS CORP	$10.39	$1,112	0.3	(12.2)	(16.9)	(20.0)	(47.9)	11.8		-26.7%	-32.6%	70.2%	-31.1%	-9.1%		1.41	-111.2%	C	0.00%	
Average			$16,164	(5.7)	(15.3)	(9.3)	(2.1)	(10.7)	(2.9)	3.4	-8.4%	-10.5%	-15.8%	454.6%	12.9%	11.1%	0.84	141.1%		1.75%	45.1%
Median			$7,897	(6.9)	(20.3)	(13.9)	(4.1)	(8.8)	(4.9)	6.8	1.0%	-15.3%	-19.1%	10.6%	5.4%	10.8%	0.70	109.3%		1.32%	41.9%
SPX	S&P 500 INDEX	$2,269		(0.1)	2.9	5.1	8.6	12.5	1.3			1.0%	0.6%	12.0%	11.5%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017E	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
KSS	http://www.kohls.com	10.5%	1.45	9.9	12.1	13.8	13.1	11.1	10.6	10.1	2.9%	0.40	7.6%	6.5%	8.8	5.2	6.0			0.9%	$29.02
DDS	http://www.dillards.com	10.8%	1.09	7.3	8.2	10.1	10.3	10.2	10.1	11.3	2.9%	0.29	5.5%	9.9%	7.4			-4.7%		2.0%	$51.99
M	http://www.macysinc.com	20.1%	2.49	7.3	9.6	12.4	14.6	9.6	9.1	9.2	2.9%	0.36	7.1%	9.0%	9.4	4.8	6.6	-3.2%	-2.3%	1.6%	$12.40
JWN	http://shop.nordstrom.com	39.9%	9.18	12.2	14.5	23.0	24.5	15.0	14.6	13.5	2.3%	0.53	6.2%	13.0%	10.0	6.1	9.4	4.6%	5.7%	8.3%	$4.97
JCP	http://shop.nordstrom.com/	0.5%	2.12	-3.1	-4.7	393.0	-9.2	16.8	12.3	6.6	0.0%	0.19	1.0%	-7.7%	1021.0	4.7		3.0%	3.1%		$3.70
TGT	http://www.targetcorp.com	25.4%	3.70	18.9	13.8	14.5	13.1	13.4	13.1	12.5	4.0%	0.58	7.3%	12.9%	10.5	8.0	8.4	0.0%	2.4%	1.8%	$19.64
TJX	http://www.tjx.com	52.4%	11.47	24.2	22.9	21.9	22.3	20.6	20.1	18.3	6.8%	1.50	11.8%	38.1%	13.0	15.8	15.2	6.1%	6.2%	7.1%	$6.64
SHLD	http://www.searsholdings.com	71.4%	-0.41	-0.7	-1.0	-0.6	-0.6	-0.8	-0.8	-0.9	-8.7%	0.05	-5.9%	-91.5%	-3.4	-0.5	-3.1	-19.5%		-10.3%	-$25.23
Average		31.5%	4.23	9.5	9.0	67.8	10.7	12.1	11.2	10.1	1.5%	0.50	4.7%	-2.3%	152.6	6.5	7.3	-2.0%	3.0%	1.8%	
Median		25.4%	2.49	7.3	9.6	14.5	13.1	13.4	12.3	11.3	2.9%	0.36	6.2%	9.9%	10.0	5.5	8.4	0.0%	3.1%	1.9%	
spx	S&P 500 INDEX			19.4	19.2	19.1			17.1	15.3											

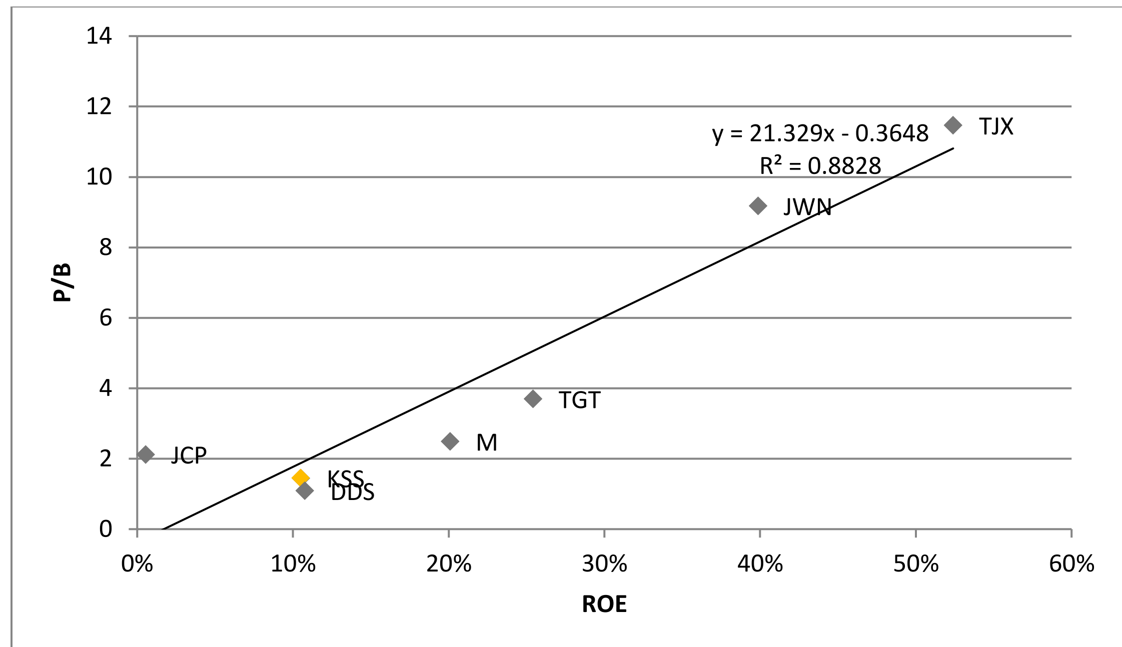
Source:FactSet

A more thorough analysis of P/B and ROE is shown in figure 29. The calculated R-squared of the regression indicates that over 88% of a sampled firm's P/B is explained by its NTM ROE. Note that that Sears is excluded from this regression because of its negative price/book ratio and high ROE. KSS one of the lowest P/B and ROEs of this grouping, and according to this measure is slightly undervalued.

- Estimated P/B = Estimated 2017 ROE (14%) x 21.329 + -0.3648 = 2.621
- Target Price = Estimated P/B (2.621) x 2017E BVPS (27.76) = $72.76

Discounting back to the present at a 9.3% cost of equity leads to a target price of $66.57.

Figure 28: P/B vs 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. An 70% weighting of ROE and 30% weighting of NPM was compared to an 100% weighted composite of NTM P/E. After eliminating Sears and JC Penny, extreme outliers, the regression line had an R-squared of .95.

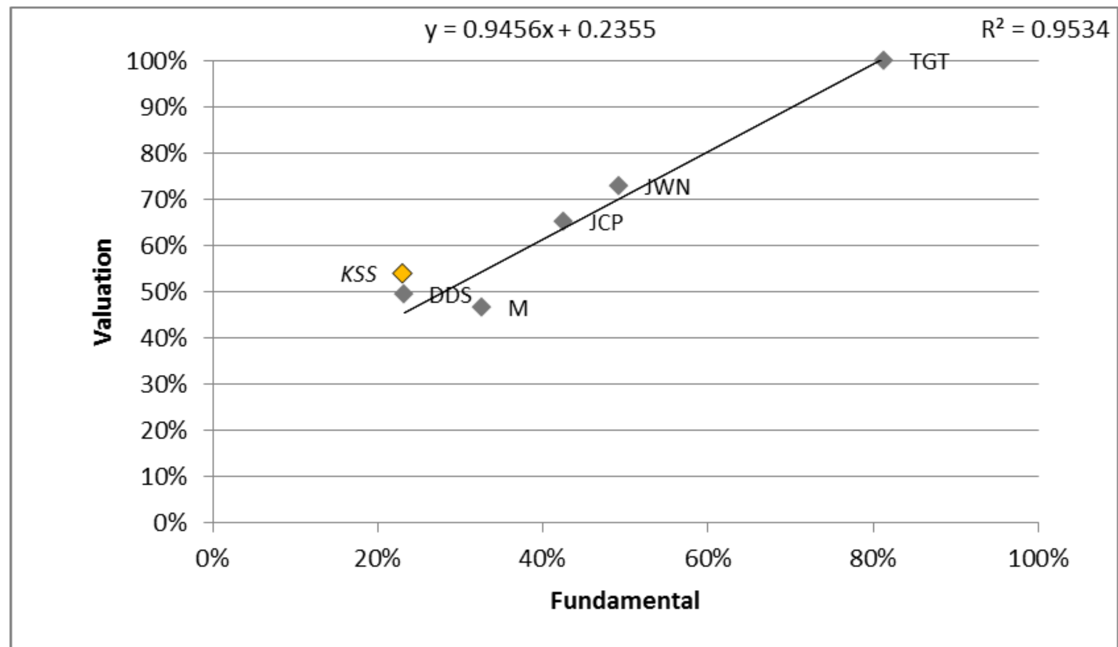
Given this relationship, Kohl's has a suggested target price of 48% of the maximum P/E, or 9.9. Kohl's currently trades at a 11.1 P/E, a slight premium to this target valuation.

Figure 29: Composite valuation, % of range

		Fundamentals			Valuation		
		Weight	70.0%	30.0%	100.0%		
Ticker	**Name**	**Value**	**2016 ROE**	**2016 NPM**	**NTM P/E**	**Weighted Fund**	**Target Value**
KSS	KOHL'S CORP	54%	15%	42%	54%	23%	48%
DDS	DILLARDS INC	49%	15%	42%	49%	23%	48%
M	MACY'S INC	47%	28%	43%	47%	33%	56%
JWN	NORDSTROM INC	73%	56%	34%	73%	49%	71%
TGT	TARGET CORP	65%	36%	59%	65%	43%	65%
TJX	TJX COMPANIES INC	100%	73%	100%	100%	81%	99%

Source: IMCP, FactSet

Figure 30: Composite relative valuation



Source: FactSet, IMCP

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 9.3% 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 2.43%.
- A beta of 0.9 was utilized as an average of the comps group. While retail is cyclical, KSS is a large firm and has reasonably 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 9.3% (2.43 + .9 (10.0 – 2.43)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $5.17 and $5.18, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $9.07 per share. Thus, stage one of this discounted cash flow analysis contributes $9.07 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 9.3% cost of equity. I assume 0.5% sales growth in 2019 through 2023. The ratio of NWC to sales will remain at 2018 levels, but NFA turnover will rise from 2.4 in 2018 to 2.6 in 2023 as a result of scaling down locations and store size while online sales become more prevalent. Also, the NOPAT margin is expected to rise to remain at 4.5% from 2018 through 2023 due to high IT wage inflation and shipping costs. After-tax interest is expected to rise 0.5% per year as the result of modest borrowing increases for online expansion. I also assume 1% reduction in shares per year.

Figure 31: FCFE and discounted FCFE, 2015 – 2021

	2017	2018	2019	2020	2021	2022	2023
FCFE	$5.17	$5.18	$4.68	$4.72	$4.77	$4.83	$4.88
Discounted FCFE	$4.73	$4.34	$3.59	$3.32	$3.07	$2.84	$2.63

Source: IMCP

Added together, the second stage discounted cash flows total $15.43.

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $4.03 in 2017 to $4.41 in 2023.

Figure 32: EPS estimates for 201 – 2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$4.03	$4.05	$4.15	$4.21	$4.28	$4.34	$4.41

Source: IMCP

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. I believe that Kohl's has reached maturity and will slowly enter the life cycle phase of decline. a P/E ratio of 10 is assumed at the end of Kohl's terminal year. This is below the comp group's historical average multiple of 15.

Given the assumed terminal earnings per share of $4.41 and a price to earnings ratio of 10, a terminal value of $44.07 per share is calculated. Using the 9.3% cost of equity, this number is discounted back to a present value of $23.72.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $48.22 is calculated (9.07 + 15.43 + 23.72). Given Kohl's current price of $42.01, this model indicates that the stock is moderately undervalued.

Scenario Analysis

Kohl's is difficult to value with certainty because of cyclicality, a shift towards e-commerce, and inability to predict consumers' reactions to brand identity. The firm has stated its desire to improve its omnichannel offerings and brand identity, but sales have not shown improvement. Given the uncertainty of what is to come, I have valued KSS under six scenarios by changing combinations of two key factors. More detailed numbers can be found in Appendix 8.

Sales Growth – High growth assumes that Kohl's new identity is able to draw in more customers and reverse the declining sales trend by 2017. I give this outcome a 20% probability because of the competitive online retail environment. Modest growth is the base assumption used in the prior DCF analysis, and is given a 50% probability. Poor growth assumes that many of Kohl's loyal customers are turned off by the company's development, and the firm is unable to attract enough new customers to grow revenues strongly. I give this outcome a 30% probability, once again, due to competitive online retail.

Cost Savings – Scenario one, moderate operating margin, assumes that Kohl's is able to maintain its operating efficiency even as it grows its online presence. In order to do this, the brand will have to effectively develop its online presence with fewer IT personnel. Scenario two, weak operating margin, assumes that Kohl's is forced to spend a significant amount on IT wages in order to keep up with online retail competition. I have assigned a 50% probability of Kohl's maintaining its current operating margin and a 50% probability of a decline in operating margin.

Figure 33: Scenario analysis

Sales	Cost Savings	DCF Value
High Growth (p=.2)	Moderate (p=0.5)	51.59
	Weak (p=0.5)	46.28
Moderate Growth (p=.5)	Moderate (p=0.5)	48.22
	Weak (p=0.5)	45.85
Weak Growth (p=.3)	Moderate (p=0.5)	47.72
	Weak (p=0.5)	45.85

Source: IMCP

A valuation of Kohl's stock was reached using the same discounted cash flow method outlined in the previous section. Each scenario's value was then multiplied by the scenario's probability to yield a probability-weighted value; the sum of these values is the likely price. This technique results in a target price of $47.34.

Business Risks

Although I have many reasons to be optimistic about Kohl's, there are several good reasons why I find the stock to be fairly priced.

Weather:

Kohl's, being primarily apparel-based, is subject to the whims of the weather. Disruptive weather can result in excess inventory and further markdowns; and on the other hand, it can lead to a shortage of in-demand inventory.

Competitive marketplace:

Retail competition has become especially fierce since the Great Recession. Discount merchandisers and online retailers have stolen market share in recent years as consumers' preferences for how they make purchases has changed and they have become more value-conscious.

Labor issues:

Kohl's relies upon low-wage part time workers to staff its stores. The inability to create a desirable working environment could result in increased turnover expenses or wage inflation. Recent moves to increase the minimum wage in several US states could also hurt operating margins.

Inability to properly adapt omni-channel offerings:

Technology, especially the internet and mobile devices, has changed the way consumers shop. The inability to invest in omni-channel offerings, create a desirable online and mobile experience, and maintain an effective relationship with consumers on social media will cause Kohl's to be swept away by other fast-growing online competitors.

Loss of brand identity:

Creating a desirable shopping experience with great product, service, merchandising, and methods of shopping is key to attracting and retaining both customers and employees. If Kohl's loses its reputation, it will quickly lose business.

Appendix 1: Income Statement

Income Statement (in millions)	2012	2013	2014	2015	2016 E	2017 E	2018 E
Sales	$19,279	$19,031	$19,023	$19,204	$18,867	$19,012	$19,170
Direct costs	12,289	12,087	12,098	12,265	12,056	12,091	12,154
Gross Margin	6,990	6,944	6,925	6,939	6,811	6,920	7,016
SG&A, R&D, and other	5,100	5,202	5,236	5,555	5,547	5,513	5,655
Earnings before interest and tax	1,890	1,742	1,689	1,384	1,264	1,407	1,361
Interest	329	338	340	327	323	319	314
Earnings before tax	1,561	1,404	1,349	1,057	941	1,088	1,047
Taxes	575	515	482	384	342	395	380
Net income	986	889	867	673	599	693	667
Basic Shares	220.0	204.0	195.0	195.0	183.0	172.1	164.8
EPS	$4.48	$4.36	$4.45	$3.45	$3.28	$4.03	$4.05
DPS	$1.36	$1.48	$1.63	$1.79	$2.10	$2.45	$2.82

Appendix 2: Balance Sheet

Balance Sheet (in millions)	2012	2013	2014	2015	2016 E	2017 E	2018 E
Assets							
Cash	537	971	1,407	707	908	705	624
Operating assets ex cash	4,182	4,321	4,173	4,369	4,056	3,992	3,930
Operating assets	4,719	5,292	5,580	5,076	4,964	4,698	4,554
Operating liabilities	2,430	2,597	2,749	2,587	2,566	2,586	2,607
NOWC	2,289	2,695	2,831	2,489	2,399	2,112	1,947
NOWC ex cash (NWC)	1,752	1,724	1,424	1,782	1,490	1,407	1,323
NFA	9,186	9,086	8,753	8,530	8,203	8,090	7,988
Invested capital	$11,475	$11,781	$11,584	$11,019	$10,601	$10,202	$9,934
Total assets	$13,905	$14,378	$14,333	$13,606	$13,167	$12,788	$12,542
Liabilities and Shareholder Equity							
Short-term and long-term debt	$4,915	$5,243	$5,046	$4,965	$4,915	$4,840	$4,765
Other liabilities	512	560	547	563	580	585	590
Equity	6,048	5,978	5,991	5,491	5,106	4,777	4,579
Total supplied capital	$11,475	$11,781	$11,584	$11,019	$10,601	$10,202	$9,934
Total liabilities and equity	$13,905	$14,378	$14,333	$13,606	$13,167	$12,788	$12,542

Appendix 3: Sales Forecast by Segment

Sales (in millions)	2012	2013	2014	2015	2016 E	2017 E	2018 E
Sales	19,279	19,031	19,023	19,204	18,867	19,012	19,170
Growth		-1.3%	0.0%	1.0%	-1.8%	0.8%	0.8%
Women's	5,977	5,900	5,707	5,761	5,646	5,722	5,779
Growth		-1.3%	-3.3%	1.0%	-2.0%	1.4%	1.0%
% of sales	31.0%	31.0%	30.0%	30.0%	29.9%	30.1%	30.1%
Men's	3,663	3,616	3,805	3,841	3,764	3,839	3,889
Growth		-1.3%	5.2%	1.0%	-2.0%	2.0%	1.3%
% of sales	19.0%	19.0%	20.0%	20.0%	20.0%	2.0%	20.3%
Children's	2,506	2,474	2,473	2,497	2,447	2,422	2,446
Growth		-1.3%	0.0%	1.0%	-2.0%	-1.0%	1.0%
% of sales	13.0%	13.0%	13.0%	13.0%	13.0%	12.7%	6.0%
Home	3,470	3,426	3,424	3,457	3,422	3,422	3,422
Growth		-1.3%	0.0%	1.0%	-1.0%	0.0%	0.0%
% of sales	18.0%	18.0%	18.0%	18.0%	18.1%	18.0%	17.9%
Accessories	1,928	1,903	1,902	1,920	1,882	1,891	1,910
Growth		-1.3%	0.0%	1.0%	-2.0%	0.5%	1.0%
% of sales	10.0%	10.0%	10.0%	10.0%	10.0%	9.9%	10.0%
Footwear	1,735	1,713	1,712	1,728	1,706	1,714	1,723
Growth		-1.3%	0.0%	1.0%	-1.3%	0.5%	0.5%
% of sales	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%

Appendix 4: Ratios

Ratios	2012	2013	2014	2015	2016 E	2017 E	2018 E
Profitability							
Gross margin	36.3%	36.5%	36.4%	36.1%	36.1%	36.4%	36.6%
Operating (EBIT) margin	9.8%	9.2%	8.9%	7.2%	6.7%	7.4%	7.1%
Net profit margin	5.1%	4.7%	4.6%	3.5%	3.2%	3.6%	3.5%
Activity							
NFA (gross) turnover		2.08	2.13	2.22	2.26	2.33	2.38
Total asset turnover		1.35	1.33	1.37	1.41	1.46	1.51
Liquidity							
Op asset / op liab	1.94	2.04	2.03	1.96	1.93	1.82	1.75
NOWC Percent of sales		13.1%	14.5%	13.9%	13.0%	11.9%	10.6%
Solvency							
Debt to assets	35.3%	36.5%	35.2%	36.5%	37.3%	37.8%	38.0%
Debt to equity	81.3%	87.7%	84.2%	90.4%	96.3%	101.3%	104.1%
Other liab to assets	3.7%	3.9%	3.8%	4.1%	4.4%	4.6%	4.7%
Total debt to assets	39.0%	40.4%	39.0%	40.6%	41.7%	42.4%	42.7%
Total liabilities to assets	56.5%	58.4%	58.2%	59.6%	61.2%	62.6%	63.5%
Debt to EBIT	2.60	3.01	2.99	3.59	3.89	3.44	3.50
EBIT/interest	5.74	5.15	4.97	4.23	3.92	4.42	4.34
Debt to total net op capital	42.8%	44.5%	43.6%	45.1%	46.4%	47.4%	48.0%
ROIC							
NOPAT to sales		5.8%	5.7%	4.6%	4.3%	4.7%	4.5%
Sales to IC		1.64	1.63	1.70	1.75	1.83	1.90
Total		9.5%	9.3%	7.8%	7.4%	8.6%	8.6%
Total using EOY IC	10.4%	9.4%	9.4%	8.0%	7.6%	8.8%	8.7%
ROE							
5-stage							
EBIT / sales		9.2%	8.9%	7.2%	6.7%	7.4%	7.1%
Sales / avg assets		1.35	1.33	1.37	1.41	1.46	1.51
EBT / EBIT		80.6%	79.9%	76.4%	74.5%	77.4%	76.9%
Net income /EBT		63.3%	64.3%	63.7%	63.7%	63.7%	63.7%
ROA		6.3%	6.0%	4.8%	4.5%	5.3%	5.3%
Avg assets / avg equity		2.35	2.40	2.43	2.53	2.63	2.71
ROE		14.8%	14.5%	11.7%	11.3%	14.0%	14.3%
3-stage							
Net income / sales		4.7%	4.6%	3.5%	3.2%	3.6%	3.5%
Sales / avg assets		1.35	1.33	1.37	1.41	1.46	1.51
ROA		6.3%	6.0%	4.8%	4.5%	5.3%	5.3%
Avg assets / avg equity		2.35	2.40	2.43	2.53	2.63	2.71
ROE		14.8%	14.5%	11.7%	11.3%	14.0%	14.3%
Payout Ratio		34.0%	36.6%	51.9%	64.1%	60.9%	69.7%
Retention Ratio		66.0%	63.4%	48.1%	35.9%	39.1%	30.3%
Sustainable Growth Rate		9.8%	9.2%	5.6%	4.1%	5.5%	4.3%

Appendix 5: 3-stage DCF Model

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	2017	2018	2019	2020	2021	2022	2387
Sales Growth	*0.8%*	*0.8%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
NOPAT / S	*4.7%*	*4.5%*	*4.5%*	*4.5%*	*4.5%*	*4.5%*	*4.5%*
S / NWC	*13.51*	*14.49*	*14.49*	*14.49*	*14.49*	*14.49*	*14.49*
S / NFA (EOY)	*2.35*	*2.40*	*2.44*	*2.48*	*2.52*	*2.56*	*2.60*
S / IC (EOY)	*2.00*	*2.06*	*2.09*	*2.12*	*2.15*	*2.18*	*2.20*
ROIC (EOY)	*9.4%*	*9.3%*	*9.4%*	*9.6%*	*9.7%*	*9.8%*	*10.0%*
ROIC (BOY)		*9.1%*	*9.4%*	*9.5%*	*9.6%*	*9.8%*	*9.9%*
Share Growth		*-4.2%*	*-2.0%*	*-1.0%*	*-1.0%*	*-1.0%*	*-1.0%*
Sales	$19,012	$19,170	$19,266	$19,363	$19,459	$19,557	$19,654
NOPAT	$896	$867	$871	$875	$880	$884	$889
Growth		*-3.3%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
- Change in NWC	-84	-84	7	7	7	7	7
NWC EOY	*1407*	*1323*	*1329*	*1336*	*1343*	*1349*	*1356*
Growth NWC		*-6.0%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
- Chg NFA	-113	-102	-92	-89	-86	-83	-80
NFA EOY	*8,090*	*7,988*	*7,896*	*7,807*	*7,722*	*7,639*	*7,559*
Growth NFA		*-1.3%*	*-1.1%*	*-1.1%*	*-1.1%*	*-1.1%*	*-1.0%*
Total inv in op cap	-196	-186	-85	-82	-79	-76	-73
Total net op cap	9497	9310	9225	9144	9065	8989	8916
FCFF	$1,092	$1,053	$956	$957	$959	$960	$962
% of sales	*5.7%*	*5.5%*	*5.0%*	*4.9%*	*4.9%*	*4.9%*	*4.9%*
Growth		*-3.6%*	*-9.2%*	*0.1%*	*0.1%*	*0.2%*	*0.2%*
- Interest (1-tax rate)	203	200	201	202	203	204	205
Growth		*-1.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
FCFE w/o debt	$889	$853	$755	$755	$756	$756	$757
% of sales	*4.7%*	*4.5%*	*3.9%*	*3.9%*	*3.9%*	*3.9%*	*3.9%*
Growth		*-4.0%*	*-11.5%*	*0.0%*	*0.0%*	*0.1%*	*0.1%*
/ No Shares	172.1	164.8	161.5	159.9	158.3	156.7	155.2
FCFE	$5.17	$5.18	$4.68	$4.72	$4.77	$4.83	$4.88
Growth		*0.2%*	*-9.7%*	*1.0%*	*1.1%*	*1.1%*	*1.1%*
* Discount factor	0.92	0.84	0.77	0.70	0.64	0.59	0.54
Discounted FCFE	$4.73	$4.34	$3.59	$3.32	$3.07	$2.84	$2.63
Third Stage							
Terminal value P/E							
Net income	$693	$667	$670	$674	$677	$680	$684
% of sales	*3.6%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
EPS	$4.03	$4.05	$4.15	$4.21	$4.28	$4.34	$4.41
Growth		*0.5%*	*2.6%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*
Terminal P/E							10.00
* Terminal EPS							$4.41
Terminal value							$44.07
* Discount factor							0.54
Discounted terminal value							$23.72

Summary

First stage	$9.07	Present value of first 2 year cash flow
Second stage	$15.43	Present value of year 3-7 cash flow
Third stage	$23.72	Present value of terminal value P/E
Value (P/E)	**$48.22**	= value at beg of fiscal yr 1905

Appendix 6: Scenario Analysis Assumptions

Sales Growth	2017	2018	2019	2020	2021	2022	2023
High Growth	0.8%	0.8%	2.5%	2.5%	2.5%	2.5%	2.5%
Moderate Growth	0.8%	0.8%	0.5%	0.5%	0.5%	0.5%	0.5%
Weak Growth	0.8%	0.8%	-1.5%	-1.5%	-1.5%	-1.5%	-1.5%

NOPAT/S	2017	2018	2019	2020	2021	2022	2023
Moderate	4.7%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Weak	4.7%	4.5%	3.0%	3.0%	3.0%	3.0%	3.0%

Appendix 7: Online Sales Data

Year	Online Sales (Millions)	Online Sales growth	Total Sales (Millions)	Online Sales as % of Total Sales	Selling Sq. Ft. (Millions)	Net Sales Per Selling Sq. Ft.	Net Sales Per Selling Sq. Ft. Without Online
2010	$717	46%	$18,391	4%	80.139	$231	$221
2011	$1,000	39%	$18,804	5%	82.226	$232	$217
2012	$1,400	40%	$19,279	7%	83.098	$231	$215
2013	$1,700	21%	$19,031	9%	83.671	$227	$207
2014 E	$1,955	15%	$19,023	10%	83.750	$226	$204
2015 E	$2,248	15%	$19,204	12%	83.810	$228	$202
2016 E	$2,473	10%	$18,867	13%	83.800	$225	$196
2017 E	$2,696	9%	$19,012	14%	83.700	$227	$195
2018 E	$2,911	8%	$19,170	15%	83.500	$230	$195

Appendix 8: Porter's 5 Forces

Threat of New Entrants – Moderate

While the barriers to entry into the department store sub-industry are not extensive, it would require substantial amounts of cash for real estate or online presence to cause a major disruption in the industry. The largest threat would be an already established business.

Threat of Substitutes - High

Kohl's largest threat is losing customers to lower-cost retailers. Kohl's relies on brand identity to convince customers to pay more for products that have huge numbers of potential lower-cost substitutes.

Supplier Power - Low

Kohl's carries a broad assortment of items; however, it is primarily apparel-based. Since there are many suppliers of clothing, it is very easy to change suppliers with little effort.

Buyer Power – Very High

Consumers of retail apparel goods have a great degree of power over retailers. Consumers are able to switch brands with ease and at no cost. Consumers also have the ability to wait for markdowns as there typically is no urgency to purchase apparel items.

Intensity of Competition – Very High

There are numerous national and international retail companies that occupy space in the same shopping centers, as well as online-only retailers that are growing at astounding rates. As foot traffic in malls has decreased, Kohl's traditional competitors are fighting even harder to obtain market share. Discounting by one will usually cause others to follow suit, hurting profit margins for all participants.

Appendix 9: SWOT Analysis

Strengths	Weaknesses
High gross margins	Low operating margin
Large domestic presence	Stagnating growth
Opportunities	**Threats**
Expand online presence	Rising labor costs
Additional fulfillment centers	Competitive prices

Analyst: Brian Lee

INVESTMENT MANAGEMENT CERTIFICATE PROGRAM

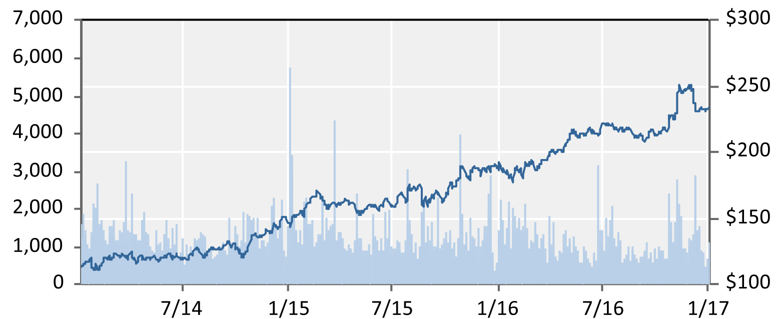
January 4, 2017

Recommendation	NEUTRAL
Target (today's value)	$230.00
Current Price	$228.21
52 week range	$175.00 - $253.80

Aerospace / Defense

Northrop Grumman Corporation

Share Data	
Ticker:	NOC
Market Cap. (Billion):	$41.4
Inside Ownership	0.7%
Inst. Ownership	82.1%
Beta	0.88
Dividend Yield	1.5%
Payout Ratio	29.0%
Cons. Long-Term Growth Rate	8.3%



	'14	'15	'16E	'17E	'18E
Sales (billions)					
Year	$24.0	$23.5	$24.0	$24.7	$25.4
Gr %	-2.8%	-1.9%	2.2%	2.6%	3.0%
Cons	-	-	$24.5	$25.0	$26.5
EPS					
Year	$9.91	$10.51	$11.65	$12.72	$13.66
Gr %	16.6%	6.0%	10.9%	9.2%	7.4%
Cons	-	-	$12.19	$12.11	$13.47

Summary: I recommend a neutral rating with a target of $230. Although NOC grown significantly in the past two years after winning the B-21 contract, the stock is expensive compared to the market and its peers. Any reversion of the stock could produce a buying opportunity to purchase a good company with consistent growth. The stock is fairly priced if not a bit undervalued based on relative and DCF analysis.

Ratio	'14	'15	'16E	'17E	'18E
ROE (%)	23.2%	31.2%	31.2%	37.8%	34.9%
Industry	32.2%	40.7%	40.7%	51.3%	93.8%
NPM (%)	8.6%	8.5%	8.5%	8.8%	8.5%
Industry	7.2%	6.9%	6.9%	6.9%	7.7%
A. T/O	0.97	0.93	0.91	0.92	0.95
ROA (%)	7.6%	7.8%	7.8%	7.8%	8.7%
Industry	6.3%	6.1%	6.1%	6.2%	6.7%
A/E	2.58	2.63	2.97	4.00	4.02

Key Drivers:

- Increase in the Department of Defense spending will positively affect Northrop Grumman's sales.
- Growth in Unmanned aircraft for the use of both surveillance and combat could increase Northrop Grumman's sales.
- Winning the B-21 Raider contract has provided Northrop Grumman with a consistent form of revenue for years to come.
- The Election of President Trump is expected to have a positive impact on Northrop Grumman's sales as Trump supports increasing defense spending.

Valuation	'15	'16E	'17E	'18E
P/E	27.9	23.9	22.4	19.8
Industry	20.8	24.1	19.3	18.0
P/S	1.1	1.3	1.5	1.7
P/B	2.4	4.1	6.2	7.0
P/CF	10.8	12.1	16.7	17.0
EV/EBITDA	7.1	8.6	10.8	12.9

Valuation: Using a 3-stage discounted cash flow model, it appears that that Northrop Grumman is undervalued at its current price. When using a relative valuation approach it too appeared that NOC was overvalued when compared to its peers in the aerospace /defense industry. Through a combination of the approaches I determined a value of $230 for NOC.

Performance	Stock	Industry
1 Month	-6.4%	-0.2%
3 Month	9.2%	10.8%
YTD	1.0%	1.3%
52-week	24.4%	27.0%
3-year	106.8%	21.5%

Risks: Threats to the business include Department of Defense budget cuts, B-21 Raider contract getting delayed by Congress, a slowdown in the growth of unmanned vehicles for defense, and a potential worker shortage as the aging workforce begins to retire.

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Company Overview

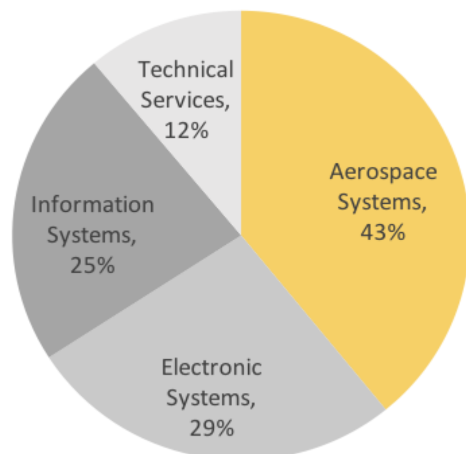
Headquartered in Falls Church, Virginia, Northrop Grumman Corporation (NOC) is a leading global security company providing innovative systems, products and solutions in autonomous systems, cyber, C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance), strike, and logistics and modernization to government and commercial customers worldwide.

The majority of the Northrop Grumman's business is from the U.S. government (typically exceeding 80% of sales.) NOC realigned from four to three segments on January 1, 2016. The four business segments of Northrop Grumman are:

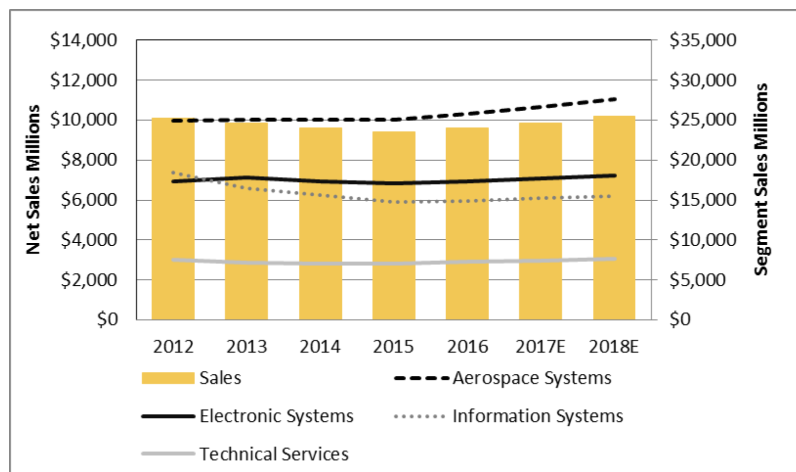
- Aerospace Systems: Headquartered in Redondo Beach, California, Aerospace Systems is responsible for developing unmanned systems, military aircraft systems, space systems, and strategic programs & technology. The customers of aerospace systems, primarily U.S. government agencies, use these systems to perform missions such as surveillance and battle management. This segment is responsible for creating some of the more iconic aircraft in the U.S. arsenal, the B-2 Spirit bomber, and helped to develop the F-35 Lightning II alongside Lockheed Martin. Aerospace Systems had a CAGR of -0.7% over the past 7 years, but is recently rising.
- Electronic Systems: Headquartered in Linthicum, Maryland, Electronic Systems develops systems for use by global military, commercial and civil customers. This segment develops radar systems, targeting systems, airborne fire control systems, and intelligence systems. Electronic Systems had a CAGR of -1.9% over the past 7 years.
- Information Systems: Headquartered in McLean, Virginia, Information Systems focuses on developing cyber security, air and missile defense, intelligence processing, civil security, and health technology and government support systems. Information Systems had a CAGR of -6.1% over the past 7 years.
- Technical Services: Headquartered in Herndon, Virginia, Technical Services is split into two separate parts: Integrated Logistics & Modernization and Mission Solutions & Readiness. Integrated Logistics & Modernization is responsible for providing support and modernization of weapon systems and aircraft. Mission Solutions and Readiness provides a wide array of realistic training for military and civil purposes. Technical Services had a CAGR of 0.4% over the past 7 years.

NOC realigned the four business segments into three to align better with customer needs on 01/01/2016. The three segments are: aerospace systems, mission systems, and technology services.

Figures 1 and 2: Business segments, year-end 2015 (left) and revenue history since 2012



Source: Company Reports 10-K



Source: Company Reports

Business/Industry Drivers

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

1) U.S. Government Defense Spending
2) Growth in Unmanned Systems
3) B-21 Raider Contract
4) Competition

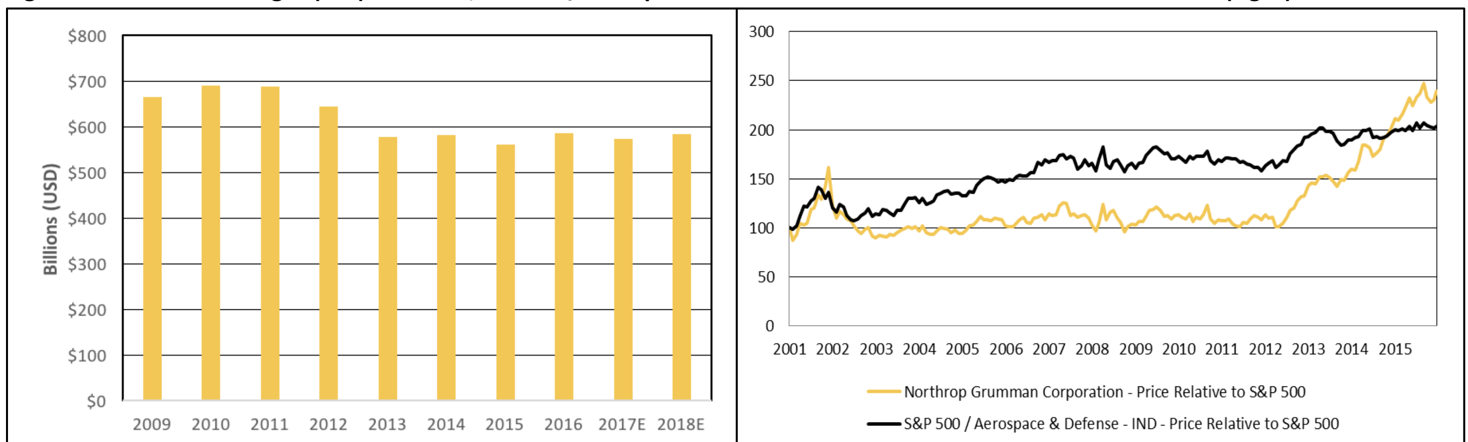
U.S. Government Defense Spending

Global conflict looks to keep defense spending high.

The U.S. Government, more specifically the Department of Defense (DoD), accounted for 83% - 86% of sales from 2013 - 2015. Republican Donald Trump won the election against Democrat Hillary Clinton and became the 45th President of the United States of America. President Trump had campaigned on an aggressive strategy to combat ISIS, and had called for more soldiers on the ground, more ships in ocean, and more fighter aircraft in the air. Trump's views on a stronger military resulted in NOC's share price rising 5.41% the day after the election. Trump's unconventional Twitter habits have caused declines in both Boeing's (BA) and Lockheed Martin's (LMT) share prices. Trump "tweeted" that he intends to reduce funding to both BA and LMT; Trump's tweets have also had an effect on the other defense companies all of which have seen a reversion to just above pre-election levels. Trump's pick for Secretary of Defense, James Mattis, is a board member for General Dynamics (GD), a competitor to NOC. Mattis has been a supporter of drone usage in combat and stronger presence in the Middle East.

Northrop Grumman has outperformed the S&P 500 since 2001, which can be attributed to the heightened global terror threat that is keeping defense spending high. The events of 9/11 caused significant increases to the defense budget, the growth of ISIS, and a nuclear North Korea in recent years is keeping defense spending high. The recently awarded B-21 Raider contract can explain the outperformance by NOC compared to the S&P / Aerospace & Defense Index in 2015. Modernization of the U.S. aircraft and military systems along with the growing demand for unmanned systems should boost NOC's growth. Although, a looming budget crisis though could put a damper on defense spending growth as Trump has shown concern, through his tweets, that too much is being spent.

Figure 3 and 4: DoD budget (left) and NOC, S&P500/Aerospace & Defense Index relative to S&P500 since 2001 (right)



Source: U.S. Department of Defense *Source: Factset*

Growth in Unmanned Systems

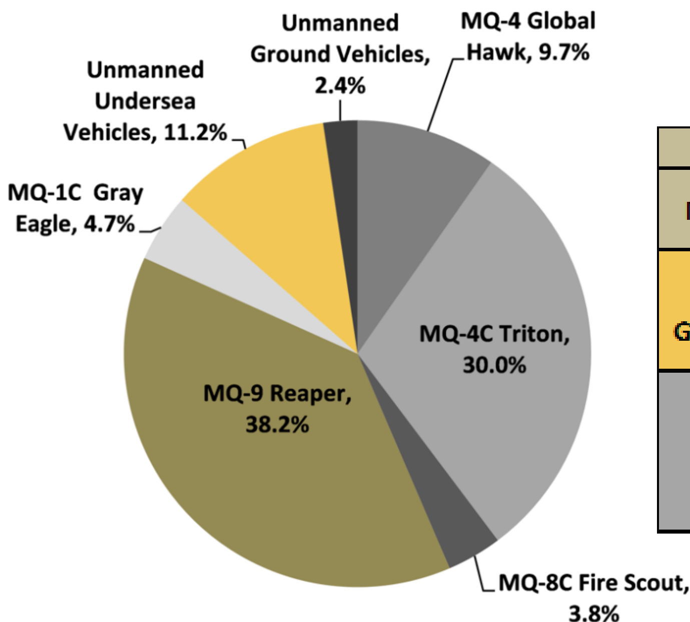
Growth in UMS has helped fuel growth in the aerospace segment for NOC.

Northrop Grumman's growth in the aerospace segment is mainly driven by the growth of unmanned systems (UMS), renamed autonomous systems in 2016. Global conflict has been hitting an all-time high with the rise of ISIS in the Middle East and the increasing threat of a nuclear-armed North Korea; with these threats, the Department of Defense and President Trump will want to maintain a strong military force. The trend for the modern military is to remove the soldiers from the battlefield and instead replace them with unmanned drones. Because of this, NOC has been investing heavily in R&D in order to sustain growth in the UMS segment. In 2014, NOC experienced a slight decrease in UMS, but in 2015 sales rose because of the Global Hawk program. In 2016, NOC was awarded two separate contracts from the U.S. Navy to produce MQ-4C Triton unmanned planes and MQ-8C Fire Scout unmanned helicopters.

Government Accountability Office estimates value the Triton project at $12.8 billion with $8.9 billion yet to be spent; the project is expected to be fully operational in 2023. The 2016 MQ-4C Triton deal is a modification contract worth $255.3 million and expected to be completed by 2020. In addition, the Navy also awarded NOC with more contracts worth $49.4 million and $95 million, so that total is $399.7 million, 3.8% of estimated aerospace system sales, from the Triton. The U.S. Navy has future plans to purchase 66 MQ-4C Tritons from NOC at a cost of $130 million for each drone. The MQ-8C Fire Scout deal is a worth $108.1 million and is for NOC to build an additional 10 Fire Scouts for the Navy which will increase the Navy's fleet to 29 MQ-8Cs. Although the cost per drone is a small number, it shows potential as the landscape of warfare moves towards autonomous means of combat.

The long-term nature of the Triton and Fire Scout contracts should allow NOC to have steady sales for coming years. In addition, if the Triton and Fire Scout have success with the Navy it opens up the possibility of NOC gaining contracts with other divisions of the military.

Figure 5 and 6: DoD spending on UMS/Drones FY17 (left) and cost per NOC drones and Competitor drones (right)



DoD Estimated Drone Spending Fiscal Year 2017		
Manufacturer	Project Name	Spending in Millions
Northrop Gruman Drones	MQ-4 Global Hawk	$ 305
	MQ-4C Triton	$ 944
	MQ-8C Fire Scout	$ 120
Competitor Drones	MQ-9 Reaper	$ 1,200
	MQ-1C Gray Eagle	$ 148
	Unmanned Undersea Vehicles	$ 352
	Unmanned Ground Vehicles	$ 74

Source: Center for the Study of Drones, Bard College

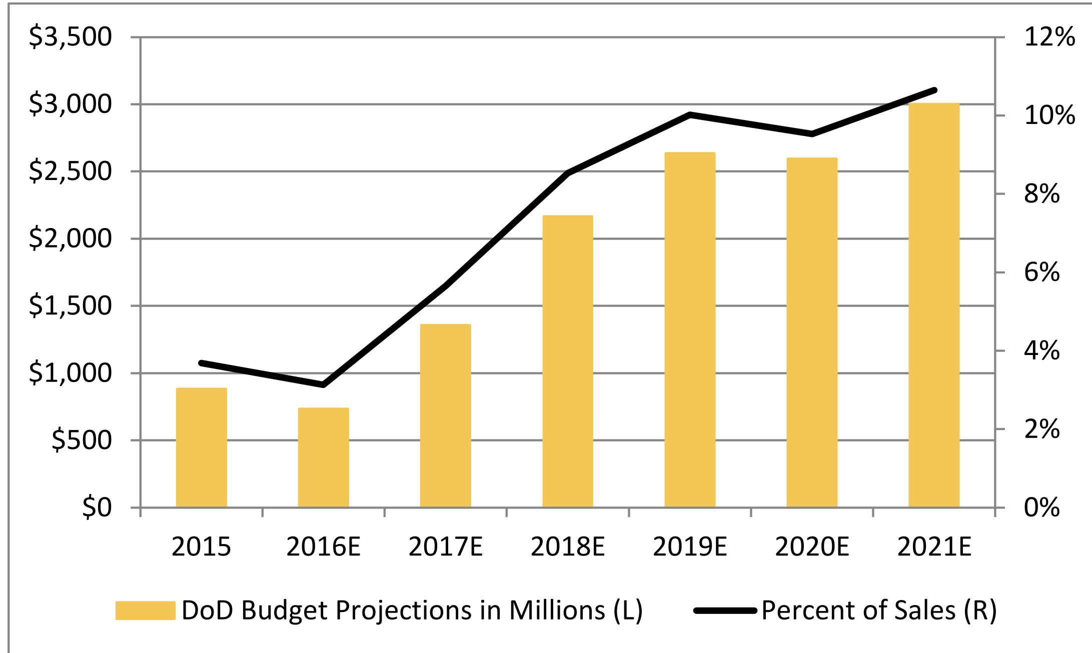
B-21 Raider Contract

NOC was awarded the B-21 contract; the largest single military aircraft contract since 2001.

Northrop Grumman was awarded the LRS-B (long range strike bomber) contract in October 2015; the contract is the largest contract for military aircraft since the JSF contract award to Lockheed Martin in 2001 for its F-35 Lightning II. Winning the contract was not easy as Lockheed and Boeing submitted a joint bid but were ultimately defeated as NOC won the contract. Lockheed and Boeing submitted a protest to the bid, but in February 2016 the decision to give NOC the contract was upheld. The LRS-B was recently named the B-21 Raider.

The project is expected to generate $55 billion over the lifetime of the program with each B-21 costing about $550 million to make. Due to security concerns, the actually cost of the project is still considered classified as DoD officials believe that releasing the cost of the contract could allow enemies to determine what technologies are being used. The B-21 is expected to be fully operational in 2025; this will make NOC a legitimate contender for new fighter contracts when the DoD starts to build the new sixth-generation fighters, expected to start in 2025.

Figure 7: Budget projections for B-21 Raider and percentage of NOC net sales



Source: Congressional Research Services

Competition

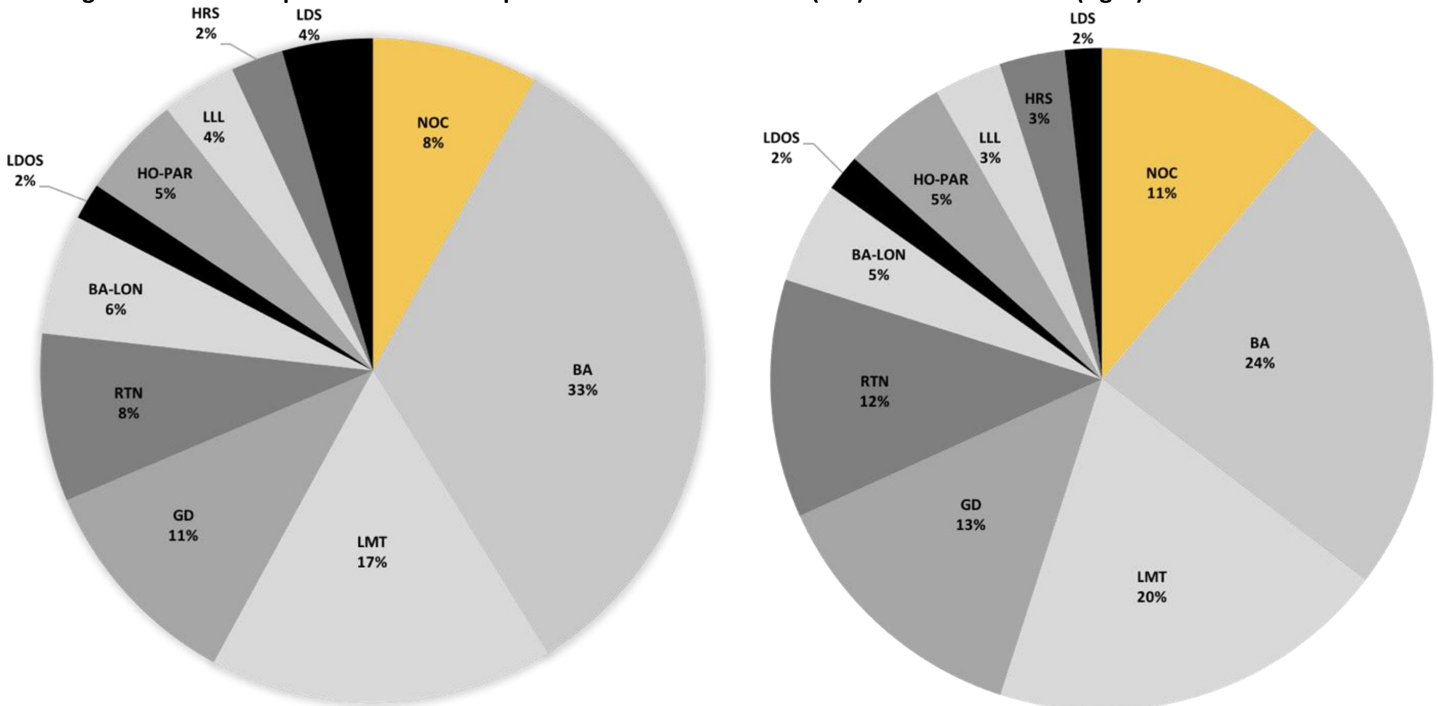
Northrop Grumman has few competitors, that compete fiercely, in its industry because of significant barriers to entry. The US Government limits who can manufacture defense equipment and vehicles.

Drone growth and B-21 contract give NOC advantage over its largest competitors.

Northrop Grumman's biggest competitors in the aerospace/defense industry are Boeing (BA) and Lockheed Martin (LMT). Most recently, NOC was awarded a contract to develop and manufacture the new B-21 bomber; winning a bid over the combined forces of Boeing and Lockheed Martin. The B-21 contract; the largest single military aircraft contract in 15 years, gives NOC an incredible competitive advantage over its competitors. NOC benefits from having a successful UMS segment and, in the fiscal year 2017, 49.4% of the Department of Defense's drone spending is on NOC drones.

The DoD budget has huge impact on defense heavy companies like NOC or LMT because the majority of sales come from defense contracts. Boeing is somewhat isolated from defense cuts because most Boeing's sales come from its commercial aircraft segment. Increasing global conflict means defense companies can expect sales to remain high, especially for unmanned aircraft as the trend is to have fewer soldiers on the ground and for coordinated drone strikes.

Figure 8 and 9: Comparison of NOC competitors based on Net Sales (left) and Market Value (right)



Source: Factset

Figure 10: Major Competitor Comparison (higher values are lighter and lower values are darker)

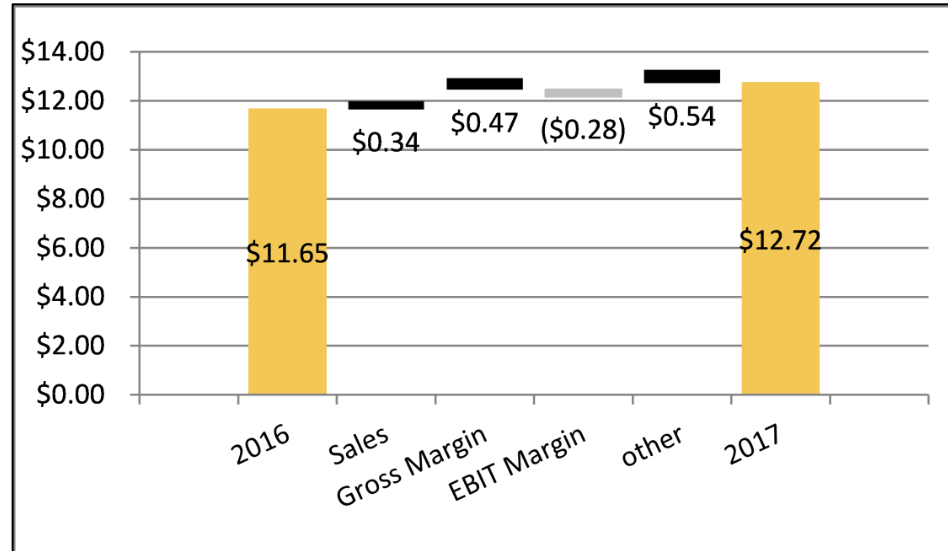
	Northrop Grumman	Boeing	General Dynamics	Lockheed Martin	BAE Systems	Raytheon Co	Thales	Harris
Ticker	NOC	BA	GD	LMT	BA-GB	RTN	HO-FR	HRS
Percent of Sales Defense	99.1%	23.6%	65.6%	80.2%	82.0%	98.9%	50.4%	43.5%
5-YR Sales CAGR	-7.5%	8.4%	-0.6%	0.1%	-4.5%	-1.6%	1.4%	4.7%
5-YR Avg EBITDA Margin	14.8%	9.8%	13.5%	12.2%	11.3%	14.5%	10.4%	21.8%
5-YR Avg Net Margin	8.1%	5.5%	6.6%	6.8%	4.9%	8.4%	4.5%	8.2%

Financial Analysis

I anticipate EPS to grow to $12.72 from $11.65 in 2017, an increase of $1.07 or 9.2% from 2016. NOC won the contract to make the B-21 Raider which should increase sales that should boost EPS by $0.34. Newly elected President Trump and General Mattis, Trump's pick for Secretary of Defense, are likely to pursue greater defense spending which should increase sales and EPS. Gross margin continuing to grow (it has grown since 2013) should result in an increase of $0.47 per share; I expect the gross margin growth to be from NOC's segment realignment. I expect EBIT Margin to increase but this should result in a decrease in the earnings per share of $0.28, the decrease is a result of the SG&A growing at a faster rate than the gross margin. NOC has been continually repurchasing shares

since 2003, with the assumption that this policy will continue, EPS should increase $0.54. Trump has promised that he would slash the corporate tax rate and if success it should increase the EPS as well.

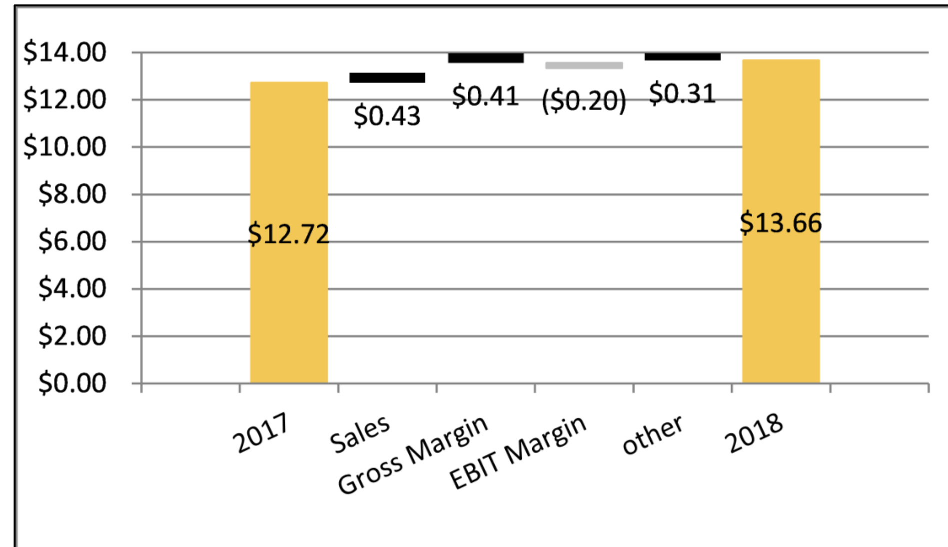
Figure 11: Quantification of 2016 EPS Drivers



Source: Company Reports, IMCP

My assumptions for 2018 indicate that EPS should increase from $12.72 to $13.66, an increase of $0.94 or 7.4%. Sales growth should account for $0.43 in EPS growth as sales are driven up by the B-21 funding. I expect gross margin increases to increase EPS by $0.41, but EBIT margin growth will shrink EPS again by $0.20. Share buybacks should drive up EPS by $0.31.

Figure 12: Quantification of 2017 EPS Drivers



Source: Company Reports, IMCP

I am initially less optimistic than the consensus in EPS but, after fiscal year 2016, I am more optimistic and assume higher growth in 2017 and 2018. Since my sales estimates are about the same as consensus, I am assuming higher margins. The B-21 contract should boost margins as it moves away from strictly development and design of the aircraft and NOC starts to manufacture and deliver the B-21.

Figure 13: EPS and Sales YoY growth estimates vs consensus

	2016E	2017E	2018E
EPS- Estimate	$11.65	$12.72	$13.66
YoY Growth	12%	9%	7%
EPS - Consensus	$11.72	$12.11	$13.46
YoY Growth	13%	3%	11%
Sales - Estimate	$24,042	$24,673	$25,423
YoY Growth	2%	3%	3%
Sales - Consensus	$24,027	$25,043	$26,552
YoY Growth	2%	4%	6%

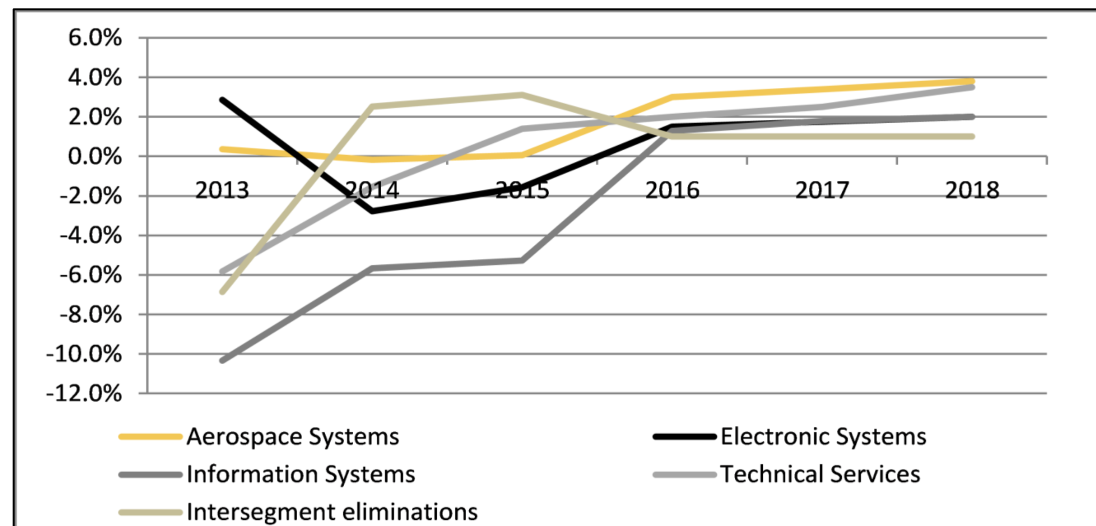
Source: Company Reports, IMCP

Revenues

Northrop Grumman had experienced significant revenue declines since 2010. With a 5-Year CAGR of -7.5%, NOC had the worst sales growth of its competitors. The Election of President Trump along with Republican control in both houses of Congress makes it likely that there would be a significant increase in defense spending. NOC winning the B-21 Raider contract was a huge gain for the company and I expect this to reverse the negative sales growth experienced in recent years. I expect the sales growth to be steady for the next couple of years as NOC begins developing and soon after manufacturing the new B-21. With a 6th generation of fighter aircraft expected to be released in 2025, NOC has created a team to start developing concepts to compete for contracts in the future.

I expect all four segments of Northrop to experience growth with the largest growth in the aerospace systems, NOC's largest segment. Technical services should grow almost as well as aerospace systems because technical services manage the modernization of older active-service aircraft. Electronic systems and information systems should grow at a steady rate as cyber warfare starts to increase in severity, and cyber security becomes a necessity.

Figure 14: Segment sales growth

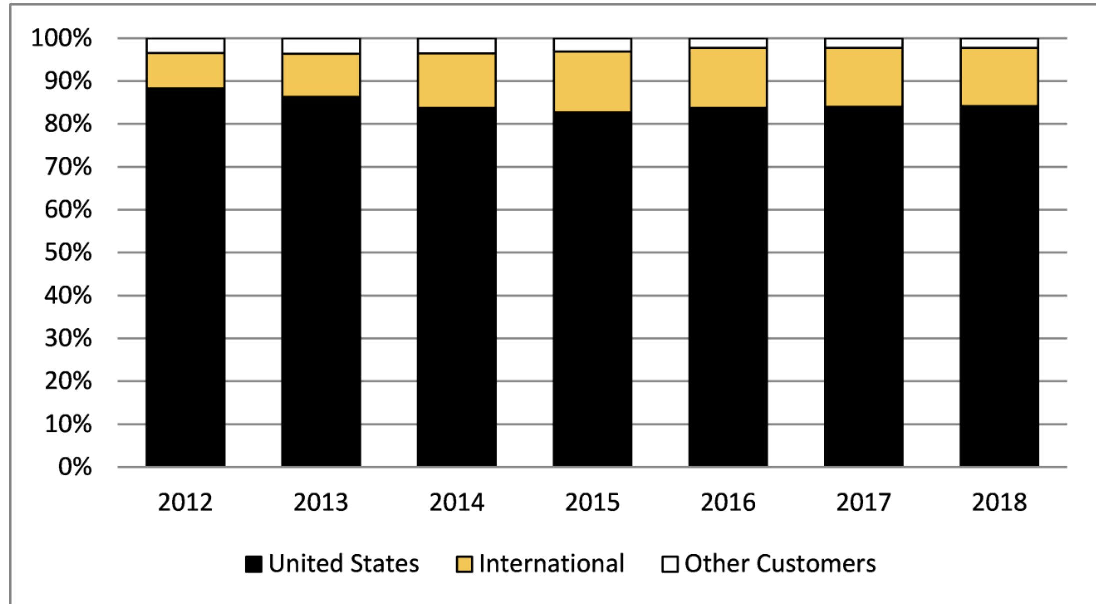


Source: Company Reports, IMCP

International sales have been steadily increasing in recent years, I expect this to continue but with a lower growth rate. Much of Northrop's sales come directly from the United States government (typically exceed 80% of overall sales.) Despite growing international sales the percentage of sales to

the US government should increase at a greater rate making the overall percentage sales for international customers fall below 14%.

Figure 15: Segment sales as a percentage of total sales



Source: Company Reports, IMCP

Operating Income and EBIT Margin

I expect NOC to increase its gross margin for the next three years. The expected rise in gross margin from increased sales and efficiencies gained from realigning the segments from four to three. In years 2017 and 2018, I expect SG&A and R&D costs to increase more than 5.0% YoY. The increase in SG&A and R&D is expected because of the increased cost NOC is set to incur from the development of the B-21 Raider. The SG&A is required for NOC to complete and start production of the B-21. SG&A costs might also increase as the cost to hire new STEM graduates increases because of increasing competition with technology companies. Increased SG&A costs are the reason that I expect the EBIT margin to increase at a lower rate than the gross margin.

Figure 16: NOC Operating Income and EBIT Margin

	2014	2015	2016E	2017E	2018E
Sales	$23,979	$23,526	$24,042	$24,673	$25,423
Cost of goods sold	$18,378	$17,884	$18,248	$18,603	$19,067
Gross income	$5,601	$5,642	$5,794	$6,070	$6,356
Gross Margin	*23.4%*	24.0%	24.1%	24.6%	25.0%
Operating Expenses					
SG&A	$2,382	$2,551	$2,428	$2,566	$2,695
Growth	*5.4%*	*7.1%*	*-4.8%*	*5.7%*	*5.0%*
EBIT	$3,219	$3,091	$3,366	$3,504	$3,661
EBIT Margin	*13.4%*	*13.1%*	*14.0%*	*14.2%*	*14.4%*

Source: Company Reports, IMCP

Return on Equity

Northrop has traditionally had a higher ROE than the industry average, 20.2%. NOC has a 35% projected ROE in 2016 and I expect that ROE to slightly decrease in 2017 and 2018. I expect the ROA to increase in 2016 and the next two years; the increase in ROA is because of the expected EBIT margin increase in those years. With the cash balance increasing with FCF. I expect the leverage ratio to decrease even though the firm is buying over $1 billion in stock each year lower leverage is causing the ROE to decline. If NOC needs to raise funds to complete its contracts, the firm could issue debt that would raise the leverage ratio; however, it appears FCF is more than sufficient to fund growth.

Figure 17: DuPont ROE 2013 – 2018E

5-stage DuPont	2013	2014	2015	2016E	2017E	2018E
EBIT / sales	12.7%	13.4%	13.1%	14.0%	14.2%	14.4%
Sales / avg assets	0.93	0.91	0.92	0.95	0.93	0.93
EBT / EBIT	91.8%	91.2%	90.3%	90.7%	90.6%	90.6%
Net income /EBT	68.2%	70.4%	71.3%	72.3%	73.9%	73.9%
ROA	7.4%	7.8%	7.8%	8.7%	8.8%	9.0%
Avg assets / avg equity	2.63	2.97	4.00	4.02	3.63	3.48
ROE	19.4%	23.2%	31.2%	35.0%	32.0%	31.3%

Source: Company Reports, IMCP

Free Cash Flow

NOC has had volatile free cash flow for the past three years. I project this to settle down and FCF to rise slightly for the next three years. NOC has been using free cash flow to pay dividends and repurchase shares, repurchasing 59.2 million shares since 2012 (about 1/3 of shares). I expect the share repurchases to continue in 2017 and 2018; although, at a smaller $1.25 billion in shares per year. NOC has maintained negative net working capital, this is normal for the industry due to the large amount of long-term receivables.

I excluded cash from free cash flow because of the large unnecessary percentage of assets in cash. I expect the FCFF and FCFE for 2016 to decrease as NFAs increase after decreasing the year previous. In 2017 and 2018, I expect NOPAT and NFA to grow at a steady rate resulting in steady FCFF and FCFE growth.

NOC increased its long-term debt in 2013, I assume no new debt is needed partly because I expect they will reduce stock repurchases.

Figure 18: Free cash flow per share, 2013 – 2018E

Without cash and debt	2013	2014	2015	2016E	2017E	2018E
FCFF per share	$14.53	$4.15	$12.37	$10.88	$11.62	$12.12
Growth		-71.4%	198.1%	-12.1%	6.7%	4.3%
FCFE per share	$13.77	$3.20	$11.24	$9.69	$10.30	$10.70
Growth		-76.8%	251.4%	-13.8%	6.3%	3.9%

Source: Company Reports, IMCP

Figure 19: Free cash flows 2012 – 2018E

Free Cash Flow Without Cash & Debt	2012	2013	2014	2015	2016E	2017E	2018E
NOPAT	$2,119	$2,127	$2,268	$2,205	$2,433	$2,589	$2,705
Growth		0.4%	6.6%	-2.8%	10.4%	6.4%	4.5%
NWC*	(1,526)	(1,477)	(1,571)	(1,442)	(1,467)	(1,505)	(1,551)
Net fixed assets	18,151	16,893	18,388	18,120	18,517	19,003	19,581
Total net operating capital*	$16,625	$15,416	$16,817	$16,678	$17,051	$17,498	$18,030
Growth		-7.3%	9.1%	-0.8%	2.2%	2.6%	3.0%
- Change in NWC*		49	(94)	129	(25)	(38)	(46)
- Change in NFA		(1,258)	1,495	(268)	397	486	578
FCFF*		$3,336	$867	$2,344	$2,061	$2,141	$2,173
Growth			-74.0%	170.4%	-12.1%	3.9%	1.5%
- After-tax interest expense	141	175	199	215	226	243	255
FCFE**		$3,161	$668	$2,129	$1,835	$1,898	$1,918
Growth			-78.9%	218.7%	-13.8%	3.5%	1.0%
+ Net new debt/other cap		1,998	(3)	491	0	0	0
Sources of cash		$5,159	$665	$2,620	$1,835	$1,898	$1,918
Uses of cash							
Other expense		0	0	0	0	0	0
Increase cash and mkt sec		1,288	(1,287)	(1,544)	1,218	13	13
Dividends		545	563	603	621	640	660
Change in other equity		301	4,891	3,100	(0)	1,250	1,250
		$2,134	$4,167	$2,159	$1,840	$1,903	$1,923
Change in other liab		(3,025)	3,502	(461)	5	5	5
Total		$5,159	$665	$2,620	$1,835	$1,898	$1,918
* NWC excludes cash							
** No adjustment is made for debt							

Source: Company Reports, IMCP

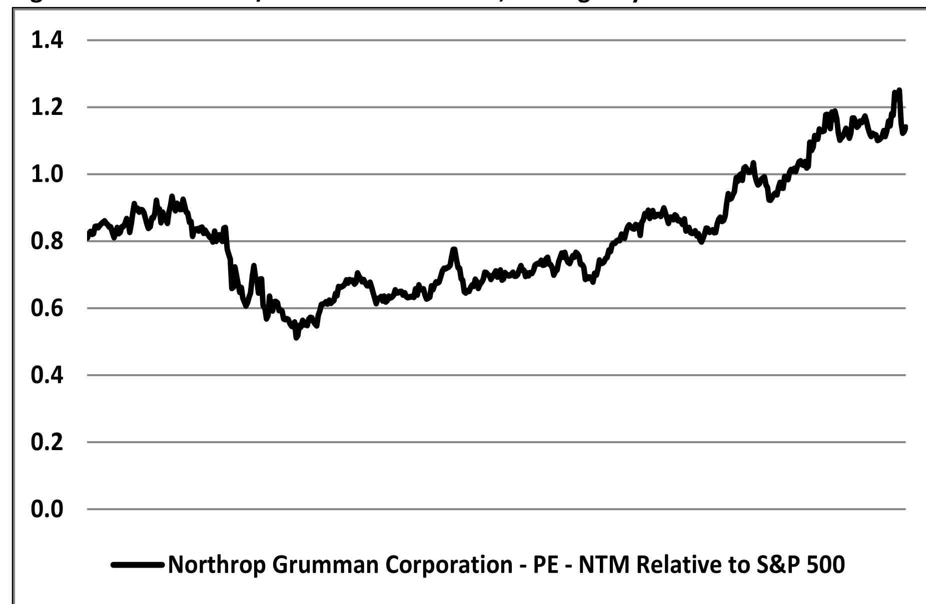
Valuation

NOC 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 $240; however, due to winning some recent large contracts, this high valuation may be warranted. Relative valuation shows NOC to be slightly overvalued at $221 compared to its peers in the aerospace / defense industry. A detailed DCF analysis values NOC slightly higher, at $235; I give this value a bit more weight because it incorporates assumptions that reflect NOC's recently awarded contracts and higher P/E. Based on all of the analysis I value the stock at $230.

Trading History

NOC is currently trading near its 10 year high relative to the S&P 500. This is the result of recent award of large contracts and most analysts believe growth will pick up in the future. NOC's current NTM P/E is at 19.2 compared to its five-year average of 12.69. While I expect some regression towards that number in the future, I do not think that is likely to be the case in the near term.

Figure 20: NOC NTM P/E relative to S&P 500, trailing 10 years



Source: Factset

Assuming the company maintains a 19.2 NTM P/E at the end of 2017, it should trade at $262 by the end of the year.

- Price = P/E x EPS = 19.2 x $13.66 = $262

Discounting $262 back to today at a 9.3% cost of equity (explained in Discounted Cash Flow Section) yields a price of $240. Given NOC's strong recent growth relative to its competitors, I believe this is a low valuation; however, this could be because NOC is still in the early stages of delivering on its large contacts.

Relative Valuation

Northrop Grumman is currently trading at a P/E lower than that of its peers with a P/E TTM of 19.8 compared to an average of 22.8. The P/E NTM for NOC is 20.1 compared to the average of 18.8; investors are willing to pay more for NOC because it has better expected growth. NOC benefits from the B-21 contract and has relative safety from economic downturns because it has a consistent revenue source in the US government. NOC's P/B ratio is higher than the average of its comps; with the outliers LMT and BA removed. The higher P/B is because of the high ROE compared to comps. NOC has a ROE of 31.9% compared to the average of 29.4% for the comps; this ROE number does not include the outliers LMT and BA. The high ROE is a result of NOC increasing debt in recent years; Although NOC's debt to equity ratio is about the median versus the group (it has a wide range). NOC has a current P/CF of 13.8 which is lower than the average of 15.1. P/S for NOC is 1.74, above the average of 1.47 due to its slightly better margins.

Figure 21: NOC 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	2014	2015	2016	2017	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
NOC	NORTHROP GRUMMAN CORP	$232.58	$40,995	(0.0)	(6.8)	8.7	4.6	22.4	23.2	8.3	-1.1%	16.8%	6.6%	12.8%	3.2%	8.8%	0.57	110.8%	A	1.50%	29.0%
RTN	RAYTHEON CO	$142.00	$41,698	(1.0)	(5.0)	4.3	4.5	12.9	14.0	8.6	-4.9%	16.9%	-3.2%	10.5%	-0.7%	7.0%	0.59	51.0%	A	2.06%	38.3%
BA-GB	BAE SYSTEMS	$7.31	$23,213	(0.6)	(1.5)	12.9	12.9	17.0	18.4	6.3		-14.5%	0.0%	-16.9%	10.2%	0.0%	0.43			3.57%	
HO-FR	THALES	$97.17	$20,491	0.1	0.0	12.4	22.8	33.0	33.3	10.2		-24.7%	25.8%	10.7%	11.9%		0.55			1.53%	
GD	GENERAL DYNAMICS CORP	$172.66	$52,578	(0.3)	(1.5)	11.3	24.0	24.0	25.7	7.3	5.6%	11.4%	16.0%	7.8%	2.8%	5.9%	0.81	34.3%	A	1.76%	31.7%
LMT	LOCKHEED MARTIN CORP	$249.94	$73,227	(0.3)	(5.8)	4.3	0.7	13.7	15.1	8.6	-4.9%	17.0%	2.2%	6.6%	3.9%	9.0%	0.53	615.8%	A+	2.71%	51.8%
HRS	HARRIS CORP	$102.47	$12,735	(0.6)	(1.1)	11.9	22.8	17.2	17.9		107.9%	2.8%	10.9%	0.0%	1.8%		1.17	133.9%	B	2.01%	71.7%
BA	BOEING CO	$155.68	$96,080	(0.0)	3.4	18.2	19.9	6.3	7.7	11.1	38.6%	21.6%	-10.2%	-8.2%	31.9%	10.7%	1.13	470.3%	A-	2.80%	63.6%
Average			$45,127	(0.3)	(2.3)	10.5	14.0	18.3	19.4	8.6	23.5%	5.9%	6.0%	2.9%	8.1%	6.9%	0.72	236.0%		2.24%	47.7%
Median			$41,346	(0.3)	(1.5)	11.6	16.4	17.1	18.2	8.6	2.2%	14.1%	4.4%	7.2%	3.6%	7.9%	0.58	122.3%		2.04%	45.0%
SPX	S&P 500 INDEX	$2,239		(0.5)	1.8	3.3	6.7	8.5	9.5			8.7%	0.2%	3.4%	6.6%						

Ticker	Website	2015 ROE	P/B	P/E 2013	2014	2015	TTM	NTM	2016	2017E	2015 NPM	2015 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
NOC	http://www.northropgrumman.com	31.9%	7.13	27.9	23.9	22.4	19.8	20.1	19.8	19.2	7.8%	1.74	12.8%	15.9%	13.1	13.8	9.3	3.9%	6.5%	-7.5%	$32.62
RTN	http://www.raytheon.com	18.9%	3.98	23.8	20.4	21.0	19.0	19.9	19.0	19.2	8.5%	1.79	12.6%	13.6%	14.2			4.3%	5.1%	-1.6%	$35.65
BA-GB	http://www.baesystems.com	59.2%	7.34	10.6	12.4	12.4			14.9	13.5	7.1%	0.88		16.0%	13.2	15.0	10.4			-4.5%	$1.00
HO-FR	http://www.thalesgroup.com	18.8%	4.36	22.0	29.2	23.2			20.9	18.7	5.8%	1.34	6.6%	14.3%	12.1	14.5	7.7			1.4%	$22.30
GD	http://www.generaldynamics.com	24.4%	4.65	24.6	22.1	19.0	18.4	17.4	17.6	17.2	8.8%	1.67	13.7%	20.5%	10.9	14.0	11.0	2.7%	2.3%	-0.6%	$37.16
LMT	http://www.lockheedmartin.com	144.5%	31.52	26.1	22.3	21.8	19.6	20.6	20.5	19.7	7.3%	1.59	11.2%	26.7%	15.2	15.4	10.7	-0.4%	4.5%	0.1%	$7.93
HRS	http://www.harris.com	23.2%	4.16	20.5	19.9	18.0	36.2	17.4	18.0	17.7	9.5%	1.71	18.4%	4.4%	10.8	17.7		-2.6%		4.7%	$24.60
BA	http://www.boeing.com	228.7%	46.13	22.0	18.1	20.2	23.7	17.1	22.0	16.7	5.0%	1.00	4.8%	32.5%	13.7	15.1	11.7	-2.6%	2.6%	8.4%	$3.38
Average		68.7%	13.66	22.2	21.0	19.7	22.8	18.8	19.1	17.7	7.5%	1.47	11.4%	18.0%	12.9	15.1	10.1	0.9%	4.2%	0.1%	
Median		28.1%	5.89	22.9	21.2	20.6	19.7	18.7	19.4	18.2	7.5%	1.63	12.6%	15.9%	13.2	15.0	10.6	1.1%	4.5%	-0.2%	
spx	S&P 500 INDEX			20.6	18.9	18.9			18.2	17.1											

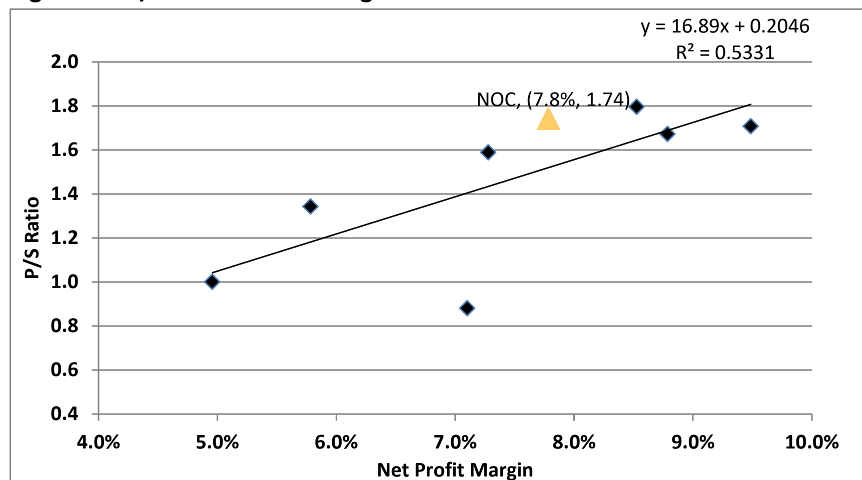
Source: Factset, IMCP

A more thorough analysis of P/S and net profit margin is shown in Figure 22. The calculated R^2 of the regression indicates that over 53% of sampled companies' P/S is explained by its net profit margins. NOC has the second highest P/S of its peers and the fourth highest net profit margin of this grouping. According to this measure NOC is slightly overvalued. Although, NOC can improve its net profit margin when the development of the B-21 is complete and starts manufacturing them.

- Estimated P/S = Estimated 2017 NPM (9.5%) x 16.89 + 0.2046 = 1.81
- Target Price = Estimated P/S (1.81) x 2017E Sales Per Share (133.83) = $242

Discounting back to the present at a 9.3% cost of equity leads to a target price of $221 using P/S.

Figure 22: P/S vs Net Profit Margin



Source: Factset, IMCP

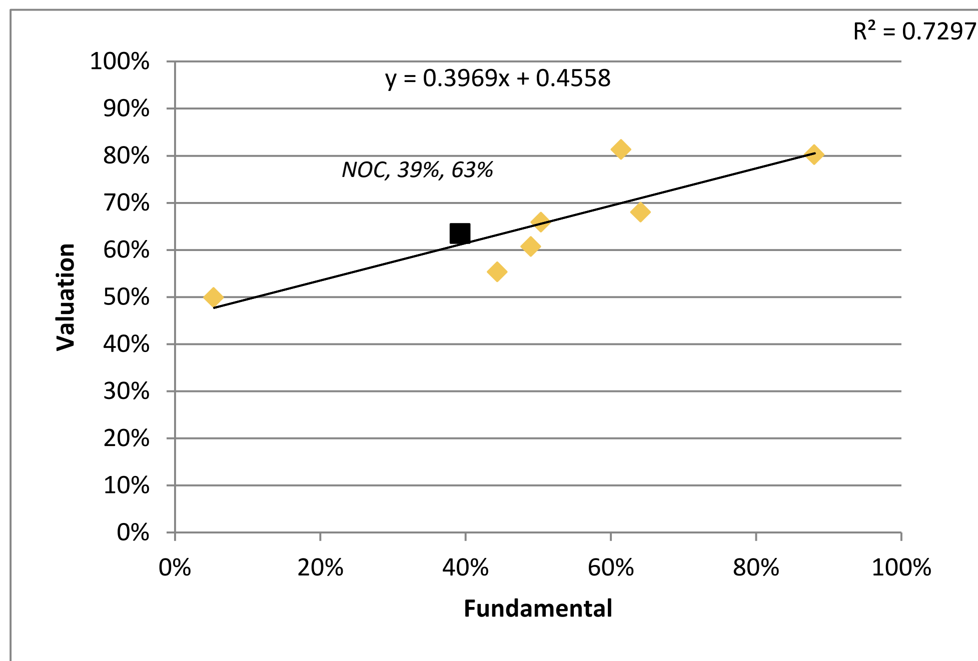
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. A weighting of 50% past five years earning growth, 25% 2015 net profit margin, and 25% past 5 year sales growth for fundamentals was run against an equal weight of 33.3% each to P/B, P/S, P/CF for valuation. The regression line had an R^2 0.73. NOC was just above the line and that means NOC is slightly overvalued based on its fundamentals.

Figure 23: Composite valuation, % of range

		Fundamentals			Valuation				
	Weight	50.0%	25.0%	25.0%	33.3%	33.3%	33.3%		
Ticker	Name	Pst 5yr	2015 NPM	Pst 5yr	P/B	P/S	P/CF	Fund	Value
NOC	NORTHROP GRUMMAN CORP	82%	82%	-90%	15%	97%	78%	39%	63%
RTN	RAYTHEON CO	65%	90%	-19%	9%	100%	89%	50%	66%
BA-GB	BAE SYSTEMS	0%	75%	-53%	16%	49%	85%	5%	50%
HO-FR	THALES	50%	61%	17%	9%	75%	82%	44%	55%
GD	GENERAL DYNAMICS CORP	56%	93%	-7%	10%	93%	79%	49%	61%
LMT	LOCKHEED MARTIN CORP	84%	77%	2%	68%	88%	87%	61%	81%
HRS	HARRIS CORP	50%	100%	57%	9%	95%	100%	64%	68%
BA	BOEING CO	100%	52%	100%	100%	56%	85%	88%	80%

Source: IMCP

Figure 24: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis (see appendix 6)

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

For the purpose of this analysis, the company's cost of equity was calculated to be 9.3% 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 2.60%.
- I calculated a beta of 0.91, this beta made sense because NOC is less risky than the market as it has a stable base of business so it should have a beta below 1.0.
- 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 9.3% = (2.6 + 0.91 (10.0 – 2.60)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $10.30 and $10.70, respectively, without debt and cash. Discounting these cash flows, using the cost of equity calculated above, results in a value of $18.36 per share. Thus, stage one of this discounted cash flow analysis contributes $18.36 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 9.3% cost of equity. I assume 3.5% sales growth from 2019 through 2023. The ratio of NWC to sales will remain at 2018 levels, but NFA turnover will rise from 2.90 in 2016 to 3.47 in 2021 as a result of improvements in operations. Also, the NOPAT margin is expected remain the same from 2019 through 2023. Finally, after-tax interest is expected to drop to 3.5% growth per year from 2019 through 2023, because I assume that as interest rate are expected to rise NOC will pay off debt with FCF.

Figure 25: FCFE and discounted FCFE, 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
FCFE	$10.30	$10.70	$10.62	$10.99	$11.38	$11.78	$12.19
Discounted FCFE	$9.42	$8.95	$8.13	$7.69	$7.28	$6.90	$6.53

Source: IMCP

Added together these discounted cash flows total $36.53.

Stage Three – Net income for the years 2017 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $12.72 in 2017 to $16.23 in 2023.

Figure 26: EPS estimates for 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$12.72	$13.66	$14.14	$14.64	$15.15	$15.68	$16.23

Source: IMCP

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. A P/E ratio of 19.2 is assumed at the end of NOC's terminal year, which is slightly below todays multiple. While this may be a high multiple at the end of 2023, 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 due to its improving prospects. NOC's P/E over the last five years was only 12.69, but this is due to lower defense spending. P/E will increase greatly over the

next few years because of the B-21 contract, increased need for drones, and a president who is likely to increase defense spending and keep it high. NOC deserves a higher P/E ratio than its peers because of the B-21 contract that should provide NOC with consistent sales.

Given the assumed terminal earnings per share of $16.23 and a price to earnings ratio of 19.2, a terminal value of $312 per share is calculated. Using the 9.3% cost of equity, this number is discounted back to a present value of $166.84.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $222 is calculated (18.36 + 36.53 + 166.84). Given NOC's current price of $235, this model indicates that the stock is slightly overvalued.

Scenario Analysis

Northrop Grumman is a stable company that, by the nature of its business, is not very hard to value. The US Government is the main source of NOC's sales and this means that sales should stay consistent for the company. Global conflict remains at an all-time high and NOC benefits from this conflict. I adjusted the DCF model for several scenarios.

Figure 27: Scenario Analysis

				Bull Case			
Expectations	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Beta	0.85						
Sales Growth	2.6%	3.0%	4.0%	4.5%	5.0%	5.0%	5.0%
Gross Margin	25.0%	25.5%					
EBIT Margin	14.5%	14.7%					
P/E	20.0						
						Value (P/E) beginning of 2017	$249.46
				Base Case			
Expectations	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Beta	0.91						
Sales Growth	2.6%	3.0%	3.5%	3.5%	3.5%	3.5%	3.5%
Gross Margin	24.6%	25.0%					
EBIT Margin	14.2%	14.4%					
P/E	19.2						
						Value (P/E) beginning of 2017	$ 221.73
				Bear Case			
Expectations	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Beta	1.00						
Sales Growth	2.6%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Gross Margin	23.5%	23.0%					
EBIT Margin	13.8%	13.6%					
P/E	17.0						
						Value (P/E) beginning of 2017	$176.65

Source: IMCP

Bull Case – During the bull case, I anticipate similar sales growth for years 2017 and 2018 to the base case. For years 2019 through 2023, sales increase due to a variety of factors related to global security. An increase in global conflict would influence government officials to raise defense spending and NOC would benefit with new contracts supplying aircraft, unmanned vehicles, defense systems, and information systems. A Donald Trump presidency could usher in a bull case for NOC as he has been supportive of spending more on national defense, and has been supportive of using drones to monitor the US Mexico border. Beta would decrease during the bull scenario, as more long-term contracts would lessen NOC's risk to possible economic downturns. P/E would increase to 20.0 as investors see NOC as a good investment with increased sales. The increased sales would increase gross margins and EBIT margins as well.

Bear Case – During the bear case, I anticipate similar sales growth for years 2017 and 2018 to the base case. For years 2019 through 2023 sales growth decreases to 2%. A few factors could cause a bear case for NOC. The first cause of a bear case could be a long period of peace, which would reduce the need for defense spending. The second cause for a bear case would be concerns over the budget deficit, the US may reign in its spending which could drastically reduce its defense spending. I expected sales to still grow as NOC is providing the B-21 contract to replace the aircraft and I assume that even if the number of aircraft declines the government would not cancel the contract all together. Beta would increase to 1.00 as NOC becomes more risky with lowered sales growth. P/E would reduce to 17.0 to reflect investors' concerns over the reduced defense spending. The gross margin would decrease, as would the EBIT margin as NOC is losing sales.

Business Risks

Although I have many reasons to be optimistic about Northrop Grumman, there are several concerns that would explain why I feel the stock may be overpriced.

Looming Budget Concerns:

The US budget is a mess and many politicians are arguing for defense cuts. NOC has over 99% of its business related to defense, and with over 80% of its sales annually coming from the US government, NOC must be concerned about possible defense budget cuts. Projected growth will be too high if defense spending isn't increased.

B-21 Raider Contract Issues:

Politicians have raised concerns over the secrecy surrounding the specifics on the cost to build a B-21 which remains secretive to protect the project. Officials claim that if they released specifics on the cost to build the new bomber then foreign countries could figure out how the stealth bomber is built. The B-21 is still under development and unforeseen cost spikes in raw materials or reductions in efficiencies could hurt NOC's margins or reduce sales growth.

Unmanned Vehicle Concerns:

I expected unmanned vehicles/ drones to play a larger role in NOC's growth as their use in modernization of the military is increased, but if the growth in drone usage for defense isn't as fast as expected then my sales growth estimates may not be achieved.

The Graying of the Aerospace Industry:

Looming retirements and a shrinking number of qualified candidates entering the aerospace industry threatens to cause worker shortages and could result in NOC's inability to complete its contracts. In order to attract new talent NOC may have to increase salaries to be more competitive with companies like Google or Amazon.

Appendix 1: Income Statement

Income Statements (Millions)							
Items	2012	2013	2014	2015	2016E	2017E	2018E
Sales	25,218	24,661	23,979	23,526	24,042	24,673	25,423
Costs of goods sold	19,638	19,282	18,378	17,884	18,248	18,603	19,067
Gross Profit	5,580	5,379	5,601	5,642	5,794	6,069	6,356
Operating Expense							
SG&A, R&D, and other	2,403	2,259	2,382	2,551	2,428	2,566	2,695
Earniung before interst & Tax	3,177	3,120	3,219	3,091	3,366	3,504	3,661
Interest expense	212	257	282	301	313	329	345
Earning before tax	2,965	2,863	2,937	2,790	3,053	3,174	3,316
Taxes	987	911	868	800	846	829	866
Net Income	$1,978	$1,952	$2,069	$1,990	$2,207	$2,346	$2,450
Divdends							
Basic Shares	248.6	229.6	208.8	189.4	189.4	184.4	179.3
Earnings per share	$7.96	$8.50	$9.91	$10.51	$11.65	$12.72	$13.66
Dividends per share	$2.15	$2.37	$2.70	$3.18	$3.28	$3.47	$3.68

Appendix 2: Balance Sheet

Balance Sheet (Millions)							
Items	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18
ASSETS							
Current assets							
Cash	3,862	5,150	3,863	2,319	3,537	3,550	3,564
Operating assets ex cash	4,530	4,338	4,321	4,015	4,255	4,367	4,500
Operating assets	8,392	9,488	8,184	6,334	7,793	7,917	8,063
Operating liabilities	6,056	5,815	5,892	5,457	5,722	5,872	6,051
NOWC	2,336	3,673	2,292	877	2,071	2,045	2,013
NOWC ex cash (NWC)	(1,526)	(1,477)	(1,571)	(1,442)	(1,467)	(1,505)	(1,551)
NFA	18,151	16,893	18,388	18,120	18,517	19,003	19,581
Invested capital	20,487	20,566	20,680	18,997	20,588	21,048	21,594
Total assets	$26,543	$26,381	$26,572	$24,454	$26,310	$26,921	$27,645
Short-term and long-term debt	3,930	5,928	5,925	6,416	6,416	6,416	6,416
Other liabilities	7,043	4,018	7,520	7,059	7,064	7,069	7,074
Equity	9,514	10,620	7,235	5,522	7,108	7,563	8,104
Total supplied capital	20,487	20,566	20,680	18,997	20,588	21,048	21,594
Total liabilities and equity	$26,543	$26,381	$26,572	$24,454	$26,310	$26,921	$27,645

Appendix 3: Sales Forecast

Sales							
Items	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Sales	$25,218	$24,661	$23,979	$23,526	$24,042	$24,673	$25,423
Growth		*-2.2%*	*-2.8%*	*-1.9%*	*2.2%*	*2.6%*	*3.0%*
Aerospace Systems	9,977	10,014	9,997	10,004	10,304	10,654	11,059
Growth		*0.4%*	*-0.2%*	*0.1%*	*3.0%*	*3.4%*	*3.8%*
% of sales	*39.6%*	*40.6%*	*41.7%*	*42.5%*	*42.9%*	*43.2%*	*43.5%*
Electronic Systems	6,950	7,149	6,951	6,842	6,945	7,066	7,207
Growth		*2.9%*	*-2.8%*	*-1.6%*	*1.5%*	*1.8%*	*2.0%*
% of sales	*27.6%*	*29.0%*	*29.0%*	*29.1%*	*28.9%*	*2.0%*	*28.3%*
Information Systems	7,356	6,596	6,222	5,894	5,971	6,078	6,200
Growth		*-10.3%*	*-5.7%*	*-5.3%*	*1.3%*	*1.8%*	*2.0%*
% of sales	*29.2%*	*26.7%*	*25.9%*	*25.1%*	*24.8%*	*24.6%*	*6.0%*
Technical Services	3,019	2,843	2,799	2,838	2,895	2,967	3,071
Growth		*-5.8%*	*-1.5%*	*1.4%*	*2.0%*	*2.5%*	*3.5%*
% of sales	*12.0%*	*11.5%*	*11.7%*	*12.1%*	*12.0%*	*12.0%*	*12.1%*
Intersegment eliminations	(2,084)	(1,941)	(1,990)	(2,052)	(2,073)	(2,093)	(2,114)
Growth		*-6.9%*	*2.5%*	*3.1%*	*1.0%*	*1.0%*	*1.0%*
% of sales	*-8.3%*	*-7.9%*	*-8.3%*	*-8.7%*	*-8.6%*	*-8.5%*	*-8.3%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
United States	22,268	21,278	20,085	19,458	20,123	20,725	21,381
Growth		*-4.4%*	*-5.6%*	*-3.1%*	*3.4%*	*3.0%*	*3.2%*
% of sales	*88.3%*	*86.3%*	*83.8%*	*82.7%*	*83.7%*	*84.0%*	*84.1%*
International	2,085	2,493	3,045	3,339	3,366	3,392	3,458
Growth		*19.6%*	*22.1%*	*9.7%*	*0.8%*	*0.8%*	*1.9%*
% of sales	*8.3%*	*10.1%*	*12.7%*	*14.2%*	*14.0%*	*13.8%*	*13.6%*
Other Customers	865	890	849	729	541	555	572
Growth		*2.9%*	*-4.6%*	*-14.1%*	*-25.8%*	*2.6%*	*3.0%*
% of sales	*3.4%*	*3.6%*	*3.5%*	*3.1%*	*2.3%*	*2.3%*	*2.3%*

Appendix 4: Ratios

Ratios	2012	2013	2014	2015	2016E	2017E	2018E
Profitability							
Gross margin	22.1%	21.8%	23.4%	24.0%	24.1%	24.6%	25.0%
Operating (EBIT) margin	12.6%	12.7%	13.4%	13.1%	14.0%	14.2%	14.4%
Net profit margin	7.8%	7.9%	8.6%	8.5%	9.2%	9.5%	9.6%
Activity							
NFA (gross) turnover		1.41	1.36	1.29	1.31	1.32	1.32
Total asset turnover		0.93	0.91	0.92	0.95	0.93	0.93
Liquidity							
Op asset / op liab	1.39	1.63	1.39	1.16	1.36	1.35	1.33
NOWC Percent of sales		12.2%	12.4%	6.7%	6.1%	8.3%	8.0%
Solvency							
Debt to assets	14.8%	22.5%	22.3%	26.2%	24.4%	23.8%	23.2%
Debt to equity	41.3%	55.8%	81.9%	116.2%	90.3%	84.8%	79.2%
Other liab to assets	26.5%	15.2%	28.3%	28.9%	26.8%	26.3%	25.6%
Total debt to assets	41.3%	37.7%	50.6%	55.1%	51.2%	50.1%	48.8%
Total liabilities to assets	64.2%	59.7%	72.8%	77.4%	73.0%	71.9%	70.7%
Debt to EBIT	1.24	1.90	1.84	2.08	1.91	1.83	1.75
EBIT/interest	14.99	12.14	11.41	10.27	10.75	10.65	10.61
Debt to total net op capital	19.2%	28.8%	28.7%	33.8%	31.2%	30.5%	29.7%
ROIC							
NOPAT to sales		8.6%	9.5%	9.4%	10.1%	10.5%	10.6%
Sales to IC		120.1%	116.3%	118.6%	121.5%	118.5%	119.2%
Total		10.4%	11.0%	11.1%	12.3%	12.4%	12.7%
Total using EOY IC	10.3%	10.3%	11.0%	11.6%	11.8%	12.3%	12.5%
ROE							
5-stage							
EBIT / sales		12.7%	13.4%	13.1%	14.0%	14.2%	14.4%
Sales / avg assets		0.93	0.91	0.92	0.95	0.93	0.93
EBT / EBIT		91.8%	91.2%	90.3%	90.7%	90.6%	90.6%
Net income /EBT		68.2%	70.4%	71.3%	72.3%	73.9%	73.9%
ROA		7.4%	7.8%	7.8%	8.7%	8.8%	9.0%
Avg assets / avg equity		2.63	2.97	4.00	4.02	3.63	3.48
ROE		19.4%	23.2%	31.2%	35.0%	32.0%	31.3%
3-stage							
Net income / sales		7.9%	8.6%	8.5%	9.2%	9.5%	9.6%
Sales / avg assets		0.93	0.91	0.92	0.95	0.93	0.93
ROA		7.4%	7.8%	7.8%	8.7%	8.8%	9.0%
Avg assets / avg equity		2.63	2.97	4.00	4.02	3.63	3.48
ROE		19.4%	23.2%	31.2%	35.0%	32.0%	31.3%
Payout Ratio		27.9%	27.2%	30.3%	28.1%	27.3%	26.9%
Retention Ratio		72.1%	72.8%	69.7%	71.9%	72.7%	73.1%
Sustainable Growth Rate		14.0%	16.9%	21.7%	25.1%	23.3%	22.9%

Appendix 5: Cash Flow Statement

Cash Flow Statement	2013	2014	2015	2016E	2017E	2018E
Cash from Operatings (understated - depr'n added to net assets)						
Net income	1,952	2,069	1,990	2,207	2,346	2,450
Change in Net Working Capital ex cash	(49)	94	(129)	25	38	46
Cash from operations	$1,903	$2,163	$1,861	$2,232	$2,384	$2,496
Cash from Investing (understated - depr'n added to net assets)						
Change in NFA	1,258	(1,495)	268	(397)	(486)	(578)
Cash from investing	$1,258	($1,495)	$268	($397)	($486)	($578)
Cash from Financing						
Change in Short-Term and Long-Term Debt	1,998	(3)	491	0	0	0
Change in Other liabilities	(3,025)	3,502	(461)	5	5	5
Dividends	(545)	(563)	(603)	(621)	(640)	(660)
Change in Equity ex NI and Dividends	(301)	(4,891)	(3,100)	0	(1,250)	(1,250)
Cash from financing	($1,873)	($1,955)	($3,673)	($616)	($1,885)	($1,905)
Change in Cash	1,288	(1,287)	(1,544)	1,218	13	13
Beginning Cash	3,862	5,150	3,863	2,319	3,537	3,550
Ending Cash	$5,150	$3,863	$2,319	$3,537	$3,550	$3,564

Appendix 6: 3- stage DCF Model

3-stage Discounted Cash Flow							
	Year						
	1	2	3	4	5	6	7
First Stage			Second Stage				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*2.6%*	*3.0%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
NOPAT / S	*10.5%*	*10.6%*	*10.6%*	*10.6%*	*10.6%*	*10.6%*	*10.6%*
S / NWC	*(16.39)*	*(16.39)*	*(16.39)*	*(16.39)*	*(16.39)*	*(16.39)*	*(16.39)*
S / NFA (EOY)	*1.30*	*1.30*	*1.30*	*1.30*	*1.30*	*1.30*	*1.30*
S / IC (EOY)	*1.41*	*1.41*	*1.41*	*1.41*	*1.41*	*1.41*	*1.41*
ROIC (EOY)	*14.8%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*
ROIC (BOY)		*15.5%*	*15.5%*	*15.5%*	*15.5%*	*15.5%*	*15.5%*
Share Growth		*-2.7%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$24,673	$25,423	$26,313	$27,234	$28,187	$29,174	$30,195
NOPAT	$2,589	$2,705	$2,800	$2,898	$2,999	$3,104	$3,213
Growth		*4.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
- Change in NWC	-38	-46	-54	-56	-58	-60	-62
NWC	*-1505*	*-1551*	*-1605*	*-1661*	*-1719*	*-1780*	*-1842*
Growth NWC		*3.0%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
- Chg NFA	486	578	685	709	734	760	786
NFA EOY	*19,003*	*19,581*	*20,267*	*20,976*	*21,710*	*22,470*	*23,256*
Growth NFA		*3.0%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
Total inv in op cap	448	532	631	653	676	700	724
Total net op cap	17498	18030	18662	19315	19991	20690	21415
FCFF	$2,141	$2,173	$2,169	$2,245	$2,323	$2,405	$2,489
% of sales	*8.7%*	*8.5%*	*8.2%*	*8.2%*	*8.2%*	*8.2%*	*8.2%*
Growth		*1.5%*	*-0.2%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
- Interest (1-tax rate)	243	255	264	273	283	293	303
Growth		*4.9%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
FCFE w/o debt	$1,898	$1,918	$1,905	$1,972	$2,041	$2,112	$2,186
% of sales	*7.7%*	*7.5%*	*7.2%*	*7.2%*	*7.2%*	*7.2%*	*7.2%*
Growth		*1.0%*	*-0.7%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
/ No Shares	184.4	179.3	179.3	179.3	179.3	179.3	179.3
FCFE	$10.30	$10.70	$10.62	$10.99	$11.38	$11.78	$12.19
Growth		*3.9%*	*-0.7%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
* Discount factor	0.91	0.84	0.77	0.70	0.64	0.59	0.54
Discounted FCFE	$9.42	$8.95	$8.13	$7.69	$7.28	$6.90	$6.53
Third Stage							
Terminal value P/E							
Net income	$2,346	$2,450	$2,536	$2,625	$2,717	$2,812	$2,910
% of sales	*9.5%*	*9.6%*	*9.6%*	*9.6%*	*9.6%*	*9.6%*	*9.6%*
EPS	$12.72	$13.66	$14.14	$14.64	$15.15	$15.68	$16.23
Growth		*7.4%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
Terminal P/E							19.20
* Terminal EPS							$16.23
Terminal value							$311.59
* Discount factor							0.54
Discounted terminal value							$166.84

Summary		
First stage	$18.36	Present value of first 2 year cash flow
Second stage	$36.53	Present value of year 3-7 cash flow
Third stage	$166.84	Present value of terminal value P/E
Value (P/E)	**$221.73**	= value at beg of fiscal yr 2017

Appendix 7: 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	2014	2015	2016	2017	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
NOC	NORTHROP GRUMMAN CORP	$232.58	$40,995	(0.0)	(6.8)	8.7	4.6	22.4	23.2	8.3	-1.1%	16.8%	6.6%	12.8%	3.2%	8.8%	0.57	110.8%	A	1.50%	29.0%
RTN	RAYTHEON CO	$142.00	$41,698	(1.0)	(5.0)	4.3	4.5	12.9	14.0	8.6	-4.9%	16.9%	-3.2%	10.5%	-0.7%	7.0%	0.59	51.0%	A	2.06%	38.3%
BA-GB	BAE SYSTEMS	$7.31	$23,213	(0.6)	(1.5)	12.9	12.9	17.0	18.4	6.3		-14.5%	0.0%	-16.9%	10.2%	0.0%	0.43			3.57%	
HO-FR	THALES	$97.17	$20,491	0.1	0.0	12.4	22.8	33.0	33.3	10.2		-24.7%	25.8%	10.7%	11.9%		0.55			1.53%	
GD	GENERAL DYNAMICS CORP	$172.66	$52,578	(0.3)	(1.5)	11.3	24.0	24.0	25.7	7.3	5.6%	11.4%	16.0%	7.8%	2.8%	5.9%	0.81	34.3%	A	1.76%	31.7%
LMT	LOCKHEED MARTIN CORP	$249.94	$73,227	(0.3)	(5.8)	4.3	0.7	13.7	15.1	8.6	-4.9%	17.0%	2.2%	6.6%	3.9%	9.0%	0.53	615.8%	A+	2.71%	51.8%
HRS	HARRIS CORP	$102.47	$12,735	(0.6)	(1.1)	11.9	22.8	17.2	17.9		107.9%	2.8%	10.9%	0.0%	1.8%		1.17	133.9%	B	2.01%	71.7%
BA	BOEING CO	$155.68	$96,080	(0.0)	3.4	18.2	19.9	6.3	7.7	11.1	38.6%	21.6%	-10.2%	-8.2%	31.9%	10.7%	1.13	470.3%	A-	2.80%	63.6%
Average			$45,127	(0.3)	(2.3)	10.5	14.0	18.3	19.4	8.6	23.5%	5.9%	6.0%	2.9%	8.1%	6.9%	0.72	236.0%		2.24%	47.7%
Median			$41,346	(0.3)	(1.5)	11.6	16.4	17.1	18.2	8.6	2.2%	14.1%	4.4%	7.2%	3.6%	7.9%	0.58	122.3%		2.04%	45.0%
SPX	S&P 500 INDEX	$2,239		(0.5)	1.8	3.3	6.7	8.5	9.5			8.7%	0.2%	3.4%	6.6%						

Ticker	Website	2015 ROE	P/B	P/E 2013	2014	2015	TTM	NTM	2016	2017E	2015 NPM	2015 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
NOC	http://www.northropgrumman.com	31.9%	7.13	27.9	23.9	22.4	19.8	20.1	19.8	19.2	7.8%	1.74	12.8%	15.9%	13.1	13.8	9.3	3.9%	6.5%	-7.5%	$32.62
RTN	http://www.raytheon.com	18.9%	3.98	23.8	20.4	21.0	19.0	19.9	19.0	19.2	8.5%	1.79	12.6%	13.6%	14.2			4.3%	5.1%	-1.6%	$35.65
BA-GB	http://www.baesystems.com	59.2%	7.34	10.6	12.4	12.4			14.9	13.5	7.1%	0.88		16.0%	13.2	15.0	10.4			-4.5%	$1.00
HO-FR	http://www.thalesgroup.com	18.8%	4.36	22.0	29.2	23.2			20.9	18.7	5.8%	1.34	6.6%	14.3%	12.1	14.5	7.7			1.4%	$22.30
GD	http://www.generaldynamics.com	24.4%	4.65	24.6	22.1	19.0	18.4	17.4	17.6	17.2	8.8%	1.67	13.7%	20.5%	10.9	14.0	11.0	2.7%	2.3%	-0.6%	$37.16
LMT	http://www.lockheedmartin.com	144.5%	31.52	26.1	22.3	21.8	19.6	20.6	20.5	19.7	7.3%	1.59	11.2%	26.7%	15.2	15.4	10.7	-0.4%	4.5%	0.1%	$7.93
HRS	http://www.harris.com	23.2%	4.16	20.5	19.9	18.0	36.2	17.4	18.0	17.7	9.5%	1.71	18.4%	4.4%	10.8	17.7		-2.6%		4.7%	$24.60
BA	http://www.boeing.com	228.7%	46.13	22.0	18.1	20.2	23.7	17.1	22.0	16.7	5.0%	1.00	4.8%	32.5%	13.7	15.1	11.7	-2.6%	2.6%	8.4%	$3.38
Average		68.7%	13.66	22.2	21.0	19.7	22.8	18.8	19.1	17.7	7.5%	1.47	11.4%	18.0%	12.9	15.1	10.1	0.9%	4.2%	0.1%	
Median		28.1%	5.89	22.9	21.2	20.6	19.7	18.7	19.4	18.2	7.5%	1.63	12.6%	15.9%	13.2	15.0	10.6	1.1%	4.5%	-0.2%	
spx	S&P 500 INDEX			20.6	18.9	18.9			18.2	17.1											

Appendix 8: Porter's 5 Forces

Threat of New Entrants – Very Low

The defense sector is extremely difficult for new entrants. Northrop Grumman specifically develops highly advanced aircraft and weapon systems; massive start-up costs and the United States Government regulations prevent new firms from entering the sector.

Threat of Substitutes – Very Low

Northrop Grumman develops highly advanced aircraft and weapon systems. It invests heavily in R&D to maintain competitiveness with other aerospace / defense companies. NOC has the most advanced stealth bomber on the market and won the contract to make the next generation of stealth bombers; this makes NOC very resistant to substitutes.

Supplier Power – Moderate

Although Northrop Grumman develops a lot of parts itself, NOC does need to order parts such as electronics from other manufacturers. The specialized nature of these parts can make the cost high for NOC.

Buyer Power- High

About 80% of Northrop's sales are to the United States Government. Such a high concentration of sales going to one customer makes the buyer's power high. The US government has the right to stop a work under a contract for a limited time for its convenience. With the US government as its main customer, NOC is beholden to it more than other customers.

Intensity of Competition – High

The defense sector although small, has high competition as most of the companies have one primary costumer, the US government, that they need to win contracts from. When the US government needs a new product, it allows defense contractors to offer bids to complete the contracts, sometimes worth well into the billions of dollars. NOC won the LRS-B contract to build the B-21 competing against the combined forces of Lockheed Martin and Boeing; after LMT and BA lost the contract they disputed it in court but ultimately NOC was deemed to have properly won the contract.

Appendix 9: SWOT Analysis

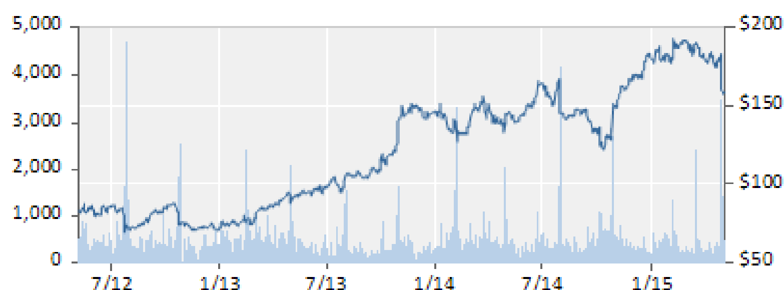
Strengths	Weaknesses
Government Relationships B-21 Contract Unmanned Vehicles	US Government Largest Customer Possible B-21 Cancelations Low International Sales
Opportunities	**Threats**
Next Generation Fighter Global Conflict/ DoD budget Increase Greater Drone Usage	Aging Workforce / Worker Shortages Budget Cuts / US Deficit Concerns Peace

Analyst: Daniel Macek

Recommendation	NEUTRAL
Target (today's value)	$155
Current Price	$150
52 week range	$122-$175

Restaurant

Buffalo Wild Wings, Inc.



Share Data	
Ticker:	BWLD
Market Cap. (Billion):	$2.72
Inside Ownership	1.3%
Inst. Ownership	91.6%
Beta	0.95
Dividend Yield	N/A
Payout Ratio	N/A
Cons. Long-Term Growth Rate	19.3%

	'14	'15	'16E	'17E	'18E
Sales (billions)					
Year	$15.2	$18.1	$20.2	$22.4	$24.3
Gr %		19.1%	11.6%	9.8%	8.4%
Cons	-	-	$20.0	$22.1	$23.5
EPS					
Year	$4.98	$5.00	$5.61	$6.83	$7.79
Gr %	19.6%	0.5%	12.2%	21.7%	14.5%
Cons	-	-	$5.51	$6.47	$6.51

Ratio	'14	'15	'16E	'17E	'18E
ROE (%)	18.1%	15.5%	15.5%	16.6%	22.1%
Rel Industry	17.0%	20.9%	20.9%	17.8%	21%
NPM (%)	6.2%	5.2%	5.2%	5.1%	5.0%
Rel Industry	6.3%	7.3%	7.3%	7.2%	8.0%
A. T/O	1.94	1.88	1.88	1.85	1.94
ROA (%)	12.1%	9.9%	9.9%	9.4%	9.7%
Rel Industry	8.9%	10.0%	10.0%	9.6%	11.2%
A/E	1.54	1.52	1.49	1.64	1.69

Valuation	'15	'16E	'17E	'18E
P/E	33.3	30	27.1	23.1
Rel Industry	33.8	45.6	55.5	26.9
P/S	1.74	1.54	1.35	1.23
P/B	4.6	4.8	4.7	5.6
P/CF	12.4	10.7	9.8	8.5
EV/EBITDA	23.5	21.2	19.3	18.3

Performance	Stock	Industry
1 Month	-3.2%	5.3%
3 Month	2.3%	17.0%
YTD	-3.2%	5.3%
52-week	-0.1%	41.8%
3-year	5.4%	34.2%

Contact: Daniel Macek
Email: dhmacek@uwm.edu
Phone: 262-416-8220

Summary: I recommend a neutral rating with a target of $160. BWLD is growing rapidly and has an untapped international market, but the slow of growth within the US over the past year is a headwind. The stock is fairly valued based on relative, DCF, and multiple analyses.

Key Drivers:

- Store expansion: BWLD has been growing rapidly since its IPO in 2003. The company currently has about 1190 owned or franchised restaurants and plans to own or franchise 3000. With only 4 restaurants open outside of the US, the international market is still wide-open. I expect it to open about 75 restaurants per year.

- Same-store sales: While the restaurant has been rapidly expanding stores, the company must maintain its loyal customers. Same-store sales are down in 2016.

- Margins: Fluctuating costs of chicken and labor directly cut into BWLD's margin. It has initiated plans to offset this volatility, but it still exists.

- Consumer habits: BWLD is still growing so it is not as cyclical as its mature competitors, but it still relies on loyal customer traffic. With its large market of sports fans, it was hurt over the last year by poorer NFL ratings.

Valuation: Using a relative valuation approach, BWLD appears to be fairly valued in comparison to the restaurant industry. As a growth stock, the restaurants multiple is the best way to value the stock. Assuming a declining P/E to 23 in 2023 as growth slows, the stock value is about $146 and currently trades at $150.

Risks: Threats to the business include maturity, fluctuations in operating costs, consumer habits, and competition.

Company Overview

Buffalo Wild Wings is an American restaurant and sports bar famous for its Buffalo, New York-style chicken wings paired with its 16 signature sauces and five signature seasonings. Each restaurant features a full bar and numerous televisions and projectors for mostly sports-viewing purposes. Buffalo Wild Wings appeals to its consumer market with its slogan "Wings. Beer. Sports." BWLD also operates R Taco, a fast casual taco restaurant, as well as Pizza Rev, a fast casual pizza restaurant.

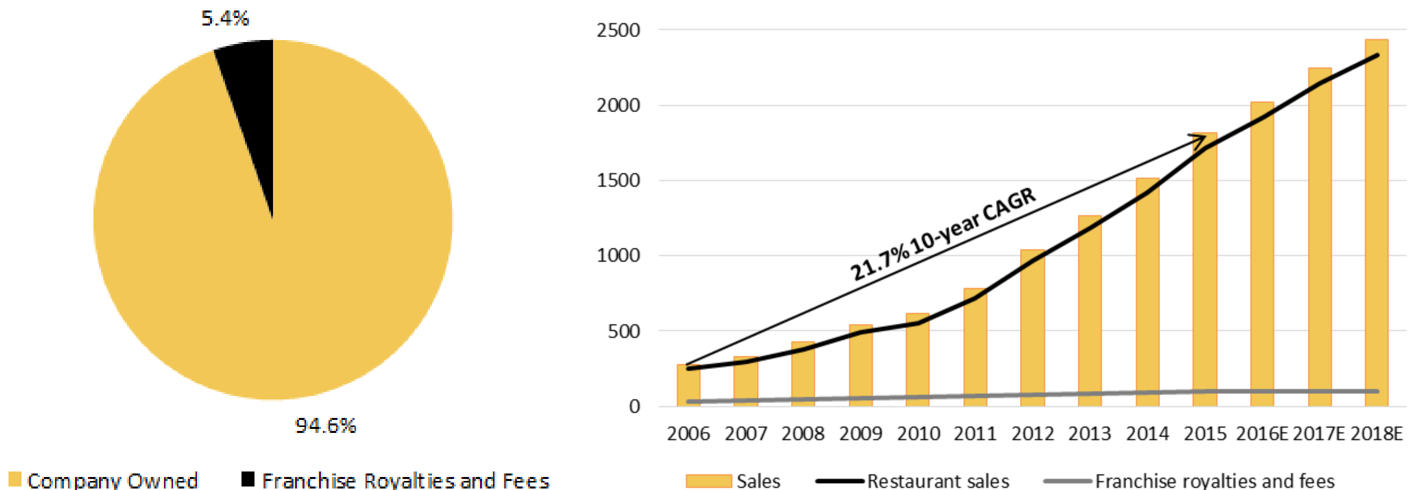
Originally called "Buffalo Wild Wings & Weck" (hence the nickname "BW3"), Buffalo Wild Wings was founded by Jim Disbrow and Scott Lowery at a location near The Ohio State University. The two had just moved from New York and were craving Buffalo, New York-style chicken wings. The original restaurant was very popular and so the founders began to expand. The company began franchising in 1991 and in 2003 completed its IPO. The restaurant has won "Best Wings" and "Best Sports Bar" awards throughout the US. To some sports fans, "B-Dub's" is the place to be when the game is on.

With corporate headquarters in Minneapolis, Minnesota, there are approximately 1190 Buffalo Wild Wings restaurants in the United States and Canada. Buffalo Wild Wings has a few restaurants outside of the United States as well, with ten restaurants in Mexico, two in the Philippines, one in Saudi Arabia, and one in the United Arab Emirates. These restaurants target the different interests of each culture. The plan for Buffalo Wild Wings is to own or franchise a total of 3000 restaurants in the United States. As far as same-stores, the company plans to continue growth through innovation such as new technologies for the convenience of guests and the most up-to-date entertainment systems. Internationally, the company plans to open 400 restaurants in the next 10-12 years.

Buffalo Wild Wings generates:

- Revenues from company-owned stores
- Royalties and fees from franchised stores

Figures 1 and 2: Revenue sources for BWLD, EOY 2015 (left) and revenue units since FYE 2005 (right)



Source: Company annual reports

Business/Industry Drivers

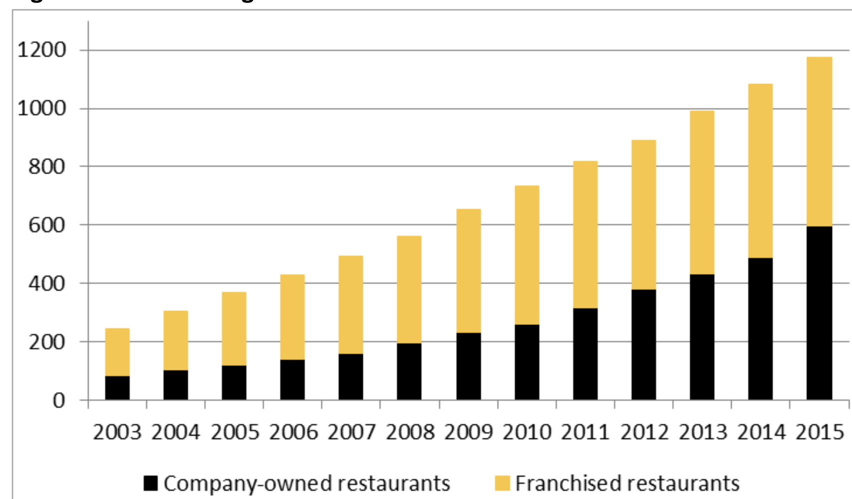
Though several factors may contribute to Buffalo Wild Wings future success, the following are the most important business drivers:

1) Business growth strategy
2) Same-store sales
3) Consumer habits
4) Margin

Store Expansion

Buffalo Wild Wings has been growing rapidly. At its IPO in 2003, BWLD had 245 restaurants. The company currently has approximately 1,190 company owned restaurants and franchised restaurants. Internationally, Buffalo Wild Wings didn't have any restaurants outside of the United States at the time of its IPO. The company now owns 13 restaurants outside of the United States. The company plans to open 400 restaurants internationally. I forecast 75 new company-owned stores per year through 2018. This estimate is important because I use it to forecast sales through FYE 2018.

Figure 3: Restaurant growth



Source: Company reports

Buffalo Wild Wings business strategy is as follows:

"We aspire to be a growth enterprise of restaurant brands, with more than 3,000 restaurants creating the ultimate guest experience worldwide. To escalate our strategy, we will:

- Continue to strengthen the Buffalo Wild Wings® brand domestically and internationally;
- Identify, invest in and develop emerging restaurant concepts beyond Buffalo Wild Wings;
- Continuously develop and deliver unique guest experiences;
- Offer crave-able menu items with broad appeal;
- Create an inviting neighborhood atmosphere;
- Focus on operational excellence;
- Open restaurants in new and existing domestic and international markets; and
- Increase same-store sales, average unit volumes, and profitability."

Buffalo Wild Wings rapid growth has led to a 22.2% CAGR since its IPO in 2003. During this time, the company has seen sales rise from FYE 2003 of $126.5 mil, to FYE 2015 of $1715 mil, with sales continuing to grow every year.

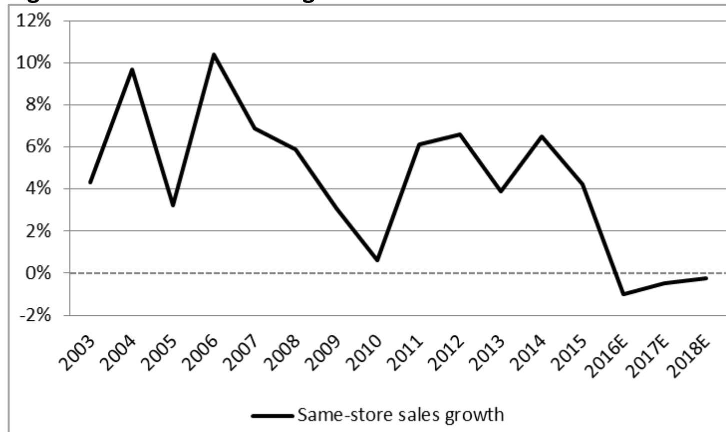
Same-Store Sales

The "Buffalo Wild Wings" name gives the company a sustainable competitive advantage.

Buffalo Wild Wings measures same-stores as stores that have been operating for 15 months or more. Since its IPO 13 years ago, the company experienced growth in same-store sales. BWLD has a relatively loyal fan-base. The name "Buffalo Wild Wings" is a sustainable competitive advantage, or "MOAT," as the restaurant is known as the first restaurant focused on wings. Sports fans pile into their local Buffalo Wild Wings to watch their favorite team, which creates a more consistent sales base.

In 1Q16, Buffalo Wild Wings saw a decrease in same-store sales growth for the first time in the company's existence. This decline could be attributed to cannibalism between Buffalo Wild Wing's rapidly expanding stores, or possibly the maturity of the company. The recent decline in NFL viewership also means less traffic for BWLD same-stores, as I will discuss later.

Figure 4: Same-store sales growth

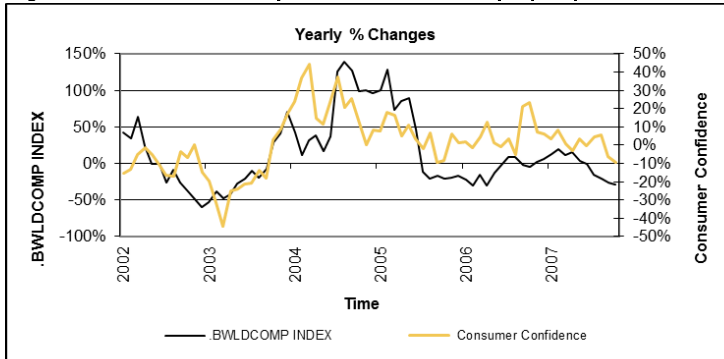


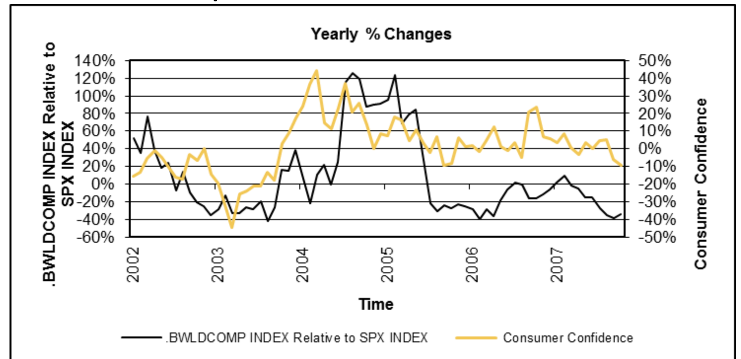
Source: Company reports

Consumer Confidence Index

The Consumer Confidence Index (CCI) is a measurement of consumer's degree of optimism about the state of the economy. The index has been on the rise since the subprime mortgage crisis, with a 12.4% CAGR since it bottomed-out in 2009. In December of 2016, the CCI reached its highest point since before the internet bubble burst in 2001. However, with Buffalo Wild Wings' rapid growth, the economy has not played a huge factor in earning performance; however the comps are still correlated with the CCI.

Figures 5 and 6: CCI compared to BWLD comps (left) and CCI compared to BWLD comps relative to the S&P 500



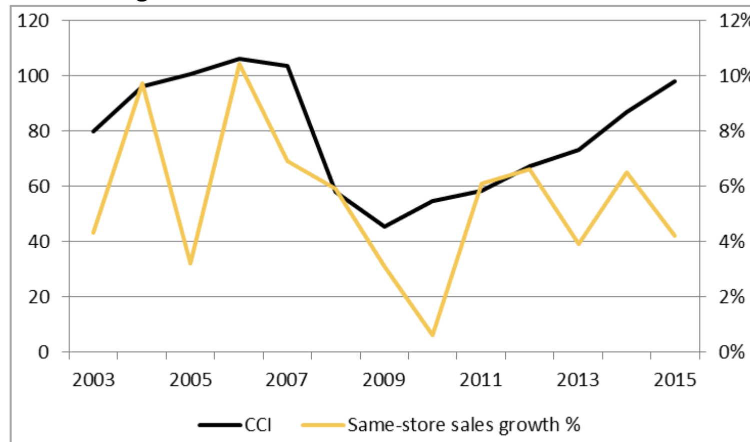


Consumer confidence will have a stronger relationship with BWLD as the restaurant matures.

When confidence rises, consumers are more likely to eat out. Thus, it is not surprising that Buffalo Wild Wing's restaurants comps have a strong 0.7 correlation with consumer confidence. As the firm matures, the economy should impact the stock more than in the past.

The CCI can be best compared to Buffalo Wild Wing's same-store sales, as these sales more accurately reflect consumer's willingness to spend during different states of the economy; this is the majority of BWLD's growth, which is derived from its newly opened stores. Once store expansion slows, the CCI will have a stronger correlation with earnings. Same-stores has a correlation of 0.51 with the CCI, with an R^2 of 0.26.

Figure 7: Consumer Confidence Index (CCI) compared to same-store sales growth



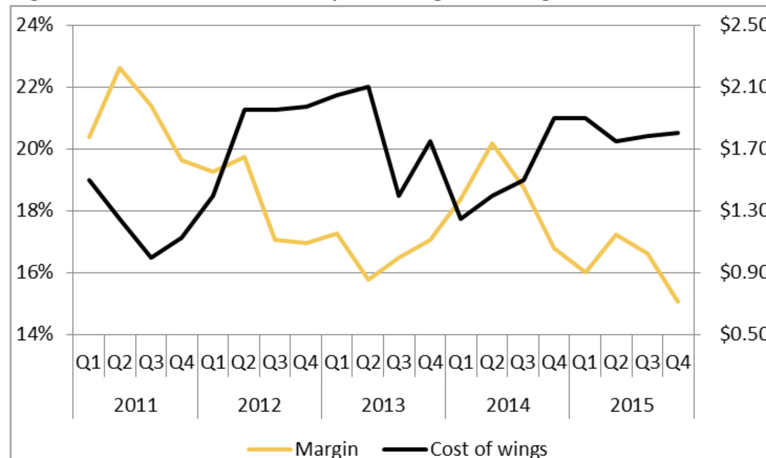
Source: FactSet, company reports

Cost of chicken $/lb

The cost of chicken wings makes up 25% of BWLD's cost of sales.

As the name would suggest, chicken wings are Buffalo Wild Wings primary food product. The restaurant serves both bone-in chicken wings as well as boneless chicken wings, made from chicken breasts. The cost of chicken wings has an inverse relationship with Buffalo Wild Wing's margin, making up about 25% of BWLD's cost of sales. The cost of sales make up 36% of BWLD's operating expenses. Figure 8 shows the inverse relationship between the cost of chicken and Buffalo Wild Wings margin. Over the past 5 years, the company's margin and the cost of wings have a correlation of -0.7. As you can see, this hurt margins in 2015.

Figure 8: Cost of chicken compared to gross margin



Source: Company reports

Over the past ten years, the cost of chicken wings per lb. has risen about 22%. As the cost of chicken wings rose at the end of 2011, Buffalo Wild Wings worked to maintain margins by:

- Introducing new menu items
- Marketing promotions
- Avoiding waste
- Menu price increases
- Supplier cost-splitting

In 2013, after the swift increase in chicken wing costs in 2012, BWLD began selling wings by weight rather than quantity. This tactic provided guests with a consistent amount of chicken, as well as decreased yield fluctuations to Buffalo Wild Wing's cost of sales. The price of chicken wings is the average of the previous month's wing market plus a processing and distribution mark-up. In order to negate risks due to the fluctuations of wing prices, BWLD set a monthly average threshold in the contracts with suppliers. This way, if the monthly average price of chicken wings exceeds the upper threshold or falls below the lower threshold the damage is split between the two parties.

In 2013, after the price of wings increased, Buffalo Wild Wings was able to increase the prices of its wings because of the strength of its brand. Now that the price of wings has steadied, BWLD has begun a marketing campaign in an effort to increase traffic in 4Q16. The headline of this campaign is half-priced "Wing Tuesday,' which is offered to 1,100 of Buffalo Wild Wings restaurants. Another effort to drive in customers was a hard-hitting advertising campaign promoting the new football season. Unfortunately, America's most watched sports TV ratings are down.

Viewership of Sporting Events

NFL viewership declined 11% in the first month of the regular season

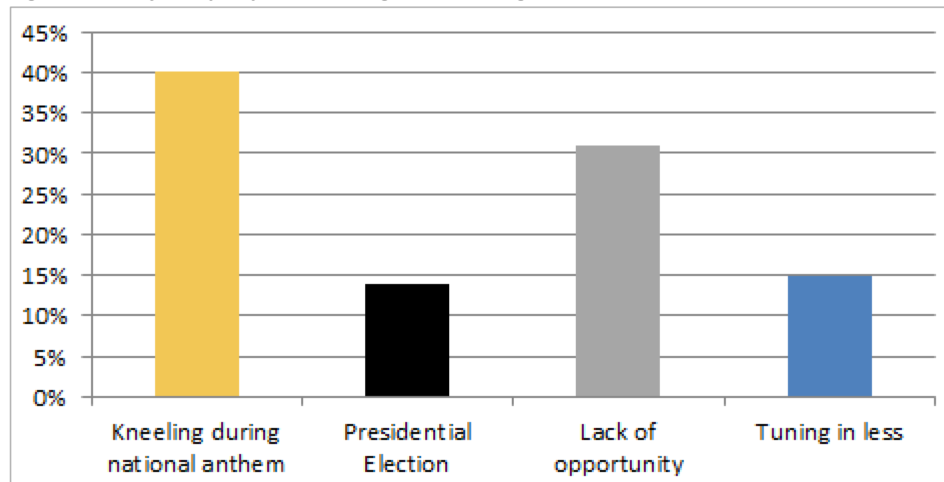
Sports fans make up a large portion of BWLD's customers. The NFL is the most popular sport in the United States, according to ESPN, and so in the summer of 2016 BWLD began its heavy marketing campaign to bring in football fans. The problem for BWLD isn't that fans are going elsewhere to watch the game- it's that a lot fewer fans are watching it. According to CNN, after the first two weeks of the NFL regular season, NBC's "Sunday Night Football" viewership was down 12%, ESPN's "Monday Night Football" was down 12%," and CBS' "Thursday Night Football" plunged down 26%. The decrease in viewers means a decrease in traffic at Buffalo Wild Wings. This decrease in traffic could be seen in a same-store sales decline in 3Q16, the third consecutive quarter of declining same-store sales. The restaurant began to offer half-priced wings on Tuesdays in September in order to increase traffic. James Schmidt, COO of the company, stated in 3Q16 earnings call that BWLD is "seeing significant traffic increase and also a nice lift in sales on that day (Tuesday)," and went on to say "we don't believe we're cannibalizing the other days." It is hard to say that this tactic worked-same-store sales declined but not by as much as the previous two quarters.

The NFL remains confident that this fall's decrease in ratings during the early stages of the NFL season won't be sustained over the long-term. A letter from NFL senior executives Brian Rolapp and Howard Katz stated, "While our partners, like us, would have liked to see higher ratings, they remain confident in the NFL and unconcerned about a long-term issue," and that football "continues to be far and away the most powerful programming on television and the best place for brands and advertisers." They aren't wrong to state that the NFL still remains the most watched TV program. In fact, the top 20 most-viewed programs in US history are all Super Bowls, except for the M*A*S*H series finale at number 8 on the list.

The NFL believes the drop in ratings won't be sustained, but studies are concerning

The league went on to state that the large drop in ratings is likely because of the 2016 presidential election. The first debate of election 2016 was the most watched presidential debate to date. The letter from Rolapp and Katz went on to state that the NFL saw a similar ratings decline during the 2000 presidential election. NFL Players kneeling during the National Anthem is another speculative reason as to why ratings have declined, but the NFL has denied this theory, saying that there is no evidence as to that being a factor in the decline of ratings, and adding, "in fact: our own data shows that the perception of the NFL and its players is actually up in 2016." This statement is contradictive to a survey of 1,136 people taken by Yahoo/YouGov. The results of the survey are shown in figure 9. The survey found that 29% of respondents were watching fewer NFL games, and of that 40% said that the reason they were watching fewer games was because of protest during the national anthem.

Figure 9: Why are people watching fewer NFL games?



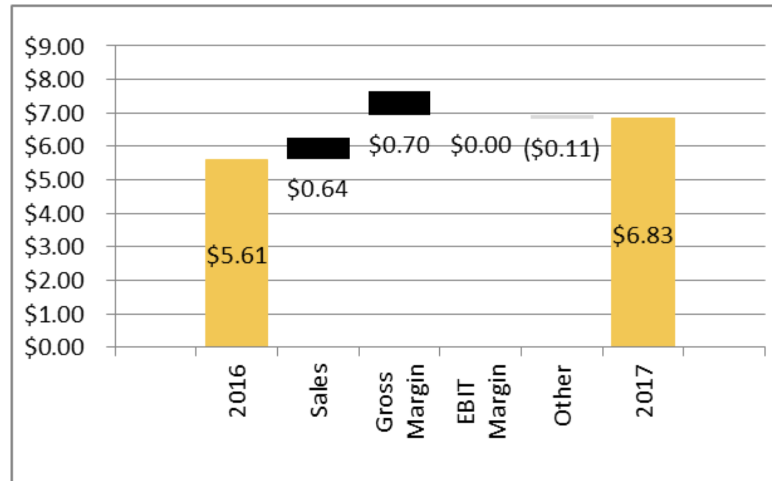
Source: Yahoo!

Financial Analysis

Buffalo Wild Wings is a growing company. The company has about 1200 restaurants open, and plans on having 3000. Though the company has seen its first decline in same-store sales, it will continue to open new restaurants.

My 4Q16 forecast is above consensus earnings and EPS. We have seen strong economic data throughout 4Q16, including the CCI reach its highest tick since the burst of the internet bubble. In 2017 I anticipate EPS to increase from $5.19 to $6.86. As BWLD continues to expand, sales will lead to a $0.60 increase in EPS. BWLD has seen decreasing margins over the past five years. This is probably due to the high cost of chicken wings and, recently, the introduction of $0.50 wing days at BWLD restaurants. After poor same-store sales and low margins relative to the company's history, CEO Sally Smith stated in BWLD's 3Q16 earnings call that a point of emphasis is to improve same-store sales back to industry-leading levels, as well as increasing restaurant level margins to 20%. The improvement of gross margin from 15% in 2016 to 16% in 2017 will lead to an increase in EPS of $0.70. This increase in gross margin will negate the impact that EBIT margin has on EPS. CEO Sally Smith stated that the company will look to increase debt, aiming for a debt-to-EBITDA ratio of 1.5. This is interest payment will be slightly offset by a decrease in corporate taxes in 2016, leading to a $0.11 decrease to EPS.

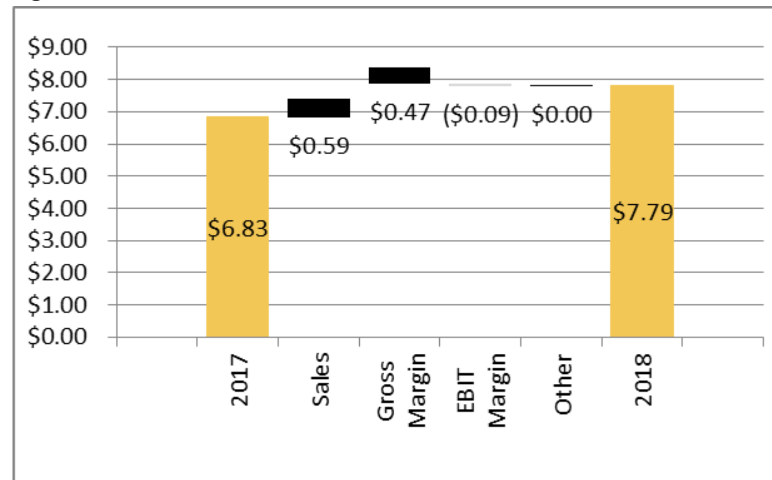
Figure 10: Quantification of 2017 EPS drivers



Source: Company reports, IMCP

In 2018, EPS will continue to grow with sales, painting a similar picture to 2017. Sales growth will contribute $0.59 to EPS. EBIT margin will take a slight fall as percentage of sales, as BWLD continues to look for ways to improve its margin to the company's goal of 20%. SG&A, R&D, and other will continue to rise proportionately to the company's sales growth.

Figure 11: Quantification of 2018 EPS drivers



Source: Company reports, IMCP

Sales Forecast

Figure 12 shows my sales model. This model shows the impact of same-store sales and new store sales on total revenue. BWLD classifies stores that are open for more than 15 months as same-store sales, so the column "15-mo of sales existing stores" was created to show the total sales that same-store sales contributed over its 15-month period.

My revenue estimates are above consensus. The company has planned to buy back previously franchised stores and for this reason I see about 70 new BWLD restaurants. I estimate higher sales growth/new stores because of strong economic data going into 4Q16. I see this figure falling as BWLD continues to grow, as new stores are likely to be somewhat cannibalized by same-stores, regressing to the company's historical average of new sales growth/store of 2.5.

Figure 12: Sales forecast model

Year	Comp-Owned Restaurants	Comp-Owned sales	YOY Sales Growth	YOY Abs. Cnge.	Same-store sales growth	Same-store Abs. growth	Sales from new stores	15-mo of sales existing stores	Implied SSS % growth	Sales w/o new stores	New Stores	New stores % of sales growth	New sales gr/store	Franchise fees	Total Revenue
2003	84	113			4.3%	3.3								14	127
2004	103	152	34.8%	39	9.7%	10.0	29.3			123	19	74.5%	1.54	19	171
2005	122	186	22.1%	34	3.2%	4.5	29.1			157	19	86.6%	1.53	24	210
2006	139	278	49.7%	92	10.4%	18.1	74.3	130	14.0%	204	17	80.4%	4.37	31	309
2007	161	330	18.5%	52	6.9%	15.7	35.8	166	9.4%	294	22	69.5%	1.63	37	367
2008	197	422	28.1%	93	5.9%	16.3	76.4	222	7.3%	346	36	82.4%	2.12	43	465
2009	232	539	27.6%	117	3.1%	11.1	105.4	304	3.6%	434	35	90.5%	3.01	50	589
2010	259	613	13.8%	74	0.6%	2.6	71.8	364	0.7%	542	27	96.5%	2.66	58	671
2011	319	717	17.0%	104	6.1%	31.1	73.0	455	6.8%	644	60	70.1%	1.22	67	784
2012	381	964	34.4%	247	6.6%	41.6	205.0	562	7.4%	759	62	83.1%	3.31	77	1,041
2013	434	1,185	23.0%	221	3.9%	33.2	188.2	667	5.0%	997	53	85.0%	3.55	81	1,266
2014	491	1,423	20.0%	238	6.5%	70.3	167.3	807	8.7%	1,256	57	70.4%	2.94	93	1,516
2015	596	1,715	20.5%	292	4.2%	51.1	240.9	1,049	4.9%	1,474	105	82.5%	2.29	98	1,813
2016E	666	1,920	11.9%	205	-1.5%	-19.5	224.0	1,299	-1.5%	1,696	70	109.5%	3.2	100	2,020
2017E	741	2,145	11.7%	225	0.5%	7.6	217.5	1,518	0.5%	1,927	75	96.6%	2.9	100	2,245
2018E	816	2,332	8.7%	188	0.0%	0.0	187.5	1,742	0.0%	2,145	75	100.0%	2.5	100	2,432

Source: Company reports

Figure 12 is a model using BWLD's real same-store sales figures to forecast sales.

Strong economic data (highest CCI since 2001) should lead to an increase in same-store sales growth for BWLD, bringing same-stores sales growth up from -1.7% in 3Q16 to -1.5% in 2016. This implies a $19.5 million decline in same-store sales in 2016. Buffalo Wild Wings opened a lot of restaurants between 2011 and 2015 (50-105 per year). In the nine months ended after 3Q16, BWLD opened 21 company-owned restaurants and 23 franchised restaurants. Historically, BWLD opens a lot of stores in 4Q, it opened 23 company-owned restaurants in 4Q15 last year. The company is probably preparing for sporting events that drive in traffic in the first quarter, including the NCAA Men's Basketball Championship, of which the restaurant is a big sponsor, the college football playoff, the NFL's Super Bowl, and the holiday season. I believe the restaurant will continue this trend, especially after a disappointing first three quarters of 2016. I have forecasted about $3.2 million sales per new store, which is slightly higher than usual because of strong economic data. Franchise fees and royalties will be about the same as same-store sales are negative.

In 2017 and 2018, Buffalo Wild Wings will continue to open both company-owned and franchised restaurants. Same-store sales may rebound to 0.5% in 2017 as the economy improves, as some of the firm's marketing initiatives kick-in, and as NFL ratings improve.

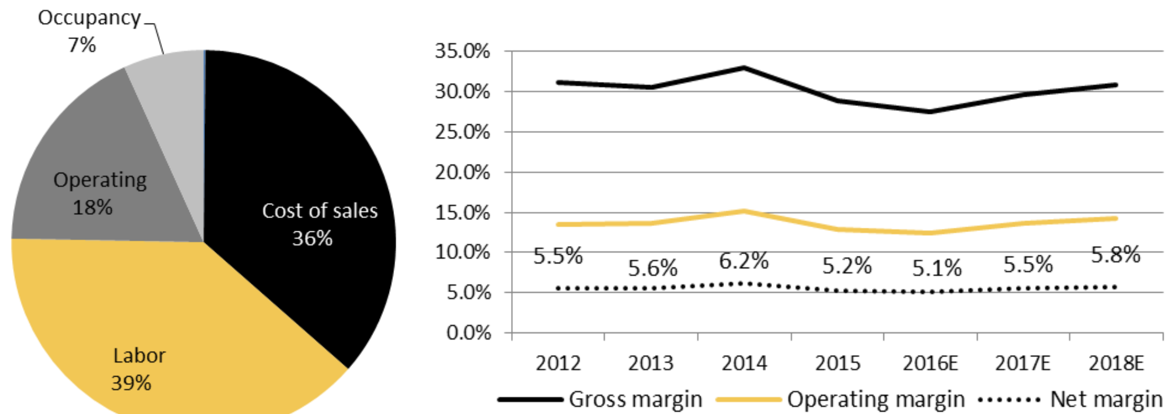
Figure 13: Sales forecast model

	2016	2017	2018
Revenue	2020	2245	2432
Consensus	2010	2208	2349
EPS	5.61	6.83	7.79
Consensus	5.52	6.51	7.57

Margins

Gross margins fell in the first 9 months of 2016. Costs include labor and cost of sales. I expect gross margin to rise from 15.2% in 2016 to 16.5% in 201 as chicken prices normalize and the company strives for efficiency with its marketing initiatives. EBIT margin will rise with gross margin from 7.3% in 2016 to 8.5% in 2018, this figure will grow proportionately to sales.

Figures 14 and 15: Components of operating expenses (left) and margin history (right)



Source: Company reports

Figure 16: Operating income and estimates

	2012	2013	2014	2015	2016E	2017E	2018E
Sales	$1,041	$1,267	$1,516	$1,813	$2,020	$2,245	$2,432
Direct costs	856	1,052	1,245	1,523	1,713	1,885	2,031
Gross Margin	185	215	271	289	307	359	401
SG&A, R&D, and other	102	114	135	151	160	177	195
Operating Income	83	101	136	138	147	182	207

Return on Equity

ROE declined in 2015 as margins fell (6.25% to 5.25%), despite higher leverage (1.50 to 1.57). In 2016, flat margins have not helped, and the main culprit for falling ROE is asset turnover. This is directly negatively impacted by same-store sales growth. Higher leverage helps ROE in 2016. In 2017 and 2018, margins and leverage increase, and asset turnover improves leading to a higher ROE.

Figure 17: 3-stage DuPont analysis

	2012	2013	2014	2015	2016E	2017E	2018E
Net income / sales		5.60%	6.20%	5.20%	5.10%	5.50%	5.80%
Sales / avg assets		1.95	1.94	1.88	1.8	1.85	1.86
ROA		11.00%	12.10%	9.90%	9.10%	10.20%	10.70%
Avg assets / avg equity		1.53	1.5	1.57	1.66	1.72	1.78
ROE		16.90%	18.10%	15.50%	15.20%	17.60%	19.10%

Free Cash Flow

FY 2015 free cash flow was low because BWLD began to repurchase franchised stores, began paying interest on the largest sum of debt the company has taken on in its history, and bought back shares of $25 million. The company plans to continue to repuchase shares. In the years 2017 and 2018 BWLD will continue to repurchase a small amount of shares, but the restaurant will not repurchase such a large amount of previously franchised restaurants.

Figure 18: Free cash flow

	2012	2013	2014	2015	2016E	2017E	2018E
NOPAT	$57	$71	$94	$97	$104	$127	$145
Growth		*25.2%*	*32.6%*	*2.4%*	*7.9%*	*22.2%*	*13.7%*
NWC*	(46)	(49)	(44)	(48)	(50)	(55)	(60)
Net fixed assets	466	523	590	875	868	976	1,106
Total net operating capital*	$419	$474	$546	$827	$819	$921	$1,046
Growth		*13.1%*	*15.1%*	*51.5%*	*-1.0%*	*12.4%*	*13.6%*
- Change in NWC*		(3)	5	(4)	(2)	(6)	(5)
- Change in NFA		57	67	285	(6)	107	130
FCFF*		$16	$23	-$185	$112	$25	$20
Growth			*39.2%*	*-916.6%*	*-160.9%*	*-77.4%*	*-22.1%*
- After-tax interest expense		(0)	0	2	3	3	3
+ Net new short-term and long-term debt		6	5	113	41	-	-
FCFE		-$14	-$9	$9	$0	$0	$0
Growth			*-34.9%*	*-200.0%*	*-104.9%*	*-100.0%*	*-198.4%*

Valuation

I have valued Buffalo Wild Wings using multiples and a 3-stage discounted cash flow analysis. Based on earnings multiples, the stock is historically more expensive than the industry due to its above average growth; however, it now trades at about the multiple of the peers (see figure 18) as growth has slowed. A P/B vs. ROE valuation methodyielded a discounted target price of $143.78. Lastly, DCF analysis produces a value of $146.

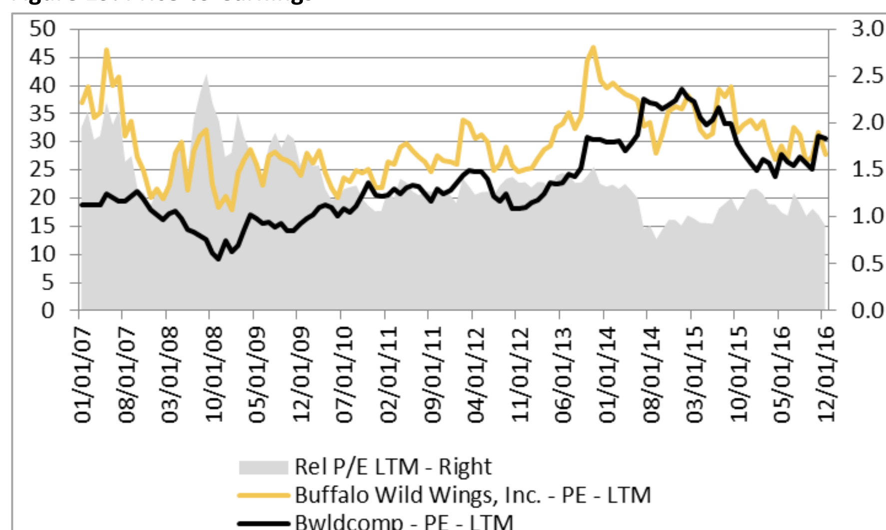
Figure 20 is a table of comparable companies.

Assuming the firm maintains a LTM P/E of 25 at the end of 2017, it should trade at $165 by the end of the year:

- P = P/E x EPS = 25 x $6.83 = 171

Discounting this value at the cost of equity yields a price today of $155.

Figure 19: Price-to-earnings



Source: FactSet

Figure 20: BWLD 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	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
BWLD	BUFFALO WILD WINGS INC	$151.85	$2,764	(1.7)	(9.7)	8.2	8.1	(4.9)	(1.7)	19.3	9.9%	0.4%	12.8%	21.8%	14.1%	18.8%	0.47	14.8%	B+	0.00%	
DRI	DARDEN RESTAURANTS INC	$72.06	$8,869	(0.9)	(4.0)	17.4	14.4	13.2	(0.9)	10.5	19.5%	6.5%	34.2%	11.3%	9.7%	1.0%	0.02	23.8%	A-	2.92%	62.2%
PLAY	DAVE & BUSTER'S ENTMT INC	$55.84	$2,349	(0.8)	17.5	37.7	20.6	33.8	(0.8)	15.6	10.5%	100.0%	34.9%	15.1%	11.4%		0.75	64.5%		0.00%	
CAKE	CHEESECAKE FACTORY INC	$59.43	$2,819	(0.8)	(1.7)	19.0	24.5	28.9	(0.8)	14.3	11.6%	20.3%	19.8%	8.1%	10.4%	11.3%	0.12	16.7%	B+	1.47%	31.1%
CMG	CHIPOTLE MEXICAN GRILL INC	$374.77	$10,849	(0.7)	(6.3)	(13.0)	(4.9)	(21.9)	(0.7)	9.7	213.7%	6.9%	-89.6%	475.8%	41.7%	21.8%	0.11	0.0%	B+	0.00%	0.0%
CBRL	CRACKER BARREL OLD CTRY STOR	$163.15	$3,922	(2.3)	(1.7)	23.5	(3.9)	28.6	(2.3)	9.2	3.4%	21.1%	10.7%	9.9%	8.7%	17.7%	0.45	73.1%	A	2.69%	55.1%
TXRH	TEXAS ROADHOUSE INC	$47.82	$3,372	(0.9)	0.6	23.6	5.4	33.7	(0.9)	11.5	17.5%	11.4%	29.2%	13.0%	15.5%	11.4%	0.77	7.1%	A-	1.58%	44.6%
WING	WINGSTOP INC	$29.58	$850	(0.0)	(4.1)	0.9	4.4	29.7	(0.0)	20.0	23.5%	27.0%	21.3%	14.0%	23.1%		0.69	-192.5%		9.80%	
Average			$4,474	(1.0)	(1.2)	14.7	8.6	17.6	(1.0)	13.8	38.7%	24.2%	9.2%	71.1%	16.8%	13.7%	0.42	0.9%		2.31%	38.6%
Median			$3,096	(0.8)	(2.9)	18.2	6.8	28.8	(0.8)	12.9	14.5%	15.8%	20.6%	13.5%	12.8%	14.5%	0.46	15.7%		1.52%	44.6%
SPX	S&P 500 INDEX	$2,258		0.8	3.0	4.5	7.4	10.5	0.8			1.0%	0.6%	12.0%	11.6%						

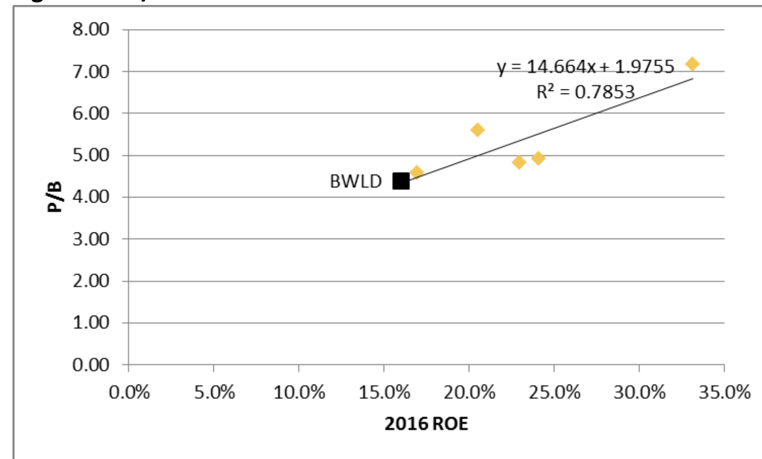
Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017E	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
BWLD	http://www.buffalowildwings.com	16.2%	4.39	30.7	30.6	27.1	27.3	24.9	22.2	19.5	5.1%	1.37	7.9%	14.6%	21.2	10.3	13.5	7.8%	11.5%	24.2%	$34.57
DRI	http://www.darden.com	24.1%	4.92	29.2	27.4	20.4	21.1	17.7	18.3	16.7	6.3%	1.28	9.5%	11.3%	14.7	11.1	10.0	2.9%		-1.6%	$14.64
PLAY	http://www.daveandbusters.com	20.6%	5.60	73.5	36.7	27.2	27.9	25.3	23.7	21.2	8.6%	2.34	14.8%	8.7%	16.9	13.1		13.2%	13.9%	10.7%	$9.97
CAKE	http://www.thecheesecakefactory.cc	23.0%	4.81	30.2	25.1	20.9	22.0	19.7	19.4	17.5	5.9%	1.24	8.8%	17.8%	14.1	12.1	10.9	7.5%	3.9%	4.8%	$12.36
CMG	http://www.chipotle.com	3.2%	7.54	26.5	24.8	238.7	155.5	49.6	41.5	29.3	1.2%	2.77	3.5%	23.0%	18.6			14.9%	14.2%	19.6%	$49.72
CBRL	http://www.crackerbarrel.com	33.2%	7.17	29.0	23.9	21.6	20.0	19.3	19.7	18.1	6.2%	1.35	10.0%	20.3%	14.4	13.0	12.5	3.1%		3.6%	$22.77
TXRH	http://www.texasroadhouse.com	17.0%	4.58	38.9	34.9	27.0	28.8	24.5	23.9	20.7	6.2%	1.68	9.3%	14.3%	17.3			10.0%	8.9%	12.5%	$10.43
WING	http://www.wingstop.com	-20.5%	-10.63	79.9	62.9	51.9	58.0	47.0	45.5	37.0	17.9%	9.28	31.5%	12.2%	28.1	48.0		15.2%			-$2.78
Average		14.6%	3.55	42.2	33.3	54.4	45.1	28.5	26.8	22.5	7.2%	2.66	11.9%	15.3%	18.2	17.9	11.7	9.3%	10.5%	10.6%	
Median		18.8%	4.87	30.4	29.0	27.1	27.6	24.7	23.0	20.1	6.2%	1.53	9.4%	14.5%	17.1	12.6	11.7	8.9%	11.5%	10.7%	
spx	S&P 500 INDEX			19.3	19.1	19.0			17.0	15.2											

Source: FactSet

Figure 21 is an analysis of P/B and ROE. The regression's R^2 indicates that about 72% of BWLD's P/B can be explained by its NTM ROE. I have excluded outliers Wingstop and Chipotle Mexican Grill- Wingstop has negative ROE and P/B, and Chipotle has seen unusually low ROE because of the recent Ecoli outbreak. Using this regression:

- Estimated P/B = Estimated 2017 ROE (14.7%) x 14.664 + 1.9755 = 4.556
- Target Price = Estimated P/B (4.131) / Current P/B (4.39) x Current Price (151.85) = 157.59
- Discounted Target Price = 157.59 / (1+cost of equity of 9.6%) = $143.78

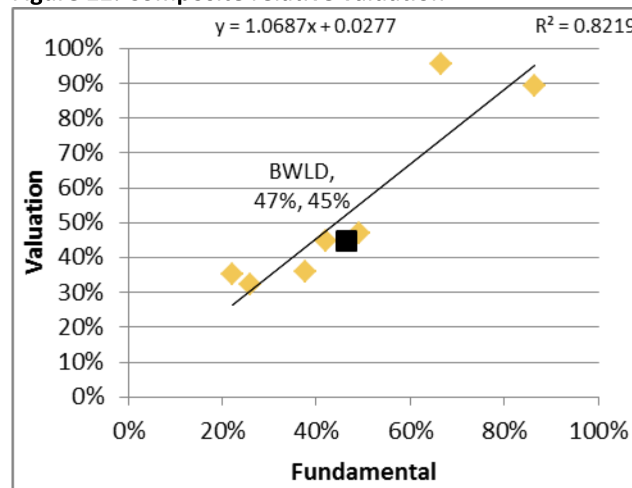
Figure 21: P/B vs NTM ROE



Source: FactSet

For a final comparison, I created a composite ranking of several valuation and fundamental metrics (see figure 20). 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 NTM sales growth was compared to a NTM P/E with a weighting of 85% and P/S of 15%. The regression line has an R^2 of 0.8219. BWLD is below the line meaning it is inexpensive based on its fundamentals.

Figure 22: Composite relative valuation



Source: IMCP

Discounted Free Cash Flow

I also used a three stage discounted cash flow model to value BWLD.

In this model, I use a cost of equity for BWLD of 9.6%, calculated using CAPM. In this model, I have made the following assumptions:

- An expected return of the market of 10% (roughly average annual return of S&P 500).
- A risk free rate of the current US ten year Treasury bond yield of roughly 2.5%.
- A beta of 0.95, as BWLD's growth has kept it from seeing the full risk of the market.

Figure 23: Cost of equity

Cost of equity	
Market return	10.0%
- Risk free rate	2.50%
= Market risk premium	7.5%
* Beta	0.95
= Stock risk premium	7.1%
r = r_f+ stock RP	**9.6%**

Stage One - The model's first stage discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $1.20 and $0.85, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $1.80 per share. Thus, stage one of this discounted cash flow analysis contributes $1.80 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 9.6% cost of equity. I assume 7% sales growth in 2019, falling to gradually falling to 5.5% in 2023. Based on my financial analysis, I keep all other ratios constant in stage 2 from 2018 values. Stage 2 discounted FCFE is $16.69.

Figure 24: FCFE and discounted FCFE

	2017	2018	2019	2020	2021	2022	2023
FCFE	$1.20	$0.85	$4.27	$4.84	$5.33	$5.78	$6.45
Growth		*-29.0%*	*403.2%*	*13.3%*	*10.1%*	*8.5%*	*11.6%*
Discounted FCFE	$1.09	$0.71	$3.24	$3.35	$3.37	$3.33	$3.39

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $6.83 in 2016 to $10.55 in 2021.

Figure 25: EPS

	2017	2018	2019	2020	2021	2022	2023
EPS	$6.83	$7.79	$8.34	$8.88	$9.43	$10.00	$10.55

Stage three requires an assumption for PE. The PE will decline closer to that of the market as the company matures. Therefore, I assume a PE of 23 in 2023, which is still a premium to the market, but down significantly from its PE of 27.

Given the assumed terminal earnings per share of $10.55 and a PE of 23, I calculate a terminal value of $242.62. Discounting this value with BWLD's assumed cost of equity of 9.6% yields a discounted terminal value of $127.52. Including the prior stages, the stock is worth $146 ($1.80+$16.69+$127.52). Given BWLD's current value of $155, the stock is fairly valued.

Scenario Analysis

The first scenario analysis assumes BWLD is able to achieve constant sales growth of 10% and therefore a constant PE of 27. Using the same 3-stage DuPont analysis yields a terminal value of $172.

Figure 26: Bull scenario

First stage	$1.80	Present value of first 2 year cash flow
Second stage	$15.48	Present value of year 3-7 cash flow
Third stage	$155.30	Present value of terminal value P/E
Value (P/E)	**$172.58**	Value at beg of fiscal yr 2017

A second scenario analysis assumes slowed sales growth and a terminal PE of 20. The 3-stage DuPont analysis yields a terminal value of $124.73.

Figure 27: Bear scenario

First stage	$1.80	Present value of first 2 year cash flow
Second stage	$18.61	Present value of year 3-7 cash flow
Third stage	$104.32	Present value of terminal value P/E
Value (P/E)	**$124.73**	Value at beg of fiscal yr 2017

Business Risks

BWLD's growth could slow more than I forecast- this decline in same-store sales could be a sign of cannibalization, and BWLD will be unable to successfully open new stores. Another factor is the timing of this growth- how rapidly the company opens new stores. The following are risks associated with Buffalo Wild Wings business strategy:

Lack of Growth

The biggest potential risk for the company is that its planned strategy to open 3000 stores worldwide will fail. A few years ago this would not have been discussed, but it seems more relevant now that BWLD posted its first same-store sales decline. This could mean that BWLD has matured, or that newly opened restaurants are cannibalizing same-stores. The international market is wide-open for BWLD, but the restaurant may not be accepted internationally.

In addition, the cost of opening new restaurants is expensive. There are many factors in opening these restaurants including negotiating the lease, building of the new restaurant, competition, and marketing to make customers aware of the restaurants opening. Also, cultures differ and other countries may not like its food or be as enthused by sports.

Negative Publicity

Recently, professional football player Jared Cook found that one of his "wings" from Buffalo Wild Wings was the cooked and breaded head of a chicken. Due to his popularity, Cook's tweet a photo of this became widespread. This incident and those like it, even if unavoidable, present the restaurant in a negative light. This could potentially harm Buffalo Wild Wings strong brand.

Fluctuations in Operating Costs

BWLD's growing sales means growing costs. The majority of the company's operating costs are labor and cost of sales (directly related to the cost of chicken). If either of these two factors were to go up in price, it would be out of Buffalo Wild Wings control, and the restaurant would have to find ways to maintain a healthy margin.

Consumer Preferences and Spending Habits

Times are currently good, but this could quickly and unexpectedly change and have a direct impact on BWLD. The popularity of wings could diminish because of health issues. The habits of consumers, driven by consumer spending and consumer confidence, could become unfavorable in a recession.

Appendix 1: Sales forecast

Year	Comp-Owned Restaurants	Comp-Owned sales	YOY Sales Growth	YOY Abs. Cnge.	Same-store sales growtl	Same-store Abs. growth	Sales from new stores	15-mo of sales existing stores	Implied SSS % growth	Sales w/o new stores	New Stores	New stores % of sales growth	New sales gr/store	Franchise fees	Total Revenue
2003	84	113			4.3%	3.3								14	127
2004	103	152	34.8%	39	9.7%	10.0	29.3			123	19	74.5%	1.54	19	171
2005	122	186	22.1%	34	3.2%	4.5	29.1			157	19	86.6%	1.53	24	210
2006	139	278	49.7%	92	10.4%	18.1	74.3	130	14.0%	204	17	80.4%	4.37	31	309
2007	161	330	18.5%	52	6.9%	15.7	35.8	166	9.4%	294	22	69.5%	1.63	37	367
2008	197	422	28.1%	93	5.9%	16.3	76.4	222	7.3%	346	36	82.4%	2.12	43	465
2009	232	539	27.6%	117	3.1%	11.1	105.4	304	3.6%	434	35	90.5%	3.01	50	589
2010	259	613	13.8%	74	0.6%	2.6	71.8	364	0.7%	542	27	96.5%	2.66	58	671
2011	319	717	17.0%	104	6.1%	31.1	73.0	455	6.8%	644	60	70.1%	1.22	67	784
2012	381	964	34.4%	247	6.6%	41.6	205.0	562	7.4%	759	62	83.1%	3.31	77	1,041
2013	434	1,185	23.0%	221	3.9%	33.2	188.2	667	5.0%	997	53	85.0%	3.55	81	1,266
2014	491	1,423	20.0%	238	6.5%	70.3	167.3	807	8.7%	1,256	57	70.4%	2.94	93	1,516
2015	596	1,715	20.5%	292	4.2%	51.1	240.9	1,049	4.9%	1,474	105	82.5%	2.29	98	1,813
2016E	666	1,920	11.9%	205	**-1.5%**	-19.5	224.0	1,299	-1.5%	1,696	**70**	109.5%	**3.2**	100	2,020
2017E	741	2,145	11.7%	225	**0.5%**	7.6	217.5	1,518	0.5%	1,927	**75**	96.6%	**2.9**	100	2,245
2018E	816	2,332	8.7%	188	**0.0%**	0.0	187.5	1,742	0.0%	2,145	**75**	100.0%	**2.5**	100	2,432

Appendix 2: Income Statement

	2012	2013	2014	2015	2016E	2017E	2018E
Sales	$1,041	$1,267	$1,516	$1,813	$2,020	$2,245	$2,432
Direct costs	856	1,052	1,245	1,523	1,713	1,885	2,031
Gross Margin	185	215	271	289	307	359	401
SG&A, R&D, and other	102	114	135	151	160	177	195
EBIT	83	101	136	138	147	182	207
Interest	-1	-1	0	2	3	5	6
EBT	83	102	135	136	144	177	200
Taxes	26	30	41	41	42	53	60
Income	57	72	94	95	102	124	140
Net income	57	72	94	95	102	124	140
Basic Shares(billions)	18.6	18.8	18.9	19.0	18.2	18.1	18.0
EPS	$3.08	$3.81	$4.98	$5.00	$5.61	$6.83	$7.79

Appendix 3: Balance Sheet

	2012	2013	2014	2015	2016E	2017E	2018E
Cash	21	58	93	11	96	58	18
Operating assets ex cash	95	118	151	177	193	214	232
Operating assets	116	175	244	189	289	272	250
Operating liabilities	141	166	195	225	242	269	292
NOWC	-25	9	50	-37	46	2	-42
NOWC ex cash (NWC)	-46	-49	-44	-48	-50	-55	-60
NFA	466	523	590	875	868	976	1,106
Invested capital	$441	$532	$639	$838	$915	$978	$1,063
Marketable securities	10	8	20	9	9	9	9
Total assets	$591	$706	$853	$1,072	$1,166	$1,257	$1,364
Short-term and long-term debt	$28	$34	$38	$151	$192	$232	$277
Other liabilities	39	40	46	40	41	41	41
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	383	466	574	656	691	714	755
Total supplied capital	$450	$539	$659	$847	$924	$987	$1,072
Total liabilities and equity	$591	$706	$853	$1,072	$1,166	$1,257	$1,364

Appendix 4: Ratios

	2012	2013	2014	2015	2016E	2017E	2018E
Profitability							
Gross margin	17.70%	17.00%	17.90%	16.00%	15.20%	16.00%	16.50%
Operating (EBIT) margin	7.90%	8.00%	9.00%	7.60%	7.30%	8.10%	8.50%
Net profit margin	5.50%	5.60%	6.20%	5.20%	5.10%	5.50%	5.80%
Activity							
NFA (gross) turnover		2.56	2.73	2.48	2.32	2.43	2.34
Total asset turnover		1.95	1.94	1.88	1.8	1.85	1.86
Liquidity							
Op asset / op liab	0.82	1.05	1.25	0.84	1.19	1.01	0.86
NOWC Percent of sales		-0.60%	1.90%	0.40%	0.20%	1.10%	-0.80%
Solvency							
Debt to assets	4.70%	4.80%	4.50%	14.10%	16.50%	18.50%	20.30%
Debt to equity	7.30%	7.20%	6.70%	23.10%	27.80%	32.50%	36.70%
Other liab to assets	6.60%	5.60%	5.40%	3.70%	3.50%	3.20%	3.00%
Total debt to assets	11.30%	10.40%	9.90%	17.80%	20.00%	21.70%	23.30%
Total liabilities to assets	35.10%	34.00%	32.70%	38.90%	40.80%	43.20%	44.70%
Debt to EBIT	0.34	0.33	0.28	1.09	1.3	1.28	1.34
EBIT/interest	-109.57	-149.65	428.15	59.03	49.14	34.26	32.46
Debt to total net op capital	6.40%	6.30%	6.00%	18.00%	21.00%	23.70%	26.10%
ROIC							
NOPAT to sales		5.60%	6.20%	5.30%	5.20%	5.70%	6.00%
Sales to IC		2.61	2.59	2.45	2.3	2.37	2.38
Total		14.60%	16.10%	13.10%	11.90%	13.40%	14.20%
Total using EOY IC	12.90%	13.40%	14.70%	11.50%	11.40%	13.00%	13.60%
ROE							
5-stage							
EBIT / sales		8.00%	9.00%	7.60%	7.30%	8.10%	8.50%
Sales / avg assets		1.95	1.94	1.88	1.8	1.85	1.86
EBT / EBIT		100.70%	99.80%	98.30%	98.00%	97.10%	96.90%
Net income /EBT		70.50%	69.50%	69.80%	70.60%	70.00%	70.00%
ROA		11.00%	12.10%	9.90%	9.10%	10.20%	10.70%
Avg assets / avg equity		1.53	1.5	1.57	1.66	1.72	1.78
ROE		16.90%	18.10%	15.50%	15.20%	17.60%	19.10%
3-stage							
Net income / sales		5.60%	6.20%	5.20%	5.10%	5.50%	5.80%
Sales / avg assets		1.95	1.94	1.88	1.8	1.85	1.86
ROA		11.00%	12.10%	9.90%	9.10%	10.20%	10.70%
Avg assets / avg equity		1.53	1.5	1.57	1.66	1.72	1.78
ROE		16.90%	18.10%	15.50%	15.20%	17.60%	19.10%
Payout Ratio		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Retention Ratio		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Sustainable Growth Rate		16.90%	18.10%	15.50%	15.20%	17.60%	19.10%

Appendix 5: 3-stage DCF

	Year						
	1	2	3	4	5	6	7
First Stage			**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*11.1%*	*8.4%*	*7.0%*	*6.5%*	*6.2%*	*6.0%*	*5.5%*
NOPAT / S	*5.7%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
S / NWC or S / NOWC	*(40.55)*	*(40.55)*	*(40.55)*	*(40.55)*	*(40.55)*	*(40.55)*	*(40.55)*
S / NFA (EOY)	*2.30*	*2.20*	*2.20*	*2.20*	*2.20*	*2.20*	*2.20*
S / IC (EOY)	*2.44*	*2.33*	*2.33*	*2.33*	*2.33*	*2.33*	*2.33*
ROIC (EOY)	*13.8%*	*13.8%*	*13.8%*	*13.8%*	*13.8%*	*13.8%*	*13.8%*
ROIC (BOY)		*15.7%*	*14.8%*	*14.7%*	*14.7%*	*14.7%*	*14.6%*
Share Growth		*-0.6%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$2,245	$2,432	$2,602	$2,772	$2,943	$3,120	$3,292
NOPAT	$127	$145	$155	$165	$175	$186	$196
Growth		*13.7%*	*7.0%*	*6.5%*	*6.2%*	*6.0%*	*5.5%*
- Change NOWC	-6	-5	-4	-4	-4	-4	-4
NOWC EOY	*-55*	*-60*	*-64*	*-68*	*-73*	*-77*	*-81*
Growth NOWC		*8.4%*	*7.0%*	*6.5%*	*6.2%*	*6.0%*	*5.5%*
- Chg NFA	107	130	77	77	78	80	78
NFA EOY	*976*	*1,106*	*1,183*	*1,260*	*1,338*	*1,418*	*1,496*
Growth NFA		*13.3%*	*7.0%*	*6.5%*	*6.2%*	*6.0%*	*5.5%*
Total inv in op cap	102	125	73	73	74	76	74
Total net op cap	921	1046	1119	1191	1265	1341	1415
FCFF	$25	$20	$82	$92	$101	$110	$122
% of sales	*1.1%*	*0.8%*	*3.1%*	*3.3%*	*3.4%*	*3.5%*	*3.7%*
Growth		*-22.1%*	*313.5%*	*12.9%*	*9.8%*	*8.4%*	*11.3%*
- Interest (1-tax rate)	4	4	5	5	5	6	6
Growth		*20.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
FCFE w/o debt	$22	$15	$77	$87	$96	$104	$116
% of sales	*1.0%*	*0.6%*	*3.0%*	*3.1%*	*3.3%*	*3.3%*	*3.5%*
Growth		*-29.4%*	*403.2%*	*13.3%*	*10.1%*	*8.5%*	*11.6%*
/ No Shares	18.1	18.0	18.0	18.0	18.0	18.0	18.0
FCFE	$1.20	$0.85	$4.27	$4.84	$5.33	$5.78	$6.45
Growth		*-29.0%*	*403.2%*	*13.3%*	*10.1%*	*8.5%*	*11.6%*
* Discount factor	0.91	0.83	0.76	0.69	0.63	0.58	0.53
Discounted FCFE	$1.09	$0.71	$3.24	$3.35	$3.37	$3.33	$3.39
Third Stage							
Terminal value P/E							
Net income	$124	$140	$150	$160	$170	$180	$190
% of sales	*5.5%*	*5.8%*	*5.8%*	*5.8%*	*5.8%*	*5.8%*	*5.8%*
EPS	$6.83	$7.79	$8.34	$8.88	$9.43	$10.00	$10.55
Growth		*14.1%*	*7.0%*	*6.5%*	*6.2%*	*6.0%*	*5.5%*
Terminal P/E							23.00
* Terminal EPS							$10.55
Terminal value							$242.62
* Discount factor							0.53
Discounted terminal value							$127.52

Summary		
First stage	$1.80	Present value of first 2 year cash flow
Second stage	$16.69	Present value of year 3-7 cash flow
Third stage	$127.52	Present value of terminal value P/E
Value (P/E)	**$146.00**	= value at beg of fiscal yr 2017

Appendix 6: Porter's Five Forces

Threat of new entrants: **Medium**

Any restaurant can sell chicken wings, or specialize in them. Buffalo Wild Wings' strong brand name helps to offset this.

Threat of Subsitutes: **High**

There are many alternatives to chicken wings, and, while BWLD offers many menu items, customers could be looking for something else to eat. Customers may not know that Buffalo Wild Wings sells more than wings, or they may think that, with chicken wings being BWLD's specialty, other foods are not appealing.

Supplier Power: **Medium**

BWLD's strong brand helps its position with suppliers, but the price of chicken wings is out of the restaurants control.

Buyer power: **Medium**

Again, BWLD's strong brand gives it power over buyers. In 2014, for example, when BWLD changed the price of the chicken to weight rather than quantity, the restaurant still maintained its loyal customer base and saw solid same-store sales growth.

Intensity of Competition: **High**

There are a lot of restaurants that specialize in wings, and a lot more restaurants that offer wings but do not specialize in them.

Appendix 7: SWOT Analysis

Strengths	Weaknesses
• Strong national brand appeal in North America • Popular among a large market of sports fans • Loyal customers, consistent same-store sales before FY2016	• Might be deterring non-sports fans • Relatively expensive wings, though the company uses its strong brand to justify prices • Recognition as a wing based restaurant is good for the company, but may deter customers craving other food items
Opportunities	**Threats**
• International and national expansion planned • Diversification of menu items • Delivery services • Dividend policy	• Competitors- anyone can sell chicken wings • The high cost of sales and labor • A US market that is currently trying to eat healthier • An untapped international market that has a different tastes and consumer habits

Analyst: Christian Pacheco

Auto Industry

General Motors Company

Recommendation	BUY
Target (today's value)	$46.00
Current Price	$35.15
52 week range	$26.69 - $37.97

Share Data	
Ticker:	GM
Market Cap. (Billion):	$53.15
Inside Ownership	7.8%
Inst. Ownership	61.6%
Beta	1.21
Dividend Yield	4.32%
Payout Ratio	17.2%
Cons. Long-Term Growth Rate	16.1%

	'14	'15	'16E	'17E	'18E
Sales (billions)					
Year	$155.9	$152.4	$164.9	$170.6	$175.3
Gr %	0.3%	-2.3%	8.3%	3.4%	2.8%
Cons	-	-	163.6	$163.3	$167.6
EPS					
Year	$1.75	$6.11	$6.18	$6.33	$6.86
Gr %	-	249.6%	1.2%	2.4%	8.4%
Cons	-	-	$5.92	$5.76	$5.80

Ratio	'14	'15	'16E	'17E	'18E
ROE (%)	10.1%	25.7%	25.7%	22.2%	18.2%
Industry	10.5%	13.0%	13.0%	13.8%	12.%
NPM (%)	2.5%	6.4%	6.4%	5.8%	5.4%
Industry	4.7%	4.6%	4.6%	5.2%	5.4%
A. T/O	0.91	0.82	0.82	0.85	0.82
ROA (%)	2.3%	5.2%	5.2%	4.9%	4.4%
Industry	3.2%	3.1%	3.1%	3.3%	3.4%
D/A	26.4%	32.4%	34.2%	35.4%	35.8%

Valuation	'15	'16E	'17E	'18E
P/E	12.9	4.7	4.0	5.8
Industry	10.5	8.9	27.5	8.3
P/S	0.38	0.36	0.34	0.33
P/B	1.7	1.3	1.2	1.2
P/CF	4.6	4.9	3.7	4.3
EV/EBITDA	29.4	11.3	11.3	4.5

Performance	Stock	Industry
1 Month	-0.7%	-0.2%
3 Month	9.7%	10.8%
YTD	0.9%	1.3%
52-week	3.4%	27.0%
3-year	0.9%	18.1%

Contact: Christian Pacheco
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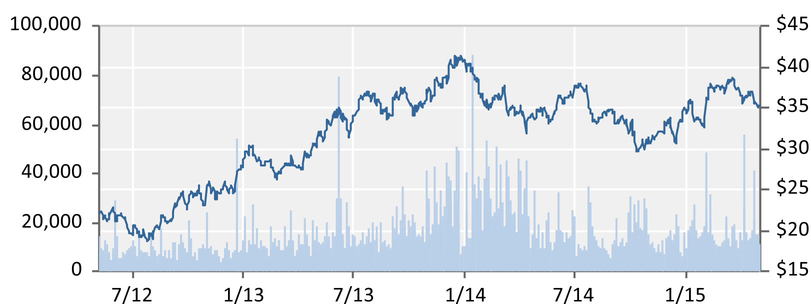


Source: FactSet Prices

Summary: I recommend a buy rating with a target of $46. GM has been at the forefront of the automotive industry in sales, posting record earnings in 2016. It has the opportunity to improve in its two lagging segments, GM Europe and GM South America, as the regions settles from political and economic volatility. The stock is undervalued based on a discounted cash flow analysis.

Key Drivers:

- Demand for light-truck vehicles in US: As a result of a recovering economy, lower gasoline prices and increased fuel efficiency, the US auto industry has experienced a changing preference to more pick-up trucks, crossovers and SUVs that have driven GM sales, which concentrates on a higher margin light-truck portfolio.
- GM China & SAIC-GM-Wuling: Buick, Cadillac, Wuling and Baojun continue to post record quarters in China. This is quickly becoming GM's most important segment for growth in sales and market share.
- Stock/Share Repurchase Program: The board of directors at General Motors approved a plan to repurchase a combined total of $9 Billion in shares by 2017, or nearly 18% of shares outstanding based on the current price.
- Mobility Technology and Alternative Fuel: GM has invested a $500 million 9% equity ownership in ride-sharing company Lyft, and $1 billion acquisition of Cruise Automation for autonomous driving. GM launched an all-electric Chevy Bolt to compete against Tesla ahead of its model 3 release, and won car of the year.
- Macroeconomic Factors: Low oil prices, low rates of unemployment and high consumer confidence help the auto industry thrive.

Valuation: Using a relative valuation approach, General Motors appears to be much fairly valued in comparison to the automotive manufacturing industry. DCF provides the best way to value the stock as it best incorporates my long-term assumptions for growth. General Motors is undervalued, based on the DCF analysis, as the value is $46 and the shares trade at $35.15

Risks: Threats to business include rising price of oil, consumer preference shifting to smaller vehicles, global competition, and incentives that decrease bottom line in key segments like the United States and China. Foreign currency exchange rates continue to pose a material threat to GM's bottom line as sales outside of the US fall as the dollar strengthens.

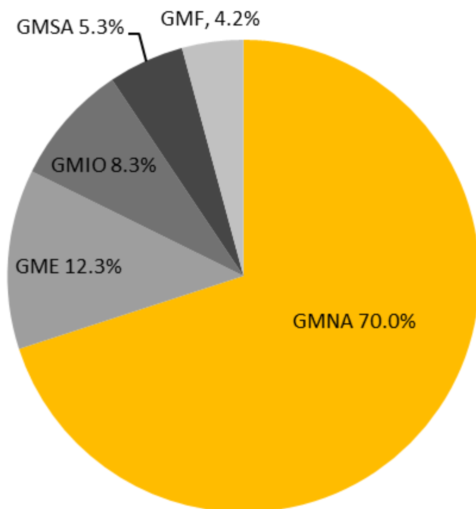
Company Overview

General Motors Company (GM) designs, builds and sells cars, trucks, crossovers and automobile parts worldwide. It also provides automotive financing services through General Motors Financial Company, Inc. The company was founded by William C. Durant on September 16, 1908 and is headquartered in Detroit, MI. GM employs over 215,000 people worldwide.

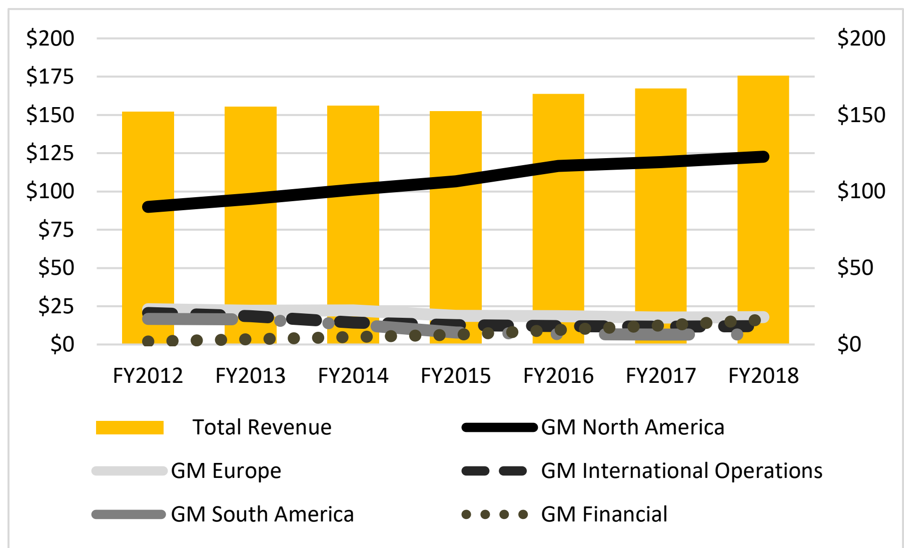
It operates through five segments, four automotive and one financial: GM North America (GMNA), GM Europe (GME), GM International Operations (GMIO), GM South America (GMSA), and GM Financial (GMF), that provides retail lending, both loan and lease, across the credit spectrum. GM also holds equity ownership stakes directly or indirectly in entities through various subsidiaries in Asia, primarily in China, through a joint venture SAIC-GM-Wuling Automobile.

- GMNA: Offers the Buick, Cadillac, Chevrolet and GMC brands. This is the biggest source of revenue for GM, led primarily by the United States. CAGR is 4.3% for 2010-2015.
- GME: Includes the Opel brand and its subsidiary Vauxhall. GM reported a profit in 2015 for the first time since 2008. CAGR is -4.1% for 2010-2015.
- GMIO: Includes the highly successful GM China. It offers Buick, Cadillac, Chevrolet, Jiefang, Wuling and Baojun brands primarily located in Asia. CAGR is -8.5% for 2010-2015 partially offset by success in China.
- GMSA: GM's least successful segment due to political and economic distress; however, there is a possibility the situation will improve in the near future. CAGR is -10.7% for 2010-2015.
- GMF: After its acquisition as AmeriCredit Corp in 2010 for $3.5 billion, GM Financial has become increasingly profitable part of GM. CAGR is 68.6% for 2010-2015 and growing.

Figures 1 and 2: Revenue sources for GM, EOY 2015 (left), and combined segment revenue since 2011 (right) in millions



Source: Company Reports 10-k



Source: Company records, 10-K

Business/Industry Drivers

Although many factors may contribute to General Motors' future success, the following are the most important business drivers:

1) North American demand for light trucks
2) GM China and SAIC-GM-Wuling
3) Stock Repurchase Program
4) Macroeconomic Trends

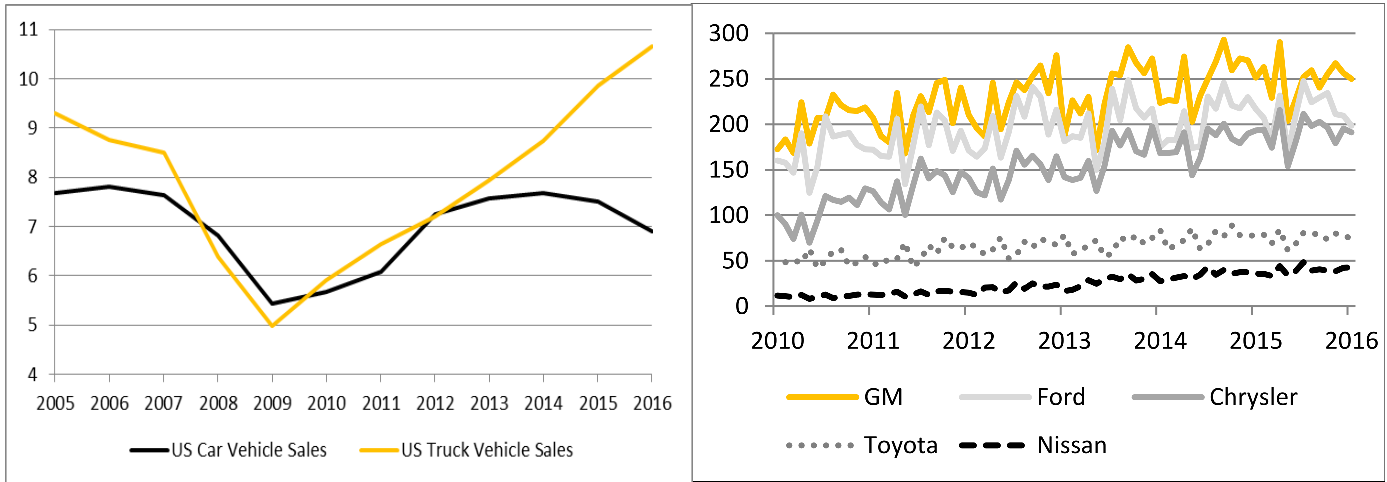
GM continues to have the highest market share in the United States thanks to its variety of brands and models.

North American demand for light trucks

Automotive industry sales in North America, primarily driven by the United States, have reached record highs as the economy recovered from the financial crisis of 2008 when auto sales barely surpassed 10 million units. Sales for light trucks, which include pick-ups, vans, crossovers and SUV's with maximum payload capacity of 4,000 lbs were also fueled by decreasing gasoline prices, greatly benefitting GM's light-truck focused portfolio.

Though GMNA offers a variety of small, mid-size and large cars, it generally recognizes higher profit margins on light truck vehicles. Of the 45 vehicles offered through its Buick, Cadillac, Chevrolet, and GMC brands, 28, or 62%, of those are light-trucks. GM states that variable profit, defined as revenue less material cost, freight, variable component of manufacturing expense, policy, warranty and recall-related costs, is higher in trucks and crossovers, 170% and 80% respectively, than it is in cars which is only 30%. GM sold more vehicles in this class than all other competitors.

Figures 3 and 4: US light truck and car sales for industry in millions (left), US light truck sales by company in thousands (right)



Source: Bloomberg, IMCP

GMNA experienced a decrease in market share of 0.1% to 16.8% in 2015 from 16.9% in 2014; although, it achieved higher revenues and higher net income in 2015 compared to 2014. GMNA was achieved EBIT-adjusted margins of 10.3% in 2015, up from 6.5% in 2014. GMNA is expected to sustain margins of 10% in 2016 due to a consistent to slight increase in U.S. industry light vehicle sales, key product launches, continued cost performance, and an overall strengthening economy.

With lessened concern for gas prices and increased fuel efficiency on larger vehicles, consumers have chosen to purchase light trucks over small cars. However, a change in the price of oil could cause a shift in consumer demand towards smaller, more fuel efficient vehicles, and weaken the demand for higher margin full-size pick-up trucks and SUV's.

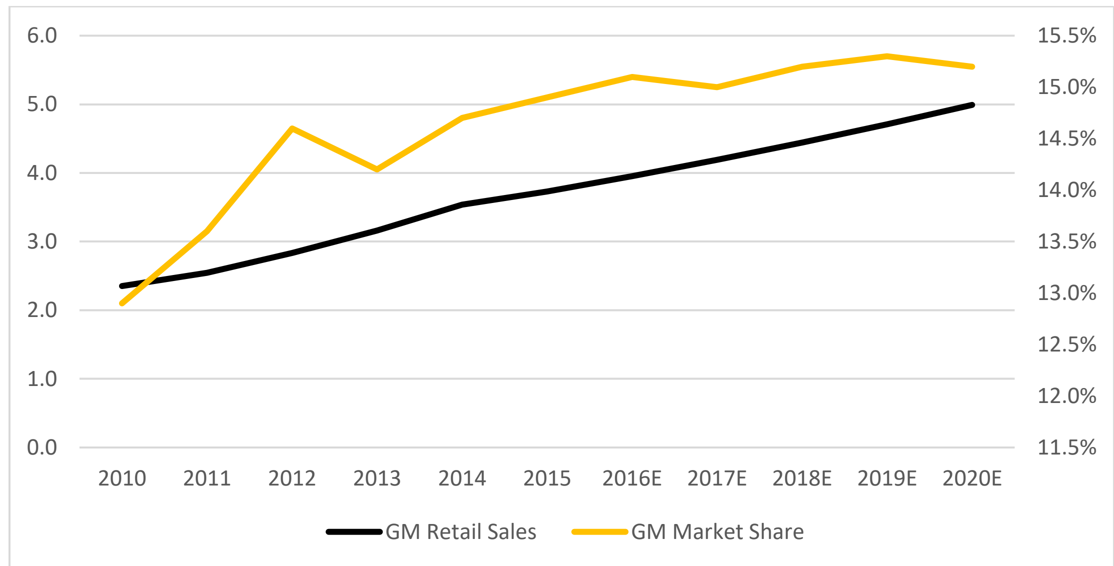
Both the Buick and Baojun brands are top sellers in China. Cadillac has experienced a 35% unit sales increase YTD-16 through the month of September.

GM brands and SAIC-GM-Wuling Joint Venture thriving in China

SAIC-GM-Wuling Automobile Co., Ltd. (SGMW) is a joint venture that was founded on November 18, 2002. GM China has a 44.0% stake, SAIC a 50.1% stake, and Wuling Motors a 5.9% stake. SGMW manufactures a range of Wuling brand mini-trucks and minivans as well as a growing family of Baojun brand passenger cars. The Baojun 560 became the second best-selling SUV in China two months after its launch in the summer of 2015, while the Baojun 730 has been the market leader in its segment since launching in August 2014. SGMW currently has three manufacturing plants throughout China and expects about 4.2 million units to be sold in its SUV, MPV and luxury segments through 2020. GM will capitalize on this trend with over 40% of its new vehicles in the SUV, MPV and the Cadillac luxury brand will introduce 10 refreshed models.

General Motors International Operations, reported a record 3.7 (retail vehicle sales) million units sold and a 14.9% market share despite a moderation of industry growth and pricing pressures for the year ended December 31, 2015. Sales were primarily driven by successful launches in key growth segments of SUVs, multipurpose vehicles and luxury vehicles including the Buick Envision and Cadillac XT5. GM reported that 2016 Buick global sales surpassed 1 million year-to-date to post 23% growth, placing the brand as the second largest passenger-car in China. Cadillac has also seen success in the China reporting YTD unit sales of 77,028 units as of September, for an increase of 35.4% from 56,873 in 2015. EBIT-adjusted margins rose to 11.1% in 2015 up from 8.5% in 2014.

Figures 5: GMIO light truck sales in millions (left), Chinese market share as a percentage (right)



Source: Company Filings, 10-K

GM China will introduce about 20 vehicle models by the year 2020. It projects 4.2 million units sold through the same period.

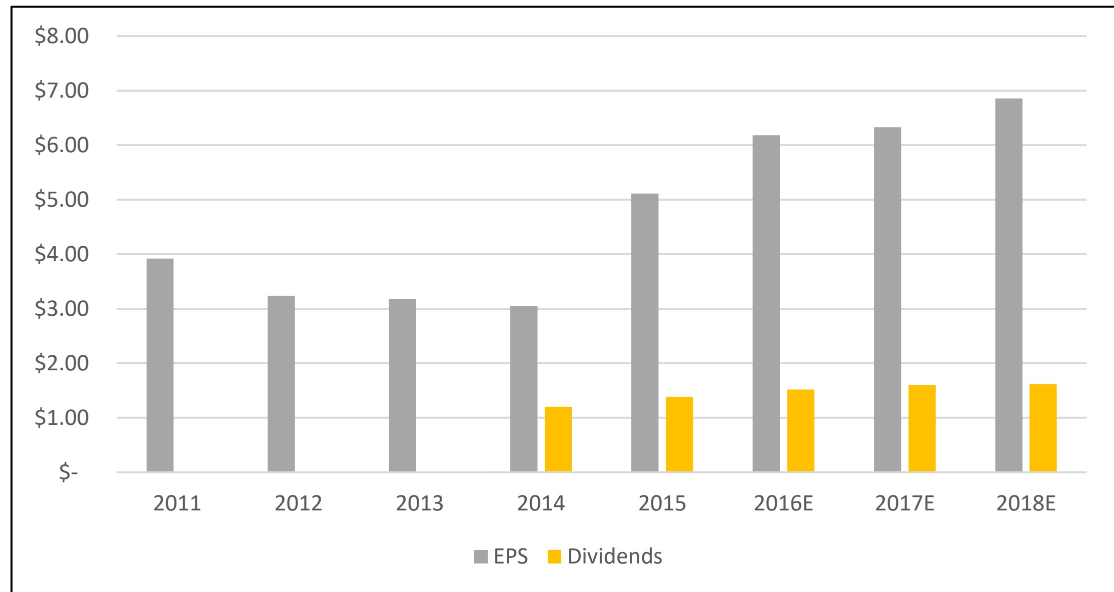
GM's Chevrolet recently announced plans to introduce more than 20 totally new or refreshed products in China, its second-largest market for growth, by the end of 2020. Nearly 30% of the models will be SUVs and nearly half will be new nameplates for the China portfolio. Most of the products will be manufactured in China by SAIC-GM-Wuling. GM China has expanded the brand to be offered in 600 dealerships in more than 200 cities nationwide. GM China began implementing a "tier" growth strategy to reach cities with populations greater than one million which currently provide the greatest opportunity for sales growth as larger cities have become increasingly saturated. GM wants stay ahead of competitors to ensure its brands are reaching as many potential customers as possible.

$9 Billion Stock Repurchase Program through 2017

In March 2015, management announced its plan to return all available free cash flow to stockholders while maintaining and an investment grade balance sheet. Management's capital allocation framework includes a combined cash and marketable securities target of $20 billion and plans to reinvest in the business at an average target ROIC of 20% or more. In connection with this plan, the company's Board of Directors announced a plan to repurchase $5 billion of common stock by 2016.

The company repurchased a combined total of 102 million shares for a reported $3.58 billion in 2015, while paying $2.24 billion in dividends for the same year. In January 2016, it was announced that the Board authorized an additional increase in the stock repurchase program of $4 billion for an aggregate total of $9 billion before the end of 2017.

Figure 6: Earnings Per Share (EPS) with total amount of dividends paid out for same fiscal year



Source: Company Filings, 10-K

As of December 31, 2016, GM has purchased an additional 48 million shares for a combined total of $1.5 billion while paying an estimated $2.38 billion in dividends for the year or $1.52 per share (from $0.38 quarterly dividends). GM has accomplished this while maintaining a combined cash balance and marketable securities target of $20 billion for 2015 and 2016 even after having upped its quarterly dividend from $0.30 in 2014 to $0.36 in 2015 and $0.38 in 2016.

GM launches Maven, car-sharing service, and makes $500 million investment in Lyft ride-hailing service in 2016.

Ride-hailing investments: Maven, Lyft and Yi Wei Xing

In the years ended 2015, 2014, 2013 research and development was $7.5, $7.4 and $7.2 or 4.9%, 4.7% and 4.6% of sales revenue respectively, placing it fourth behind Volkswagen, Toyota and Daimler. GM has also continued product development for services like its 6.6 million subscriber OnStar subsidiary as well as hybrid vehicles and alternative fuel technologies, including the Chevrolet Bolt, which are important as GM tries to remain relevant and competitive. GM plans to expand the OnStar service to have 12 million OnStar connected vehicles on the road. By 2020, more than 75% of its global sales volume is expected to be actively connected. In China, all Cadillac, Buick and Chevrolet models will be connected by 2020. The company plans to capitalize on the future of personal mobility using tools such as connectivity, ridesharing, car sharing and autonomous driving in the US and China.

In January of 2016, GM started its own mobility brand called Maven which combines and expands the company's multiple car-sharing programs. Through Maven, GM offers customers a fleet of new

vehicles on-demand for use in exchange for an hourly fee. Seven months into launch, Maven has managed to expand to five U.S. cities, with over 5,000 registered members and 4.2 million miles driven. GM sees car sharing as an opportunity to earn lease income and to expose consumers to their brands and models by going beyond the dealership showroom.

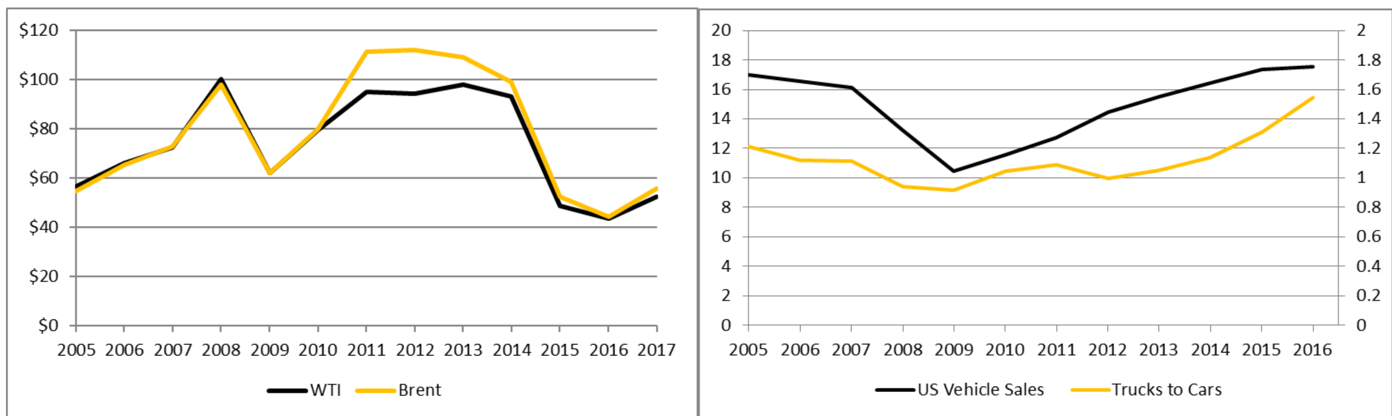
Additionally, GM has recently invested in the car-and-ride sharing business and in autonomous driving technology. In the first half of 2016, GM invested $500 million to purchase a 9% equity ownership interest in Lyft, Inc., greater than the $300 million invested in Gett by Volkswagen and the $100 million investment in Uber by Toyota. This was soon followed by a $1 billion acquisition of Cruise Automation, a self-driving technology start-up and later an investment in Yi Wei Xing Technology Co. Ltd, a leading car-sharing technology solution provider in China to explore new-car sharing models, gain insights into China's rapidly changing car-sharing market and develop a deeper understanding of Chinese consumers' personal mobility needs.

Oil price per barrel has hovered between $40-60 since end of 2014

Macroeconomic Trends: Low oil prices, positive correlations with ISM and low rate of unemployment

Oil prices have decreased from $100 a barrel at the end of 2014 and have remained between $40-60 since April 2015. Part of this can be attributed to the fact that US has doubled its shale oil production, decreasing dependency on oil imports. Simply put, supply has exceeded demand. This paired with increasing fuel efficiency helped push consumer preference to a 1.6:1 ratio of light-trucks to car sales.

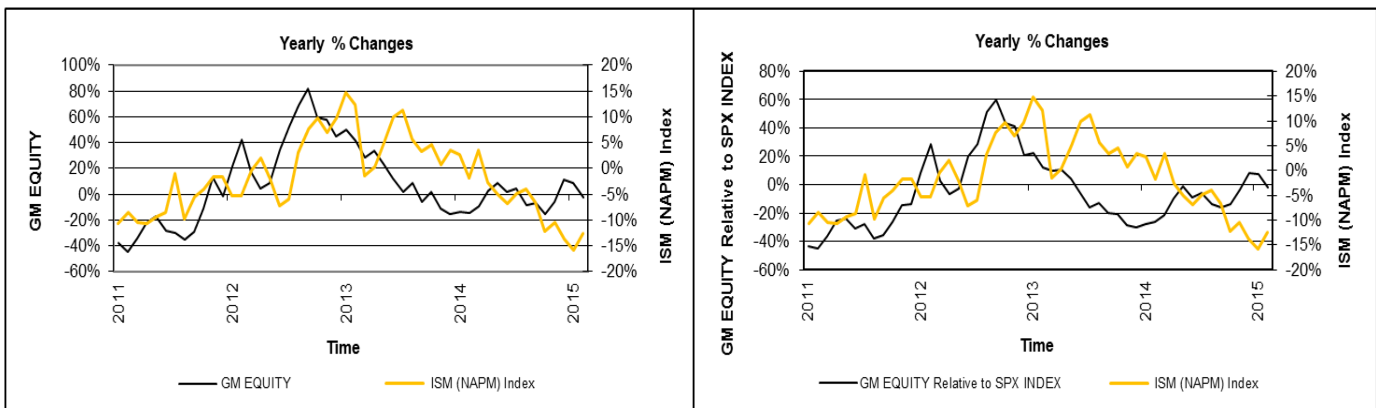
Figures 7 and 8: WTI and Brent price per barrel in USD (left), total US vehicle sales and truck-to-car ratio in millions, (right)



Source: Bloomberg, IMCP

The Institute of Supply Management (ISM) is a leading coincident indicator of expansion or contractions in the economy. GM's equity has a correlation of 0.527 and an R Square of 0.28 to the ISM Index. GM's relative return to the SPX has a 0.366 correlation and an R Square of 0.13.

Figures 9 and 10: GM equity vs ISM Index (left), GM equity relative to SPX Index vs ISM Index

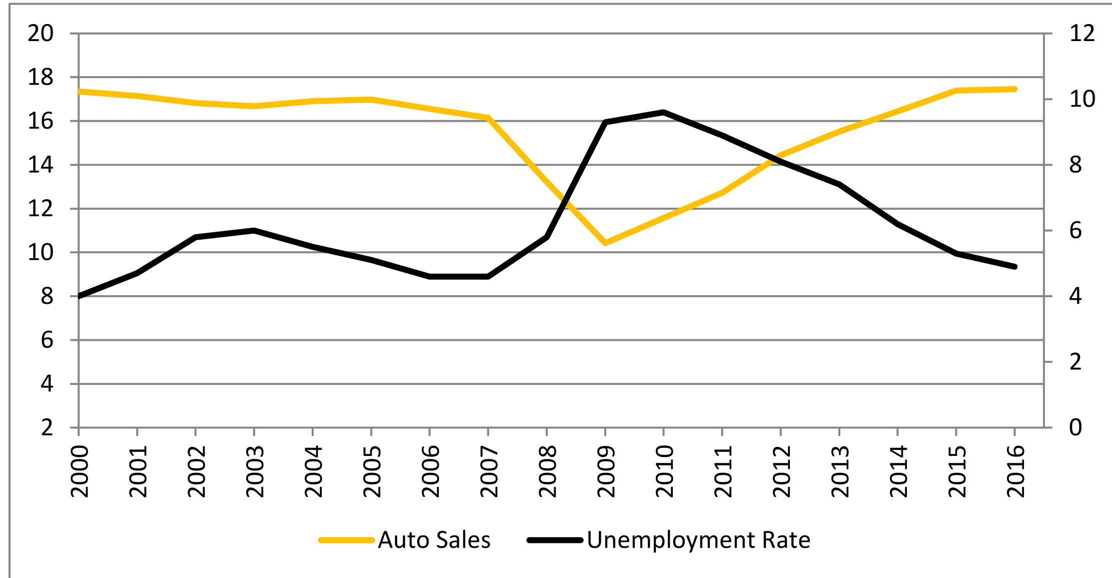


Source: Bloomberg, IMCP

Source: Bloomberg, IMCP

The rate of unemployment has been steadily decreasing since the recession of 2008, and settled around 4.9% as of September, 2016. More people working and a greater need for personal transportation helps provide more discretionary income that can be used towards the purchase of a new vehicle.

Figure 11: Total auto sales in millions (left), unemployment rate in percentages (right)



Source: Bloomberg, IMCP

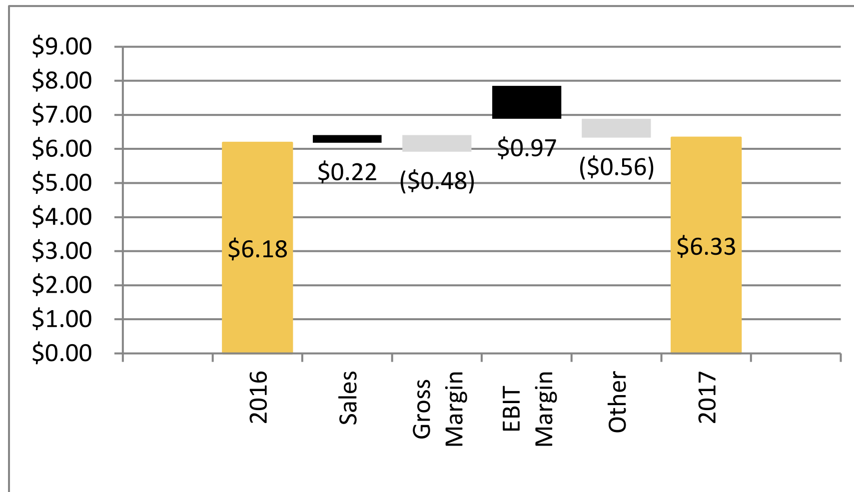
These macroeconomic conditions contributed to the success of the auto industry as a whole. A decrease in the overall rate of unemployment paired with decreasing gasoline prices incentivizes consumers to purchase new vehicles. General Motors has thrived among its competitors due to its variety of brands and models that concentrates on a higher margin light-truck portfolio. Pick-up trucks, SUVs and crossovers were the vehicle of choice amongst the North American car buyer for the past five years helping push GM unit sales and revenue above the rest. The trend is expected to continue through 2020. Gasoline prices pose both a benefit and a threat to the General Motors' future success.

Financial Analysis

Quantification of Drivers

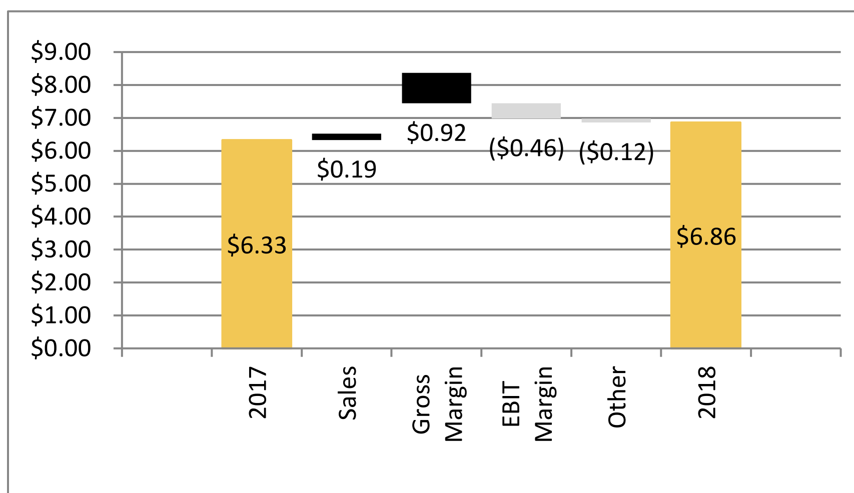
General Motors will end 2016 with record sales driven by sales of higher margin pick-up trucks, SUVs and Crossovers in its North American segment (GMNA) with an estimated 3.9 million units sold, of which more than 3.3 million are estimated to be from the United States. As sales in China continue to grow, Europe settles from the Brexit and South America begins to come out of its recession, sales in General Motors' respective segments should help to offset a slight decrease in sales in North America as the economy there begins to stabilize from expansion. I expect GM to continue to show profitability in all segments and for EPS to rise from $6.18 in 2016 to $6.86 in 2018. This is assuming gasoline prices do not rise significantly as the US increases its production to offset OPEC's reduction.

Figure 12: Quantification of 2017E EPS drivers



From 2016 to 2017, I expect sales growth to add $0.22 to EPS, but gross margins will decline and detract $0.48. An improvement in SG&A as a percent of sales will add $0.97 to EPS as plants are temporarily closed in 2017 to reduced inventory build-up. Higher interest expense and a higher tax rate more than offset the benefit of share buybacks ($0.47 benefit) and net subtract $0.56 from EPS.

Figure 13: Quantification of 2018E EPS drivers



In 2018, EPS rises $0.19 due to higher sales and $0.92 due to a higher gross margin (I expect GME and GMSA to become profitable and higher margin trucks and other vehicles to continue to grow as a percent of units). Higher SG&A as a percent of sales will follow the drop the prior year and detract $0.46 from EPS. Higher interest and other income more than offset the benefit of share buybacks and hurts EPS by $0.12.

Figure 14: EPS and YoY growth estimates in thousands

	FY 2017E	FY 2018E
Estimate	$ 170,604	$ 175,346
Consensus	$ 163,263	$ 167,558

Figure 15: EPS and YoY growth estimates

	FY 2017E	FY 2018E
Estimate	$ 6.33	$ 6.86
Consensus	$ 5.76	$ 5.80

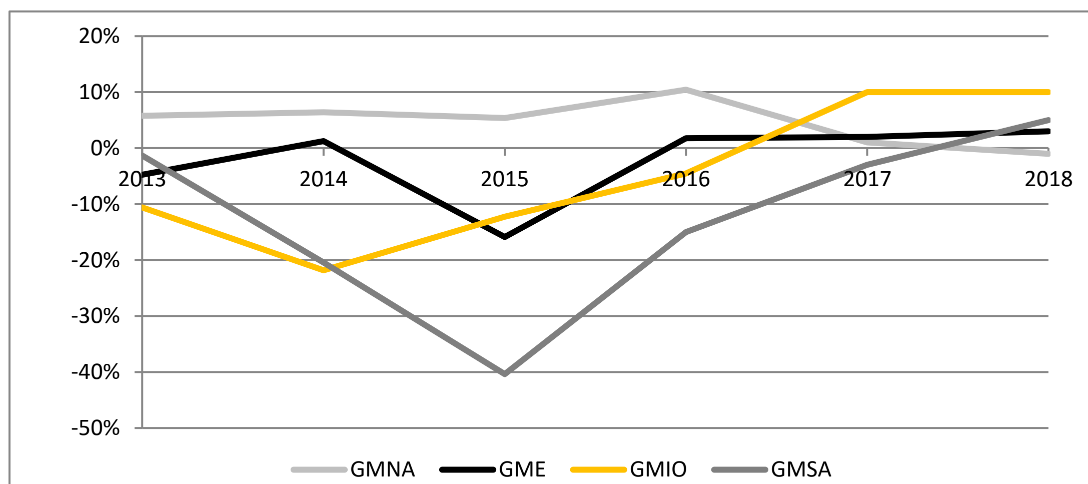
Source: FactSet, IMCP

Figures 14 and 15 illustrate my annual expectations for Sales and EPS. My expectations are more bullish than consensus. The difference is due to sales growth. For the years 2017 and 2018, my estimates show flat sales for North America (GMNA), and declining sales for South America (GMSA), while growth in the remaining three segments: 2% and 3% in Europe (GME), 10% and 10% in International Operations (GMIO), 33% and 30% in GM Financial (GMF). I don't expect sales in GMNA, primarily the US, to grow much more as we've seen record highs in the past few years. In regards to Europe, I see the Opel and Vauxhall brand gaining ground amongst competitors as the overall political climate settles and the economy expands. South America will bottom -3% in 2017 and in 2018 I estimate it will begin with growth of 5%. I estimate International Operations (GMIO), led by China, will continue to grow in unit sales as the Buick, Cadillac and Chevrolet brands gain further appeal.

GMIO: Focus on Chinese Markets

The Asia/Pacific, Middle East and Africa region is the largest region by retail vehicle sales volume and represented over 40% of global retail vehicle sales volume in 2015. Strong growth in Cadillac, Buick and Baojun passenger vehicles, including SUVs, were partially offset by lower Chevrolet sales because of model changeover and lower Wuling sales from a continued segment shift from mini commercial vehicles. Still, I expect the segment to sustain an estimated 10% YOY growth through 2018.

Figure 16 illustrates the decline and rise of GMIO's sales growth and estimates



Source: Company Reports, 10-K

Note: Retail vehicle sales data, which represents sales to the end customers based upon the good faith estimates of management, including fleets, does not correlate directly to the revenue recognized during the period. However, retail vehicle sales data is indicative of the underlying demand for GM vehicles. Market share information is based primarily on retail vehicle sales volume.

DuPont Analysis

Figures 17: 5 stage DuPont Analysis

Dupont Analysis	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18
ROE							
5-stage							
EBIT / sales		5.0%	3.0%	5.4%	7.0%	7.5%	8.0%
Sales / avg assets		0.98	0.91	0.82	0.79	0.74	0.71
EBT / EBIT		95.7%	91.3%	94.6%	93.6%	92.9%	92.0%
Net income /EBT		50.5%	66.0%	125.5%	87.9%	75.8%	72.7%
ROA		2.4%	1.6%	5.2%	4.5%	3.9%	3.8%
Avg assets / avg equity		4.00	4.40	4.94	4.90	4.94	4.91
ROE		9.6%	7.2%	25.7%	22.3%	19.3%	18.7%

Source: Company Reports, IMCP

GM has had a volatile ROE in the past two years, but ROE should settle around the 18-22% range within the next two years. DuPont analysis for GM reveals that ROE is driven by the tax burden ratio (net income/EBT), which could decrease if the new presidential administration lowers corporate taxes. The company had negative taxes in 2015 as a result (Note 16 2015 10K) of a release of valuation allowances for GME. In 2014, US federal taxes were negative. I assume taxes will normalize in the future. ROE also benefits by consistently rising operating margin in the past and projected years; although, lower asset turns hurts ROE. Asset turns are falling because of the growth in the financial segment, which has also boosted leverage (helps ROE).

Free Cash Flow

Figure 18: Free Cash Flow 2012-2018E

Free Cash Flow	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18
NOPAT	$6,031	$5,570	$4,399	$10,167	$10,046	$9,596	$10,521
Growth		*-7.7%*	*-21.0%*	*131.1%*	*-1.2%*	*-4.5%*	*9.6%*
NWC*	17,420	28,887	32,921	30,544	29,692	29,002	28,055
Net fixed assets	79,426	84,843	93,875	116,513	141,231	156,516	166,996
Total net operating capital*	$96,846	$113,730	$126,796	$147,057	$170,924	$185,519	$195,052
Growth		*17.4%*	*11.5%*	*16.0%*	*16.2%*	*8.5%*	*5.1%*
- Change in NWC*		11,467	4,034	(2,377)	(852)	(690)	(947)
- Change in NFA		5,417	9,032	22,638	24,718	15,285	10,480
FCFF*		($11,314)	($8,667)	($10,094)	(13,821)	($4,999)	$988
Growth			*-23.4%*	*16.5%*	*36.9%*	*-63.8%*	*-119.8%*
- After-tax interest expense	(105)	239	381	552	639	684	837
FCFE**		($11,553)	($9,048)	($10,646)	($14,459)	($5,683)	$151
Growth			*-21.7%*	*17.7%*	*35.8%*	*-60.7%*	*-102.7%*

Source: Company Reports, IMCP

The firm generates negative free cash flow. While NOPAT has risen significantly and is expected to stay somewhat stable through 2018, it has not been sufficient to fund significant growth in net fixed assets (this includes the loans for the finance business). The short-fall has been financed through additional debt. Debt has risen from $5 billion in 2012 to a projected $84 billion in 2016. I forecast it to rise over $30 billion more through 2018. $43 billion of the new debt from 2012 through 2015 was to fund growth in GM Financial, so the rise is less alarming as it was not necessarily to fund the main auto business. LTM debt/equity is 120%, less than that of domestic competitors (figure 20). FCFE if we include debt was over $9 billion in 2015, and is projected at $5 billion in 2016, over $10 billion in 2017, and over $13 billion in 2018. Some of this FCFE is being returned to shareholders in stock buybacks which I forecast at $4 billion in 2017 and $3 billion in 2018. Dividends are about $2.5 billion.

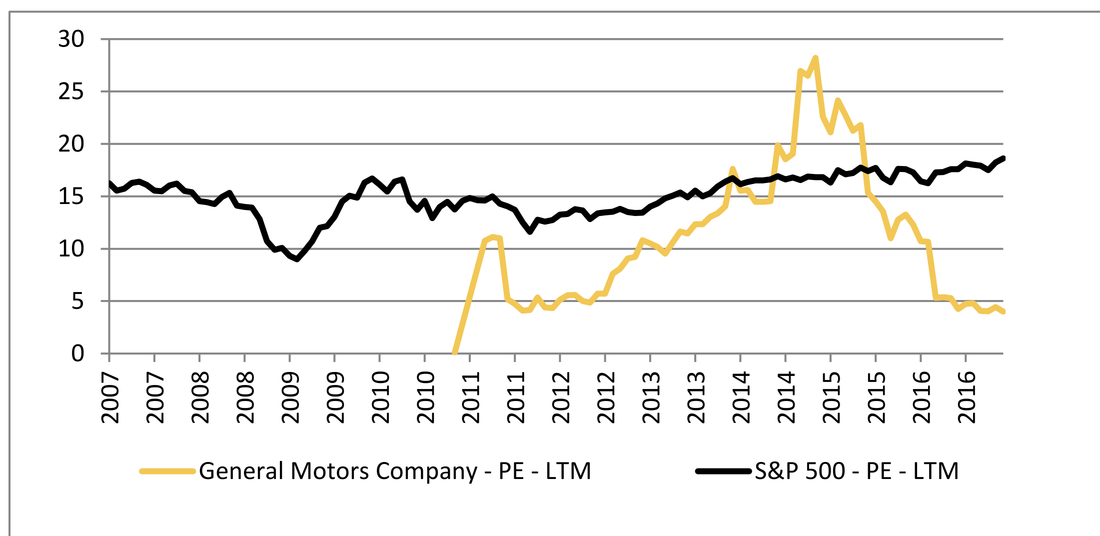
Valuation

GM 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 $27; however, due to the volatility of GM's earnings the past few years, as well as the effect of recent nonrecurring expenses, this metric may be unreliable. This also relies on using today's P/E that implies low expect growth by other investors, and I disagree with this market expectation. Relative valuation shows GM to be slightly undervalued based on its fundamentals versus those of its peers in the auto industry. Price to book valuation yielded a price of $40. A detailed DCF analysis values GM at $46; I give this value a bit more weight because it incorporates assumptions that reflect GM's ability to continue to grow. I value the stock at $46.

Trading History

GM is currently trading relatively low to the S&P 500. This is the result of recent earnings increase and the fact GM has beat most analysts estimates for the past few years. GM's current LTM P/E is at 4.3, which is relatively low compared to industry median of 9.4 and its average of 11.6 since it emerged from bankruptcy.

Figure 19: GM LTM P/E relative to S&P 500



Source: FactSet

Assuming the firm maintains a 4.3 LTM P/E at the end of 2017, it should trade at $27.22 at the end of 2017. Discounting this value at 11.8% cost of equity yields a value of $24.35 today.

- Price = P/E x EPS = 4.3 x $6.33 = $27.22

Given GM's potential for earnings growth and continued profitability, this seems to be an unusually low valuation. This implies investors believe EPS is peaking. Still, GM posted records sales in the Unites States and China, its two biggest markets in 2016. I expect P/E to increase over time as investors gain confidence in GM as it reestablishes itself post-bankruptcy and begin to believe the current level of auto sales can still rise. Still, the P/E would have to rise to 6.2 to justify today's stock price.

Figure 20: GM 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	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
GM	GENERAL MOTORS CO	$37.95	$57,849	1.6	0.8	19.0	26.0	25.5	8.9	16.1	-34.8%	64.6%	19.9%	-5.1%	0.2%	0.9%	1.69	120.1%		4.36%	17.2%
F	FORD MOTOR CO	$12.67	$50,349	(1.4)	(3.8)	5.7	(4.5)	(0.8)	4.5	-5.6	-18.1%	66.4%	-6.2%	-9.4%	3.7%	3.0%	1.33	285.7%	B	4.95%	29.9%
FCAU	FIAT CHRYSLER AUTOMOBILES NV	$11.09	$14,295	2.6	31.9	70.6	73.6	37.5	21.6	17.6	122.1%	107.4%	36.6%	13.1%	9.2%	-10.0%	1.42	146.8%		0.12%	
TM	TOYOTA MOTOR CORP	$119.91	$195,633	0.1	(2.5)	4.0	13.5	4.4	2.3	5.6	-8.9%	4.8%	7.4%	-18.5%	12.0%	32.1%	0.74	53.1%		2.87%	28.9%
HMC	HONDA MOTOR CO LTD	$30.18	$54,393	0.3	(1.5)	3.5	17.1	2.8	3.4	18.4	31.3%	-20.1%	-34.3%	66.0%	9.1%	-14.5%	1.10	53.2%		2.49%	36.8%
NSANY	NISSAN MOTOR CO LTD	$20.09	$39,252	(0.9)	3.8	4.9	6.6	3.3	(0.3)	8.5	28.8%	2.8%	14.3%	18.3%	13.0%	2.9%	1.04	97.4%		1.64%	15.6%
VLKAY	VOLKSWAGEN AG	$32.07	$47,310	1.9	12.5	9.8	17.6	15.1	11.8	-1.0	2113.7%	-113.2%	-664.3%	19.7%	7.2%		1.63	91.6%		0.06%	
005380-K	HYUNDAI MOTOR CO	$124.12	$33,346	(2.3)	3.1	10.4	13.4	6.1	1.7	1.3	10.4%	-17.5%	-6.0%	4.4%	5.6%	3.5%	1.28	71.1%		2.74%	17.8%
Average			$61,553	0.2	5.5	16.0	20.4	11.7	6.7	7.6	280.6%	11.9%	-79.1%	11.1%	7.5%	2.6%	1.28	114.9%		2.40%	24.4%
Median			$48,830	0.2	1.9	7.7	15.3	5.3	3.9	7.1	19.6%	3.8%	0.7%	8.7%	8.1%	2.9%	1.31	94.5%		2.62%	23.3%
SPX	S&P 500 INDEX	$2,275		0.3	0.7	6.5	6.5	18.3	1.6			0.2%	2.4%	6.5%	8.2%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017E	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
GM	http://www.gm.com	20.2%	1.27	12.4	7.6	6.3	4.3	6.7	6.6	6.6	5.6%	0.35	6.5%	12.9%	11.3	3.2	4.5	-3.9%	4.1%	2.4%	$29.81
F	http://www.ford.com	23.3%	1.63	10.9	6.6	7.0	6.3	7.7	7.7	7.5	5.1%	0.36	5.2%	6.6%	20.3			-7.7%	7.8%	3.0%	$7.78
FCAU	http://www.chrysler.com	10.2%	0.74	20.5	9.9	7.2	9.2	4.2	6.4	5.9	1.7%	0.12	3.4%	0.2%	9.1	1.5	1.4	5.0%		25.3%	$15.02
TM	http://www.toyota.co.jp	11.4%	1.11	11.0	10.4	9.7	10.3	11.3	11.9	10.6	8.5%	0.83	8.7%	8.3%	12.8	5.8	6.6	-1.5%	3.2%	1.1%	$107.80
HMC	http://www.honda.co.jp	4.4%	0.84	10.0	12.5	19.0	15.3	11.6	11.4	10.5	2.4%	0.45	4.2%	3.1%	22.4	5.2	5.6	0.2%	5.2%	2.9%	$35.97
NSANY	http://www.nissan.co.jp	9.9%	0.96	11.4	11.0	9.7	9.5	7.4	8.2	7.2	4.3%	0.41	6.4%	5.9%	14.5	3.4	3.3	2.5%	3.9%	-0.4%	$21.03
VLKAY	http://www.volkswagenag.com	10.6%	0.86	6.1	-45.8	8.1	151.9	6.9	6.8	6.3	2.6%	0.21	4.4%	-1.0%	30.9	3.6		5.3%	-0.9%	7.0%	$37.27
005380-K	https://www.hyundaiusa.com	9.7%	0.63	5.0	6.1	6.5	6.4	5.8	6.2	5.9	6.6%	0.43	6.1%	6.3%	13.4	2.9	4.1	-0.6%		-4.0%	$198.05
Average		12.5%	1.00	10.9	2.3	9.2	26.7	7.7	8.2	7.6	4.6%	0.40	5.6%	5.3%	16.9	3.6	4.3	-0.1%	3.9%	4.7%	
Median		10.4%	0.91	10.9	8.7	7.7	9.4	7.1	7.3	6.9	4.7%	0.39	5.6%	6.1%	14.0	3.4	4.3	-0.2%	4.0%	2.6%	
SPX	S&P 500 INDEX			19.2	19.2	18.7			17.6	16.3											

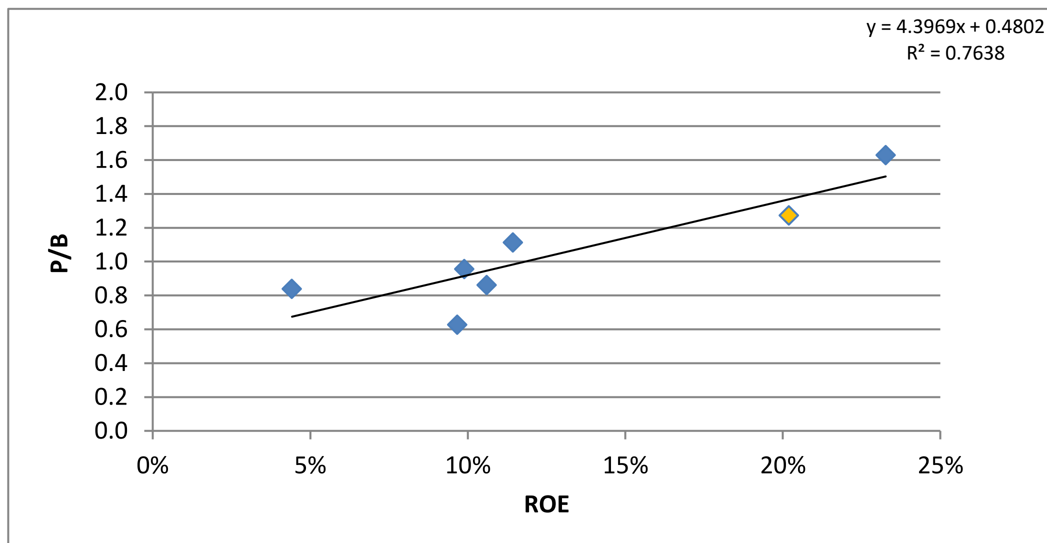
Source: FactSet

<u>Relative Valuation</u>

A more thorough analysis of P/B and ROE is shown in figure 20. The calculated R-squared of the regression indicates that over 76% of a sampled firm's P/B is explained by its 2016 ROE. The target price is $40.45.

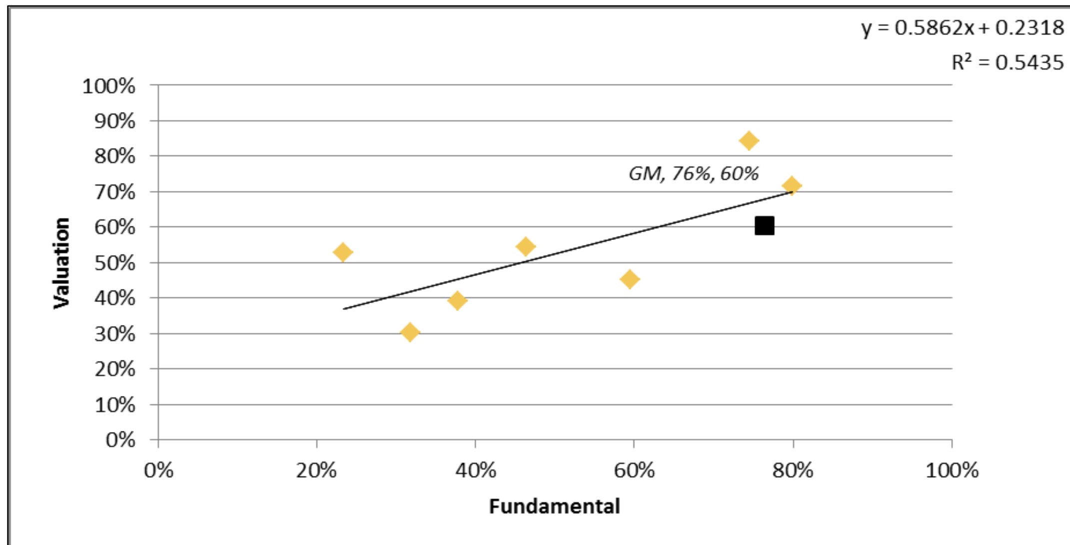
- Estimated P/B = Estimated 2016 ROE (20.2%) x 4.3969 + 0.4802 = 1.368
- Target Price = Estimated P/B (1.368) x 2016E BVPS (29.57) = $40.45

Figure 21: P/B vs LTM ROE



Source: IMCP

Figure 21: P/B vs NTM ROE



Source: 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 2016 ROE and 2016 net profit margin was compared to an equal weighting of P/B and P/S. The resulting R-squared is .54. As you can see, GM is below the line so it is undervalued.

Figure 23: Composite valuation, % of

						Fundamental		Value	
					Weight	50%	50%	50%	50%
	Rank		Target	Weighted		2016	2016		
Name	Diff	Diff	Value	Fund	Value	ROE	NPM	P/B	P/S
GENERAL MOTORS CO	8	14%	75%	76%	60%	87%	66%	78%	43%
FORD MOTOR CO	6	7%	79%	80%	72%	100%	60%	100%	43%
FIAT CHRYSLER AUTOMOBILES NV	5	-8%	22%	32%	30%	44%	20%	45%	15%
TOYOTA MOTOR CORP	3	-12%	72%	75%	84%	49%	100%	68%	100%
HONDA MOTOR CO LTD	1	-40%	12%	23%	53%	19%	28%	52%	54%
NISSAN MOTOR CO LTD	2	-15%	39%	46%	54%	43%	50%	59%	50%
VOLKSWAGEN AG	4	-10%	29%	38%	39%	46%	30%	53%	25%
HYUNDAI MOTOR CO	7	10%	55%	59%	45%	42%	77%	38%	52%

Source: IMCP

Discounted Cash Flow Analysis

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

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 2.33%.
- A ten-year beta of 1.23 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 11.8% (2.33 + 1.23 (10.0 – 2.33)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be ($3.99) and $0.11, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of ($3.48) per share. Thus, stage one of this discounted cash flow analysis contributes ($3.48) to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 11.8% cost of equity. I assume 2.0% sales growth in 2019, and fluctuating between 1% and 3% before returning to 2% by 2023. Margins are expected to stay at the 2018 levels. The ratio of NWC to sales will remain at 2018 levels. NFA turnover will remain constant as well as NFA grows at the same rate of sales. The firm is also projected to decrease shares by 3% per year.

Figure 24: FCFE and discounted, 2017 - 2022

	2017	2018	2019	2020	2021	2022	2023
FCFE	(3.99)	0.11	4.48	3.22	6.50	6.73	5.28
Discounted FCFE	($3.57)	$0.09	$3.21	$2.06	$3.73	$3.45	$2.42

Added together, these discounted cash flows total $14.87.

Stage Three – Net income for the years 2017 – 2021 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $6.63 in 2017 to $8.84 in 2023. At least half of this growth is due to share buybacks and the other 1% to 3% per year is due to sales growth. It is important to note that the model does not forecast a recession, and instead continued modest growth from high levels of auto unit sales.

Figure 25: Estimates for 2017-2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$6.33	$6.86	$7.42	$7.86	$8.14	$8.44	$8.84

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. The average P/E since the firm emerged from bankruptcy is 11.6, which includes both recession and recovery periods. Given that I am growing EPS off of a high level, a below average P/E of 8.5 is utilized which reflects the fact that EPS may be above "normal" in 2023.

Given the assumed terminal earnings per share of $8.84 and a price to earnings ratio of 8.5, a terminal value of $75.10 per share is calculated. Using the 11.8% cost of equity, this number is discounted back to a present value of $34.48.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $45.87 is calculated (-3.48 + 14.87 + 34.48). Given GM's current price of $35.15, this model indicates that the stock is quite undervalued.

Scenario Analysis

When evaluating a company, it is important to consider the different scenarios the economy might hold. Currently, the United States has made a strong recovery from the recession of 2008. Trends in unemployment, consumer confidence, interest rates and oil prices have been at ideal levels to support economic expansion in the United States. With the transition of power in The White House, the future has become uncertain. Below is a bull and bear case of what may happen in the next years. I expect a slow but steady growth with a probability of 50%.

Bull Case

Bull Case	FY 2017E	FY 2018E
EPS	$6.74	$8.05
Dividends	$1.64	$1.90

Oil prices remain between $50 and $60 per barrel, unemployment remains under 5%, interest rates rise slowly enough to lengthen economic expansion as opposed to causing contraction and consumer confidence remains optimistic. Europe settles and auto sales soar. South America rebounds from recession and China continues to boom. I would expect GM sales to reach $170 billion worldwide and EPS to rise around above $7.00 with a quarterly dividend of $0.50. I give this a probability of 25%.

Bear Case

Bear Case	FY 2017E	FY 2018E
EPS	$6.09	$6.55
Dividends	$0.00	$0.00

Oil prices rise above $80 per barrel, causing consumers to rush to small, low-margin vehicles, essentially cutting GM's margins in half. If Interest rates rise too quickly, this would limit credit affordability and availability. EPS would return to the lows of 2013 at about $3.00 and no quarterly dividend. I expect the chances of this happening to have a probability 25%.

Business Risks

Although I believe the stock is a buy, there are many business risks:

Profits dependent on sale of full-size pick-up trucks and SUVs

General Motors offers a variety of small, mid-size and large cars, crossovers, SUVs and trucks. It generally recognizes higher profit margins on full-size pick-up trucks and SUVs. GM's success is strongly dependent upon consumer preferences and its ability to sell higher margin vehicles in sufficient volumes.

Fuel Prices

In 2016, an estimated 60% of General Motors' sales were from light truck type vehicles. Any increases in the price of oil or any sustained shortage of oil, including as a result of global political instability, could cause a shift in consumer demand towards smaller, more fuel efficient vehicles, and weaken the demand for higher margin full-size pick-up trucks and SUV's.

Changes in foreign currency exchange rates and interest rates:

General Motors lost a substantial amount due to increasing sales in countries with weakening currencies. This was especially true for sales in Brazil where the Real depreciated as the overall economy tumbled. Additionally, GM Financial has become an increasingly profitable segment that borrows locally. If the cost of borrowing increases for GMF, this increase in cost would transfer to consumers who might otherwise not to purchase GM vehicles.

Foreign Policy Changes and Tariffs:

Business in China is subject to aggressive competition and is sensitive to economic and market conditions. Changes in international trade and investment policies, especially between the U.S and China.

Appendix 1: Sales Forecast

Sales								Bull Case		Bear Case	
Items	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16E	Dec-17E	Dec-18E	Dec-17E	Dec-18E	Dec-17E	Dec-18E
Sales	152,256	155,427	155,929	152,356	164,958	170,603	175,346	181,016	198,146	164,458	164,596
Growth		2.1%	0.3%	-2.3%	8.3%	3.4%	2.8%	9.7%	9.5%	-0.3%	0.1%
GMNA	89,910	95,099	101,199	106,622	117,743	118,920	117,707	124,866	131,159	115,352	113,011
Growth		5.8%	6.4%	5.4%	10.4%	1.0%	-1.0%	6.1%	5.0%	-2.0%	-2.0%
% of sales	59.1%	61.2%	64.9%	70.0%	71.4%	69.7%	67.1%	69.0%	66.2%	70.1%	68.7%
Units	3,019	3,276	3,413	3,612	3,901	3,940	3,861	4,096	4,260	3,784	3,670
Growth		8.5%	4.2%	5.8%	8.0%	1.0%	-2.0%	5.0%	4.0%	-3.0%	-3.0%
Total	17,847	19,092	20,204	21,518	22,594	22,594	22,142	23,046	23,276	22,142	21,699
Growth		7.0%	5.8%	6.5%	5.0%	0.0%	-2.0%	2.0%	1.0%	-2.0%	-2.0%
Market share	16.9%	17.2%	16.9%	16.8%	17.3%	17.4%	17.4%	17.8%	18.3%	17.1%	16.9%
Avg Price	$29.78	$29.03	$29.65	$29.52	$30.18	$30.18	$30.48	$30.48	$30.79	$30.48	$30.79
Growth		-2.5%	2.1%	-0.4%	2.3%	0.0%	1.0%	1.0%	1.0%	1.0%	1.0%
GME	23,055	21,962	22,235	18,704	19,031	19,412	19,994	20,554	22,198	18,651	18,464
Growth		-4.7%	1.2%	-15.9%	1.8%	2.0%	3.0%	8.0%	8.0%	-2.0%	-1.0%
% of sales	15.1%	14.1%	14.3%	12.3%	11.5%	11.4%	11.4%	11.4%	11.2%	11.3%	11.2%
GMIO	20,588	18,411	14,392	12,626	12,058	13,264	14,590	14,469	17,363	12,661	13,294
Growth		-10.6%	-21.8%	-12.3%	-4.5%	10.0%	10.0%	20.0%	20.0%	5.0%	5.0%
% of sales	13.5%	11.8%	9.2%	8.3%	7.3%	7.8%	6.0%	8.0%	8.8%	7.7%	8.1%
GMSA	16,700	16,478	13,115	7,820	6,647	6,448	6,770	6,979	7,677	5,982	5,683
Growth		-1.3%	-20.4%	-40.4%	-15.0%	-3.0%	5.0%	5.0%	10.0%	-10.0%	-5.0%
% of sales	11.0%	10.6%	8.4%	5.1%	4.0%	3.8%	3.9%	3.9%	3.9%	3.6%	3.5%
Corporate and Elimations	42	142	151	150	150	152	155	153	156	150	150
Growth		238.1%	6.3%	-0.7%	0.0%	1.0%	2.0%	2.0%	2.0%	0.0%	0.0%
% of sales	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Automotive	150,295	152,092	151,092	145,922	155,358	156,937	155,672	167,022	178,554	152,796	150,602
Growth		1.2%	-0.7%	-3.4%	6.5%	1.0%	-0.8%	7.5%	6.9%	-1.6%	-1.4%
% of sales	98.7%	97.9%	96.9%	95.8%	94.2%	92.0%	88.8%	92.3%	90.1%	92.9%	91.5%
GM Financial	1,961	3,335	4,837	6,434	9,329	12,408	16,130	13,994	19,592	11,662	13,994
Growth		70.1%	45.0%	33.0%	45.0%	33.0%	30.0%	50.0%	40.0%	25.0%	20.0%
% of sales	1.3%	2.1%	3.1%	4.2%	5.8%	8.0%	11.2%	7.7%	9.9%	7.1%	8.5%

Appendix 2: Income Statement

Income Statement	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18
Sales	$152,256	$155,427	$155,929	$152,356	$164,958	$170,603	$175,346
Direct costs	141,443	137,373	142,121	134,054	142,689	148,424	150,798
Gross Margin	10,813	18,054	13,808	18,302	22,269	22,178	24,548
SG&A, R&D, and other	39,019	10,262	9,159	10,141	10,722	9,383	10,521
EBIT	(28,206)	7,792	4,649	8,161	11,547	12,795	14,028
Interest	489	334	403	443	734	912	1,116
EBT	(28,695)	7,458	4,246	7,718	10,813	11,883	12,912
Taxes	(34,831)	2,127	228	(1,897)	1,406	2,971	3,228
Income	6,136	5,331	4,018	9,615	9,407	8,912	9,684
Other	1,277	1,561	1,214	(72)	(99)	(100)	300
Net income	4,859	3,770	2,804	9,687	9,506	9,012	9,384
Basic Shares	1,566	1,393	1,605	1,586	1,538	1,424	1,368
EPS	$3.10	$2.71	$1.75	$6.11	$6.18	$6.33	$6.86
Diluted Shares	1675	1676	1687	1640	1578	1464	1408
DPS	$2.90	$2.25	$1.66	$5.91	$6.02	$6.16	$6.66
Growth Statistics							
Sales		*2.1%*	*0.3%*	*-2.3%*	*8.3%*	*3.4%*	*2.8%*
Direct Costs		*-2.9%*	*3.5%*	*-5.7%*	*6.4%*	*4.0%*	*1.6%*
Gross Margin		*67.0%*	*-23.5%*	*32.5%*	*21.7%*	*-0.4%*	*10.7%*
SG&A, R&D, and other		*-73.7%*	*-10.7%*	*10.7%*	*5.7%*	*-12.5%*	*12.1%*
EBIT		*-127.6%*	*-40.3%*	*75.5%*	*41.5%*	*10.8%*	*9.6%*
Interest		*-31.7%*	*20.7%*	*9.9%*	*65.7%*	*24.2%*	*22.3%*
EBT		*-126.0%*	*-43.1%*	*81.8%*	*40.1%*	*9.9%*	*8.7%*
Taxes		*-106.1%*	*-89.3%*	*-932.0%*	*-174.1%*	*111.3%*	*8.7%*
Continuing income		*-13.1%*	*-24.6%*	*139.3%*	*-2.2%*	*-5.3%*	*8.7%*
Other		*22.2%*	*-22.2%*	*-105.9%*	*37.5%*	*1.0%*	*-400.0%*
Net income		*-22.4%*	*-25.6%*	*245.5%*	*-1.9%*	*-5.2%*	*4.1%*
Basic Shares		*-11.0%*	*15.2%*	*-1.2%*	*-3.0%*	*-7.4%*	*-3.9%*
EPS		*-12.8%*	*-35.4%*	*249.6%*	*1.2%*	*2.4%*	*8.4%*
DPS		*-22.5%*	*-26.1%*	*255.4%*	*2.0%*	*2.2%*	*8.3%*
Common Size							
Sales	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
Direct Costs	*92.9%*	*88.4%*	*91.1%*	*88.0%*	*86.5%*	*87.0%*	*86.0%*
Gross Margin	*7.1%*	*11.6%*	*8.9%*	*12.0%*	*13.5%*	*13.0%*	*14.0%*
SG&A, R&D, and other	*25.6%*	*6.6%*	*5.9%*	*6.7%*	*6.5%*	*5.5%*	*6.0%*
EBIT	*-18.5%*	*5.0%*	*3.0%*	*5.4%*	*7.0%*	*7.5%*	*8.0%*
Interest	*0.3%*	*0.2%*	*0.3%*	*0.3%*	*0.4%*	*0.5%*	*0.6%*
EBT	*-18.8%*	*4.8%*	*2.7%*	*5.1%*	*6.6%*	*7.0%*	*7.4%*
Taxes	*-22.9%*	*1.4%*	*0.1%*	*-1.2%*	*0.9%*	*1.7%*	*1.8%*
Continuing income	*4.0%*	*3.4%*	*2.6%*	*6.3%*	*5.7%*	*5.2%*	*5.5%*
Other	*0.8%*	*1.0%*	*0.8%*	*0.0%*	*-0.1%*	*-0.1%*	*0.2%*
Net income	*3.2%*	*2.4%*	*1.8%*	*6.4%*	*5.8%*	*5.3%*	*5.4%*

Appendix 3: Balance Sheet

Balance Sheet	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18
Cash	18,422	20,021	18,954	15,238	16,201	14,828	18,826
Operating assets ex cash	42,586	52,508	55,450	54,606	57,735	59,711	61,371
Operating assets	61,008	72,529	74,404	69,844	73,936	74,539	80,197
Operating liabilities	25,166	23,621	22,529	24,062	28,043	30,708	33,316
NOWC	35,842	48,908	51,875	45,782	45,893	43,830	46,881
NOWC ex cash (NWC)	17,420	28,887	32,921	30,544	29,692	29,002	28,055
NFA	79,426	84,843	93,875	116,513	141,231	156,516	166,996
Invested capital	*$115,268*	*$133,751*	*$145,750*	*$162,295*	*$187,124*	*$200,347*	*$213,878*
Marketable securities	8,988	8,972	9,222	8,163	8,205	7,205	7,705
Total assets	*$149,422*	*$166,344*	*$177,501*	*$194,520*	*$223,372*	*$238,260*	*$254,898*
Short-term and long-term debt	$5,172	$7,137	$46,665	$63,111	$83,700	$98,700	$115,700
Other liabilities	82,084	92,412	72,283	67,024	66,568	61,568	54,068
Debt/equity-like securities	756	567	567	452	292	102	(48)
Equity	36,244	42,607	35,457	39,871	45,477	47,890	52,571
Total supplied capital	*$124,256*	*$142,723*	*$154,972*	*$170,458*	*$196,037*	*$208,260*	*$222,291*
Total liabilities and equity	*$149,422*	*$166,344*	*$177,501*	*$194,520*	*$224,080*	*$238,968*	*$255,607*

Appendix 4: Ratio Page

Ratios	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18
Profitability							
Gross margin	7.1%	11.6%	8.9%	12.0%	13.5%	13.0%	14.0%
Operating (EBIT) margin	-18.5%	5.0%	3.0%	5.4%	7.0%	7.5%	8.0%
Net profit margin	3.2%	2.4%	1.8%	6.4%	5.8%	5.3%	5.4%
Activity							
NFA (gross) turnover		1.89	1.74	1.45	1.28	1.15	1.08
Total asset turnover		0.98	0.91	0.82	0.79	0.74	0.71
Liquidity							
Op asset / op liab	2.42	3.07	3.30	2.90	2.64	2.43	2.41
NOWC Percent of sales		27.3%	32.3%	32.0%	27.8%	26.3%	25.9%
Solvency							
Debt to assets	3.5%	4.3%	26.3%	32.4%	37.5%	41.4%	45.4%
Debt to equity	14.3%	16.8%	131.6%	158.3%	184.0%	206.1%	220.1%
Other liab to assets	54.9%	55.6%	40.7%	34.5%	29.8%	25.8%	21.2%
Total debt to assets	58.4%	59.8%	67.0%	66.9%	67.3%	67.3%	66.6%
Total liabilities to assets	75.2%	74.0%	79.7%	79.3%	79.8%	80.2%	79.7%
Debt to EBIT	(0.18)	0.92	10.04	7.73	7.25	7.71	8.25
EBIT/interest	(57.68)	23.33	11.54	18.42	15.73	14.03	12.57
Debt to total net op capital	4.5%	5.3%	32.0%	38.9%	44.7%	49.3%	54.1%
ROIC							
NOPAT to sales		3.6%	2.8%	6.7%	6.1%	5.6%	6.0%
Sales to IC		1.25	1.12	0.99	0.94	0.88	0.85
Total		4.5%	3.1%	6.6%	5.8%	5.0%	5.1%
Total using EOY IC	5.2%	4.2%	3.0%	6.3%	5.4%	4.8%	4.9%

Appendix 5: Discounted Cash Flow

3 Stage Discounted Cash Flow

	Year						
	1	2	3	4	5	6	7
	First Stage		**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*3.4%*	*2.8%*	*2.0%*	*3.0%*	*1.0%*	*1.0%*	*2.0%*
NOPAT / S	*5.6%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
S / NWC	*5.88*	*6.25*	*6.25*	*6.25*	*6.25*	*6.25*	*6.25*
S / NFA (EOY)	*1.09*	*1.05*	*1.05*	*1.05*	*1.05*	*1.05*	*1.05*
S / IC (EOY)	*0.92*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
ROIC (EOY)	*5.2%*	*5.4%*	*5.4%*	*5.4%*	*5.4%*	*5.4%*	*5.4%*
ROIC (BOY)		*5.7%*	*5.5%*	*5.6%*	*5.4%*	*5.4%*	*5.5%*
Share Growth		*-3.9%*	*-3.0%*	*-3.0%*	*-3.0%*	*-3.0%*	*-3.0%*
Sales	$170,603	$175,346	$178,853	$184,219	$186,061	$187,922	$191,680
NOPAT	$9,596	$10,521	$10,731	$11,053	$11,164	$11,275	$11,501
Growth		*9.6%*	*2.0%*	*3.0%*	*1.0%*	*1.0%*	*2.0%*
- Change in NWC	-690	-947	561	858	295	298	601
NWC	*29002*	*28055*	*28617*	*29475*	*29770*	*30067*	*30669*
Growth NWC		*-3.3%*	*2.0%*	*3.0%*	*1.0%*	*1.0%*	*2.0%*
- Chg NFA	15285	10480	3340	5110	1754	1772	3579
NFA EOY	*156,516*	*166,996*	*170,336*	*175,446*	*177,201*	*178,973*	*182,552*
Growth NFA		*6.7%*	*2.0%*	*3.0%*	*1.0%*	*1.0%*	*2.0%*
Total inv in op cap	14595	9533	3901	5969	2049	2070	4181
Total net op cap	185519	195052	198953	204921	206971	209040	213221
FCFF	($4,999)	$988	$6,830	$5,085	$9,114	$9,206	$7,320
% of sales	*-2.9%*	*0.6%*	*3.8%*	*2.8%*	*4.9%*	*4.9%*	*3.8%*
Growth		*-119.8%*	*591.5%*	*-25.6%*	*79.3%*	*1.0%*	*-20.5%*
- Interest (1-tax rate)	684	837	887	940	997	1056	1120
Growth		*22.3%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
FCFE w/o debt	($5,683)	$151	$5,943	$4,144	$8,118	$8,149	$6,200
% of sales	*-3.3%*	*0.1%*	*3.3%*	*2.2%*	*4.4%*	*4.3%*	*3.2%*
Growth		*-102.7%*	*3838.2%*	*-30.3%*	*95.9%*	*0.4%*	*-23.9%*
/ No Shares	1423.7	1368.2	1,327.1	1,287.3	1,248.7	1,211.2	1,174.9
FCFE	($3.99)	$0.11	$4.48	$3.22	$6.50	$6.73	$5.28
Growth		*-102.8%*	*3960.0%*	*-28.1%*	*101.9%*	*3.5%*	*-21.6%*
* Discount factor	0.89	0.80	0.72	0.64	0.57	0.51	0.46
Discounted FCFE	($3.57)	$0.09	$3.21	$2.06	$3.73	$3.45	$2.42
			Third Stage				
Terminal value P/E							
Net income	$9,012	$9,384	$9,844	$10,113	$10,167	$10,219	$10,381
% of sales	*5.3%*	*5.4%*	*5.5%*	*5.5%*	*5.5%*	*5.4%*	*5.4%*
EPS	$6.33	$6.86	$7.42	$7.86	$8.14	$8.44	$8.84
Growth		*8.4%*	*8.1%*	*5.9%*	*3.6%*	*3.6%*	*4.7%*
Terminal P/E							8.50
* Terminal EPS							$8.84
Terminal value							$75.10
* Discount factor							0.46
Discounted terminal value							$34.48

Summary

First stage	($3.48)	Present value of first 2 year cash flow	
Second stage	$14.87	Present value of year 3-7 cash flow	
Third stage	$34.48	Present value of terminal value P/E	
Value (P/E)	**$45.87**	= value at beg of fiscal yr	2017

Appendix 6: Porter's 5 Forces

Threat of New Entrants – Low

Entry into the market is relatively difficult because of capital intense requirements, its competitive nature, as well as needing brand development and commercial successes.

Threat of Substitutes - Moderate

With the introduction of ride-hailing services like Uber and Lyft, personal mobility has changed in the way that the immediate purchase of a vehicle is not the only way to travel. This technology has greatly disrupted the automobile industry as well as the transportation industry as a whole. Many auto manufacturers have invested in this new technology inclduing GM, Toyota and Volkswagen.

Supplier Power - Low

There are many suppliers for automobile parts and components, which decreases their influence over the larger auto manufacturers.

Buyer Power – High

General Motors' faces a market of consumers with low switching cost and a lot of information at their fingertips to see what competitors are offering.

Intensity of Competition – Very High

General Motors' operates in one of the most competitive industries. Other auto manufacturers are doing everything they can to increase their market share through effective marketing and pricing, innovative designs and a variety of models. Many automakers must provide generous incentives that ultimately decrease the bottom line.

Appendix 7: SWOT Analysis

Strengths	Weaknesses
Variety of brands and models High-margin light-truck portfolio GM Financial impact on earnings	Low-margin small cars High EOY inventory
Opportunities	**Threats**
Further expansion in China Emerging markets: Mexico/Brazil Rideshare tech to boost sales	Increase in oil prices Incentives decrease bottom line Currency exchange fluctuations

Analyst: Mitchell Rzentkowski

December 30, 2016

Automotive Manufacturing

The Ford Motor Company

Recommendation	Underweight
Target (today's value)	$11.10
Current Price	$12.56
52 week range	$11.02 - $14.22

Share Data	
Ticker:	F
Market Cap. (Billion):	$49.75
Inside Ownership	1.2%
Inst. Ownership	56.1%
Beta	1.62
Dividend Yield	4.95%
Payout Ratio	29.9%
Cons. Long-Term Growth Rate	-0.4%

	'14	'15	'16	'17E	'18E
Sales (billions)					
Year	$140.8	$149.5	$151.3	$146.6	$143.3
Gr %	-1.9%	3.8%	1.1%	-3.0%	-3.6%
Cons	-	-	-	$150.2	$146.7
EPS					
Year	$0.31	$1.86	$1.80	$1.62	$1.43
Gr %	-77.0	490.3%	-3.0%	-10.3%	-11.5%
Cons	-	-	-	$1.62	$1.71

Ratio	'14	'15	'16	'17E	'18E
ROE (%)	4.8%	27.8%	23.8%	19.1%	15.1
Rel Industry	0.47	2.27	2.00	1.61	1.29
NPM (%)	0.9%	4.9%	4.7%	4.4%	4.0%
Rel Industry	0.23	1.19	0.94	0.73	0.66
A. T/O	0.70	0.69	0.66	0.59	0.57
ROA (%)	0.6%	3.4%	3.1%	3.0%	2.6%
Rel Industry	0.20	1.09	0.89	0.85	0.72
A/E	8.52	7.84	7.45	6.75	6.18

Valuation	'14	'15	'16	'17E
P/E	19.3	7.6	6.7	7.7
Rel Industry	1.83	0.68	0.65	0.81
P/S	0.4	0.3	0.3	0.4
P/B	2.5	1.9	1.5	1.3
P/CF	6.8	4.8	5.2	5.7
EV/EBITDA	6.2	3.9	2.9	3.2

Performance	Stock	Industry
1 Month	2.8%	4.5%
3 Month	4.0%	1.6%
YTD	3.7%	0.5%
52-week	-10.6%	-2.0%
3-year	-6.7%	-2.2%

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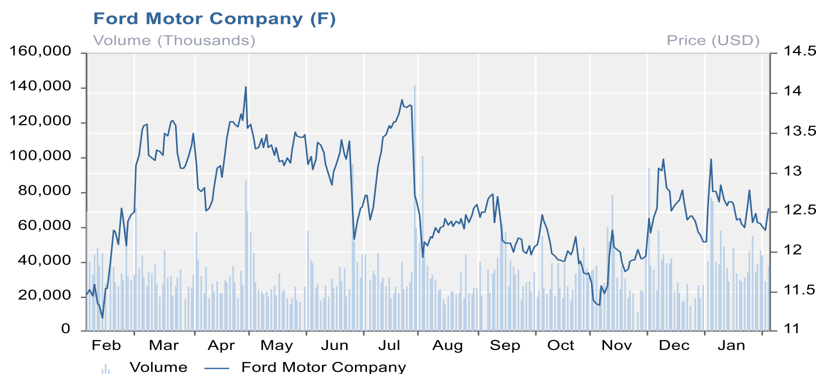


Source: FactSet Prices

Summary: I give Ford an underweight rating with a target of $11.10 The firm's shares are fairly valued based on relative and DCF analysis. However, heightened cyclical and industry risk have offset my optimism. Ford is highly dependent upon the U.S. auto market, which is peaking. In order to generate revenue growth, Ford will have to rely on international markets to outperform, which I view with pessimism.

Key Drivers:

- Consumer Preferences: Consumers are demanding more utility vehicles and trucks due to favorable macroeconomic conditions. Ford performs well in this, as they have had the number 1 selling truck in the U.S. for 39 years.

- Balanced Product Mix: Ford's product line up consists of a favorable balance between cars, utilities, and trucks. As a result, the firm is less susceptible to quick shift in demand.

- U.S. Market: Over 70% of Ford's revenue is generated from the U.S. The strength of the U.S. market has positively impacted Ford over the last several years. However, there are many indications that this market is peaking and that growth will slow.

- Emerging Markets: Ford started investing heavily in emerging markets in search of growth. However, these markets are still small portions of Ford's total revenue and significant growth doesn't seem to feasible in the near future.

Valuation: Using a relative valuation approach, Ford appears to be fairly valued in comparison to the automotive manufacturing industry. A combination of the approaches suggests that Ford is fairly valued, as the stock's value is about $11.10 and the shares trade at $12.56.

Risks: Threats to the business include declining U.S. light vehicle sales, increased competition, shifts in consumer preferences, increasing interest rates, and oil prices.

Company Overview

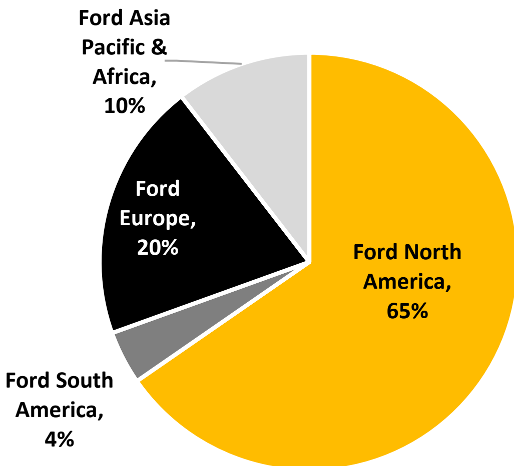
Management has recently started reallocating capital to emerging opportunities in electrification, autonomy, and mobility.

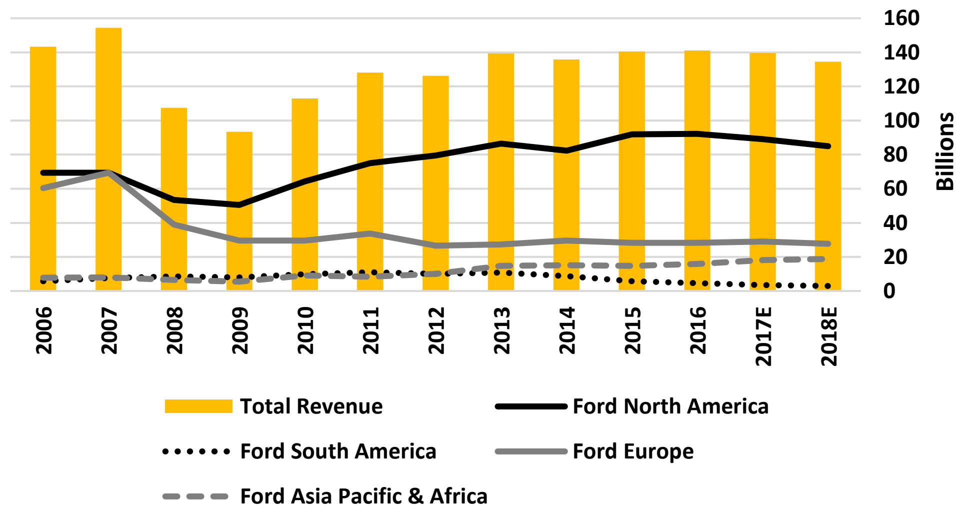
The Ford Motor Company (F), is an automotive and mobility company, with over 190,000 employees that design, manufacture, and distribute automobiles globally. The company manages two major automotive brands, Ford and Lincoln. With over 29 vehicle models, the Ford brand targets retail, commercial, and governmental buyers at multiple price points. Whereas, Lincoln, which consist of six vehicle models, competes in the luxury automotive market. Ford sells its vehicles, parts, and accessories through approximately 12,000 dealers worldwide. Additionally, Ford provides vehicle-related financing and leasing through Ford Credit.

Ford Motor Company generates revenue from the following two sectors, automotive and financial services. 94% of Ford's revenue is attributable to the automotive sector through vehicle, parts, and accessory sales. Ford's automotive business is further divided into the following four segments:

- North America: Ford North America, which includes the U.S., Canada, and Mexico, is the firm's largest segment in terms of overall revenue. The U.S. is the largest contributor within the segment.
    - **Industry Volume:** In 2016, the U.S. market recorded volume of 17.55m units.
    - **Financial Success**: Revenue is up 1% YOY, pre-tax results are down 4% YOY
- Europe: Ford Europe is the second largest segment in terms of overall revenue. However, revenue has been steadily deteriorating for years.
    - **Financial Deterioration:** Revenue has declined 59% from 2007-2015
    - **Consumer Preference:** Smaller fuel efficient vehicles with low margins
- Asia Pacific & Africa: Ford Asia Pacific & Africa despite being the 3rd largest segment, has seen strong growth since the great recession of 2008. This growth has been mainly fueled by China's increase in industry volume.
    - **Growth:** Revenue has increased 83% from 2009-2015, down 6.12% YOY
    - **Industry Volume:** In 2016, industry volume was 42.1m units, up 7.6% YOY
- South America: Ford South America is the smallest segment and has been deteriorating due to negative economic growth, high inflation, and currency weakness in the region.
    - **Industry Volume:** In 2016, industry volume was 3.7m units, down 12% YOY
    - **Financial Deterioration:** In 2016, revenue was down 17% YOY

Figures 1 and 2: Automotive revenue sources for F, year-end 2015 (left) and revenue history since 2006 (right)





Source: Company reports

Business/Industry Drivers

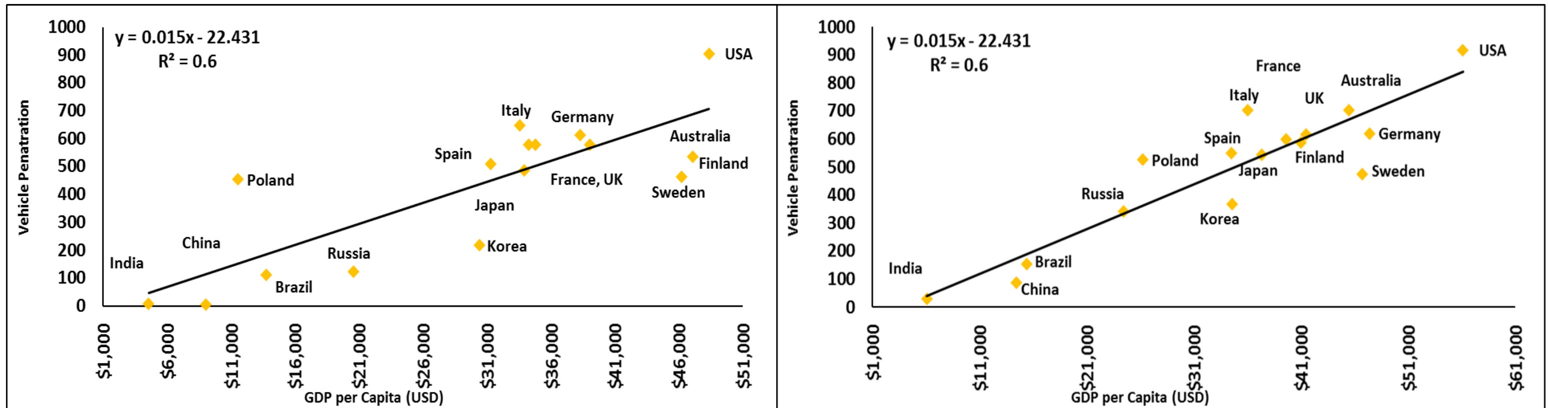
1) Global Macroeconomic Factors
2) Macroeconomic Factors in the United States
3) Pent-Up Demand in the United States
4) New Car Financing in the United States
5) Leasing Vehicles in the United States
6) Incentive Spending in the United States
7) Market and Product Analysis in the United States

Global Macroeconomic Factors

To anticipate operating performance, my analysis tracks the following macroeconomic data:

- **A ratio of vehicle penetration measured by number of vehicles per 1,000 and GDP per capita -** This ratio is used to analyze markets as being over or under penetrated.
- **Consumer confidence** - The relationship between LV sales and consumer confidence is strong in most emerging and established markets.
- **Unemployment -** LV sales and unemployment are traditionally inversely related. However, LV sales in emerging markets are less susceptible to relatively small movements in unemployment.

Figures 3 and 4: GDP per capita vs. vehicle penetration, 2010 (L) and GDP per capita vs. vehicle penetration, 2016 (R)



Source: Bloomberg, IMCP, BofA Merrill Lynch

> Use the linear regression to determine which markets are over or under penetrated. Markets above the line are considered to be over penetrated. As a result, these markets are more sensitive to the business cycle.

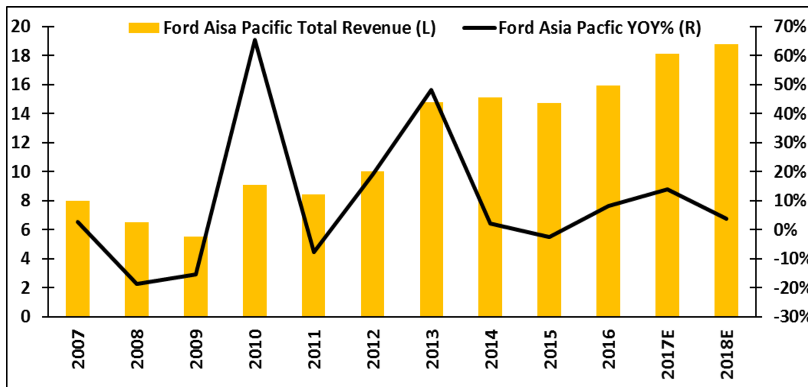
Historically, worldwide light vehicle sales have been largely concentrated in North America, specifically in the United States. However, emerging markets have begun to erode the North American market share's percentage of worldwide LV sales. North America now only accounts for 20% of global LV sales. This is significantly down from its peak of 35% in 2000. Despite the erosion, I still expect Ford to rely on the U.S. for its main source of profits.

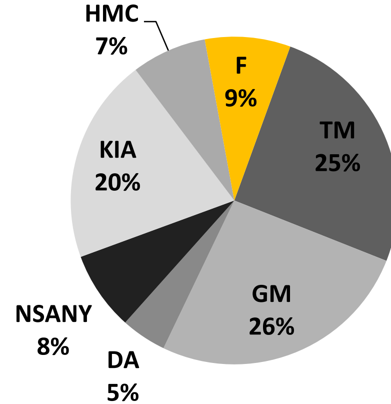
Ford's revenues are highly dependent upon the U.S. market; approximately 70% of its revenue is derived there. I view this unfavorably because the U.S. is a highly penetrated market. Highly penetrated markets are more susceptible to the business cycle, adding uncertainty to Ford's earnings. To quantify my remarks, I compared GDP per capita to vehicle penetration in a variety of markets.

My analysis shows that GPD per capita and vehicle penetration are well correlated. I used this linear regression to explore the potential sales growth opportunities of global markets. Markets that are represented above the line, are considered to be over penetrated for their level of GDP per Capita and vice versa. As depicted in the regression, India and China are well below the regression line and offer large opportunities for new car sales.

Chinese Operations

Figures 5 and 6: Ford's Asia Pacific revenues, 2007-2018E in billions (L) and, market share by OEM in China 2016 (R)



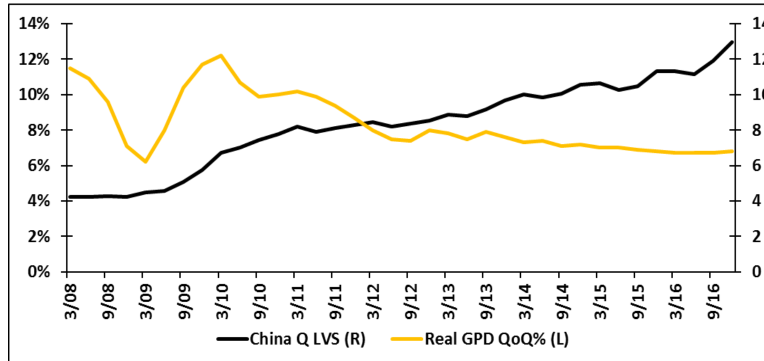


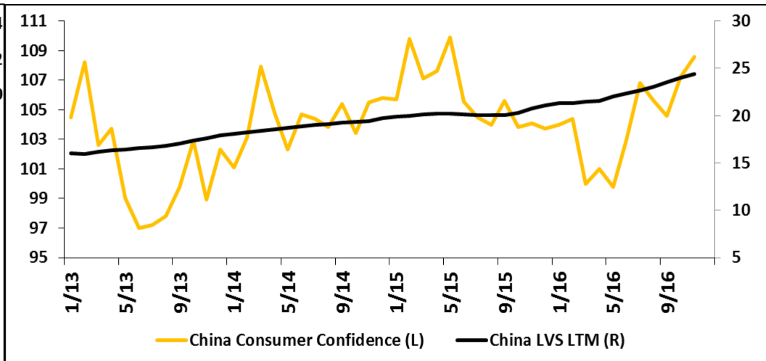
Source: Company reports

> To become more competitive in the China, Ford must grow its market share.

Ford has started to capitalize on these opportunities, especially in China. However, these newly added ventures have only nominally contributed to total sales. For example, China only accounts for approximately 4.4% of Ford's growth. In 2016 Ford sold a record 1.27m units in China, which was a 14% increase YOY. However, 2016 operating margins in China decreased by 1% to 14.7%. Ford only commands 9% of the Chinese market, which is relatively small compared to its peers.

Figure 7: Chinese real GDP growth QoQ% vs. Q Chinese LVS in millions, 2008-2016 (L)
Figure 8: Chinese consumer confidence vs. Chinese LVS LTM in millions, 2013-2016 (R)





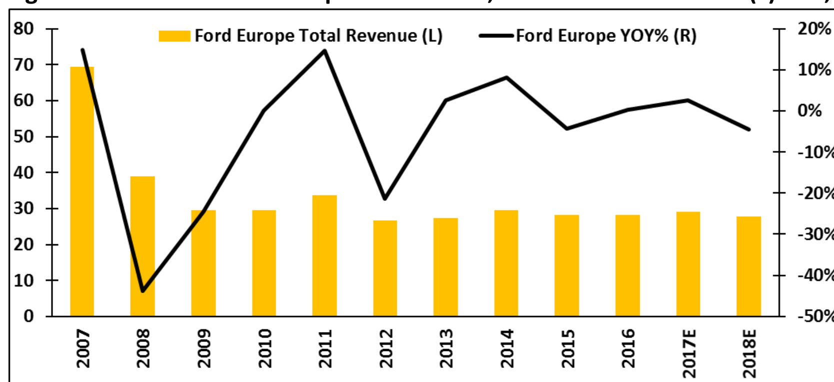
Source: Factset

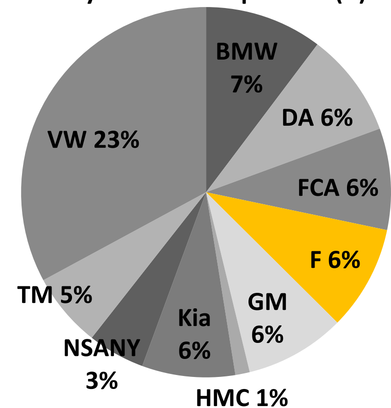
> Figures 7 and 8 illustrate how China's LVS are less sensitive to macroeconomic factors.

Ford's operations in China are still a major source of growth and earnings stability for the company, as this market is substantially less correlated with the business cycle. However, I view its Chinese operations with skepticism, as they are still small and unproven. Expansion has caused significant unexpected expenses, as was the case in 2014. Furthermore, Ford's management recently adjusted guidance for additional unexpected expenses due to global expansion.

European Operations

Figures 9 and 10: Ford's European revenues, 2007-2018E in billions (L) and, market share by OEM in Europe 2016 (R)

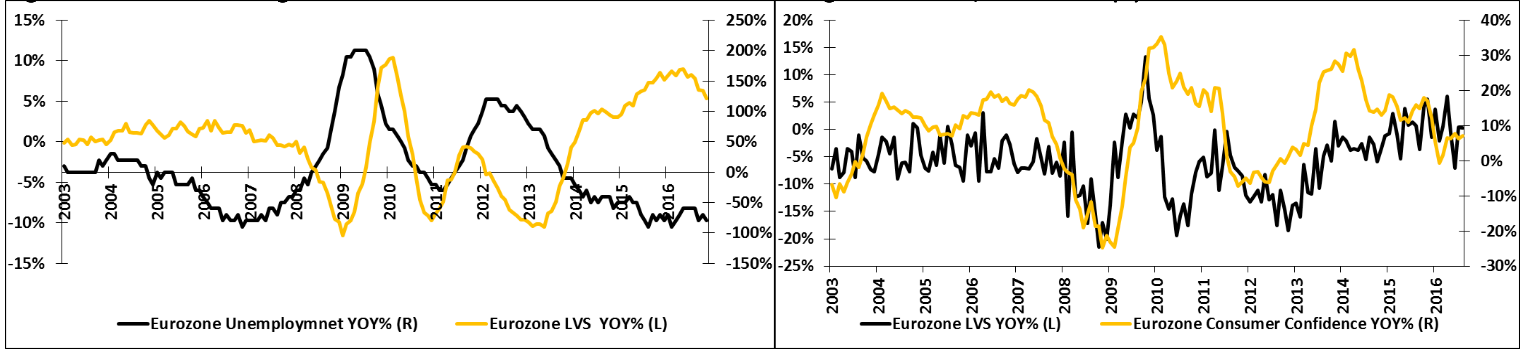




Source: Company reports

The European auto market is moderately fragmented with comparables commanding small portions of the market, with the exception of Volkswagen. Volkswagen dominates this region, commanding nearly 25% of the market. Furthermore, as depicted by my regression model, I considered the European market to be over penetrated and mature. This exemplifies the importance of tracking movements in consumer confidence, unemployment, and GDP in order to predict future operating success in this segment.

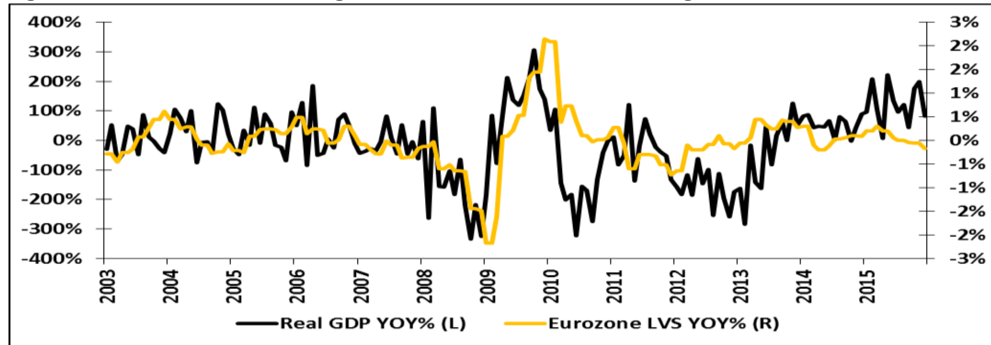
Figure 11: Eurozone unemployment growth YOY% vs. Eurozone LVS growth YOY, 2003-2016 (L)
Figure 12: Eurozone LVS growth YOY% vs. Eurozone consumer confidence growth YOY%, 2003-2016 (R)



Source: Factset

As of year-end, unemployment is down 80% YOY and consumer confidence is improving. I expect nominal to flat improvements in Ford's European operations due to a small market share and consumer preference. Ford's strength is selling trucks and utilities, which carry higher margins. However, European consumers prefer small and midsized cars. In 2015, 71% of LV sold were small and midsized cars. Due to Ford's robust product mix, I expect it to be able to maintain its market share in Europe.

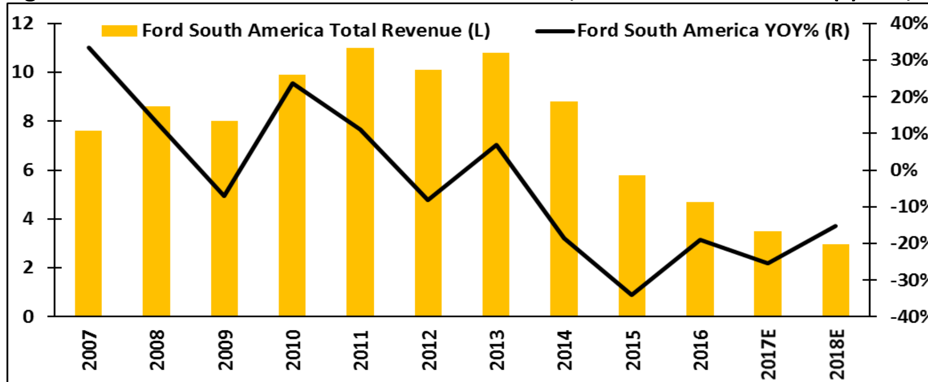
Figure 13: Eurozone real GDP growth YOY% vs. Eurozone LVS growth YOY%, 2003-2016

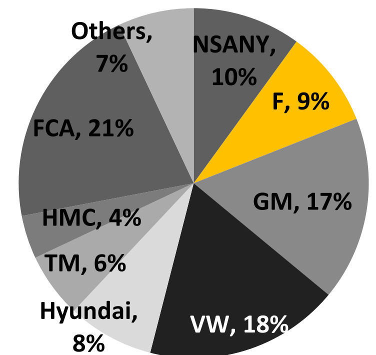


Source: Factset

South American Operations

Figures 14 and 15: Ford's South American revenues, 2007-2018E in billions (L) and, market share by OEM in South America 2016 (R)



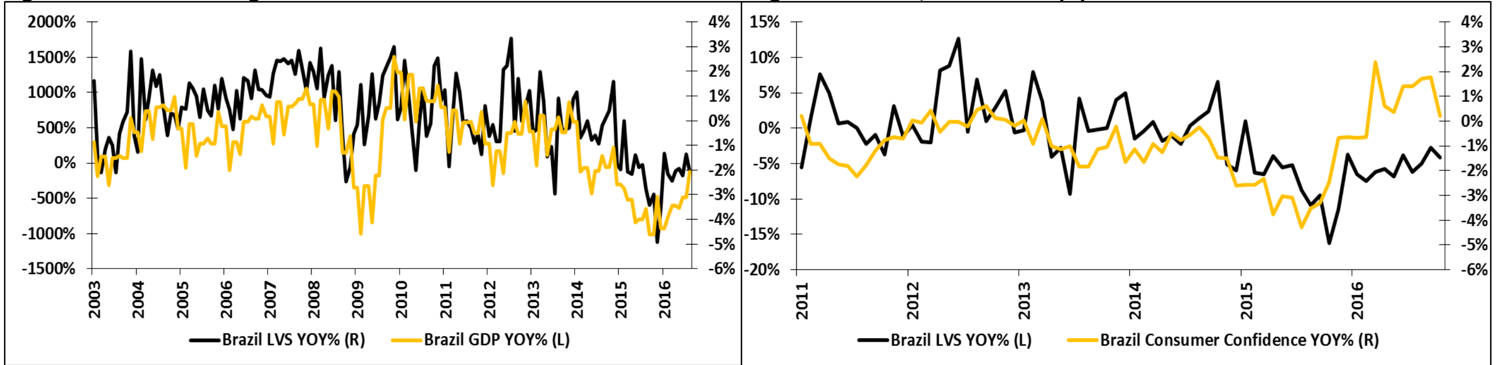


Source: Company reports

> 2016's ($1.1B) loss **negatively** affected EPS by **0.28**. 2015's ($832m) loss **negatively** affected EPS by **$0.21.**

Ford's operations in South America have led to big losses due to negative economic growth, high inflation, and currency weakness in the region. Brazil's major recession caused Ford to lose $832 million in 2015. Competitors in the region began cutting prices in an attempt to keep their operations afloat. Ford's management decided not to cut prices and instead let sales fall. As a result, Ford's market share fell 1% to 8.4% in the fourth quarter of 2015. In 2016, Ford's losses in the region totaled $1.1 billion.

Figure 16: Brazil's LVS growth YOY% vs. Brazil's GDP growth YOY%, 2003-2016 (L)
Figure 17: Brazil's LVS growth YOY% vs. Brazil's consumer confidence growth YOY%, 2011-2016 (R)



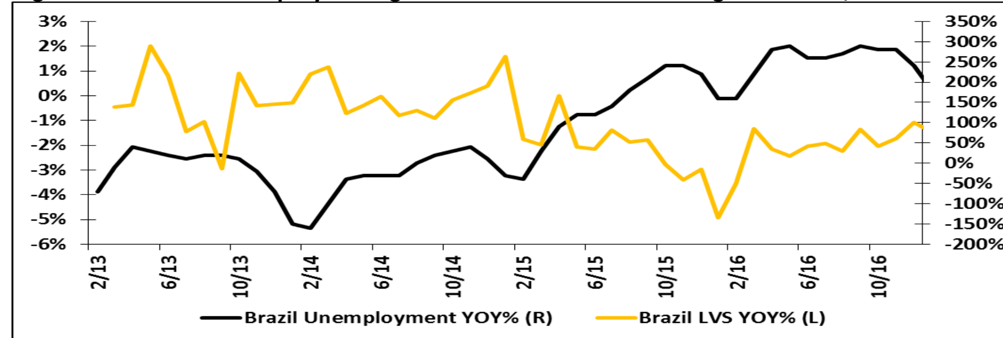
Source: Factset

Despite the large loss incurred, South American operations turned positive in the fourth quarter of 2016. All key metrics including: wholesales, revenue, market share, operating margin, and pre-tax results were up for the first time since the third quarter of 2013. Looking into 2017 and 2018, I expect South American operations to continue to be a losing proposition.

Brazil's government has taken unfavorable measures in an effort to protect its local auto manufacturing industry. High import tariffs and government regulations penalize foreign manufactures for not meeting specific requirements. I view the high political risk of the region to be damaging to Ford's ability to reach a profit.

> Is South American heading for a turn around? I expect only nominal improvements if any. Ford's operations in South America are exposed to unpredictable governments.

Figure 18: Brazil's unemployment growth YOY% vs. Brazil's LVS growth YOY, 2003-2016



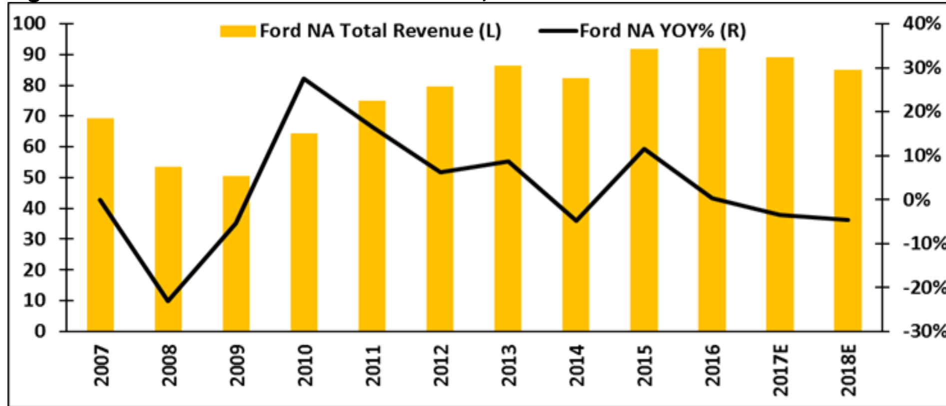
Source: Factset

Macroeconomic Factors in the United States

In order to anticipate demand in the U.S. market I analyzed the following key macroeconomic data:

- **Consumer Confidence and GDP growth** - Positively correlated with LV sales
- **Unemployment -** Negatively correlated with LV sales
- **Housing Starts –** Positively correlated with LT sales, which is especially important for Ford

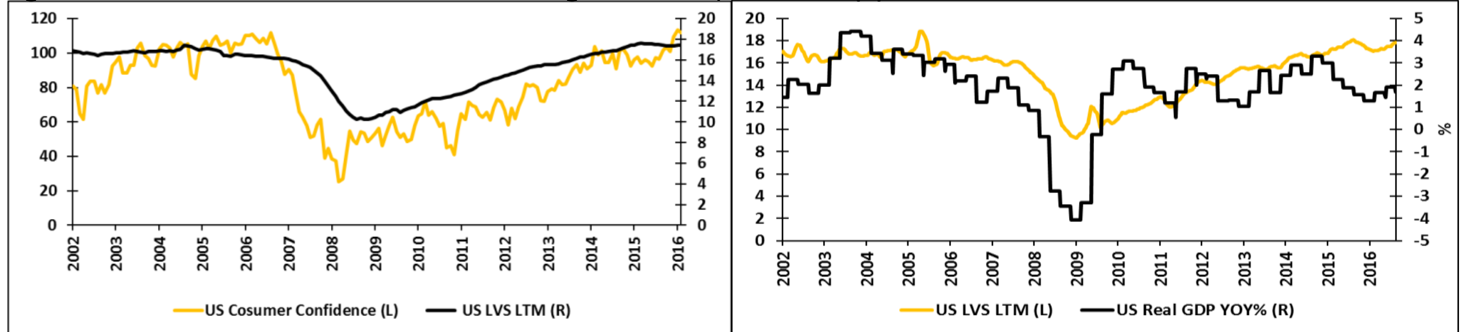
Figure 19: Ford's North American revenues, 2007-2018E in billions



Source: Company reports

Ford's largest and most important market is the United States. In 2016 the U.S. accounted for approximately 70% of Ford's total revenue. Based on my regression analysis, the U.S. market is over penetrated and highly mature. However, since critical economic conditions started to improve, Ford has enjoyed record industry volumes in the U.S.

Figure 20: U.S. consumer confidence vs. U.S. LVS LTM in millions, 2002-2016 (L)
Figure 21: U.S LVS LTM in millions vs. U.S real GDP growth YOY%, 2002-2016 (R)



Source: Factset

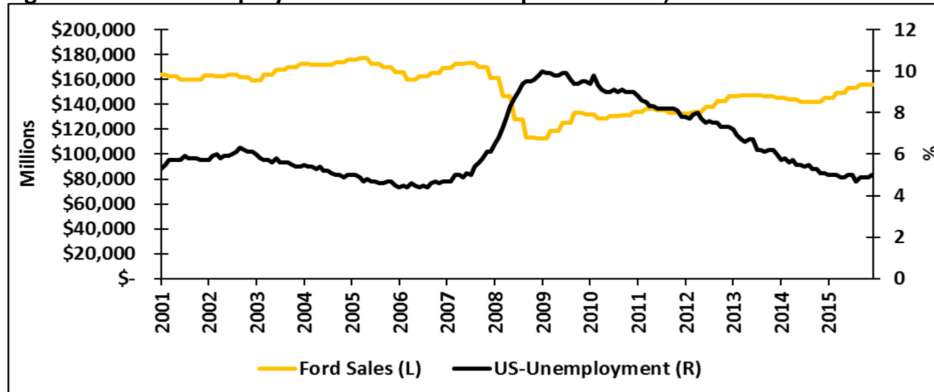
Due to the market's maturity, automotive OEMs in the U.S. operate highly cyclical businesses that are significantly affected by basic macroeconomic factors. Vehicles are durable goods that are not typically replaced during unfavorable economic periods. This creates a lethal cycle for the general economy, which further hurts OEMs.

According to the Center for Automotive Research, the auto industry supports over 7 million private sector jobs in the United States. Additionally, the auto industry has historically contributed 3.0-3.5% of GDP. As a result, when demand for vehicles decline, production is cut back and unemployment rises. This clarifies why Ford's sales have a -0.87 correlation with the U.S. unemployment rate.

Figures 23-24
Correlation .135
R-Squared .018
Correlation .051
R-Squared .003
Figures 25-26
Correlation .328
R-Squared .108
Correlation .292
R-Squared .086

Figures on Pg. 8

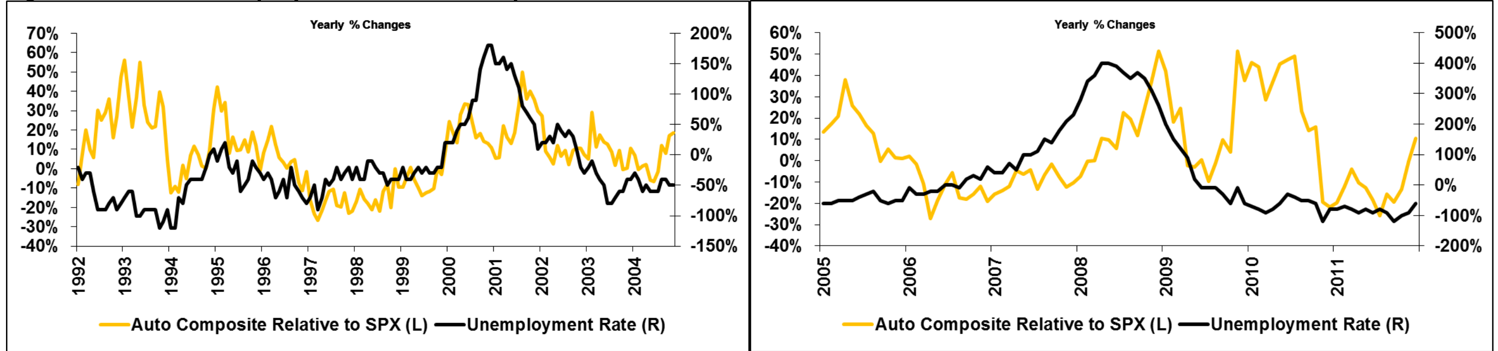
Figure 22: U.S. Unemployment vs. Ford's sales performance, 2001-2016



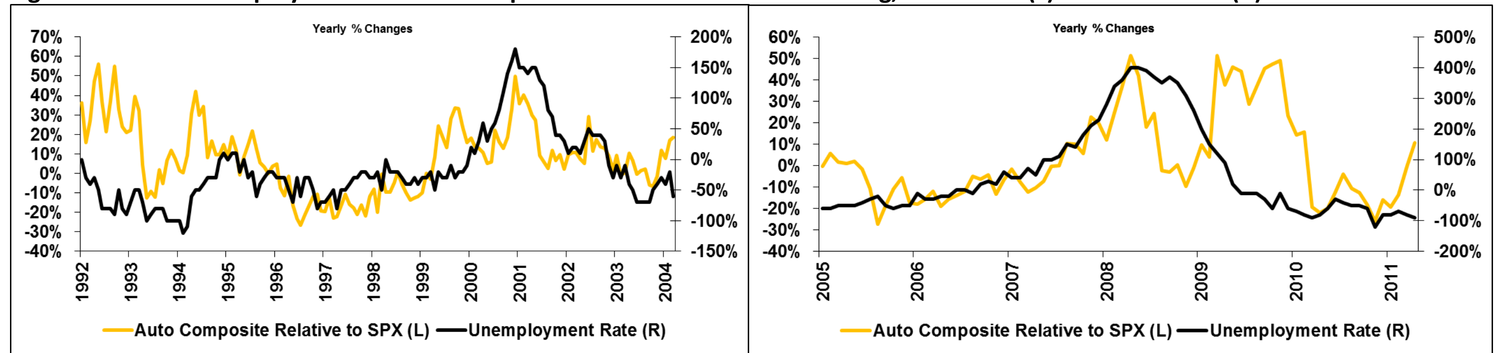
Source: Factset

However, this cycle works in the OEM's favor during periods of recovery. Traditionally, durable goods are replaced, which increases the demand for new vehicles. As this pent-up demand is released, OEMs must hire new employees to meet the increasing demand. These newly employed individuals then also demand new vehicles.

Figures 23 & 24: Unemployment vs. Auto composite relative to SPX YOY, 1992-2005 (L) and 2005-2012 (R)



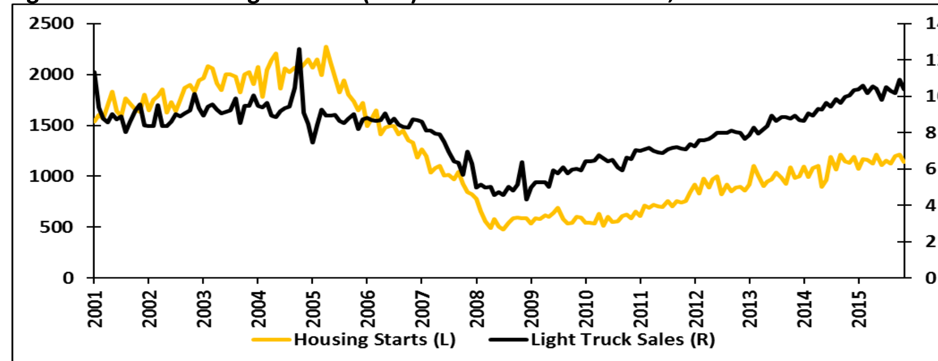
Figures 25 &26: Unemployment vs. Auto composite relative to SPX YOY with lag, 1992-2005 (L) and 2005-2012 (R)



Source: Bloomberg, IMCP

The U.S. unemployment rate can also be used as a leading indicator of automotive stock performance, during periods of economic recession. I tested this theory for the following periods, the dot-com bubble between 2000 and 2001 and the financial crises in 2008. Finding the point at which unemployment peaks is crucial, as it is the most optimal point to be-long automotive stocks, like Ford. Entering at the optimal point offers maximum benefit from the cycle.

Figure 27: U.S. housing starts in (000) vs. U.S. LTS in millions, 2001-2015



Source: Factset

Consumer preference in the U.S. has recently switched from cars, to trucks and utility vehicles, which favors Ford's strengths. In 2008, housing starts significantly declined as a result of the financial crisis. At the same time light truck sales slightly declined. I expect truck sales to always be less

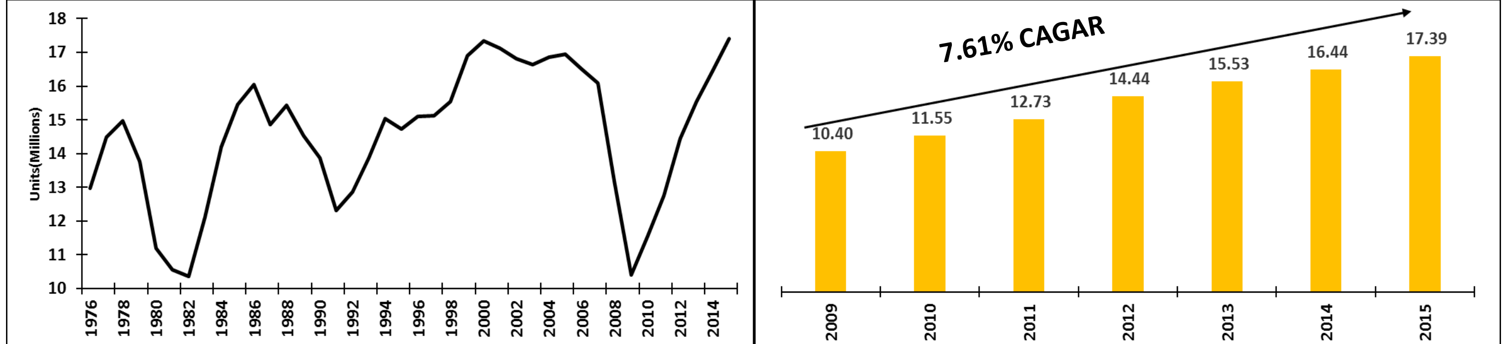
sensitive to economic conditions due to the loyalty of truck buyers. However, a strong housing market remains very important to Ford, as the F-Series has been the number one selling truck for 39 consecutive years.

The U.S. market is peaking at historic levels. Look for a moderately stronger 17' with a moderate decline in 18' and 19'.

Pent-Up Demand in the United States

Light vehicles sales, in term of units sold, have experienced relatively large declines since 2000; primarily as a result of the financial crises. Sales deteriorated 40% from 2000 to 2009, from a peak of 17.3m units in 2000, to a bottom of 10.4m units in 2009. However, since 2009, light vehicle sales have recovered in North America, especially in the United States. In 2015, the United States surpassed the peak year of 2000, with a record of 17.4m units sold.

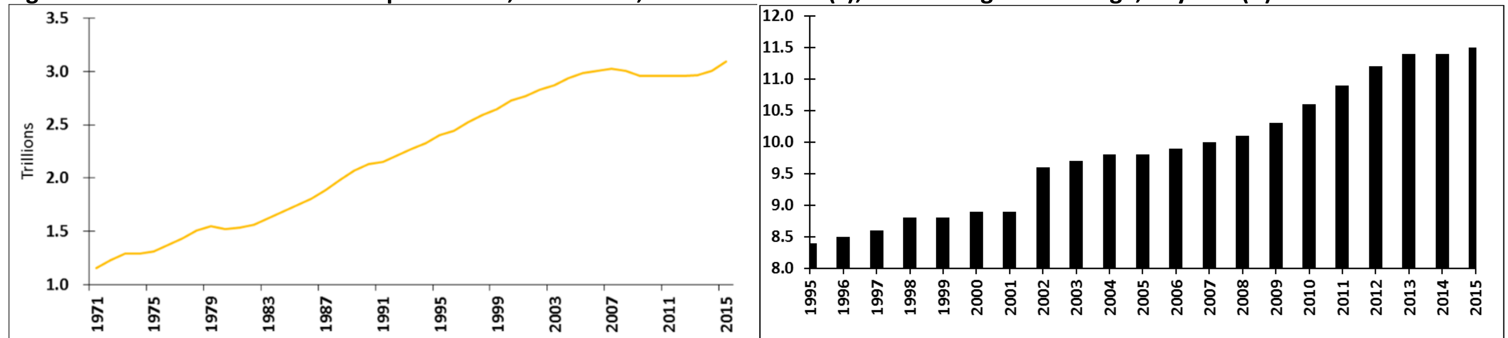
Figures 28 & 29: U.S. historical light weight vehicle sales, 1976-2015 (L), U.S. light vehicle sales, 2009-2015 units in millions (R)



Source: Federal Reserve Bank of St. Louis

The recent growth has many industry participants curious as to how much further the industry can grow. Despite consistent growth, there is still pent-up demand that has yet to be released. Total miles driven annually in the United States has grown, on average, 2.73%, between 1971 and 2007. However, from 2008 to 2013, total miles driven per annum, uncharacteristically declined. Additionally, the average age of a vehicle in the United States has reached 11.5 years, which is also higher than ever before.

Figured 30 & 31: U.S. miles driven per annum, 1971-2015, units in trillions (L), U.S. average vehicle age, in years (R)



Source: Federal Reserve Bank of St. Louis, U.S. DOT

The record 17.4m units in 2015 eclipses the former record in 2000 of 17.35m. Investors should be pessimistic about the quality of this volume.

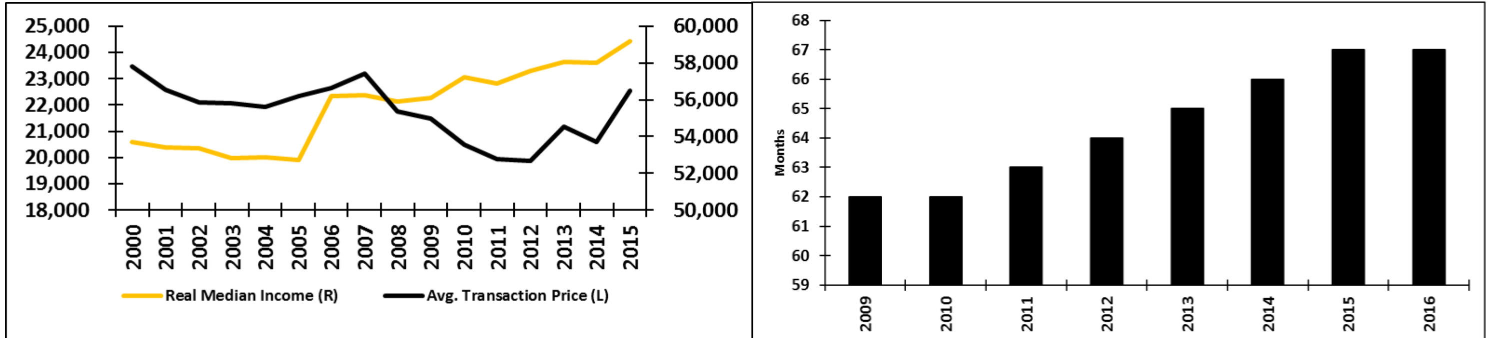
Individuals cut back on driving during the recession, as macroeconomic factors squeezed their disposable incomes. Fewer miles driven meant that vehicle replacement was not needed, resulting in an increased average vehicle age from 2008 to 2014. The recent resurgence of growth in miles driven per annum, combined with older vehicles, suggests that further growth is inevitable.

According to the U.S. Department of Highway Administration, the average American drives 13,476 miles per year. Considering the average age of a vehicle in the United States is 11.5 years old, the average vehicle has driven roughly 155,000 miles. Typically, mechanical failures become common after 150,000 miles. If replacement occurs at 175,000 miles, it can be implied that 17.6m vehicles were used up in 2015, as 3.09 trillion miles were driven.

New Car Financing in the United States

The real average transaction price in the automotive industry grew by 18.5% from 2000 to 2015. Simultaneously, real median incomes in the United States declined by 2.2%. In 2015, a vehicle accounted for 43% of the average median income. In 2016, the average transaction price rose 2.2% YOY, to $33,781. A favorable macroeconomic environment that includes credit easing, low interest rates, and longer loan terms have offset the negative effects of rising transaction costs by keeping monthly payments low.

Figures 32 & 33: Real median income vs. Real avg. transaction price, 2000-2015 (L) and Average car loan term since 2009 (R)

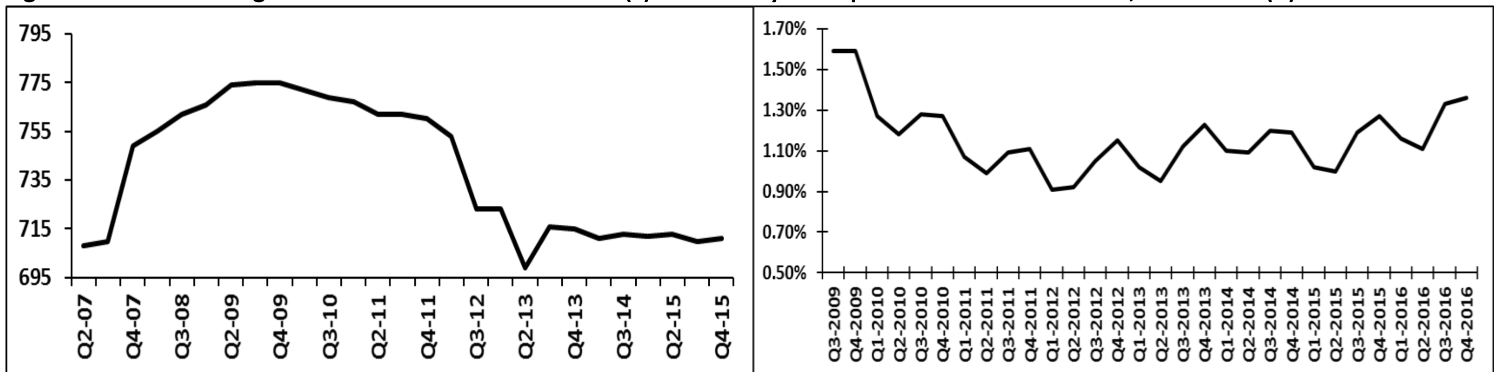


Source: Federal Reserve Bank of St. Louis

Source: Experian

The average loan term rose to 67 months in 2015. Additionally, 44% of financed vehicles were financed with abnormally long terms (61-72 months) and loan terms over 73 months have reached all-time highs at 16.3%. Currently available financing options are tremendously concerning for auto manufacturers and the industry as a whole. It is important to note that this industry is extremely short-sighted and is measured in volume, not necessarily profits. As we approach another record year, in terms of units, I am very pessimistic regarding the quality of the volume that is being generated. Longer loan terms can increase the odds of negative equity, which can hurt trade in values and ultimately new car sales. Adding negative equity to new car deals can push monthly payments to unaffordable levels. Significant changes in these variables could increase monthly payments and reduce new car sales

Figures 34 & 35: Average car loan FICO score since 2007 (L) and 60-day delinquencies on all auto loans, 2009-2016 (R)



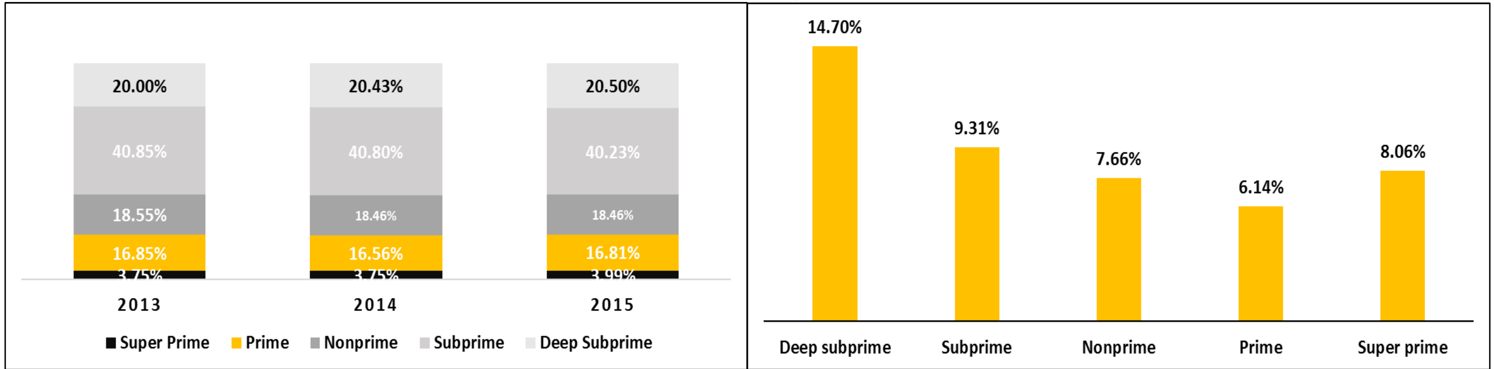
Source: Experian

Source: TransUnion

After the financial crisis, mortgage lenders have been required by law to verify that applicants can repay their debt, but car lenders do not have such an obligation.

If delinquencies continue to rise, credit agencies will have to reconsider their borrowing policies. A lot of the recent growth, for Ford and other manufacturers, has been directly related to the easing of credit. The market has greatly expanded by allowing lower credit customers access to new car loans. A tightening of credit could potentially push customers out of the market and volumes could suffer. In the fourth quarter of 2016, 60-day delinquencies on all auto loans increased 7.09% YOY to 1.36%. If this trend continues I expect sales volume to fall across the industry.

Figures 36 & 37: Risk distribution of auto loans, 2013-2015 (L) and YOY growth of auto loans by risk in 2015 (R)



Source: Experian

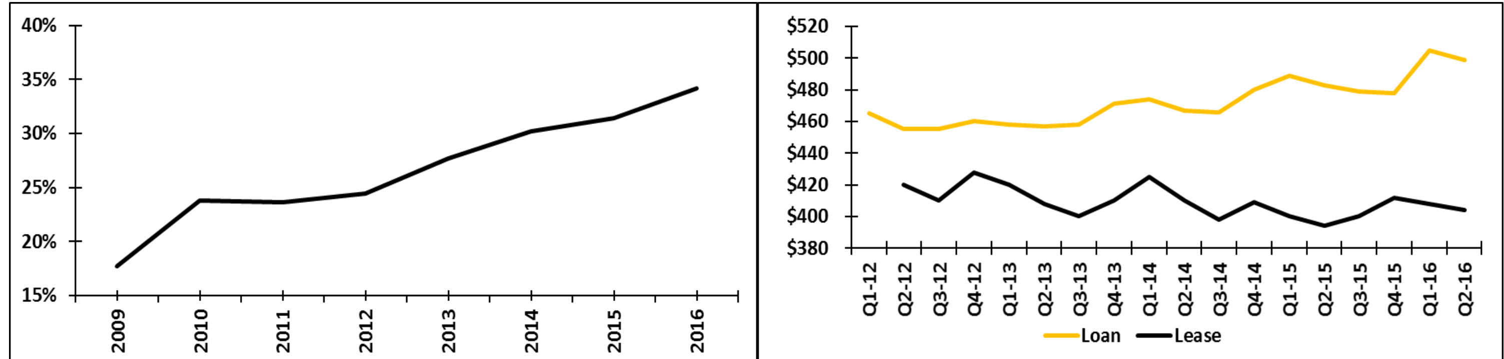
Leasing Vehicles in the United States

71.5% of lessees remain loyal to the brand, compared to **60.6%** of those financing via conventional loans.

Lease penetration began increasing 2009 and reached over 30% in 2016. High transaction prices, as previously discussed, have made leasing an economically sound option.

Leasing provides consumers with higher priced vehicles for less money each month, as shown in Figure 39. Specifically, in 2016, consumers could save an average of $100 per month by electing to lease rather than take out a loan to finance a car purchase (up $36 YOY). Leasing remains a cheap alternative to purchasing, as long as residual values remain high. Traditionally, leased vehicles are returned back to the dealers after three years. These off-leased vehicles are then sold as certified pre-owned vehicles or are sold at auction in order to recover the remaing residual.

Figures 38 & 39: Industry lease penetration, 2009-2016 (L) and Avg. monthly payment: loan vs. lease, 2012-2016 (R)



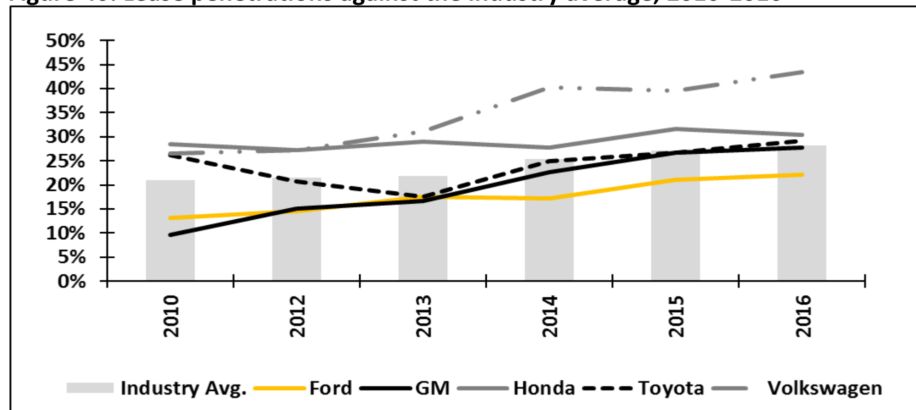
Source: Bloomberg *Source: Experian*

Auto manufacturers that rely heavily on leases, take the vehicles back in 3 years and generally sell them for huge discounts.

Leasing carries stronger brand loyalty and reduces the volatility of new car sales. However, in order to keep leasing attractive, residual values must remain strong. This is a difficult battle because as leasing increases, manufacturers must fight the forces of supply and demand. An increase in supply of relatively new used vehicles could potentially apply downward pressure on residual values. As a result, the economic advantages of leasing could disappear.

Figure 40: Lease penetrations against the industry average, 2010-2016

Are the rising lease penetrations sustainable? I expect not.



Source: Bloomberg

This could be especially problematic to American OEMs, and especially Ford, as their success is highly dependent on the sales of SUVs and CUVs. These types of vehicles often carry higher prices and margins, making them prime candidates for leasing. However, SUV and CUV demand is also most sensitive to macroeconomic factors, such as oil, credit easing, and interest rates.

In 2016, the following brands had the best retained value:

Figure 41: Lease offers comparison compact car segment, 2017 models

Compact Car	Transaction Price	Est. Residual Value	Depreciation	Interest	Lease Payment
Toyota Corolla	19,699	13,914	$ 161	$ 42	$ 203
Volkswagen Golf	19,907	13,502	$ 178	$ 42	$ 220
Honda Civic	18,677	11,962	$ 187	$ 38	$ 225
Suburu Impreza	19,863	11,164	$ 288	$ 37	$ 324
Chevy Cruze	19,819	9,458	$ 298	$ 34	$ 332
Ford Focus	18,882	8,144	$ 359	$ 33	$ 392
Dodge Dart	19,698	6,762	$ 359	$ 33	$ 392

Historically, the three most-leased vehicles are the **Honda Civic, Honda Accord,** and the **Toyota Camry**.

Figure 42: Lease offers comparison utility SUV segment, 2017 models

Utility SUV	Transaction Price	Est. Residual Value	Depreciation	Interest	Lease Payment
Toyota RAV4	25,389	18,669	$ 187	$ 55	$ 242
Subaru Outback	25,755	18,856	$ 192	$ 56	$ 247
Honda CR-V	25,221	16,694	$ 237	$ 52	$ 289
Volkswagen Tiguar	24,766	15,739	$ 251	$ 51	$ 301
Chevy Equniox	25,050	15,778	$ 258	$ 51	$ 309
Ford Escape	25,152	14,982	$ 283	$ 50	$ 333
Jeep Cherokee	25,293	13,414	$ 330	$ 48	$ 378

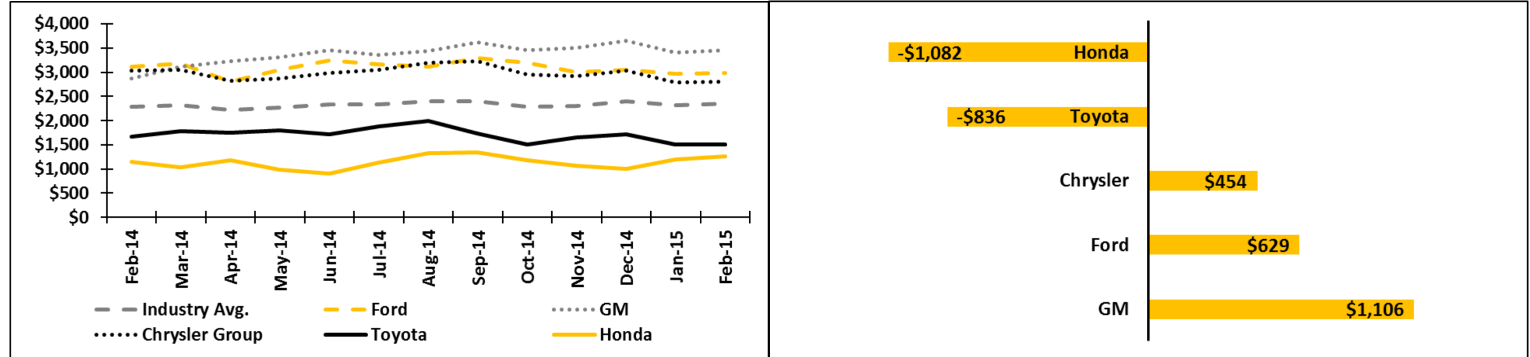
Source: ICMP, TrueCar, Graff Automotive, AutoNation

Foreign manufacturers are able to operate with higher than average lease penetrations because they manage their residuals. Foreign brands do this by not selling fleet vehicles (rentals) and keeping incentives low. As a result, without considering domestic incentives, leasing imports is typically cheaper which can be seen in figures 41 and 42.

Incentive Spending in the United States

Incentives are heavily utilized by American manufacturers in order to keep their products and lease offers competitive. Using incentives is a doubled-edged sword, as it creates a cycle that is nearly impossible to break. Over incentivizing vehicles undeniably helps maintain volume and market share, but it is a highly short-term strategy that negatively conditions consumers. Fords incentive spend has been historically been higher than the industry average.

Figures 43 & 44: OEMs' average incentive per vehicle, 2014-2015 (L), Total dollars of incentives above industry average, 2015 (R)

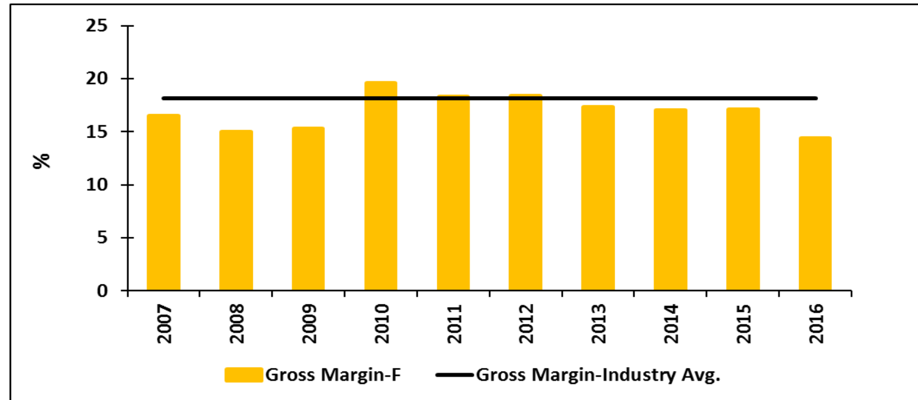


Source: Edmunds

Higher volumes due to incentives, sacrifices quality profit for quantity. Ford and the other domestic auto manufacturers rely too heavily on incentives.

Incentives put pressure on margins and generate low quality sales that artificially boost slumping volumes. Higher incentives create a push sales environment rather than a pull. As a result, the auto manufacturers create "pull-ahead" and drive customers to make purchases sooner than originally planned. This occurs because the consumer does not want to miss out on high incentives. Unfortunately, this strategy compresses volumes and creates highly volatile sales volumes, in which consumers only buy when incentives are high. Ford's above average incentive spend explains their below industry gross margin.

Figure 45: Ford's gross margin in comparison with the industry average, 2007-2016



Source: Factset

Market and Product Analysis in the United States

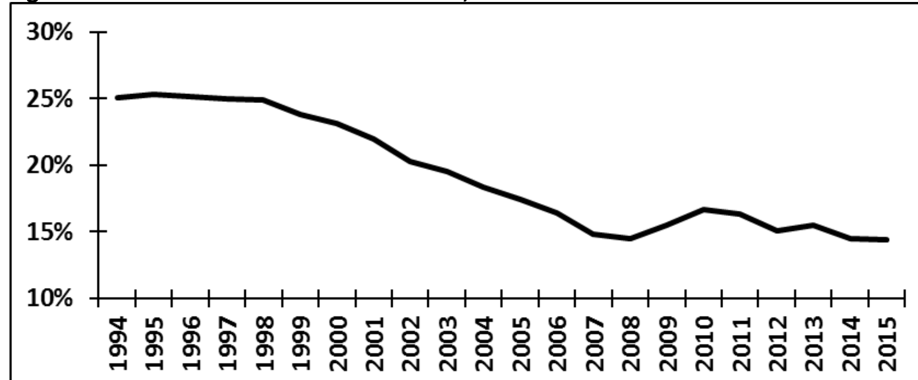
Foreign competitors are better equipped to compete in car segments. Ford is better equipped to compete in the utility and trucks segments.

Ford's market share, in the United States, has been on the decline since the mid 1990's. Specifically, Ford's market share has declined more than 42% since 1994. Much of its share has been taken by Toyota and other foreign competitors. Referring back to Figures 41 and 42, foreign competitors have done a much better job at managing their residual values. Stronger residuals equate to more affordable lease payments, relative to Ford's offers. Additionally, stronger residuals make it easier for the consumers to transfer out of older cars and into newer ones because of greater trade-in values. This loss of market share has been tough on Ford, especially through the recent financial crisis. During the financial crisis, the automotive industry saw a sharp spike in the demand for cars in the United States. It is important to note that foreign competitors have better offers in car segments. However, the playing fields in the utility and truck segments are more even.

The following are favorable macroeconomic conditions:

- Lower interest rates and oil prices
- Easing of credit
- Increasing consumer confidence and housing starts

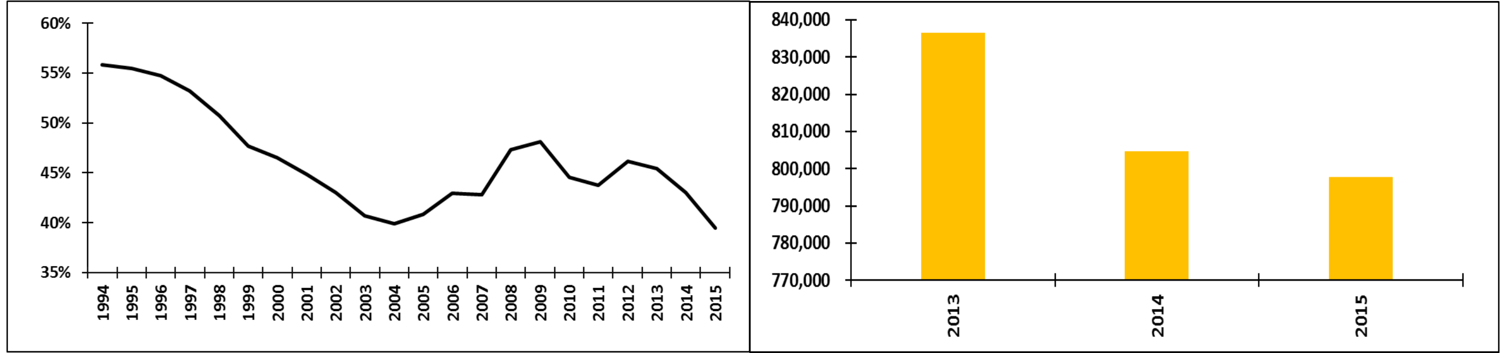
Figure 46: Ford's market share in the U.S., 1994-2015



Source: Company reports

Consumer preference has changed. Less expensive more fuel efficient cars are taking a backseat to larger utility vehicles, such as SUVs, CUVs and trucks. This preference change has shifted demand to relatively more profitable larger utility vehicles and trucks. This trend has been particularly positive for Ford, as their F-Series pickup truck has been the number one selling pick-up for 39 years straight. Ford's car volume has been continuously declining since 2013. In 2013, cars were 34% of Ford's total volume. In 2016 this figure dropped to 31%.

Figures 47 & 48: % of cars sold of total light vehicles in the U.S., 1994-2015 (L), Ford's total car sales, 2013-2015 (R)



Source: Company Reports

The resurgence of the smaller truck market further points to the U.S. market moving further away from cars.

In 2016, the U.S. market saw a strong decline in the car segment, as it was down 8.4% YOY. Simultaneously, the utility SUV and CUV segment was up 6.8%. Large SUVs saw the greatest growth YOY at 20.9%. I anticipate this trend to continue as utility vehicles offer a better driving experience and more flexibility, making them more practical and preferred by consumers. This trend will only be threatened if the cost of ownership becomes too overbearing.

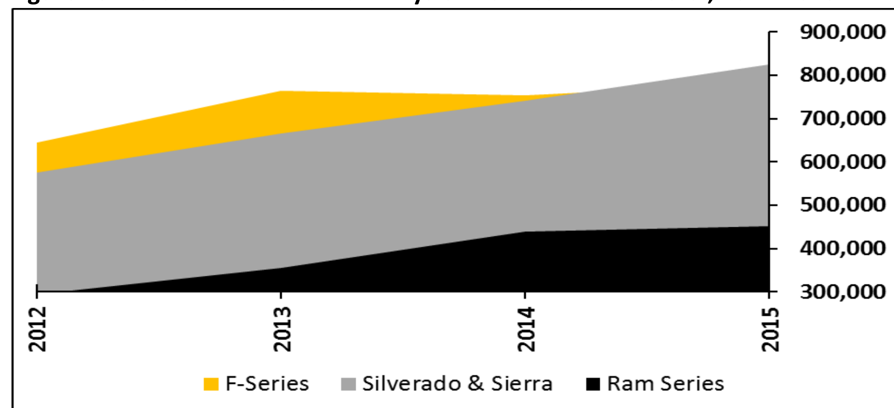
In 2016, the U.S. market saw a strong decline in cars, the segment was down 8.4% YOY. Simultaneously, the utility SUV and cross-over vehicle segment was up 6.8%. Large SUVs saw the greatest growth YOY at 20.9%. I look for this trend to continue as utility vehicles offer a better driving experience and more flexibility, making them more practical and preferred by consumers. This trend will only be threatened if the cost of ownership becomes too overbearing.

The United States has the largest pickup truck market in the world. Currently, Ford commands a 18% market share, which ranks them second behind GM with 20%. In 2015, Ford's truck segment saw an increase of 9%. In contrast, Chevy saw 22% growth in trucks, while Fiat Chrysler saw only 5% growth.

The durability of the aluminum F-150 is concerning as many truck buyers demand durability.

Ford's all the new aluminum F-150 has come under criticism as the bed of the truck is not as durable as the 2016 Chevy Silverado. Despite, the criticism the F-150 is still America's top selling vehicle, selling 733,287 units through November of 2016 (212,683 more units than Chevy Silverado). The 2016, high-strength steel, Silverado was up 13.36% in 2015. It is currently behind the F-150 in units sold for 2016.

Figure 49: Ford's VS GM and Fiat Chrysler truck sales in the U.S., 2012-2015



Source: Company Reports

Chevy's growth in trucks can be attributed to their new 2015 Colorado pickup, which sold 84,430 units, beating analyst expectations. The Colorado competes in the midsized pickup segment which brings nostalgia, considering this segment was dumped by auto manufacturers in the mid to late 2000's. Mid-sized trucks, like the Colorado, are a ploy to combat fast rising transaction prices that may have pushed consumers out of the traditional truck market. GM in combination with their GMC brand usually outsells Ford in midsize pickups. However, in the second quarter of 2016, GM came in second, this could indicate that midsize trucks are cannibalizing the full-sized pickup. Ford has their own midsized truck in their pipeline, the Ranger. The Ford Ranger should be hitting dealers as earlier as 2019.

Figure 50: Ford's estimated product pipeline, 2017-2020

2017E	2018E	2019E	2020E
F-Series Super Duty-Large Picku	Ford Expedition-Large SUV	Lincoln Aviator-Large Lux CU	Ford EcoSport-Mid CUV
Lincoln Continential-Sedan	Lincoln Navigator-Large Lux SU	Ford Explorer-Large CUV	Ford F-150-Large Pickup
Ford GT- Coupe	Lincoln MKA-Sedan	Ford Escape- Mid CUV	Ford Transit Connect-Va
	Lincoln-MKM-Coupe	Lincoln MKC-Small Lux CUV	Ford Bronco-Mid SUV
	Ford Focus-Sedan	Ford C-Max-Small SUV	Lincoln MKZ-Sedan
	Ford Fiesta-Sedan & Hatachba	Ford Ranger-Midsize Pickup	
		Ford Taurus-Sedan	
		Ford Fusion-Sedan	
11% of Volume Replaced	14% of Volume Replaced	35% of Volume Replaced	26% of Volume Replaced

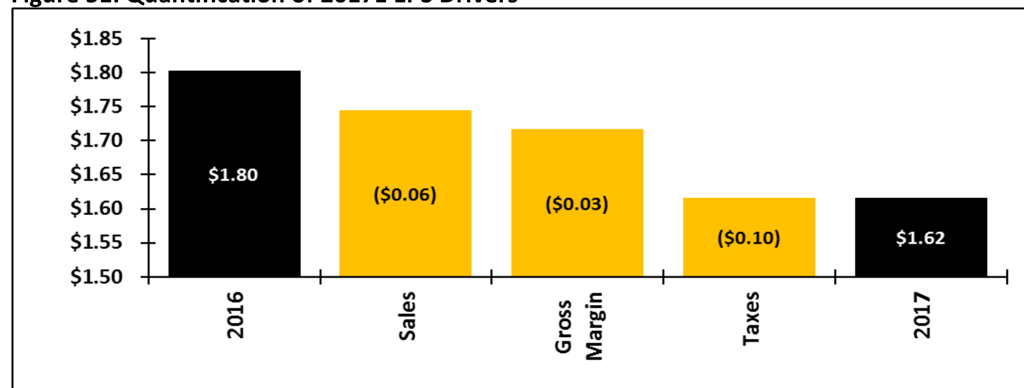
Source: BofA Merrill Lynch Global Research

Ford's product mix is robust and evenly distributed between cars, utilities, and trucks. I view this favorably, as shifts in economic conditions could shift consumer demand between the different segments. In comparison, Fiat Chrysler is heavily dependent on utilities and trucks. The elimination of their two cars, the Dodge Dart and the Chrysler 200, leave them highly susceptible to shifts in demand. I do not find Ford to have this level of susceptibility, and I believe they are well positioned if macroeconomic conditions shift. Ford's current pipeline, even though slanted more towards utilities and trucks, still keeps the firm's offerings balanced.

Financial Analysis

Figure 51 illustrates the major 2017 financial drivers of the Ford Motor company. My research suggests Ford's EPS will slightly decrease in 2017 to $ 1.62. A 2% decrease in sales, due to a peaking U.S. market, will lower EPS by $0.06. Ford's gross margin will tighten in 2017, as downward pressure is applied due to overproduction and expenditures in emerging markets. Gross margin will decrease EPS by $0.03. Taxes will increase to 33% from 28%, as Ford's temporary 5% sales tax in China will increase to 10%. Even though Ford's operations in China are a small percentage of its revenue, it is its major source of growth. Threats of more taxes from the Chinese government have been airing after the Trump presidential win. For 2017, I predict taxes will decrease EPS by $0.10.

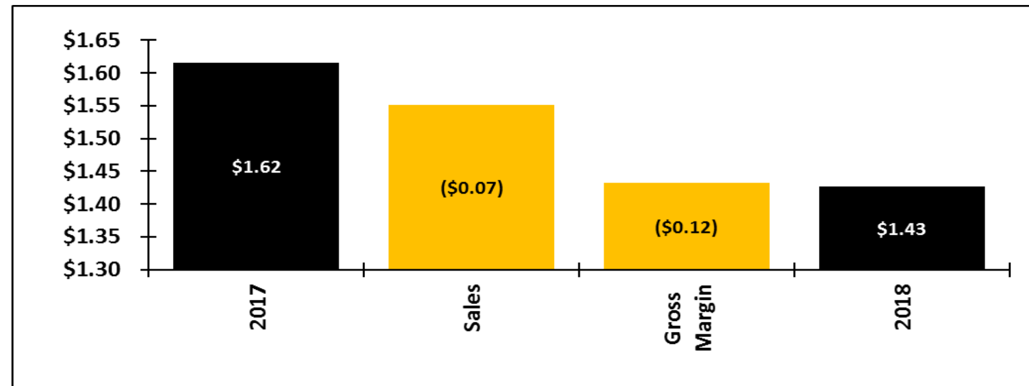
Figure 51: Quantification of 2017E EPS Drivers



Source: Company Reports, IMCP

Figure 52 illustrates the main 2018 financial drivers of the Ford Motor company. My research suggests Ford's EPS will further decrease in 2018 to $1.43. A decrease in sales due to a falling industry volume will be responsible for a decrease in EPS of $0.07. Ford's gross margin will continue to be pressured, as Ford continues its push into autonomous driving and global expansion. Preventive measures will likely lag, and I expect Ford's gross margin to decrease EPS by $0.12

Figure 52: Quantification of 2018E EPS Drivers



Source: Company Reports, IMCP

Review of EPS Estimates

Figure 53 highlights my 2017 and 2018 EPS estimates for the Ford Motor Company. My estimate for 2017 is in-line with consensus. However, my estimate for 2018 significantly differs from consensus in a bearish way. I mainly differ from consensus on the outlook of light vehicle sales in the United States. Ford is heavily dependent upon the U.S. market, as over 70% of its revenue is derived there. My research has led me to be very cautious in regards to the automotive industry, as I believe it is entering the later innings of its cycle.

Figure 53: EPS estimates vs. consensus

	FY 2017E	FY2018E
Consensus	$1.62	$1.71
Estimates	$1.62	$1.43

Source: Factset, IMCP

Due to current low rates dealers are profiting off of dealer floor plan. Large dealer's like AutoNation will stop holding excess inventory (reduce ordering as rates rise).

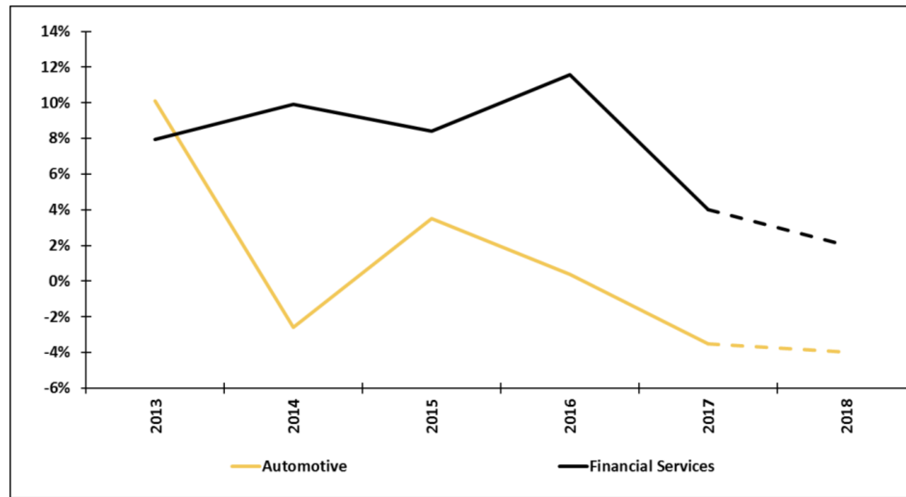
Against consensus, I expect light vehicle sales in the U.S. to decline in 2018 by 2%. Additionally, I anticipate that along with decreasing industry volume, rate hikes from the Fed will cause large automotive dealers to stop holding excess inventory. As a result, I anticipate Ford's automotive revenue in North America to be down 2.6%. Trump's recent presidential win also leaves me to be pessimistic about growth in China. I am concerned with anti-American movements by the Chinese public and government in response to Trump's tough stance on China.

Review of Total Sales

Ford's sales have found support in the $140B-$150B range. I look for this trend to continue moving forward, as I expect growth to decline in 2017 and 2018. In 2017, total sales will be $146.6B. 92.9% of this will be attributable to automotive sales, while 7.1% will be from financial services. Ford credit will have growth of 4%, automotive sales will decline by 3.5%, and in total the firm will have negative growth of 3.0%.

In 2018, total sales will be $143.3B. 92.5% of this will be attributable to automotive sales, while 7.5% will be from financial services. Ford credit will have a positive growth of 2%, automotive sales will have a negative growth of 4%, and in total the firm will have a negative growth of 3.6%.

Figure 54: Ford's total sales YOY, 2012-2018



Source: Company Reports, IMCP

My total sales estimate for 2017e is in line with consensus. However, my FY 2018e is more bearish than consensus. As previously mentioned, my view differs because I believe the U.S. market will begin to cool off from record highs.

Figure 55: Total Sales estimates vs. consensus

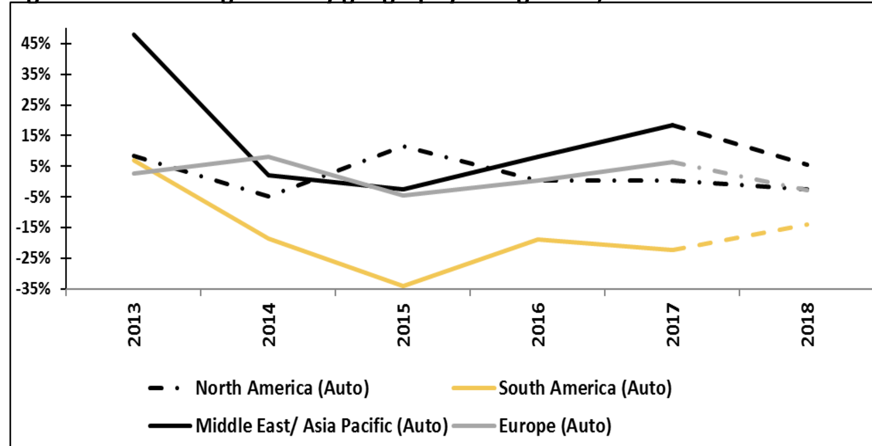
	FY 2017E	FY2018E
Consensus	150.2B	146.7B
Estimates	146.6B	143.3B

Source: Factset, IMCP

Review of Operating Segments

Ford enjoyed record industry volumes in North America, particularly in the U.S. where light vehicles sales broke a record with 17.4m units. In 2016, the industry continued to release pent-up demand, with a volume of approximately 17.3m units. Despite the industry's strong 16', Ford experienced a nominal decline in units, down 0.06%. Ford's total revenue was up 1.1% YOY in spite of the decline. Consumer preference for utilities and trucks, and Ford Credit kept growth positive. Refer to Appendix 3 for a detailed analysis of Ford's operating segments.

Figure 56: Ford's segments by geography YOY growth, 2012-2018



Source: Company Reports, IMCP

Ford's European operations have improved since 2012. Industry volume in Europe was up 4.2% in 2016 and is up 7.5% since 2012. Ford has capitalized on these improvements. Its market share is up 10.5% since 2012, and the firm now commands 7.7% of the European market. I expect mild but slow improvements for the European segment in 2017 and into 2018. The market is mainly dominated by Volkswagen, which commands 23% of the market.

Ford's Middle East and Asia Pacific segment has seen the most growth since 2012. In 2016, the segment was up 8.2% YOY. Much of the segment's growth is attributable to China. I expect much of Ford's growth to come from China, but as previously mentioned, I am bearish compared to consensus. Local brands in China have significantly out-performed joint ventures like Ford. Local brands were up 22% in 2015, while joint ventures were down 1%. Ford commands 4.7% of the Chinese market. With estimated industry volumes exceeding 25m light vehicles, China could drive 1.17 million units a year for Ford.

5-Step DuPont Analysis

Ford's ROE was above industry average in 2012 and 2013. However, in 2014 because of high costs due to expansion and product development, ROE fell 91% to 4.8%. In 2015 and 2016, ROE returned to above industry average. I expect ROE to decrease. DuPont analysis for Ford reveals that ROE is making a material shift in nearly every line item. Negative shifts in interest, operating margin, asset turns, taxes, and leverage will contribute to the decrease in ROE for the 2017 and 2018 fiscal years.

Figure 57: Ford's ROE breakdown, 2013-2018E

ROE	2013	2014	2015	2016	2017E	2018E
5-stage						
EBIT / sales	10.7%	2.1%	6.8%	7.2%	7.1%	6.6%
Sales / avg assets	0.75	0.70	0.69	0.66	0.61	0.58
EBT / EBIT	91.7%	40.7%	101.5%	92.4%	92.0%	90.7%
Net income /EBT	83.2%	99.8%	71.9%	71.4%	67.0%	67.0%
ROA	6.1%	0.6%	3.4%	3.1%	2.7%	2.3%
Avg assets / avg equity	9.23	8.07	8.16	7.64	7.13	6.61
ROE	56.4%	4.8%	27.8%	23.8%	19.1%	15.3%

Source: Company Reports, IMCP

Free Cash Flow

Figure 58: Ford's Free cash flow breakdown, 2013-2018E

Free Cash Flow	2013	2014	2015	2016	2017E	2018E
NOPAT	$13,025	$3,021	$7,262	$7,739	$6,974	$6,251
Growth	*98.9%*	*-76.8%*	*140.4%*	*6.6%*	*-9.9%*	*-10.4%*
NWC*	35,024	36,622	47,476	49,845	52,483	55,410
Net fixed assets	70,441	76,776	79,455	85,386	90,494	94,867
Total net operating capital	$105,465	$113,398	$126,931	$135,231	$142,977	$150,277
Growth	*3.9%*	*7.5%*	*11.9%*	*6.5%*	*5.7%*	*5.1%*
- Change in NOWC	(2,299)	1,598	10,854	2,369	2,638	2,927
- Change in NFA	6,209	6,335	2,679	5,931	5,108	4,373
FCFF	$9,115	-$4,912	-$6,271	-$561	-$772	-$1,050
Growth		*-153.9%*	*27.7%*	*-91.1%*	*37.7%*	*36.0%*
- After-tax interest expense	1,079	1,791	(109)	586	559	573
+ Net new ST and LT debt	9,630	4,483	13,683	4,370	3,500	3,500
FCFE	$17,666	-$2,220	$7,521	$3,223	$2,169	$1,878
Growth		*-112.6%*	*-438.8%*	*-57.1%*	*-32.7%*	*-13.5%*

NWC* -- excludes cash.

Source: Company Reports, IMCP

NOPAT has been increasing since 2013, with the exception of 2014. In 2014, NOPAT decreased 76.8% due to higher costs, lower volumes and unexpected setbacks. The higher costs were largely due to new product developments, like the F-Series pick-up and global expansion. In both 2015 and 2016, NOPAT experienced increases, particularly a 140% increase in 2015. The growth in NOPAT can be attributable to record years, in terms of industry volume, in the U.S.

I do not expect this trend to continue moving forward in 2017 and 2018. I estimate that NOPAT will decrease 9.9% in 2017 and 10.5% in 2018. As a result, I estimate that FFCF in 2017 and 2018 will decline. I forecast FCFF to be $-772m in 2017 and $-1, 050m in 2018. My forecast is based on my belief that the U.S. market hit its peak 2016, and is now on the decline. However, I expect the firm to continue growing capital at approximately at 5.6%. This further exacerbates the FCF decline

Valuation

Ford was valued using multiples and a 3-stage discounting cash flow model. Based on multiples, the stock is slightly below its competitors' averages but this is deserved. On a DCF basis, the stock is worth $11.7, which is significantly lower than its current price of $12.56. I place 70% weight on the DCF framework, which values the stock at $11.7 and 30% weight on trading history valuation, which values the stock at $9.6. As a result, the target price is $11.1

Trading History

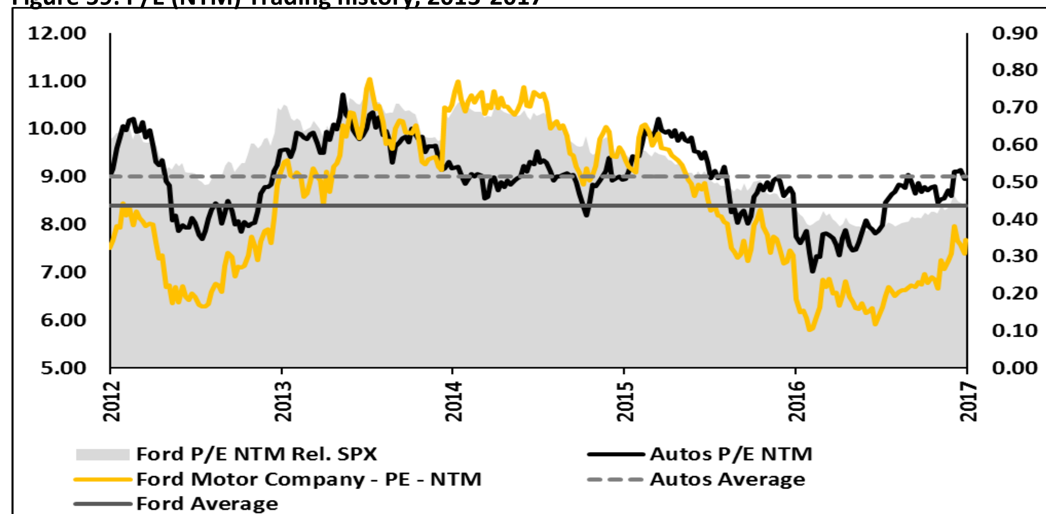
Figure 37 shows how Ford's P/E NTM compares with the auto industry's P/E NTM for the past 5 years. In 2013, Ford was trading at its 5-year high relative to the S&P 500. This was during a period of P/E growth for the whole auto industry. Since then, Ford and its peers have experienced declining P/E's mainly due to expectations that earnings in the industry have reached their highs.

Ford typically trades at a P/E lower than its peers because it carries significantly more debt. As Ford is currently expanding globally, growth is something to consider. However, I am very pessimistic as I don't expect these opportunities to generate growth in the near future. The peer group currently has an average D/E ratio of 1, Ford operates at a ratio 3 times the industry average.

Ford's EBITDA/Interest Expense in 2015 was 14.25, which gives it plenty of coverage. However, due to auto manufacturing's high operating leverage, another recession could significantly eat away at this coverage. I expect that the economy will go through another business cycle before any amount of significant growth is realized from global expansion.

Breaking down P/E, (P/E = Payout/k-g), I expect that an increase in k, due to high amounts of financial leverage, will overshadow any increases in g. As a result, I think Ford's P/E will continue to fall with the auto industry and trade below the average.

Figure 59: P/E (NTM) Trading history, 2013-2017



Source: Factset

Assuming the firm maintains a 7.7 NTM P/E at the end of 2017, it should trade at $11.0 by the end of the year.

- 7.7 * 2017 EPS of 1.43 = $11.0

Discounting $11.0 back to today at a 14.2% cost of equity (explained in Discounted Cash Flow section) yields a price of $9.6.

Figure 60: Ford's Current and 5-Year Avg. P/E, P/S, P/B

	P/E	P/S	P/B
Current	7.66X	.33X	1.61X
5-Year Avg.	9.42X	.39X	2.55X

Source: Factset

Relative Valuation

Excluding Volkswagen, Figure 61 shows that Ford is currently trading at a price to earnings multiple lower than the industry average (TTM P/E 6.2 vs. 8.4). This is reflective of the market expecting a long term negative growth of 0.4% vs. a positive growth of 10.2% for the industry. Negative growth is likely due to Ford's overreliance on the U.S. market, which is currently peaking. Price to sales in 2016 approached its 5-year average of 0.39. The firm's P/S is currently slightly lower than its peer group, which is a reflection of its relatively lower operating margin compared to its peers.

Figure 61: Ford's Comp 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	2015	2016	2017	2018	Pst 5yr	Beta	Equity	Rating	Yield	Payout
F	FORD MOTOR CO	$12.56	$49,912	2.3	(0.2)	10.7	3.5	9.6	3.5	-0.4	-18.7%	66.4%	-8.8%	-6.8%	4.3%	3.0%	1.37	285.7%	B	4.85%	29.9%
TM	TOYOTA MOTOR CORP	$115.12	$187,818	0.5	(2.9)	1.7	4.6	0.1	(1.8)	5.6	-7.7%	4.8%	7.4%	-19.2%	15.9%	32.1%	0.70	53.1%		2.90%	28.5%
GM	GENERAL MOTORS CO	$36.33	$55,379	1.7	3.4	16.9	20.1	25.6	4.3	16.1	-33.5%	64.6%	19.9%	-2.7%	0.9%	0.9%	1.64	120.1%		4.15%	17.3%
FCAU	FIAT CHRYSLER AUTOMOBILES NV	$11.03	$16,854	1.2	15.5	62.4	66.6	66.3	20.9	17.9	67.1%	87.7%	38.5%	17.8%	13.1%		1.82	172.7%		0.10%	
NSANY	NISSAN MOTOR CO LTD	$20.03	$39,129	1.2	0.5	(0.9)	4.5	5.1	(0.6)	7.9	25.8%	2.8%	14.3%	17.8%	13.9%	2.9%	1.12	97.4%		1.66%	15.5%
005380-KR	HYUNDAI MOTOR CO	$119.82	$32,190	1.1	(10.1)	0.7	4.2	6.6	(5.8)	4.2	42.2%	-17.5%	-19.4%	22.9%	6.7%	-7.7%	1.33	101.5%		2.87%	21.1%
HMC	HONDA MOTOR CO LTD	$31.06	$55,979	2.8	4.9	9.4	9.7	16.6	6.4	20.3	15.9%	-20.1%	-34.3%	62.3%	12.8%	-14.5%	1.05	53.3%		2.45%	
Average			$62,466	1.5	1.6	14.4	16.2	18.6	3.8	10.2	13.0%	27.0%	2.5%	13.1%	9.6%	2.8%	1.29	126.3%		2.71%	22.5%
Median			$49,912	1.2	0.5	9.4	4.6	9.6	3.5	7.9	15.9%	4.8%	7.4%	17.8%	12.8%	1.9%	1.33	101.5%		2.87%	21.1%
SPX	S&P 500 INDEX	$2,297		0.7	1.8	10.0	6.2	20.1	2.6			7.7%	1.2%	7.6%	12.4%						

		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
F	http://www.ford.com	22.6%	1.61	13.4	7.3	6.9	6.2	7.7	7.7	7.3	4.6%	0.33	5.2%	6.6%	21.7			-7.6%	6.1%	3.0%	$7.78
TM	http://www.toyota.co.jp	11.4%	1.07	11.5	10.7	9.5	9.8	10.6	11.6	10.0	8.2%	0.76	8.7%	8.3%	12.8	5.5	6.6	-1.5%	5.5%	1.1%	$107.80
GM	http://www.gm.com	20.2%	1.22	11.4	6.8	5.8	4.2	6.3	6.2	6.1	5.6%	0.34	6.5%	12.9%	11.3	3.2	4.5	-3.4%	3.7%	2.4%	$29.81
FCAU	http://www.fcagroup.com	11.3%	0.73	11.8	7.6	5.4	8.4	5.0	5.5	4.9	2.2%	0.14				1.6		1.6%		13.3%	$15.02
NSANY	http://www.nissan.co.jp	9.9%	0.95	10.0	11.7	9.7	9.4	7.5	8.2	7.2	4.0%	0.39	6.4%	5.9%	14.5	3.3	3.3	2.8%	6.1%	-0.4%	$21.03
005380-KR		8.0%	0.58	6.2	6.2	7.4	7.3	5.2	5.9	5.6	5.5%	0.40	5.5%	4.3%		4.5	4.1	5.0%		3.8%	$205.84
HMC	http://www.honda.co.jp	4.6%	0.89	9.7	13.2	18.4	13.2	11.4	12.0	10.7	2.4%	0.46	4.6%	3.1%	22.4	5.0	5.6	-1.2%	6.1%	2.9%	$34.75
Average		12.6%	1.01	10.6	9.1	9.0	8.4	7.7	8.2	7.4	4.6%	0.40	6.2%	6.8%	16.5	3.9	4.8	-0.6%	5.5%	3.7%	
Median		11.3%	0.95	11.4	7.6	7.4	8.4	7.5	7.7	7.2	4.6%	0.39	6.0%	6.3%	14.5	3.9	4.5	-1.2%	6.1%	2.9%	
spx	S&P 500 INDEX			19.0	17.5	19.0			18.1	16.1											

Source: Factset

I created a composite ranking based on one valuation and three fundamental metrics. Since each metric has a different scale, all factors were converted to a percentage of the maximum value. Figure 62 shows each metric used and its weight in the composite. The fundamental metrics including 1/Beta, 1/ (LTD/Equity), and net profit margin are equally weighted. Figure 63 is a

regression based on the fundamental and the weighted valuation metrics. Based on the regression of the line in Figure 63, Ford appears to be overvalued based on its fundamentals.

Figure 62: Composite valuation, percentage of the maximum

		Fundamental Percent of Range			Valuation Percent of Range
		33.3%	33.3%	33.3%	100.0%
Ticker	Name	1/ Beta	1/(LTD/ Equity)	2016 NPM	P/S
F	FORD MOTOR CO	20%	0%	40%	30%
TM	TOYOTA MOTOR CORP	100%	100%	100%	100%
GM	GENERAL MOTORS CO	7%	31%	57%	31%
FCAU	FIAT CHRYSLER AUTOMOBILES NV	0%	15%	0%	0%
NSANY	NISSAN MOTOR CO LTD	39%	44%	30%	39%
005380-KR	HYUNDAI MOTOR CO	23%	41%	55%	41%
HMC	HONDA MOTOR CO LTD	45%	100%	3%	51%

Source: Factset, IMCP

Figure 63: Composite relative valuation

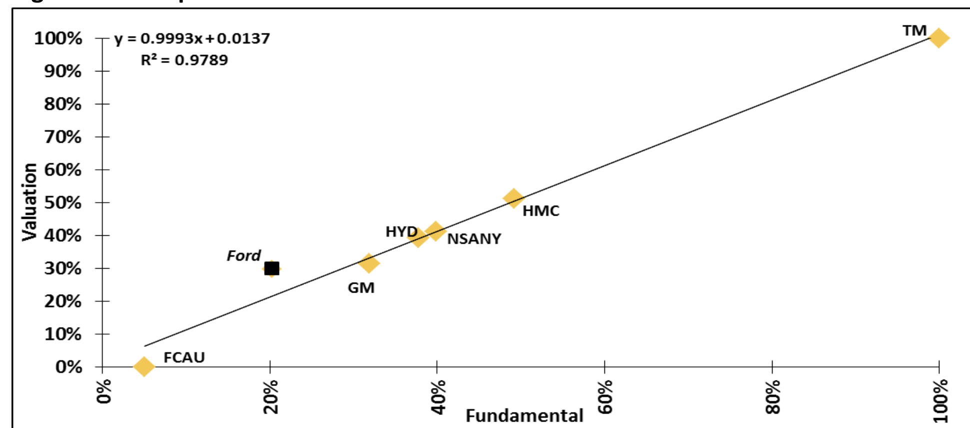
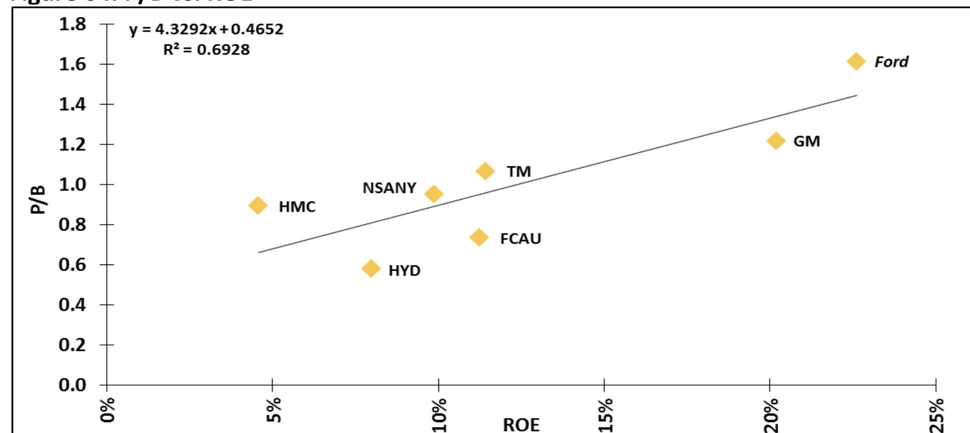


Figure 64 displays a more thorough analysis of P/B and ROE. The calculated R-squared of the regression indicates that over 69% of a sampled firm's P/B is explained by its ROE. Ford has the highest P/B and ROE of the peer grouping and according to this measure it is overvalued.

- Estimate P/B – 2016 ROE (23.8%*4.3292) +.4652 = 1.50
- P/B is currently at 1.61 so Ford is overvalued by 7.3%

Figure 64: P/B vs. ROE



Source: Factset, IMCP

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 14.2% 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 2.27%.
- A ten-year beta of 1.54 was utilized, since the company has a higher risk than the market as it is much more cyclical than the average firm.
- 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 14.2% (2.27 + 1.54 (10.0 – 2.27)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $0.55 and 0.47, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of 0.84 per share. Thus, stage one of this discounted cash flow analysis contributes $0.84 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 14.2% cost of equity. I assume a constant 1.0% sales growth from 2019-2023. The ratio of NWC to sales will decrease by 0.08 in 2019, 0.07 in 2020, and 0.05 per year from 2021-2023. NFA turnover will fall 0.03 per year, as a result of revenue increases and global expansion. Also, the NOPAT margin is expected to slightly increase from 2019-2023.

Figure 65: FCFE and discounted FCFE, 2017-2021

	2017	2018	2019	2020	2021	2022	2023
FCFE	$0.55	$0.47	$1.63	$1.68	$1.79	$1.79	$1.78
Discounted FCFE	$0.48	$0.36	$1.10	$0.99	$0.92	$0.81	$0.70

Added together, these discounted cash flows total $4.52

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $1.43 in 2018 to $1.70 in 2023.

Figure 66: EPS estimates, 2017-2021

	2017	2018	2019	2020	2021	2022	2023
EPS	$1.62	$1.43	$1.48	$1.53	$1.59	$1.64	$1.70

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. For the purpose of this analysis, I used a terminal P/E of 9.50 which may seem slightly high, but it is at a large discount to the market and near its five-year average. In the short-term, I expect the P/E to fall due to increased risk and slower growth. However, I expect that by early 2020 Ford will begin to show signs of promising growth due to global expansion and autonomous driving. The growth potential will cause the stock to trade above its current P/E.

Given the assumed terminal earnings per share of $1.70 and a price to earnings ratio of 9.5, a terminal value of $16.13 per share is calculated. Using the 14.2% cost of equity, this number is discounted back to a present value of $6.38.

Total Present Value – Given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $11.74 is calculated (0.84 + 4.52 + 6.38). Given F's current price of $12.56, this model indicates that the stock is slightly overvalued.

Figure 67: 3-Stage DCF Model (Base Case)

Cost of equity	
Market return	10.0%
- Risk free rate	2.27%
= Market risk premium	7.7%
* Beta	1.54
= Stock risk premium	11.9%
r = r_f+ stock RP	**14.2%**

Terminal year P/E	
2016	9.50

	Year						
	1	2	3	4	5	6	7
	First Stage		**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*-3.0%*	*-3.6%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*
NOPAT / S	*4.8%*	*4.4%*	*4.5%*	*4.7%*	*4.8%*	*4.9%*	*5.0%*
S / NWC	*2.79*	*2.55*	*2.47*	*2.40*	*2.35*	*2.30*	*2.25*
S / NFA (EOY)	*1.62*	*1.49*	*1.46*	*1.43*	*1.40*	*1.37*	*1.34*
S / IC (EOY)	*1.03*	*0.94*	*0.92*	*0.90*	*0.88*	*0.86*	*0.84*
ROIC (EOY)	*4.9%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*
ROIC (BOY)		*4.4%*	*4.3%*	*4.3%*	*4.3%*	*4.3%*	*4.3%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$146,600	$141,352	$142,765	$144,193	$145,635	$147,091	$148,562
NOPAT	$6,974	$6,251	$6,478	$6,710	$6,945	$7,185	$7,428
Growth		*-10.4%*	*3.6%*	*3.6%*	*3.5%*	*3.4%*	*3.4%*
- Change in NWC	2638	2927	2390	2281	1892	1980	2075
NWC or NOWC EOY	*52483*	*55410*	*57800*	*60080*	*61972*	*63953*	*66028*
Growth NWC		*5.6%*	*4.3%*	*3.9%*	*3.1%*	*3.2%*	*3.2%*
- Chg NFA	5108	4373	2917	3050	3191	3341	3501
NFA EOY	*90,494*	*94,867*	*97,784*	*100,834*	*104,025*	*107,366*	*110,867*
Growth NFA		*4.8%*	*3.1%*	*3.1%*	*3.2%*	*3.2%*	*3.3%*
Total inv in op cap	7746	7300	5307	5330	5083	5321	5576
Total net op cap	142977	150277	155584	160915	165997	171318	176895
FCFF	($772)	($1,050)	$1,171	$1,379	$1,862	$1,863	$1,852
% of sales	*-0.5%*	*-0.7%*	*0.8%*	*1.0%*	*1.3%*	*1.3%*	*1.2%*
Growth		*36.0%*	*-211.5%*	*17.8%*	*35.0%*	*0.0%*	*-0.6%*
- Interest (1-tax rate)	559	573	596	620	643	666	690
Growth		*2.5%*	*4.1%*	*3.9%*	*3.8%*	*3.6%*	*3.5%*
+ Net new debt	3500	3500	5900	5900	5900	5900	5900
Debt	140724	144224	150124	156024	161924	167824	173724
Debt / tot net op capital	*98.4%*	*96.0%*	*96.5%*	*97.0%*	*97.5%*	*98.0%*	*98.2%*
FCFE w/ debt	$2,169	$1,878	$6,475	$6,660	$7,119	$7,097	$7,062
% of sales	*1.5%*	*1.3%*	*4.5%*	*4.6%*	*4.9%*	*4.8%*	*4.8%*
Growth		*-13.5%*	*244.8%*	*2.9%*	*6.9%*	*-0.3%*	*-0.5%*
/ No Shares	3969.0	3969.0	3,969.0	3,969.0	3,969.0	3,969.0	3,969.0
FCFE	$0.55	$0.47	$1.63	$1.68	$1.79	$1.79	$1.78
Discounted FCFE	$0.48	$0.36	$1.10	$0.99	$0.92	$0.81	$0.70

Terminal value P/E							
Net income	$6,417	$5,680	$5,882	$6,090	$6,302	$6,518	$6,738
% of sales	*4.4%*	*4.0%*	*4.1%*	*4.2%*	*4.3%*	*4.4%*	*4.5%*
EPS	$1.62	$1.43	$1.48	$1.53	$1.59	$1.64	$1.70
Growth		*-11.5%*	*3.6%*	*3.5%*	*3.5%*	*3.4%*	*3.4%*
Terminal P/E							9.50
* Terminal EPS							$1.70
Terminal value							$16.13
* Discount factor							0.40
Discounted terminal value							$6.38

First stage	$0.84	Present value of first 2 year cash flow	
Second stage	$4.52	Present value of year 3-7 cash flow	
Third stage	$6.38	Present value of terminal value P/E	
Value (P/E)	**$11.74**	= value at beg of fiscal yr	2017

Source: IMCP

Scenario Analysis

Bull Scenario (Best Case)

For a bull scenario I assume Ford's terminal year P/E will trade at 11.00 with constant sales growth of 6.5% from 2019-2023. To justify this high growth, I assume the U.S. market will continue to grow setting new highs in light vehicle sales. I also assume expansion in market share in emerging markets, especially China. Furthermore, I assume margins will expand because of utility and truck sales. As a result, Ford's NOPAT will increase, on average, by 17% YOY from 2019-2023. Finally, I assume S/NWC will remain fixed at 2.55. I leave all other variables constant, as in my base case on page 23.

Total Present Value – Given the above bull assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $16.04 is calculated (0.84 + 0.91 + 14.29). Given F's current price of $12.56, this bull scenario model indicates that the stock is undervalued

Figure 68: Bull scenario 3-Stage DCF Model

Cost of equity	
Market return	10.0%
- Risk free rate	2.27%
= Market risk premium	7.7%
* Beta	1.54
= Stock risk premium	11.9%
$r = r_f +$ stock RP	**14.2%**

Terminal year P/E	
2016	11.00

	Year						
	1	2	3	4	5	6	7
	First Stage		**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*-3.0%*	*-3.6%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*
NOPAT / S	*4.8%*	*4.4%*	*4.9%*	*5.3%*	*5.9%*	*6.5%*	*7.1%*
S / NWC	*2.79*	*2.55*	*2.55*	*2.55*	*2.55*	*2.55*	*2.55*
S / NFA (EOY)	*1.62*	*1.49*	*1.46*	*1.43*	*1.40*	*1.37*	*1.34*
S / IC (EOY)	*1.03*	*0.94*	*0.93*	*0.92*	*0.90*	*0.89*	*0.88*
ROIC (EOY)	*4.9%*	*4.2%*	*4.5%*	*4.9%*	*5.3%*	*5.7%*	*6.2%*
ROIC (BOY)		*4.4%*	*4.9%*	*5.3%*	*5.7%*	*6.2%*	*6.7%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$146,600	$141,352	$150,540	$160,325	$170,746	$181,844	$193,664
NOPAT	$6,974	$6,251	$7,316	$8,561	$10,023	$11,729	$13,731
Growth		*-10.4%*	*17.0%*	*17.0%*	*17.1%*	*17.0%*	*17.1%*
- Change in NWC	2638	2927	3625	3837	4087	4352	4635
NWC or NOWC EOY	*52483*	*55410*	*59035*	*62872*	*66959*	*71311*	*75947*
Growth NWC		*5.6%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*
- Chg NFA	5108	4373	8242	9006	9846	10772	11792
NFA EOY	*90,494*	*94,867*	*103,109*	*112,115*	*121,961*	*132,733*	*144,525*
Growth NFA		*4.8%*	*8.7%*	*8.7%*	*8.8%*	*8.8%*	*8.9%*
Total inv in op cap	7746	7300	11868	12843	13933	15124	16428
Total net op cap	142977	150277	162144	174988	188920	204044	220472
FCFF	($772)	($1,050)	($4,551)	($4,282)	($3,910)	($3,395)	($2,697)
% of sales	*-0.5%*	*-0.7%*	*-3.0%*	*-2.7%*	*-2.3%*	*-1.9%*	*-1.4%*
Growth		*36.0%*	*333.6%*	*-5.9%*	*-8.7%*	*-13.2%*	*-20.6%*
- Interest (1-tax rate)	559	573	596	620	643	666	690
Growth		*2.5%*	*4.1%*	*3.9%*	*3.8%*	*3.6%*	*3.5%*
+ Net new debt	3500	3500	5900	5900	5900	5900	5900
Debt	140724	144224	150124	156024	161924	167824	173724
Debt / tot net op capital	*98.4%*	*96.0%*	*92.6%*	*89.2%*	*85.7%*	*82.2%*	*78.8%*
FCFE w/ debt	$2,169	$1,878	$752	$999	$1,347	$1,838	$2,513
% of sales	*1.5%*	*1.3%*	*0.5%*	*0.6%*	*0.8%*	*1.0%*	*1.3%*
Growth		*-13.5%*	*-59.9%*	*32.7%*	*34.9%*	*36.5%*	*36.7%*
/ No Shares	3969.0	3969.0	3,969.0	3,969.0	3,969.0	3,969.0	3,969.0
FCFE	$0.55	$0.47	$0.19	$0.25	$0.34	$0.46	$0.63
Discounted FCFE	$0.48	$0.36	$0.13	$0.15	$0.17	$0.21	$0.25
			Third Stage				
Terminal value P/E							
Net income	$6,417	$5,680	$6,720	$7,942	$9,380	$11,062	$13,041
% of sales	*4.4%*	*4.0%*	*4.5%*	*5.0%*	*5.5%*	*6.1%*	*6.7%*
EPS	$1.62	$1.43	$1.69	$2.00	$2.36	$2.79	$3.29
Growth		*-11.5%*	*18.3%*	*18.2%*	*18.1%*	*17.9%*	*17.9%*
Terminal P/E							11.00
* Terminal EPS							$3.29
Terminal value							$36.14
* Discount factor							0.40
Discounted terminal value							$14.29

Summary		
First stage	$0.84	Present value of first 2 year cash flow
Second stage	$0.91	Present value of year 3-7 cash flow
Third stage	$14.29	Present value of terminal value P/E
Value (P/E)	**$16.04**	= value at beg of fiscal yr 2017

Source: IMCP

Bear Scenario (Worst Case)

My bear scenario will assume that Ford's terminal P/E will trade much lower at 8.00 with constant negative sales growth of 0.5%. To justify the low sales growth, I assume the U.S. market's light vehicle sales will experience large declines. I also assume expansion in emerging markets will generate little to no growth. Furthermore, I assume Ford's margins will contract, as consumer preference reverts back to cars, for which foreign competitors have better offers. As a result, Ford's NOPAT will decrease, on average, by 17% YOY from 2019-2023. Finally, I assume S/NWC will remain fixed at 2.55. I leave all other variables constant, as in my base case on page 23.

Total Present Value – Given the above bear assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $6.36 is calculated (0.84 + 4.11 + 1.41). Given F's current price of $12.56, this bull scenario model indicates that the stock is overvalued.

Figure 69: Bear scenario 3-Stage DCF Model

Cost of equity	
Market return	10.0%
- Risk free rate	2.27%
= Market risk premium	7.7%
* Beta	1.54
= Stock risk premium	11.9%
r = r_f+ stock RP	**14.2%**

Terminal year P/E	
2016	8.00

	Year 1	2	3	4	5	6	7
	First Stage		**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*-3.0%*	*-3.6%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
NOPAT / S	*4.8%*	*4.4%*	*3.7%*	*3.0%*	*2.5%*	*2.1%*	*1.7%*
S / NWC	*2.79*	*2.55*	*2.55*	*2.55*	*2.55*	*2.55*	*2.55*
S / NFA (EOY)	*1.62*	*1.49*	*1.46*	*1.43*	*1.40*	*1.37*	*1.34*
S / IC (EOY)	*1.03*	*0.94*	*0.93*	*0.92*	*0.90*	*0.89*	*0.88*
ROIC (EOY)	*4.9%*	*4.2%*	*3.4%*	*2.8%*	*2.2%*	*1.8%*	*1.5%*
ROIC (BOY)		*4.4%*	*3.5%*	*2.8%*	*2.3%*	*1.9%*	*1.5%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$146,600	$141,352	$142,058	$142,769	$143,483	$144,200	$144,921
NOPAT	$6,974	$6,251	$5,185	$4,297	$3,568	$2,960	$2,458
Growth		*-10.4%*	*-17.0%*	*-17.1%*	*-17.0%*	*-17.0%*	*-17.0%*
- Change in NWC	2638	2927	299	279	280	281	283
NWC or NOWC EOY	*52483*	*55410*	*55709*	*55988*	*56268*	*56549*	*56832*
Growth NWC		*5.6%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
- Chg NFA	5108	4373	2433	2538	2649	2768	2895
NFA EOY	*90,494*	*94,867*	*97,300*	*99,838*	*102,488*	*105,255*	*108,150*
Growth NFA		*4.8%*	*2.6%*	*2.6%*	*2.7%*	*2.7%*	*2.8%*
Total inv in op cap	7746	7300	2733	2817	2929	3049	3177
Total net op cap	142977	150277	153010	155826	158755	161805	164982
FCFF	($772)	($1,050)	$2,452	$1,481	$639	($89)	($719)
% of sales	*-0.5%*	*-0.7%*	*1.7%*	*1.0%*	*0.4%*	*-0.1%*	*-0.5%*
Growth		*36.0%*	*-333.7%*	*-39.6%*	*-56.8%*	*-113.9%*	*709.9%*
- Interest (1-tax rate)	559	573	596	620	643	666	690
Growth		*2.5%*	*4.1%*	*3.9%*	*3.8%*	*3.6%*	*3.5%*
+ Net new debt	3500	3500	5900	5900	5900	5900	5900
Debt	140724	144224	150124	156024	161924	167824	173724
Debt / tot net op capital	*98.4%*	*96.0%*	*98.1%*	*100.1%*	*102.0%*	*103.7%*	*105.3%*
FCFE w/ debt	$2,169	$1,878	$7,756	$6,761	$5,896	$5,145	$4,491
% of sales	*1.5%*	*1.3%*	*5.5%*	*4.7%*	*4.1%*	*3.6%*	*3.1%*
Growth		*-13.5%*	*313.1%*	*-12.8%*	*-12.8%*	*-12.7%*	*-12.7%*
/ No Shares	3969.0	3969.0	3,969.0	3,969.0	3,969.0	3,969.0	3,969.0
FCFE	$0.55	$0.47	$1.95	$1.70	$1.49	$1.30	$1.13
Discounted FCFE	$0.48	$0.36	$1.31	$1.00	$0.77	$0.59	$0.45
Third Stage							
Terminal value P/E							
Net income	$6,417	$5,680	$4,589	$3,678	$2,925	$2,294	$1,768
% of sales	*4.4%*	*4.0%*	*3.2%*	*2.6%*	*2.0%*	*1.6%*	*1.2%*
EPS	$1.62	$1.43	$1.16	$0.93	$0.74	$0.58	$0.45
Growth		*-11.5%*	*-19.2%*	*-19.9%*	*-20.5%*	*-21.6%*	*-22.9%*
Terminal P/E							8.00
* Terminal EPS							$0.45
Terminal value							$3.56
* Discount factor							0.40
Discounted terminal value							$1.41

Summary		
First stage	$0.84	Present value of first 2 year cash flow
Second stage	$4.11	Present value of year 3-7 cash flow
Third stage	$1.41	Present value of terminal value P/E
Value (P/E)	**$6.36**	= value at beg of fiscal yr 2017

Source: IMCP

Business Risks

Although I have many reasons to be optimistic about Ford, there are several good reasons why I find the stock to be fairly priced, at only a dollar above its 52-week low:

Decline in industry volume, particularly in the United States:

Due to Ford's high operating and financial leverage, small changes in industry sales volumes can have substantial effects on the firm's cash flow, profitably, and ultimately earnings. If industry volumes were to fall like they did in 2008 and 2009 during the financial crisis, Ford's financial condition would be substantially affected.

Market shifts away from sales of larger, more profitable vehicles, especially in the Unites States:

A shift in consumer preferences away from larger, more profitable vehicles could result in an immediate and substantial negative impact on the firm's financial condition.

Decline in Ford's market share or failure to achieve growth:

To capitalize on economies of scale and grow market share, Ford must grow market share in fast-growing emerging markets, particularly in China. Any significant decrease in market share in emerging markets or mature markets could have an adverse effect on Ford's financial condition.

An increase in or continued volatility of fuel prices, or reduced availability of fuel:

Increases in fuel prices, particularly in the United States, could result in weakening demand for larger more profitable utility vehicles and trucks; while also increasing the demand for less profitable smaller vehicles. As a result, a spike in fuel prices could have a negative impact on the firm's profitability and financial condition.

Appendix 1: Income Statement

Income Statement	2013	2014	2015	2016	2017E	2018E
Sales	$146,917	$144,077	$149,548	$151,134	$146,600	$141,352
Direct costs	120,190	125,025	124,031	124,528	120,945	117,322
Gross Margin	26,727	19,052	25,517	26,606	25,655	24,030
SG&A, R&D, and other	11,058	16,021	15,416	15,756	15,246	14,701
EBIT	15,669	3,031	10,101	10,850	10,409	9,329
Interest	1,298	1,797	(151)	822	834	855
EBT	14,371	1,234	10,252	10,028	9,575	8,474
Taxes	2,425	4	2,881	2,875	3,160	2,797
Income	11,946	1,230	7,371	7,153	6,415	5,678
Other	(7)	(1)	(2)	(2)	(2)	(2)
Net income	11,953	1,231	7,373	7,155	6,417	5,680
Basic Shares	3,935	3,912	3,969	3,969	3,969	3,969
EPS	$3.04	$0.31	$1.86	$1.80	$1.62	$1.43
DPS	$0.40	$0.50	$0.60	$0.60	$0.60	$0.60

Appendix 2: Balance Sheet

Capital	2013	2014	2015	2016	2017E	2018E
Cash	14,468	10,757	14,272	13,340	13,131	12,631
Operating assets ex cash	95,017	100,689	110,294	115,412	117,427	117,322
Operating assets	109,485	111,446	124,566	128,752	130,558	129,953
Operating liabilities	59,993	64,067	62,818	65,567	64,944	61,912
NOWC	49,492	47,379	61,748	63,185	65,614	68,041
NOWC ex cash (NWC)	35,024	36,622	47,476	49,845	52,483	55,410
NFA	70,441	76,776	79,455	85,386	90,494	94,867
Invested capital	*$119,933*	*$124,155*	*$141,203*	*$148,571*	*$156,108*	*$162,908*
Marketable securities	22,100	20,393	20,904	20,825	20,825	20,825
Total assets	*$202,026*	*$208,615*	*$224,925*	*$234,963*	*$241,877*	*$245,645*
Short-term and long-term debt	$114,688	$119,171	$132,854	$137,224	$140,724	$144,224
Other liabilities	929	912	596	673	673	673
Debt/equity-like securities	-	-	-	-	-	-
Equity	26,416	24,465	28,657	31,499	35,536	38,836
Total supplied capital	*$142,033*	*$144,548*	*$162,107*	*$169,396*	*$176,933*	*$183,733*
Total liabilities and equity	*$202,026*	*$208,615*	*$224,925*	*$234,963*	*$241,877*	*$245,645*

Appendix 3: Sales Forecast

Sales

Items	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18
Sales	133,559	$146,917	$144,077	$149,548	$151,134	146,597	$141,359
Growth		*10.0%*	*-1.9%*	*3.8%*	*1.1%*	*-3.0%*	*-3.6%*
Automotive	126,567	139,369	135,782	140,556	141,100	136,162	130,715
Growth		*10.1%*	*-2.6%*	*3.5%*	*0.4%*	*-3.5%*	*-4.0%*
% of sales	*94.8%*	*94.9%*	*94.2%*	*94.0%*	*93.4%*	*92.9%*	*92.5%*
Financial Services	6,992	7,548	8,295	8,992	10,034	10,435	10,644
Growth		*8.0%*	*9.9%*	*8.4%*	*11.6%*	*4.0%*	*2.0%*
% of sales	*5.2%*	*5.1%*	*5.8%*	*6.0%*	*6.6%*	*7.1%*	*7.5%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
North America (Auto)	79,900	86,500	82,400	91,900	92,200	89,050	84,965
Growth		*8.3%*	*-4.7%*	*11.5%*	*0.3%*	*-3.4%*	*-4.6%*
% of sales	*63.1%*	*62.1%*	*60.7%*	*65.4%*	*65.3%*	*65.4%*	*65.0%*
Units Sold (NA)	2,568	2,834	2,805	2,947	2,928	2,929	2,953
Growth		*10.4%*	*-1.0%*	*5.1%*	*-0.6%*	*0.0%*	*0.8%*
Units Sold (Canda)	281	283	288	285	290	293	290
Growth		*0.7%*	*1.8%*	*-1.0%*	*1.8%*	*1.0%*	*-1.0%*
Unit Sold (Mexico)	83	91	77	93	90	89	87
Growth		*9.6%*	*-15.4%*	*20.8%*	*-3.2%*	*-1.0%*	*-2.0%*
Units Sold (US)	2,204	2,460	2,440	2,569	2,548	2,547	2,576
Growth		*11.6%*	*-0.8%*	*5.3%*	*-0.8%*	*0.0%*	*1.1%*
Ford Cars (US)	747	826	794	788	684	639	624
Growth		*10.5%*	*-3.8%*	*-0.8%*	*-13.2%*	*-6.5%*	*-2.4%*
Fiesta	57	71	63	64	49	44	46
Growth		*25.2%*	*-11.1%*	*2.0%*	*-24.2%*	*-10.0%*	*5.0%*
Focus	246	235	220	202	170	164	173
Growth		*-4.6%*	*-6.4%*	*-7.8%*	*-16.3%*	*-3.0%*	*5.0%*
C-MAX	13	35	28	22	19	17	15
Growth		*164.6%*	*-21.6%*	*-21.1%*	*-12.5%*	*-12.5%*	*-12.0%*
Fusion	241	295	307	300	271	254	244
Growth		*22.4%*	*3.9%*	*-2.2%*	*-9.8%*	*-6.0%*	*-4.0%*
Taurus	66	69	52	39	34	32	28
Growth		*4.5%*	*-24.1%*	*-25.5%*	*-11.9%*	*-8.0%*	*-12.0%*
Mustang	83	77	83	122	105	93	83
Growth		*-7.0%*	*7.1%*	*48.1%*	*-13.9%*	*-12.0%*	*-10.0%*
MKZ	28	32	34	31	31	31	32
Growth		*15.4%*	*5.1%*	*-9.1%*	*0.6%*	*1.0%*	*0.5%*
MKS	13	11	8	7	5	4	3
Growth		*-13.8%*	*-24.4%*	*-15.7%*	*-27.5%*	*-20.0%*	*-21.0%*
Ford Utilties (US)	654	706	725	779	806	794	801
Growth		*8.0%*	*2.7%*	*7.5%*	*3.5%*	*-1.5%*	*1.0%*
Escape	261	296	306	306	308	305	302
Growth		*13.4%*	*3.5%*	*0.1%*	*0.6%*	*-1.0%*	*-1.0%*
Edge	128	129	109	124	132	135	137
Growth		*0.9%*	*-15.7%*	*14.0%*	*6.5%*	*2.0%*	*2.0%*
Flex	28	26	24	20	21	21	21
Growth		*-8.0%*	*-8.2%*	*-17.8%*	*8.7%*	*-2.0%*	*-0.5%*
Explorer	158	178	189	224	216	214	218
Growth		*12.6%*	*6.2%*	*18.5%*	*-3.7%*	*-1.0%*	*2.0%*
Expedition	38	38	45	41	59	50	52
Growth		*0.8%*	*16.4%*	*-7.1%*	*41.6%*	*-15.0%*	*4.0%*
MKC	-	-	13	25	25	26	26
Growth		*0.0%*	*100.0%*	*88.0%*	*2.8%*	*1.0%*	*0.5%*
MKX	25	24	24	22	30	31	31
Growth		*-4.8%*	*0.3%*	*-7.8%*	*37.2%*	*1.0%*	*2.0%*
MKT	7	6	5	5	4	4	4
Growth		*-15.2%*	*-20.2%*	*-2.2%*	*-19.5%*	*-3.0%*	*-4.5%*
Navigator	8	9	10	12	11	9	10
Growth		*2.9%*	*21.1%*	*14.7%*	*-12.1%*	*-10.0%*	*10.0%*
Ford Trucks (US)	803	928	921	1,002	1,058	1,114	1,151
Growth		*15.6%*	*-0.8%*	*8.8%*	*5.6%*	*5.3%*	*3.3%*
F-Series	645	763	754	780	818	855	889
Growth		*18.3%*	*-1.3%*	*3.5%*	*4.9%*	*4.5%*	*4.0%*
E-Series	122	125	103	51	53	55	56
Growth		*2.4%*	*-17.6%*	*-50.8%*	*4.7%*	*4.0%*	*1.0%*
Transit	-	-	20	119	143	164	167
Growth		*0.0%*	*100.0%*	*478.8%*	*20.3%*	*15.0%*	*2.0%*
Transit Connect	35	40	43	52	44	40	38
Growth		*12.7%*	*8.8%*	*20.9%*	*-15.9%*	*-10.0%*	*-4.0%*
Heavy Trucks	7	9	10	10	15	17	17
Growth		*21.3%*	*10.9%*	*4.7%*	*49.0%*	*10.0%*	*3.0%*
Industry Volume (US)	14,300	15,500	16,400	17,400	17,300	17,127	16,784
Growth		*8.4%*	*5.8%*	*6.1%*	*-0.6%*	*-1.0%*	*-2.0%*
Industry Volume (Canda)	1,700	1,800	1,900	1,900	2,000	2,040	2,060
Growth		*5.9%*	*5.6%*	*0.0%*	*5.3%*	*2.0%*	*1.0%*
Industry Volume (Mexico)	1,000	1,100	1,200	1,400	1,600	1,680	1,730
Growth		*10.0%*	*9.1%*	*16.7%*	*14.3%*	*5.0%*	*3.0%*
Industry Volume (NA)	17,000	18,400	19,500	20,700	20,900	20,847	20,575
Growth		*8.2%*	*6.0%*	*6.2%*	*1.0%*	*-0.3%*	*-1.3%*
Price/Unit (NA)	31.11	30.52	29.37	31.18	31.48	30.40	28.77
Growth		*-1.9%*	*-3.8%*	*6.2%*	*1.0%*	*-3.4%*	*-5.3%*
Mkt Share (US)	15.41%	15.87%	14.88%	14.77%	14.73%	14.87%	15.35%
Growth		*3.0%*	*-6.2%*	*-0.8%*	*-0.2%*	*1.0%*	*3.2%*
Mkt Share (NA)	15.11%	15.40%	14.39%	14.24%	14.01%	14.05%	14.35%
Growth		*2.0%*	*-6.6%*	*-1.0%*	*-1.6%*	*0.3%*	*2.1%*
South America (Auto)	10,100	10,800	8,800	5,800	4,700	3,518	2,969
Growth		*6.9%*	*-18.5%*	*-34.1%*	*-19.0%*	*-25.1%*	*-15.6%*
% of sales	*8.0%*	*7.7%*	*6.5%*	*4.1%*	*3.3%*	*2.4%*	*2.1%*
Units Sold	498	538	463	381	315	312	309
Growth		*8.0%*	*-13.9%*	*-17.7%*	*-17.3%*	*-1.0%*	*-1.0%*
Industry Volume	5,900	5,900	5,900	4,200	3,600	3,528	3,457
Growth		*0.0%*	*0.0%*	*-28.8%*	*-14.3%*	*-2.0%*	*-2.0%*
Price/Unit	20.28	20.07	19.01	15.22	14.92	11.28	9.62
Growth		*-1.0%*	*-5.3%*	*-19.9%*	*-2.0%*	*-24.4%*	*-14.8%*
Mkt Share	8.44%	9.12%	7.85%	9.07%	8.75%	8.84%	8.93%
Growth		*8.0%*	*-13.9%*	*15.6%*	*-3.5%*	*1.0%*	*1.0%*
Europe (Auto)	26,600	27,300	29,500	28,200	28,300	29,026	27,706
Growth		*2.6%*	*8.1%*	*-4.4%*	*0.4%*	*2.6%*	*-4.5%*
% of sales	*21.0%*	*19.6%*	*21.7%*	*20.1%*	*20.1%*	*19.8%*	*19.6%*
Units Sold	1,295	1,317	1,387	1,530	1,539	1,585	1,633
Growth		*1.7%*	*5.3%*	*10.3%*	*0.6%*	*3.0%*	*3.0%*
Industry Volume	18,600	18,300	18,600	19,200	20,000	20,400	20,808
Growth		*-1.6%*	*1.6%*	*3.2%*	*4.2%*	*2.0%*	*2.0%*
Price/Unit	20.54	20.73	21.27	18.43	18.39	18.31	16.96
Growth		*0.9%*	*2.6%*	*-13.3%*	*-0.2%*	*-0.4%*	*-7.3%*
Mkt Share	6.96%	7.20%	7.46%	7.97%	7.70%	7.77%	7.85%
Growth		*3.4%*	*3.6%*	*6.9%*	*-3.4%*	*1.0%*	*1.0%*
Middle East/ Asia Pacific (Auto)	10,000	14,800	15,100	14,700	15,900	18,178	18,801
Growth		*48.0%*	*2.0%*	*-2.6%*	*8.2%*	*14.3%*	*3.4%*
% of sales	*7.9%*	*10.6%*	*11.1%*	*10.5%*	*11.3%*	*12.4%*	*13.3%*
Units Sold	1,182	1,469	1,631	1,651	1,691	1,776	1,857
Growth		*24.3%*	*11.0%*	*1.2%*	*2.4%*	*5.0%*	*4.5%*
Industry Volume	38,800	41,700	43,800	43,800	45,200	47,008	48,888
Growth		*7.5%*	*5.0%*	*0.0%*	*3.2%*	*4.0%*	*4.0%*
Price/Unit	8.46	10.07	9.26	8.90	9.40	10.23	10.13
Growth		*19.1%*	*-8.1%*	*-3.8%*	*5.6%*	*8.8%*	*-1.0%*
Mkt Share	3.05%	3.52%	3.72%	3.77%	3.74%	3.78%	3.80%
Growth		*15.6%*	*5.7%*	*1.2%*	*-0.7%*	*1.0%*	*0.5%*

Appendix 4: Sales Forecast

Ratios	2013	2014	2015	2016	2017E	2018E
Profitability						
Gross margin	18.2%	13.2%	17.1%	17.6%	17.5%	17.0%
Operating (EBIT) margin	10.7%	2.1%	6.8%	7.2%	7.1%	6.6%
Net profit margin	8.1%	0.9%	4.9%	4.7%	4.4%	4.0%
Activity						
NFA (gross) turnover	2.18	1.96	1.91	1.83	1.67	1.53
Total asset turnover	0.75	0.70	0.69	0.66	0.61	0.58
Liquidity						
Op asset / op liab	1.82	1.74	1.98	1.96	2.01	2.10
NOWC Percent of sales	29.5%	33.6%	36.5%	41.3%	43.9%	47.3%
Solvency						
Debt to assets	56.8%	57.1%	59.1%	58.4%	58.2%	58.7%
Debt to equity	434.2%	487.1%	463.6%	435.6%	396.0%	371.4%
Other liab to assets	0.5%	0.4%	0.3%	0.3%	0.3%	0.3%
Total debt to assets	57.2%	57.6%	59.3%	58.7%	58.5%	59.0%
Total liabilities to assets	86.9%	88.3%	87.3%	86.6%	85.3%	84.2%
Debt to EBIT	7.32	39.32	13.15	12.65	13.52	15.46
EBIT/interest	12.07	1.69	(66.89)	13.20	12.48	10.91
Debt to total net op capital	95.6%	96.0%	94.1%	92.4%	90.1%	88.5%
ROIC						
NOPAT to sales	8.9%	2.1%	4.9%	5.1%	4.8%	4.4%
Sales to IC	1.33	1.18	1.13	1.04	0.96	0.89
Total	11.8%	2.5%	5.5%	5.3%	4.6%	3.9%
Total using EOY IC	10.9%	2.4%	5.1%	5.2%	4.5%	3.8%

Appendix 5: 3-Stage DCF Model

Cost of equity	
Market return	10.0%
- Risk free rate	2.27%
= Market risk premium	7.7%
* Beta	1.54
= Stock risk premium	11.9%
r = r_f+ stock RP	**14.2%**

Terminal year P/E	
2016	9.50

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*-3.0%*	*-3.6%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*
NOPAT / S	*4.8%*	*4.4%*	*4.5%*	*4.7%*	*4.8%*	*4.9%*	*5.0%*
S / NWC	*2.79*	*2.55*	*2.47*	*2.40*	*2.35*	*2.30*	*2.25*
S / NFA (EOY)	*1.62*	*1.49*	*1.46*	*1.43*	*1.40*	*1.37*	*1.34*
S / IC (EOY)	*1.03*	*0.94*	*0.92*	*0.90*	*0.88*	*0.86*	*0.84*
ROIC (EOY)	*4.9%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*
ROIC (BOY)		*4.4%*	*4.3%*	*4.3%*	*4.3%*	*4.3%*	*4.3%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$146,600	$141,352	$142,765	$144,193	$145,635	$147,091	$148,562
NOPAT	$6,974	$6,251	$6,478	$6,710	$6,945	$7,185	$7,428
Growth		*-10.4%*	*3.6%*	*3.6%*	*3.5%*	*3.4%*	*3.4%*
- Change in NWC	2638	2927	2390	2281	1892	1980	2075
NWC or NOWC EOY	*52483*	*55410*	*57800*	*60080*	*61972*	*63953*	*66028*
Growth NWC		*5.6%*	*4.3%*	*3.9%*	*3.1%*	*3.2%*	*3.2%*
- Chg NFA	5108	4373	2917	3050	3191	3341	3501
NFA EOY	*90,494*	*94,867*	*97,784*	*100,834*	*104,025*	*107,366*	*110,867*
Growth NFA		*4.8%*	*3.1%*	*3.1%*	*3.2%*	*3.2%*	*3.3%*
Total inv in op cap	7746	7300	5307	5330	5083	5321	5576
Total net op cap	142977	150277	155584	160915	165997	171318	176895
FCFF	($772)	($1,050)	$1,171	$1,379	$1,862	$1,863	$1,852
% of sales	*-0.5%*	*-0.7%*	*0.8%*	*1.0%*	*1.3%*	*1.3%*	*1.2%*
Growth		*36.0%*	*-211.5%*	*17.8%*	*35.0%*	*0.0%*	*-0.6%*
- Interest (1-tax rate)	559	573	596	620	643	666	690
Growth		*2.5%*	*4.1%*	*3.9%*	*3.8%*	*3.6%*	*3.5%*
+ Net new debt	3500	3500	5900	5900	5900	5900	5900
Debt	140724	144224	150124	156024	161924	167824	173724
Debt / tot net op capital	*98.4%*	*96.0%*	*96.5%*	*97.0%*	*97.5%*	*98.0%*	*98.2%*
FCFE w/ debt	$2,169	$1,878	$6,475	$6,660	$7,119	$7,097	$7,062
% of sales	*1.5%*	*1.3%*	*4.5%*	*4.6%*	*4.9%*	*4.8%*	*4.8%*
Growth		*-13.5%*	*244.8%*	*2.9%*	*6.9%*	*-0.3%*	*-0.5%*
/ No Shares	3969.0	3969.0	3,969.0	3,969.0	3,969.0	3,969.0	3,969.0
FCFE	$0.55	$0.47	$1.63	$1.68	$1.79	$1.79	$1.78
Discounted FCFE	$0.48	$0.36	$1.10	$0.99	$0.92	$0.81	$0.70

Terminal value P/E							
Net income	$6,417	$5,680	$5,882	$6,090	$6,302	$6,518	$6,738
% of sales	*4.4%*	*4.0%*	*4.1%*	*4.2%*	*4.3%*	*4.4%*	*4.5%*
EPS	$1.62	$1.43	$1.48	$1.53	$1.59	$1.64	$1.70
Growth		*-11.5%*	*3.6%*	*3.5%*	*3.5%*	*3.4%*	*3.4%*
Terminal P/E							9.50
* Terminal EPS							$1.70
Terminal value							$16.13
* Discount factor							0.40
Discounted terminal value							$6.38

First stage	$0.84	Present value of first 2 year cash flow
Second stage	$4.52	Present value of year 3-7 cash flow
Third stage	$6.38	Present value of terminal value P/E
Value (P/E)	**$11.74**	= value at beg of fiscal yr 2017

Appendix 6: Porter's 5 Forces

Threat of New Entrants - Moderate

Vehicle manufacturing is a very capital intensive business, but barriers to entry are not as high as in the past. Tech companies with excess cash, such as Apple and Google, pose a great threat to the existing automotive manufactures. Additionally, international OEMs are attempting to enter the United States' market, particularly from India and China.

Threat of Substitutes - High

There are many different automotive brands to choose from when purchasing a vehicle. Increasing urbanization rates have increased the popularity of public and mass transit, both of which are cheaper alternatives.

Supplier Power - Moderate

Automotive manufactures are becoming more reliant on suppliers, as they grow in international markets, and more focused on establishing brand recognition and dealer networks. As a result, most parts are supplied from relatively few suppliers.

Buyer Power - Low

Automotive dealerships have no influence on the wholesale price of a vehicle. However, dealerships maintain the ability to decide when and what vehicles they order from the manufacture. Yet the manufacture maintains the right to control the quantities of each model sold to its dealerships.

Intensity of Competition - Very High

The industry is already full of strong competition, making it nearly impossible to gain a competitive advantage over another manufacturer. GM is Ford's greatest competitor in the U.S. market.

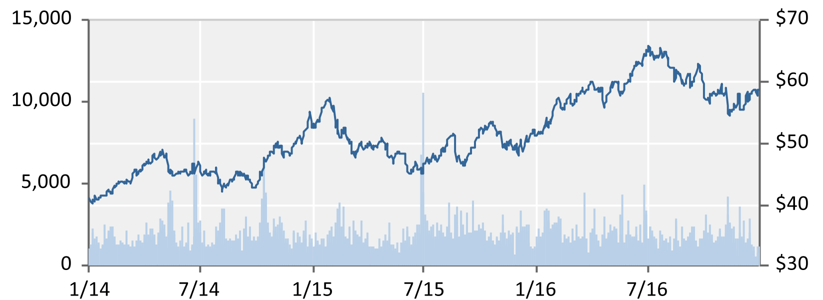
Appendix 7: SWOT Analysis

Strengths	Weaknesses
Brand reputation #1 selling truck for 34 years Balanced product mix	Highly dependent on truck and SUV sales 99% of hourly workers are unionized Stock is highly dependent on macroeconomic factors
Opportunities	**Threats**
Leasing Low oil prices Expansion in China	High competition High oil prices Currency exchange rates

Utilities – Regulated Electric

WEC Energy Group Inc

Recommendation	SELL
Target (today's value)	$55
Current Price	$58.65
52-week range	$50.44 - $66.10



Share Data	
Ticker:	WEC
Market Cap. (Billion):	$18.5
Inside Ownership	0.2%
Inst. Ownership	70.8%
Beta	0.5
Dividend Yield	3.6%
Payout Ratio	66.8%
Cons. Long-term Growth Rate	6.6%

	'14	'15	'16E	'17E	'18E
Sales (billions)					
Year	$5.0	$5.9	$7.8	$8.1	$8.6
Gr %	10.6%	18.6%	31.3%	4.4%	6.0%
Cons	-	-	$8.5	$8.7	$8.8
EPS					
Year	$2.61	$2.36	$3.00	$3.10	$3.28
Gr %	2.8%	-9.7%	27.6%	3.3%	5.8%
Cons	-	-	$2.94	$3.11	$3.33

Ratio	'14	'15	'16E	'17E	'18E
ROE (%)	13.5	9.7	9.7	10.8	11.0
Rel Industry	1.37	1.14	1.13	1.11	1.11
NPM (%)	11.8	10.8	12.2	12.1	12.1
Rel Industry	1.28	1.19	1.20	1.17	1.11
A. T/O	0.33	0.26	0.26	0.27	0.28
ROA (%)	3.9	2.8	3.2	3.2	3.4
Rel Industry	1.36	1.14	1.55	1.22	1.24
A/E	3.43	3.39	3.36	3.31	3.27

Valuation	'15	'16E	'17E	'18E
P/E	21.0	19.7	19.9	18.9
Industry	16.5	19.3	18.1	17.7
P/S	2.9	2.4	2.2	2.1
P/B	1.8	2.0	2.1	2.0
P/CF	12.5	9.7	9.2	8.8
EV/EBIT	16.0	17.3	16.7	15.6

Performance	Stock	Industry
1 Month	4.7%	4.4%
3 Months	-1.2%	-0.4%
YTD	18.2%	18.2%
52-week	16.1%	16.8%
3-year	57.3%	50.1%

Contact: Carl Schemm
Email: clschemm@uwm.edu
Phone: 920-650-3355

Summary: I recommend a sell rating with a target of $55. Increasing interest rates and lower allowed returns will depress multiples. This will be partially offset by a growing rate base as management now expects CapEx to peak at $1.96 billion in 2018. This compares to an expected $1.48 billion of capital expenditures in 2016. WEC is overvalued based on a three-stage DCF model and relative valuation approach.

Key Drivers:

- Interest rates: WEC underperforms the S&P 500 in periods of rising interest rates. The December rate hike and 2017 expectations announcements, highlight a greater probability of declining multiples.
- Integrys acquisition: With the acquisition of Integrys, WEC has expanded operations into Illinois, Michigan, and Minnesota. Increased ownership in ATC and geographic proximity will drive earnings. Because of the acquisition, a larger portion of WEC's earnings is dependent on natural gas.
- Capital expenditures: Management has revised capital expenditure expectations upwards several times in recent months, due largely to a bonus tax depreciation and replacement of Chicago's aging natural gas pipelines. Management now expects to invest between $9 and $9.5 billion in its rate base from 2016-2020. 170MW of generating capacity will be constructed to power the Tilden Mining Company operations.

Valuation: Using a weighted average of DCF, P/E, and relative valuation approaches, WEC appears to be overvalued. This combination of approaches suggests that the stock's value is about $55 and the shares closed the day at $58.01.

Risks: Threats to the business include governmental regulation, rising interest rates, equipment failure/breakdown, pension expense, and weather.

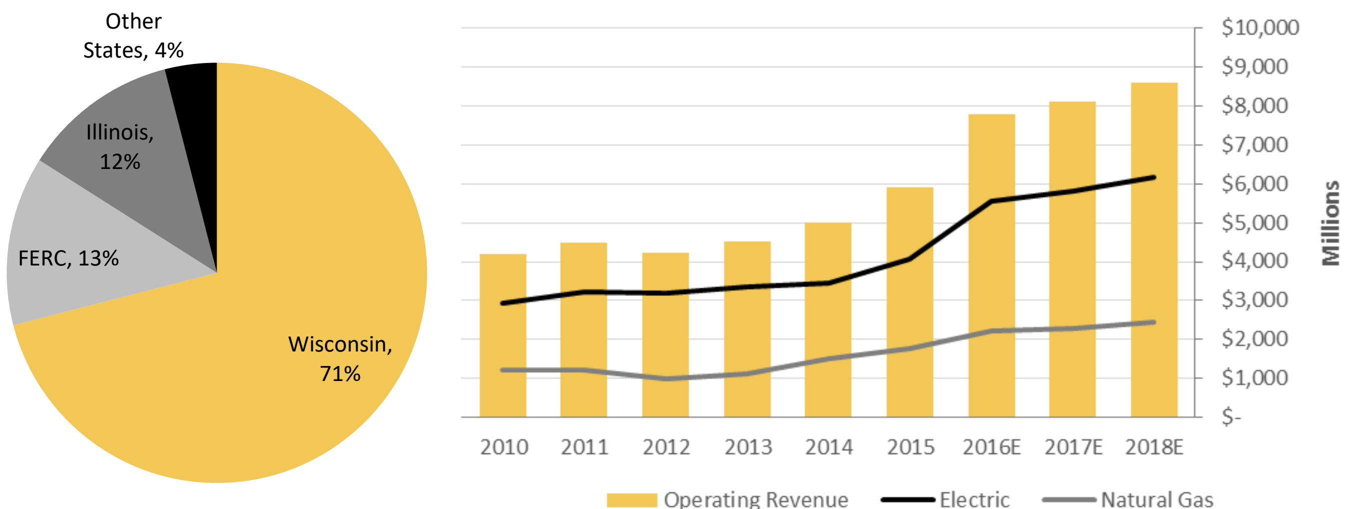
Company Overview

WEC Energy Group Inc. (NYSE: WEC) is a regulated energy holding company headquartered in Milwaukee, WI. WEC has provided energy services to the southeastern Wisconsin area since 1896. The company provides electric and natural gas utility services through its principal subsidiaries: We Energies, Wisconsin Public Service, Peoples Gas, North Shore Gas, Minnesota Energy Resources, and Michigan Gas Utilities. WEC Energy Group Inc. was formed on June 29, 2015, when Wisconsin Energy Group acquired Integrys Energy Group, Inc. (formerly NYSE: TEG) and its subsidiaries. Integrys provided natural gas services to Illinois, Michigan, Minnesota, and Wisconsin. WEC Energy Group operates about 70,000 miles of electric distribution lines and 44,000 miles of natural gas distribution and transmission lines. In addition to its current operations, WEC owns an approximately 60% equity interest in American Transmission Company (ATC).

As one of the nation's largest electric and natural gas utility companies, WEC Energy Group serves more than 4.4 million customers through its six reporting segments:

- Wisconsin: We Energies and Wisconsin Public Service deliver natural gas and electricity to communities throughout Wisconsin and the Michigan's Upper Peninsula.
    - Second quarter year-over-year revenue growth of 33% from 2015 to 2016, mostly due to Integrys acquisition
- Illinois: Peoples Gas and North Shore Gas deliver natural gas to customers in the city of Chicago and its nearby suburbs.
- Other states: Minnesota Energy Resources and Michigan Gas Utilities deliver natural gas to communities in Minnesota and Michigan.
- Electric transmission: ATC operates transmission systems in Wisconsin, Michigan, Illinois, and Minnesota.
    - Second quarter year-over-year equity in earnings growth of 116% from 2015 to 2016, largely due to Integrys acquisition
- We Power: We Power, LLC is a nonutility affiliate that builds power plants to lease to utility subsidiaries. WEC's recent power generation expansion, named Power the Future (PTF), has built four new facilities with an authorized ROE of 12.7 percent.
- Corporate and other: WEC Energy Group holding company, Integrys holding company, and WEC's additional operations report under the corporate and other segment.

Figures 1 and 2: 2015 Regulated earnings by jurisdiction (left) and operating revenue history since 2010 (right)



Source: Company Reports

Business/Industry Drivers

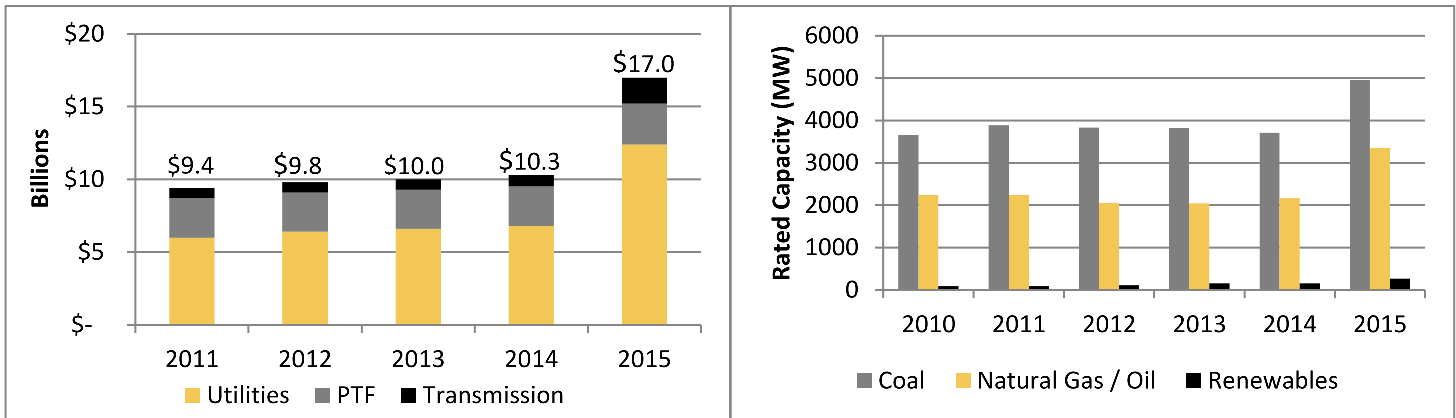
The performance of WEC will be significantly influenced by the following drivers:

1) Integrys acquisition
2) Regulation
3) Capital expenditures
4) Management and customer developments
5) Competitive position
6) Macroeconomic trends

Integrys Acquisition

On June 23, 2014, WEC Energy Group Inc. announced an agreement to acquire Integrys Energy Group Inc. The acquisition was completed on June 29, 2015, and the joint company began reporting combined financials in the first quarter of 2016. As a result of this acquisition, WEC has expanded operations into Illinois, Michigan, and Minnesota.

Figures 3 and 4: Total rate base (left) and Rated generation capacity by fuel type (right)



Source: Company reports

WEC's rate base and generation capacity increased 65% and 42% respectively

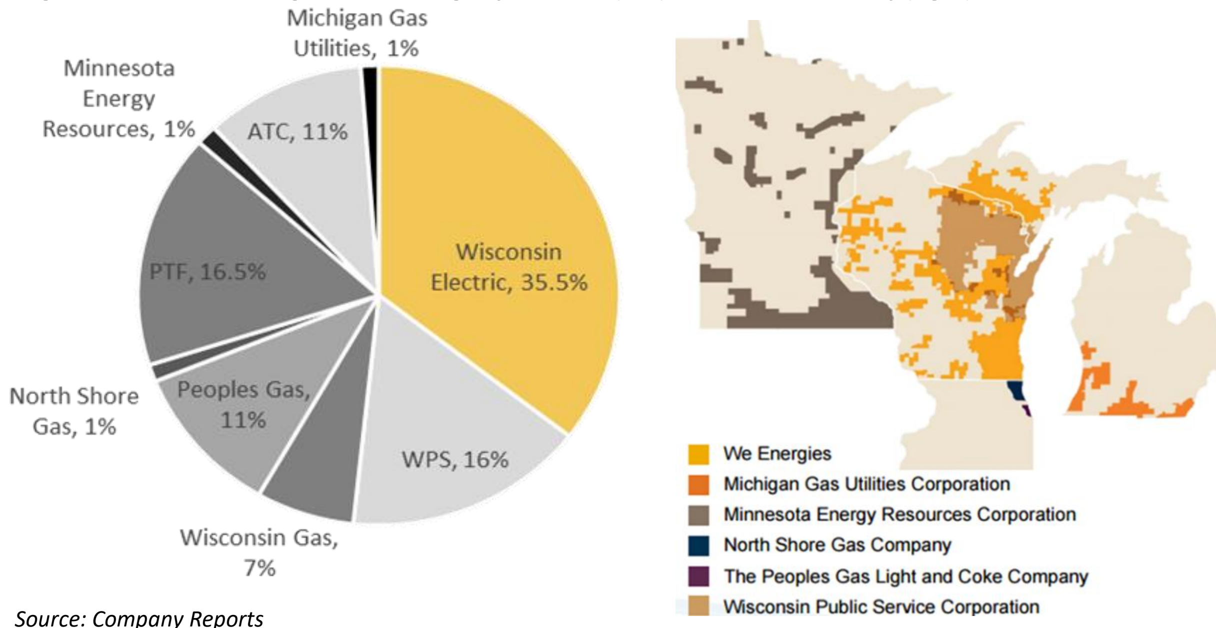
The acquisition also increased WEC's ownership of American Transmission Company (ATC) from approximately 26% to slightly more than 60%. Management lists WEC's five key cost reduction initiatives for the merger as staff level reductions, consolidating IT infrastructure, enhancing supply chain contracts, improving customer satisfaction, and operations standardization. These initiatives could save $0.03 in expenses after taxes, based on a pre-tax savings of about $16 million per year.

Acquisition Rationale
- Increased ownership in ATC
- Location proximity
- Increased natural gas (cleaner fuel)
- Growth through acquisition

Thus far, the benefits of the acquisition have allowed WEC to freeze base rates of multiple subsidiaries and increase the year-over-year dividend rate by 17.2% in the first half of 2016. The geographic proximity of WEC and Integrys operations should prove advantageous for the combined utility.

Because of the Integrys acquisition, natural gas represents a larger portion of WEC's earnings base. This product shift increases the seasonality of earnings with a relatively higher portion of earnings occurring in the first and fourth quarters. Abnormally warm summers and cold winters drive customer demand for air conditioning and heating services. Last winter, the first winter of the combined WEC and Integrys operations, was the second warmest in company history. Earnings may be materially improved in the event of a colder winter in the Midwestern region.

Figures 5 and 6: 2015 Regulated earnings by business (left) and service territory (right)



Source: Company Reports

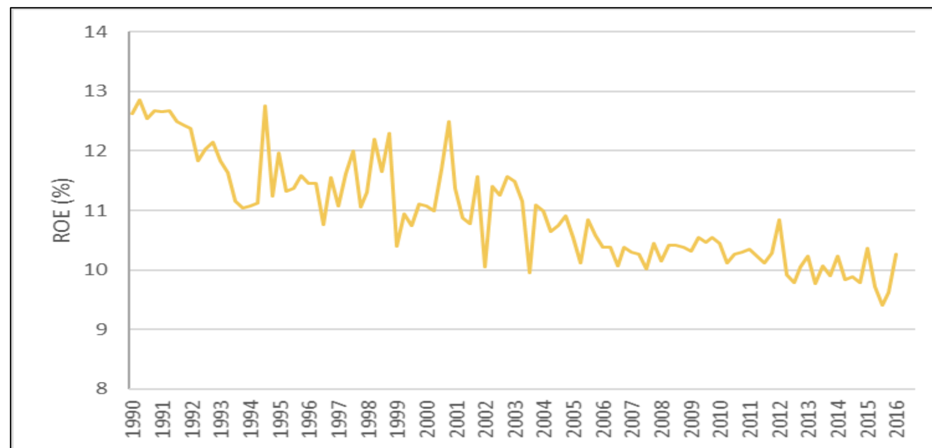
WEC financed the acquisition through the issuance of $1.2 billion of long-term debt, $300 million of commercial paper, and approximately 90.2 million shares of WEC common stock.

Benefits of the acquisition may be partially or fully offset by share dilution, unexpected transaction fees, increased per share interest expenses, goodwill impairment, or increased legal and regulatory risks. Additionally, increased ownership of ATC could negatively affect WEC's financial performance due to currently pending rate case litigation.

Regulation

Wisconsin has traditionally been a favorable regulatory environment for WEC. Including ATC and the Power the Future operations, WEC's weighted average authorized ROE (determined by rate base weights), is about 10.65%. This is slightly better than the first quarter 2016 average awarded ROE of 10.26% among investor-owned electric utilities, per the Edison Electric Institute (EEI). Average awarded ROE amongst regulated electricity utilities has been on a long downward trend, partially due to declining interest rates.

Figure 7: Industry average awarded ROE



Source: SNL Financial / Regulatory Research Assoc. & EEI Rate Department

The CPP states that generating facilities must meet compliance obligations by the year 2030.

Going forward, WEC Energy group will face a more difficult regulatory environment, largely due to a less favorable regulatory environment in Illinois. ATC is facing regulatory headwinds as Midcontinent Independent System Operator, Inc. (MISO) has issued several complaints with the Federal Energy Regulatory Commission (FERC) regarding transmission owners' ROE. In February, the Administrative Law Judge recommended ATC's base ROE be reduced from 12.2% to 9.7%. This matter is still pending. An authorized reduction of ATC's ROE could adversely impact the WEC's earnings. I expect a lower allowed ROE to decrease equity earnings in transmission affiliate by about $6 to $10 million in 2018. The current Minnesota Energy Resources rate case, initiated by MERC, aims to increase retail natural gas rates by $14.8 million. The proposed increase is related to construction, capital expenditures, and an acquisition of Alliant Energy Corporation's Minnesota natural gas operations.

Figure 8: Recent Rate Cases

Rates Case	Utility	Application	Order	Req. ($ mil)	Auth. ($ mil)	ROE	Equity
WE	Electric	May-14	Dec-14	52.30	12.70	10.2%	51.00%
	Gas	May-14	Dec-14	(10.20)	(10.20)	10.2%	51.00%
WPS	Electric	Apr-15	Dec-15	94.10	(7.90)	10.0%	51.00%
	Gas	Apr-15	Dec-15	9.40	(6.20)	10.0%	51.00%
PGL	Gas	Feb-14	Jan-15	128.90	71.10	9.05%	50.33%
NSG	Gas	Feb-14	Jan-15	7.10	3.50	9.05%	50.48%
Michigan	Gas	Jun-15	Dec-15	6.7	3.4	9.9%	52.00%
Minnesota	Gas	Sep-15	Oct-16	14.80	6.8	9.1%	50.32%

Source: Company reports

Trends in renewable energy are particularly harmful to WEC as Wisconsin is not a favorable location for solar or wind power. I believe this is why WEC has targeted natural gas as a cleaner fuel source than coal.

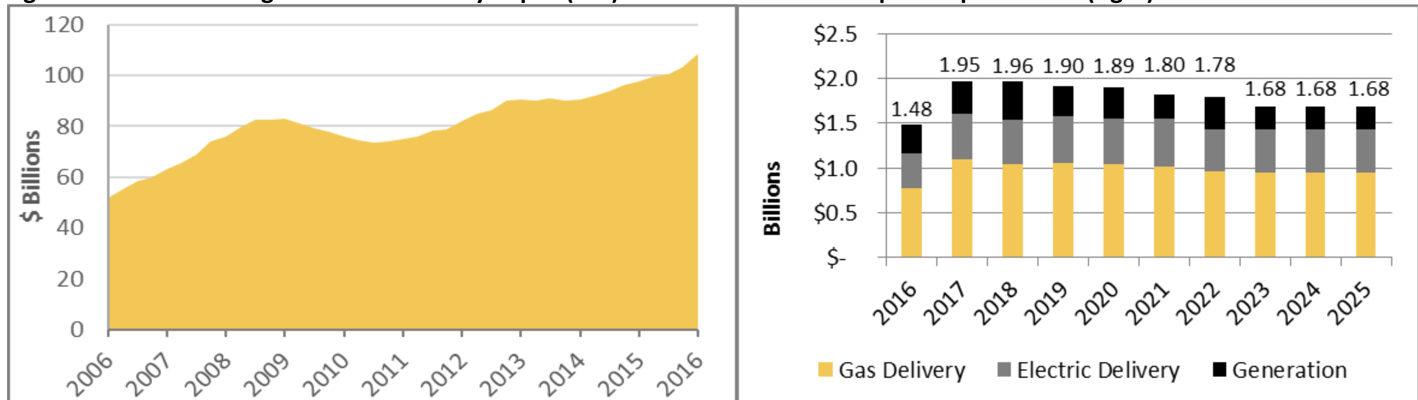
WEC is subject to significant environmental regulation. Emissions such as carbon dioxide, sulfur dioxide, nitrogen oxide and other greenhouse gasses are heavily monitored and regulated. The Clean Power Plan (CPP), initiated by the Environmental Protection Agency in 2015, imposes greenhouse gas reduction standards on current generating facilities. The CPP is currently pending judicial review at the Supreme Court. Increased costs related to the CPP may not be fully recoverable in rate cases and free cash flow could be negatively affected by this and further environmental regulation.

Capital expenditures

I forecast capital expenditures in 2017 of $1.95 billion to add about $0.19 to 2018 EPS.

Low interest rates and aging distribution channels have contributed to an extended building cycle amongst electric utilities. A recent EEI cash flow analysis estimated a 47.8% rise in industry capital expenditures from the third quarter of 2010 through the first quarter of 2016. The EEI has forecasted this building cycle to peak in 2016. WEC has forecasted its capital expenditure plan to peak in 2018 at $1.96 billion (about 9.8% of WECS' net property, plant, and equipment). Much of industry capital expenditure has been allocated towards gas and electric delivery as opposed to generation. Companies have sought to improve delivery reliability and replace aging delivery systems as well as move power lines underground. Completion of a building cycle can result in significantly enhanced cash flows due to lower capital expenditures but lowers rate base growth going forward.

Figures 9 and 10: Rolling 12-month industry CapEx (left) and WEC forecasted capital expenditures (right)



Source: SNL Financial, EEI Finance Department, & Company Reports

The EEI forecasts industry cap-ex to fall about 20% from peak levels over the next two years.

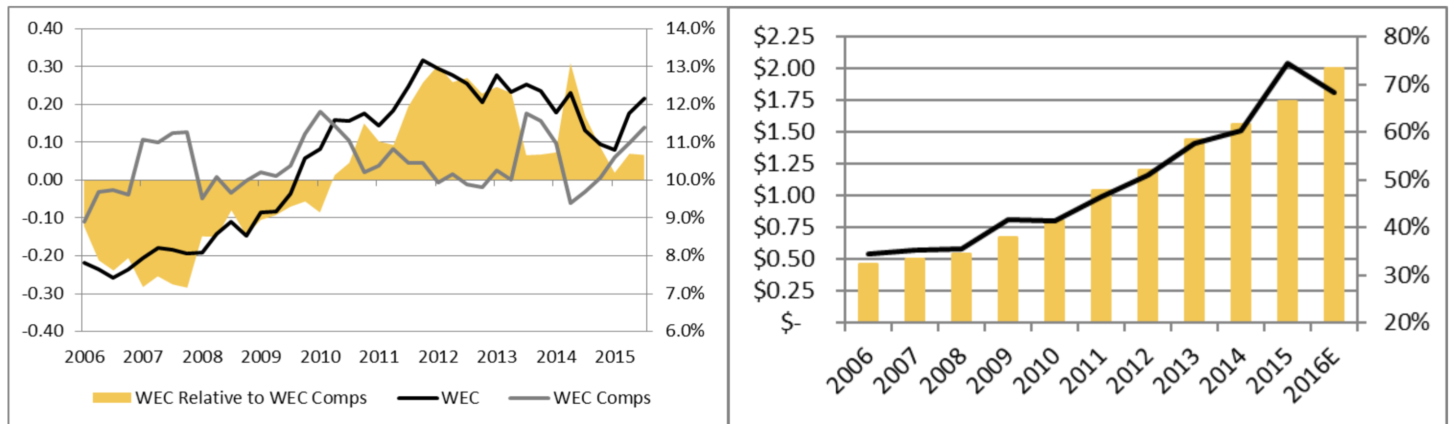
WEC plans to construct 170 MW of capacity in Michigan's Upper Peninsula by investing in $255 million in two natural gas sites. In Chicago, People's Gas is replacing approximately 2,000 miles of natural gas pipelines. Annual pipeline expenditures of $250 million to $280 million are expected through 2018. WPS is in the process of implementing a multi-pollutant control technology, at an estimated cost of approximately $345 million. An additional $100 million investment of WEC's System Modernization and Reliability Project is expected in 2019 and 2020.

Management and customer developments

Other new roles in the management team include Scott Lauber as chief financial officer and Kevin Fletcher as president of We Energies and WPS.

Effective May 1, 2016, Allen Leverett replaced Gale Klappa as CEO of WEC Energy Group Inc. Klappa retired from the chief executive role but remained on the board as a non-executive chairperson. In addition to replacing Klappa as CEO, Allen Leverett was appointed to WEC's board of directors in January 2016. Leverett is targeting 6 to 8 percent earnings growth in 2016 and 5 to 7 percent thereafter. Dividend growth is projected to be in line with earnings growth and the annual dividend payout ratio is targeted to be between 65% and 70%. Drivers of earnings growth that WEC management must address include: working with regulators, integrating operations with Integrys, determining capital allocation opportunities, and identifying additional cost savings.

Figures 11 and 12: WEC net margin relative to comps 2006 - 2016(left) and Annual dividend per share and payout ratio (right)

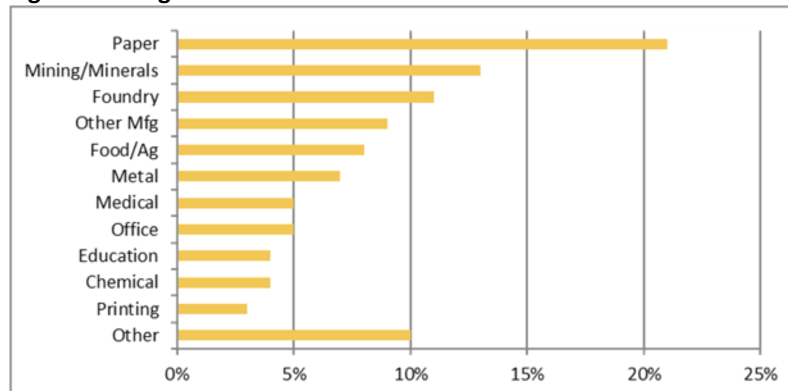


Source: Company Reports & FactSet

The EEI forecasts electric demand to increase 19.7% from 2015 to 2040.

Demand for electricity and natural gas services are significantly influenced usage per customer. Approximately 35% of its retail customer base are small commercial and industrial (C&I) businesses, 37% are large C&I businesses, and the remaining 28% include residential and farm consumers. In relation to comparable Midwestern utilities, WEC's customer base consists of a higher percentage of C&I business. This means WEC's customer demand is more cyclical and subject to economic downturns than its competition.

Figure 13: Large C&I Retail MWh Deliveries Mix



Source: Company Reports

Customer demand is significantly influenced by several factors, including population growth, weather trends, housing and business starts, wages, unemployment, natural gas prices, energy rates, and self-generation. In the state of Michigan, customers can select energy providers. If other states in which WEC operates adopt similar standards, WEC could be negatively affected by customers choosing alternative suppliers. In February 2015, WEC's largest retail customer, Tilden Mining Company, a subsidiary of Cliffs Natural Resources, returned to WEC after choosing an alternative supplier two years earlier. In 2015, Tilden announced its intention to close one of its two iron ore mines in the Upper Peninsula in 2017. In August 2016, Cliffs Natural Resources announced a 20-year agreement with WEC to supply Tilden with electrical power.

Competitive position

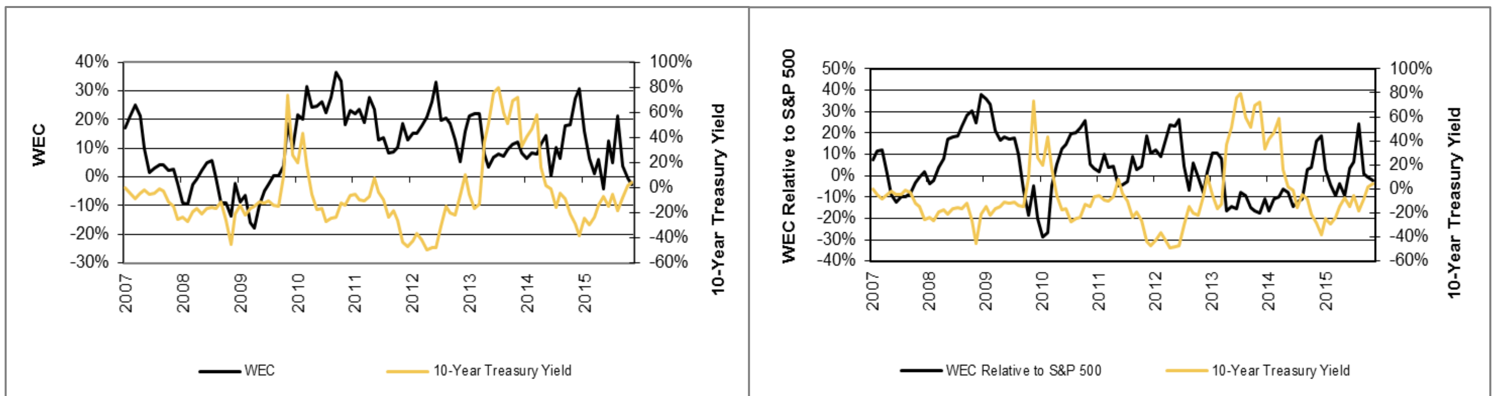
In Wisconsin, retail electric customers are not able to choose their electric supplier. WEC's competes for customers in the wholesale electric market as well as cooperatives and municipalities. WEC also faces competition from self-generation of large industrial customers. Competitive positioning and individual company growth in the industry has developed largely through acquisitions due to natural geographic monopolies. Going forward, WEC's competitive success will depend on its ability to maintain good margins, identify favorable acquisitions, and obtain favorable rate orders.

First in the field policy protects WEC from potential competitors, by disallowing construction of natural gas distribution systems. Recently, regulators have begun to implement procedures in the natural gas industry to encourage competition. As well as competing with other natural gas suppliers, WEC must evaluate the likelihood of customers with dual fuel capability switching to alternate fuels. Volatile commodity prices may cause such customers to seek alternative fuel sources.

Macroeconomic Trends

The utility industry is negatively correlated to Treasury yields. Due to dividend reliability, WEC and its competitors have consistently outperformed the S&P 500 in periods of decreasing interest rates but underperformed relative to the S&P 500 during periods of rising interest rates. WEC's dividend yield and payout ratio currently lie at about 3.4% and 68% respectively. This is slightly higher than comparable companies at 3.31% and 64.3% respective average dividend yield and payout ratio.

Figures 14 and 15: 10-Year Treasury Yield compared to WEC (left) and 10-Year Treasury Yield relative to the S&P 500 index (right)



Source: Bloomberg, IMCP

In 2017, a rising yield curve and interest rate increases may cause WEC and the utility industry to underperform the S&P 500. Although the Fed hinted at a greater number of interest rate hikes in 2017, many investors have remained doubtful, and multiples have remained above historical averages. If expectations change, and the outlook for more rate hikes increases, WEC will experience above average volatility and downward pressure.

Financial Analysis

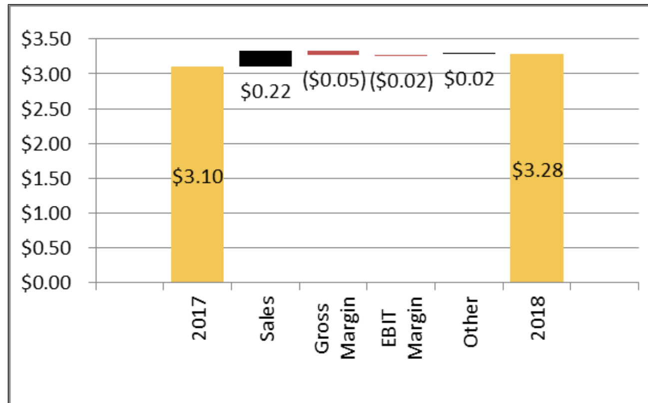
I expect GAAP EPS to grow to $3.10 in 2017. Anticipated operating revenue growth of 4.4% should increase earnings by $0.17. Gross margin and EBIT margin decline will each contribute $0.06 negatively to earnings. Gross margin is expected to decline to 53.5%; down from about 53.9% in 2016. 2016 has been an abnormally high year for gross margin and I anticipate a reversion of this trend back to normal levels. Excluding the impact of a lower gross margin, the primary reason for a lower EBIT margin in 2017 is an additional $35 million to pension expense. This will decrease WEC's equity in earnings of transmission affiliate. The $35 million pension expense will cause EPS to fall $0.11. This will be partially offset by efficiencies related to the acquisition and reduced acquisition expenses. A slightly higher interest expense should be more than offset by a lower tax rate, which would add $0.05 to EPS.

Figure 16: Quantification of 2017 EPS drivers

Source: IMCP Valuation Model

I expect 2018 EPS to increase $0.19 to $3.29. Operating revenues should increase earnings by $0.24. Gross margin (including depreciation and amortization) decline will contribute $0.05 negatively to earnings. I anticipate depreciation expense to rise in 2018 following greater capital expenditures in 2016 and 2017. I expect the increase in depreciation expense to decrease gross margin by 0.3% in 2018. Notice in Figure 17 EBIT margin decline (excluding the impact of gross margin) will contribute $0.02 negatively to earnings. I expect ATC's lower allowed ROE, following the recent FERC rate cases to decrease equity earning in transmission affiliate by about $6 to $10 million. A slightly higher interest expense should be more than offset by a lower tax rate, which would add $0.02 to EPS.

Figure 17: Quantification of 2018 EPS drivers



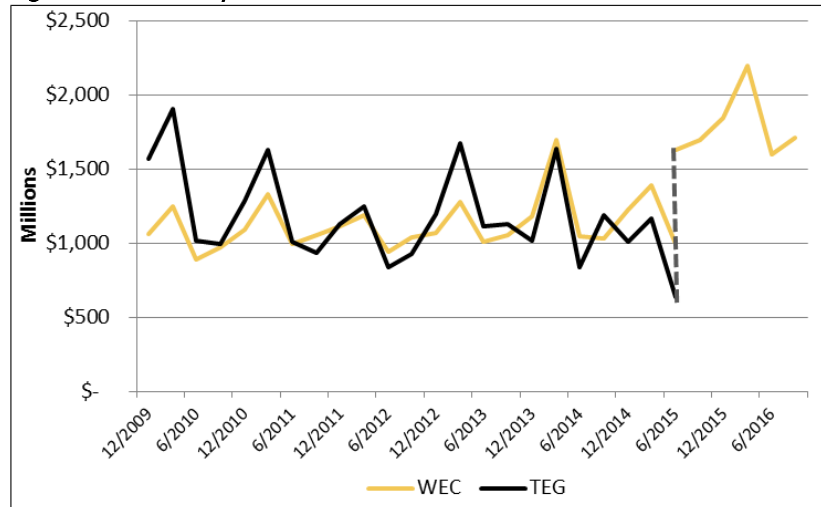
Source: IMCP Valuation Model

Revenues

Prior to the fiscal year 2014, WEC experienced mid-single-digit growth in operating revenue. In 2014 operating revenue grew 10.6%. Most this growth was from retail gas revenues resulting from a 5.3% colder winter (measured in heating degree days) than 2013. Total gas utility operating revenues grew by 33.9% in 2014.

In 2015, revenue grew by 18.6%, from $4,997 million in 2014 to $5,926 million in 2015. The two primary drivers of revenue growth in 2015 were the Integrys acquisition and the return of the two Tilden Mines in Michigan's Upper Peninsula as customers. The iron ore mines are WEC's largest retail electric customer. The mines had previously switched to another electricity supplier in 2013 before returning to WEC in February of 2015. Following the return, Cliffs Natural Resources, the owner of the mines, signed a 20-year contract with WEC to continue to power the mines. In the second quarter of 2015, WEC began reporting operating results of the combined entity, including the operations of Integrys. In the last three quarters of 2015, operating revenues totaled $5.2 billion, a 58.7% increase from the final three quarters of 2014.

Figure 18: Quarterly revenues of WEC and TEG

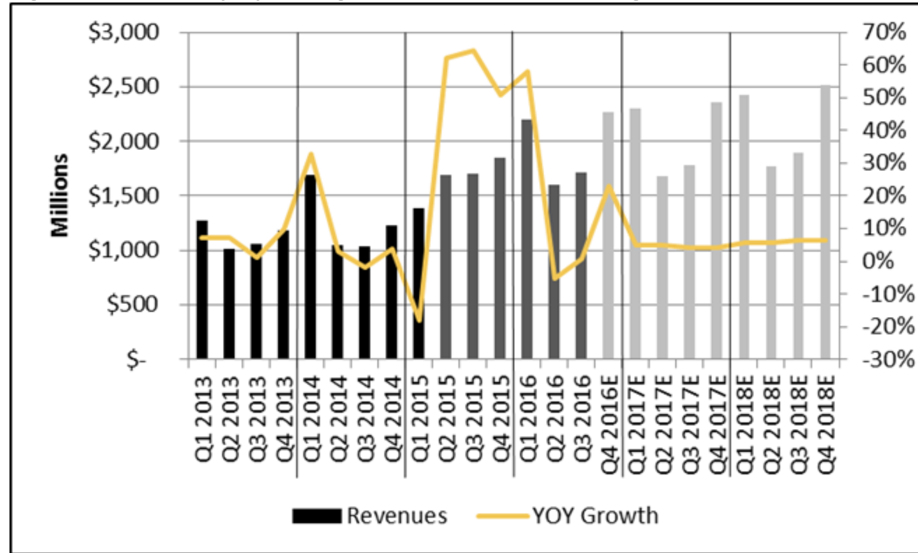


Source: Company Reports

I anticipate full year 2016 revenue to be about $7.8 billion, a 31.3% growth from 2015. 2016 will be the first full year in which the operations of Integrys are included in WEC's financial results. First quarter operating revenue was reported at $2,195 million, a 58.1% growth from the prior year. In the first 9 months of fiscal year 2016, WEC reported operating revenues of $5.5 billion. Therefore, I anticipate fourth quarter operating revenues of $2,272 million. This is 22.9% higher than 2015 fourth quarter results of $1,848.

Revenues will likely be helped by a colder winter, developments entering service and customer growth. Fourth quarter 2015 revenues were significantly hampered by the warmest winter in WEC's history. Notice the greater seasonality in revenues in Figure 19, in which more revenues occur in Q1 and Q4. I expect more normal weather conditions to increase sales volume and drive revenue by $200 million. I also expect greater customer growth and demand due partially to a more positive economic outlook for WEC's commercial and industrial customer base.

Figure 19: Quarterly Operating Revenue vs YoY revenue growth 2013 – 2016E



Source: Company Reports

I expect revenue growth to return to the mid-single digit range in 2017 and 2018 and beyond. I anticipate sales growth of 4.4% and 5.7% in 2017 and 2018 respectively. Sales growth will be significantly dependent on capital expenditures and rate cases in the coming years. In Figure 20 I calculate sales growth attributable to capital expenditures. I begin by using expected ROE and equity component adjusted for taxes to calculate EPS growth attributable to capital expenditures. I then utilize profit margin to convert EPS growth into sales growth.

- EPS Growth = (Prior Year CapEx x Equity (%) x ROE (%) X (1 – Tax Rate (%))) / Shares
- Sales Growth = (EPS Growth x Shares) / Profit Margin

Figure 20: Next 7 years' sales growth from capital expenditures

Year	Prior Yr CapEx (billions)	ROE	Equity	Tax Rate	EPS Growth	Profit Margin	SALES Growth (millions)
2017	$ 1.48	10.26%	51%	39%	$ 0.15	12.0%	$ 394
2018	$ 1.95	10.00%	51%	38%	$ 0.19	12.1%	$ 504
2019	$ 1.96	10.17%	51%	37%	$ 0.20	12.1%	$ 530
2020	$ 1.90	10.88%	51%	36%	$ 0.21	12.1%	$ 556
2021	$ 1.85	11.62%	51%	36%	$ 0.22	12.1%	$ 581
2022	$ 1.80	12.06%	51%	35%	$ 0.23	12.1%	$ 604
2023	$ 1.78	12.68%	51%	35%	$ 0.24	12.1%	$ 628

Source: Company Reports

Capital expenditures are based on management forecasts. I use the company's weighted average allowed ROE and equity component as the assumption for the first-year projection. You will notice ROE remains below 11% in the first 4 years. I base this assumption on lower approved ROE's in future rate cases. ROE then rebounds towards historical average. From 2017 to 2023, sales growth attributable to capital expenditure increases from $394 million to $628 million.

The sales growth in Figure 20 is used as a basis for my belief that total operating revenues in 2019 through 2023 should grow at about 5% per year in line with management's expectations. It is important to note that a growing ROE and lower tax rate are somewhat aggressive assumptions, justifying my belief that consensus growth is overstated.

Revenue and EPS Estimates

I am less optimistic on revenue, but more optimistic on EPS estimates for FY 2016 relative to consensus. In FY 2017 and FY 2018, my estimates for revenue are lower than consensus. My 2016 EPS is above the upper range of management's guidance and my 2017 EPS is within management's guidance range and equals consensus. Overall, my estimates of revenue and GAAP EPS are in line with consensus.

Figure 21: Revenue and EPS estimates

	2016E	2017E	2018E
Revenue Estimate*	$7,781	$8,127	$8,589
YoY Growth	31.3%	4.4%	5.7%
Revenue Concensus*	$8,527	$8,745	$8,809
YoY Growth	43.9%	2.6%	0.7%
*in millions			
EPS Estimate	$3.00	$3.10	$3.28
YoY Growth	27.6%	3.3%	5.7%
EPS Consensus	$2.94	$3.11	$3.33
YoY Growth	7.7%	5.8%	7.1%
EPS Guidance High	$2.94	$3.12	-
EPS Guidance Low	$2.88	$3.06	-

Source: FactSet

Return on Equity

WEC has historically achieved a return on equity above its comps. This is largely due to its higher net profit margins than the industry, which has more than offset a lower than average leverage ratio, thus it has a higher ROE with less risk. In 2015, the ROE results are skewed by the acquisition. Acquisition related costs caused net profit margin to drop while the spike in assets decreased the sales-to-average assets ratio. This drove down ROA to 2.9% and caused ROE to decrease from 13.6% in 2014 to 9.8% in 2015. Except for the 2015 acquisition, DuPont analysis reveals that ROE is driven primarily by profit margins.

Figure 22: ROE breakdown, 2013-2018E

3-stage DuPont	2013	2014	2015	2016E	2017E	2018E
Net income / sales	12.8%	11.8%	10.8%	12.2%	12.1%	12.1%
Sales / avg assets	0.31	0.34	0.27	0.26	0.27	0.28
ROA	4.0%	4.0%	2.9%	3.2%	3.2%	3.4%
Avg assets / avg equity	3.47	3.43	3.39	3.36	3.31	3.26
ROE	13.8%	13.6%	9.8%	10.8%	10.7%	10.9%

Source: Company Reports

Thus far, the financial results of 2016 suggest a recovery of net profit margin but not asset turnover. Therefore, I anticipate ROA to grow to 3.2% in 2016. WEC's recent rate cases have required the company to maintain its common equity components around 50% - 52%, so I expect ROE in 2016-2018 to be only modestly affected by leverage. I expect ROE to recover to 10.8% in 2016 and remain near that level in 2017 and 2018. I do not expect ROE to return to 2013 – 2014 levels due to a decline in allowed ROE in recent rate cases.

Free Cash Flow

WEC's ability to generate free cash flow has been impressive over the last several years. The electric utility industry is notoriously capital intensive, and companies constantly seek capital projects to grow earnings. Many comparable companies typically produce lower or negative free cash flows.

My analysis suggests that WEC has been able to maintain above average free cash flows because of its high profitability. The resulting output shows that NOPAT has typically been greater than growth in net fixed assets (CapEx – depreciation). Despite WEC's ability to generate positive free cash flows, these results are highly volatile on a year-to-year basis.

I expect FCFE in 2016 through 2018 to be slightly lower than previous years because the company has ramped up capital expenditures. In its December investor presentation, WEC again revised its capital plan upward to reflect greater investment in gas delivery systems. In 2017 and 2018, the company expects to invest $1.95 billion and $1.96 billion respectively. To finance these projects, I expect WEC to issue debt in 2017 and 2018.

Please notice that 2015 figures for changes in net fixed assets and debt have been adjusted for the Integrys acquisition.

Figure 23: WEC FCF analysis 2012 – 2018E

Free Cash Flow	2012	2013	2014	2015	2016E	2017E	2018E
NOPAT	$705	$737	$738	$838	$1,192	$1,234	$1,305
Growth		*4.5%*	*0.2%*	*13.5%*	*42.3%*	*3.6%*	*5.7%*
NOWC	$638	$934	$666	$751	$674	$542	$193
Net fixed assets	$13,012	$13,218	$13,612	$27,148	$27,889	$28,718	$29,824
Total net operating capital	$13,650	$14,153	$14,278	$27,899	$28,563	$29,259	$30,018
Growth		*3.7%*	*0.9%*	*95.4%*	*2.4%*	*2.4%*	*2.6%*
- Change in NOWC		$296	-$269	$85	-$76	-$132	-$348
- Change in NFA		$206	$394	$13,536	$740	$829	$1,107
+ NFA attributable to acquisition				$12,453			
FCFF		$235	$613	-$330	$528	$538	$546
Growth			*161.2%*	*-153.8%*	*-260.3%*	*1.8%*	*1.6%*
- After-tax interest expense		$158	$149	$198	$243	$254	$268
+ Net new short-term and long-term debt		-$18	-$30	$5,164	-$30	$124	$155
- Debt attributable to acquisition				$4,228			
FCFE		$59	$434	$409	$256	$408	$433
Growth			*640.0%*	*-5.6%*	*-37.5%*	*59.2%*	*6.3%*
FCFF per share		$1.03	$2.72	-$1.22	$1.67	$1.70	$1.73
Growth			*163.5%*	*-144.8%*	*-237.7%*	*1.8%*	*1.6%*
FCFE per share		$0.26	$1.92	$1.51	$0.81	$1.29	$1.37
Growth			*646.5%*	*-21.4%*	*-46.3%*	*59.2%*	*6.3%*

Source: Company reports

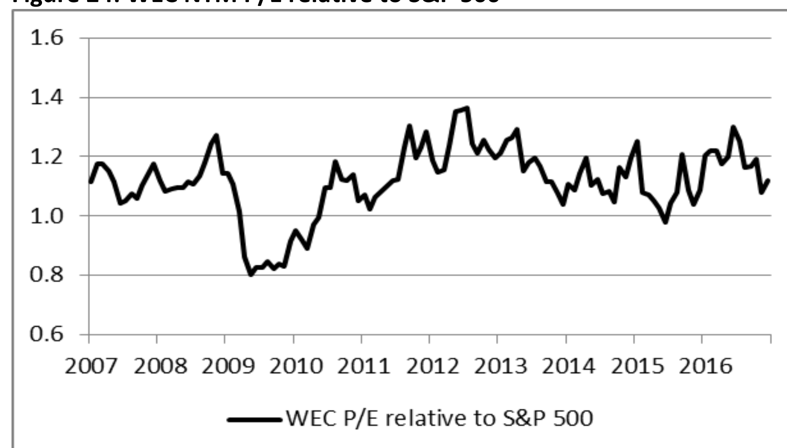
Valuation

WEC was valued using a 3-stage discounted dividend model and a relative valuation approach. Based on forecasted NTM P/E and expected 2018 EPS of $3.28, the stock is overvalued with a target price of $54.88. A P/B relative valuation regression, based on ROE, shows WEC to be slightly overvalued compared to its peers. Price-to-book valuation yielded a price of $55.79. A detailed DCF analysis values WEC slightly higher, at $55.61. Based on these valuations, I believe WEC is worth about $55.00.

Trading History

WEC is currently trading near its ten-year average NTM P/E relative to the S&P 500. Notice WEC typically trades at a P/E above the S&P 500, and trades within a range of 0.8 to 1.4 times the market. WEC's current NTM P/E is at 18.9 compared to its ten-year average of 16.0. I expect some regression towards that amount in the next year as interest rates rise and industry multiples fall.

Figure 24: WEC NTM P/E relative to S&P 500



Source: FactSet

Assuming the firm's NTM P/E falls to 18.0 by the end of 2017, it should trade at $59.04 by the end of the year based on my 2018 EPS estimate.

- Price = P/E x EPS = 18.0 x $3.28 = $59.04

Discounting $59.04 back to today at a 7.58% cost of equity (explained in Discounted Cash Flow section) yields a price of $54.88. Multiplying the P/E of 18.0 by 2018 consensus EPS of $3.33 results in a stock value of $55.72 today.

Relative Valuation

WEC Energy Group Inc. is currently trading at a P/E in line with its peers, with a TTM P/E of 20.2 compared to an average of 20.6. P/B is also in line with peers; however, WEC's P/S ratio is higher than its peers. This is likely due to the company's high net profit margin relative to its peers.

Figure 25: WEC 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	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
WEC	WEC ENERGY GROUP INC	$58.65	$18,511	(0.3)	4.7	(2.1)	(10.2)	12.3	14.3	6.2	9.7%	-9.7%	25.6%	5.8%	7.1%	4.2%	-0.05	102.2%	A	3.42%	66.8%
AEE	AMEREN CORP	$52.46	$12,729	(0.2)	6.8	6.7	(2.1)	19.2	21.4	5.9	0.0%	7.9%	4.6%	2.2%	7.9%	35.0%	0.29	91.9%	B	3.27%	63.4%
CMS	CMS ENERGY CORP	$41.62	$11,650	(0.4)	3.5	(0.9)	(9.2)	13.5	15.4	7.2	-1.1%	8.6%	6.3%	8.0%	8.3%	7.9%	0.06	207.4%	B+	2.98%	58.7%
DTE	DTE ENERGY CO	$98.51	$17,676	(0.4)	5.8	5.2	(0.6)	20.8	22.8	5.2	17.4%	-20.6%	26.2%	4.3%	7.7%	1.6%	0.15	103.8%	A-	3.10%	65.2%
EXC	EXELON CORP	$35.49	$32,767	(0.6)	9.2	6.6	(2.4)	28.2	27.8	4.5	92.7%	35.1%	5.5%	-3.0%	8.1%	-7.9%	0.30	126.7%	B	3.56%	95.2%
LNT	ALLIANT ENERGY CORP	$37.89	$8,620	(0.8)	5.5	(1.1)	(4.6)	19.4	21.3	7.9	35.2%	-2.9%	13.1%	5.8%	6.0%	5.3%	0.37	98.9%	B+	3.10%	76.6%
PPL	PPL CORP	$34.05	$23,141	(0.6)	1.8	(1.5)	(9.8)	(0.8)	(0.2)	2.1	-17.4%	-61.3%	148.5%	-14.3%	7.4%	1.7%	0.55	181.1%	B	4.46%	56.2%
XEL	XCEL ENERGY INC	$40.70	$20,674	(0.6)	4.3	(1.1)	(9.1)	11.8	13.3	5.5	4.7%	-4.4%	13.4%	5.0%	6.5%	3.7%	0.06	122.0%	A-	3.34%	61.8%
Average			$18,221	(0.5)	5.2	1.5	(6.0)	15.5	17.0	5.6	17.7%	-5.9%	30.4%	1.7%	7.4%	6.4%	0.21	129.2%		3.40%	68.0%
Median			$18,094	(0.5)	5.1	(1.0)	(6.9)	16.3	18.3	5.7	7.2%	-3.7%	13.2%	4.7%	7.6%	3.9%	0.22	112.9%		3.31%	64.3%
SPX	S&P 500 INDEX	$2,239		(0.5)	1.8	3.3	6.7	8.5	9.5			1.0%	0.8%	11.7%	11.6%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017E	2018E	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
WEC	http://www.wecenergygroup.c	10.4%	2.08	20.4	21.9	19.9	20.2	18.4	18.9	17.6	10.9%	2.18	23.7%	4.8%	17.3	8.1	8.2	30.1%	-14.9%	7.1%	$28.17
AEE	http://www.ameren.com	9.1%	1.77	19.2	16.7	19.4	19.6	19.6	18.9	17.5	10.5%	2.03	22.8%	4.3%	14.3	6.4	5.1	6.7%	2.5%	-4.4%	$29.65
CMS	http://www.cmsenergy.com	13.2%	2.73	20.0	19.1	20.7	20.0	20.2	19.2	17.7	8.4%	1.73	20.0%	4.3%	16.5			10.6%	-2.6%	0.1%	$15.26
DTE	http://www.dteenergy.com	10.0%	1.94	16.9	19.8	19.3	21.6	18.4	18.5	17.2	8.6%	1.66	13.6%	4.2%	17.4	8.5	6.1	8.5%	-0.1%	4.2%	$50.88
EXC	http://www.exeloncorp.com	9.5%	1.26	19.7	10.9	13.2	26.9	14.0	13.7	12.6	8.1%	1.08	13.3%	4.9%	13.2	3.7	3.8	1.9%	8.4%	8.7%	$28.19
LNT	http://www.alliantenergy.com	11.2%	2.23	19.2	18.6	19.9	25.1	18.6	18.9	17.8	13.0%	2.59	18.5%	5.3%	19.5	8.6	6.3	11.4%	1.4%	-1.0%	$16.96
PPL	http://www.pplweb.com	17.1%	2.32	12.9	33.8	13.6	12.6	15.3	15.8	14.7	22.0%	2.99	39.5%	5.3%	14.7	7.0	5.9	6.5%	4.2%	11.3%	$14.68
XEL	http://www.xcelenergy.com	10.2%	1.88	17.7	18.5	18.5	18.8	17.9	17.6	16.5	9.6%	1.78	20.0%	4.4%	14.9	6.7	5.9	14.6%	-0.4%	1.4%	$21.63
Average		11.3%	2.03	18.3	19.9	18.1	20.6	17.8	17.7	16.5	11.4%	2.00	21.4%	4.7%	16.0	7.0	5.9	11.3%	-0.2%	3.4%	
Median		10.3%	2.01	19.2	18.8	19.3	20.1	18.4	18.7	17.4	10.1%	1.91	20.0%	4.6%	15.7	7.0	5.9	9.5%	0.7%	2.8%	

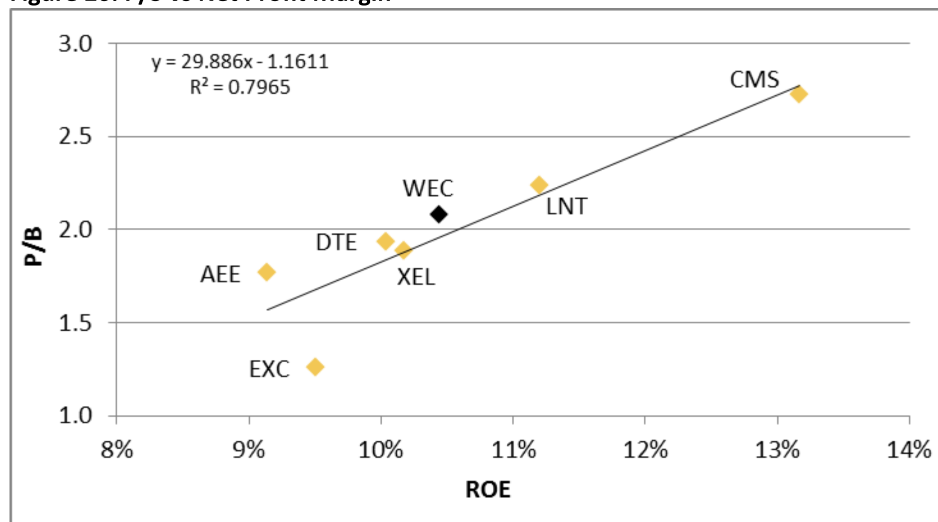
Source: FactSet

Figure 26 analyzes the relationship between P/B and ROE. The calculated R-squared of the regression indicates that ROE explains nearly 80% of a sampled firm's P/B. WEC currently has a P/B of 2.08 and appears to be overvalued.

- Estimated P/B = Estimated 2017 ROE (10.7%) x 29.886 – 1.1611 = 2.037
- Target Price = Estimated P/B (2.037) x 2017E Book per share ($29.47) = $60.02

Discounting this price of $60.02 back to the present at a 7.58% cost of equity leads to a target price of $55.79. This is 4.9% below the current price of $58.65.

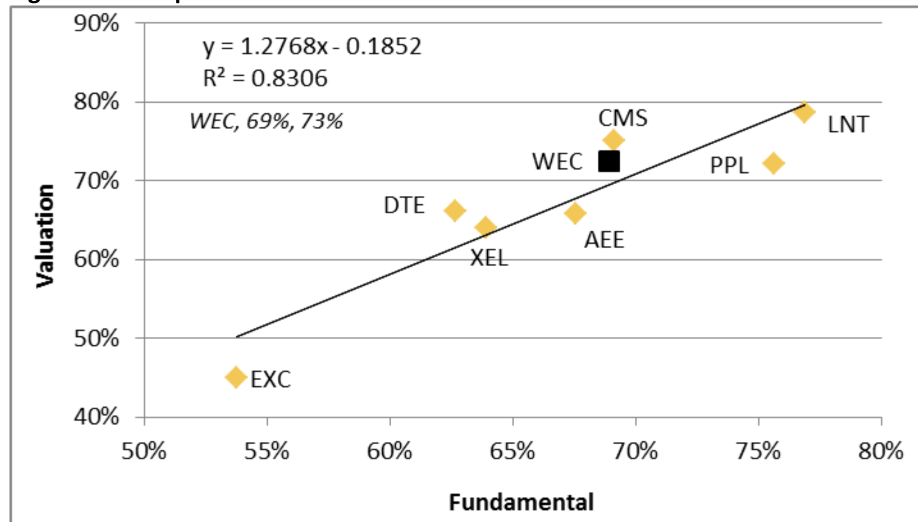
Figure 26: P/S vs Net Profit Margin



Source: FactSet

I also created a composite ranking of several fundamental and valuation metrics. The calculated R-squared of the regression indicates that the fundamental inputs explain over 83% of a sampled firm's valuation. Since the factors have different scales, each was converted to a percentile before calculating the composite score. I compared a weighted average of long-term growth rate, leverage, payout ratio, NTM ROE, and net profit margin to a weighted average composite of P/E, P/B, P/S, EV/EBIT, and yield. Based on its current fundamentals, WEC appears slightly overvalued.

Figure 27: Composite relative valuation



Source: FactSet, IMCP

Figure 28: WEC comparable companies

		Fundamental					Valuation						
	Weight	25.0%	12.5%	12.5%	25.0%	25.0%	25.0%	25.0%	25.0%	12.5%	12.5%		
Ticker	Name	LTG	Leverage	Payout	ROE	NPM	P/E	P/B	P/S	EV/EBIT	Yield	Fund	Value
WEC	WEC ENERGY GROUP INC	78%	90%	84%	61%	49%	96%	76%	73%	89%	87%	69%	73%
AEE	AMEREN CORP	75%	100%	89%	53%	48%	93%	65%	68%	73%	91%	68%	66%
CMS	CMS ENERGY CORP	91%	44%	96%	77%	38%	100%	100%	58%	85%	100%	69%	75%
DTE	DTE ENERGY CO	66%	88%	86%	59%	39%	93%	71%	55%	89%	96%	63%	66%
EXC	EXELON CORP	57%	73%	59%	56%	37%	64%	46%	36%	68%	84%	54%	45%
LNT	ALLIANT ENERGY CORP	100%	93%	73%	66%	59%	96%	82%	87%	100%	96%	77%	79%
PPL	PPL CORP	27%	51%	100%	100%	100%	66%	85%	100%	76%	67%	76%	72%
XEL	XCEL ENERGY INC	69%	75%	91%	60%	44%	89%	69%	60%	77%	89%	64%	64%

Source: FactSet, IMCP

Discounted Cash Flow Analysis

Based on a three-stage discounted cash flow model, I estimate the company's stock to be worth $55.61.

The cost of equity was calculated to be 7.58% using the CAPM with the following assumptions:

- Risk-free rate of 2.44%. This is currently the 10-year Treasury bond yield.
- A beta of 0.60. This is above the industry average, but WEC increased its risk with the recent acquisition.
- Market return of 11%. Historically, this has been about the average return of the market.

The cost of equity = 2.44% + 0.60 x (11.0% – 2.44%) = 7.58%

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 dividends per share. I forecast these per share dividends to be $2.08 and $2.24, respectively. On December 1, 2016, WEC's board of directors announced its plan to raise the quarterly dividend to $0.52 per share, indicating a full year dividend of $2.08. I anticipate WEC to raise its DPS to $2.24 in 2018, resulting in a payout ratio of about 68.4%. This aligns with WEC's target payout of 65% to 70% of earnings.

Discounting these dividends results in a value of $3.87 for the first stage of the model.

Stage Two - Stage two of the model focuses on fiscal years 2019 to 2023. Recall on page 10, I forecasted sales to grow at about 5% per year and net profit margin to remain stable. I have calculated net income for stage two based upon the same margin and growth assumptions. I expect EPS to grow from $3.10 in 2017 to $4.19 in 2023.

Figure 29: EPS estimates for 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$ 3.10	$ 3.28	$ 3.45	$ 3.62	$ 3.80	$ 3.99	$ 4.19

During this period, DPS is calculated based on a constant growth rate of 5%. At a 5% growth rate, dividends would likely remain within management's target payout ratio of 65 – 70%. The resulting dividends are then discounted using the company's 7.58% cost of equity.

Discounting these dividends results in a value of $9.02 for the second stage of the model.

Figure 30: DPS and discounted DPS, 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
DPS	$ 2.08	$ 2.24	$ 2.35	$ 2.47	$ 2.60	$ 2.73	$ 2.86
Discounted DPS	$ 1.93	$ 1.94	$ 1.89	$ 1.85	$ 1.80	$ 1.76	$ 1.72

Stage Three - Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. Although industry multiples are currently elevated, I expect WEC's P/E to return to its historical average over the next 7 years. Therefore, a P/E ratio of 17 is assumed at the end of WEC's terminal year.

Given the assumed terminal earnings per share of $4.19 and a price-to-earnings ratio of 17, a terminal value of $71.23 per share is calculated. Using the 7.58% cost of equity, this number is discounted back to a present value of $42.72.

Total Present Value – given the above assumptions and utilizing a three-stage discounted cash flow model, an intrinsic value of $55.61 is calculated (3.87 + 9.02 + 42.72). Given WEC's current price of $58.65, this model indicates that the stock is slightly overvalued.

Figure 31: DCF Summary

Summary			
First stage	$3.87	Present value of first 2 year cash flow	
Second stage	$9.02	Present value of year 3-7 cash flow	
Third stage	$42.72	Present value of terminal value P/E	
Value	**$55.61**	= value at beg of fiscal yr	2017

Scenario Analysis

Adjusting my assumptions in my DCF model shows how different scenarios can affect WEC's valuation. Figure 32 displays a more positive outlook than my original model. Decreasing beta to 0.55 in my CAPM equation reduces the cost of equity to 7.15%. Increasing 2018 assumed dividends per share by $0.01 per quarter increases the second year discounted DPS to $1.99. Assuming a 1% higher second stage growth rate increases second stage present value by $0.61. Increasing terminal P/E by 1 would increase the terminal value to $81.05. Adding these assumptions together results in a present value of WEC of $63.43. This is about 8.2% greater than the current stock price of $58.65. This scenario is bullish considering falling industry allowed ROE and increased cyclicality and seasonality following the Integrys acquisition. As interest rates normalize, I expect industry P/E ratios to return to normal levels. Historically WEC has traded at an average P/E of 17; however, P/E's of the market are elevated so it is still optimistic.

Figure 32: Bull scenario

Summary		
First stage	$3.93	Present value of first 2 year cash flow
Second stage	$9.63	Present value of year 3-7 cash flow
Third stage	$49.99	Present value of terminal value P/E
Value	**$63.54**	= value at beg of fiscal yr 2017

Figure 33 displays a more pessimistic outlook than my original model. Increasing beta in my CAPM equation to 0.65 decreases cost of equity to 8.00%. Decreasing 2018 assumed dividends per share by $2.12 for the year decreases the second year discounted DPS to $1.82. Assuming a 1% lower second stage growth rate decreases the second stage present value by $0.89. Decreasing terminal P/E by 1 would decrease the terminal value to $62.47. Adding these assumptions together results in a present value of WEC of $48.32. This is about 17.6% less than the current stock price of $58.65. This scenario is very bearish. As a large utility company, WEC's competitive advantage, high profit margins, and stable dividends make this scenario a strong price floor.

Figure 33: Bear scenario

Summary		
First stage	$3.74	Present value of first 2 year cash flow
Second stage	$8.13	Present value of year 3-7 cash flow
Third stage	$36.44	Present value of terminal value P/E
Value	**$48.32**	= value at beg of fiscal yr 2017

Risks

Regulation:

A long-term industry downtrend in approved returns and the ATC rate case may be harmful to WEC's bottom line going forward. Environmental regulation is another regulatory threat to WEC's capital budget needs.

Weather:

Above average temperatures in winter months can negatively impact earnings. WEC's increased reliance on natural gas revenues and another abnormally warm winter may hamper revenues.

Interest rates:

Rising interest rates are likely to depress shareholder returns in the short-run. Market expectations may not have fully incorporated the likelihood of additional rate hikes in 2017 and 2018.

Pension expense:

The current interest rate environment has had a negative effect on WEC's pension plan assumptions. Management recently indicated the potential for a 100-basis-point reduction in the current discount rate. WEC expects an increase to 2017 pension expense by about $35 million.

Appendix 1: Income Statement

Income Statement (in millions)							
Items	2012	2013	2014	2015	2016E	2017E	2018E
Operating Revenue	$4,246	$4,519	$4,997	$5,926	$7,781	$8,127	$8,589
Direct costs (inc. Dep & Amort)	$2,009	$2,167	$2,651	$2,802	$3,587	$3,779	$4,020
Gross Profit	$2,238	$2,352	$2,346	$3,124	$4,194	$4,348	$4,570
Operating expenses	$1,137	$1,184	$1,155	$1,719	$2,194	$2,324	$2,465
Earnings before interest & tax	$1,101	$1,167	$1,192	$1,406	$2,000	$2,024	$2,104
Interest expense	$248	$251	$240	$331	$407	$416	$432
Earnings before tax	$853	$917	$951	$1,074	$1,593	$1,607	$1,672
Taxes	$306	$338	$362	$434	$643	$627	$635
Net income	$546	$579	$590	$640	$949	$980	$1,037
Preferred dividends	$0	$1	$1	$2	$1	$1	$1
Net income attributable to common	$546	$577	$588	$639	$948	$979	$1,035
Dividends	$276	$329	$352	$455	$625	$656	$707
Basic Shares	230	228	226	271	316	316	316
Earnings per share	$2.37	$2.54	$2.61	$2.36	$3.00	$3.10	$3.28
Dividends per share	$1.20	$1.45	$1.56	$1.74	$1.98	$2.08	$2.24

Appendix 2: Balance Sheet

Balance Sheet (in millions)							
Items	2012	2013	2014	2015	2016E	2017E	2018E
Assets							
Cash	$36	$26	$62	$50	$52	$54	$22
Operating assets ex cash	$1,237	$1,525	$1,231	$2,157	$1,945	$1,951	$1,890
Operating assets	$1,273	$1,551	$1,293	$2,207	$1,997	$2,005	$1,911
Operating liabilities	$635	$617	$627	$1,456	$1,323	$1,463	$1,718
Net operating working capital	$638	$934	$666	$751	$674	$542	$193
Net working capital	$602	$908	$604	$701	$622	$488	$172
Net fixed assets	$13,012	$13,218	$13,612	$27,148	$27,889	$28,718	$29,824
Invested capital	$13,650	$14,153	$14,278	$27,899	$28,563	$29,259	$30,018
Total assets	$14,285	$14,769	$14,905	$29,355	$29,885	$30,722	$31,736
Liabilities & Equity							
Short-term and long-term debt	$5,261	$5,243	$5,212	$10,377	$10,347	$10,471	$10,626
Other liabilities	$4,224	$4,646	$4,616	$8,837	$9,207	$9,457	$9,732
Preferred Stock	$30	$30	$30	$30	$30	$30	$30
Equity	$4,135	$4,233	$4,420	$8,655	$8,978	$9,301	$9,629
Total supplied capital	$13,650	$14,153	$14,278	$27,899	$28,563	$29,259	$30,018
Total liabilities and equity	$14,285	$14,769	$14,905	$29,355	$29,885	$30,722	$31,736

Appendix 3: Ratios

Ratios	2012	2013	2014	2015	2016E	2017E	2018E
Profitability							
Gross margin	52.7%	52.0%	47.0%	52.7%	53.9%	53.5%	53.2%
Operating (EBIT) margin	25.9%	25.8%	23.8%	23.7%	25.7%	24.9%	24.5%
Net profit margin	12.9%	12.8%	11.8%	10.8%	12.2%	12.0%	12.1%
Activity							
NFA (gross) turnover		0.34	0.37	0.29	0.28	0.29	0.29
Total asset turnover		0.31	0.34	0.27	0.26	0.27	0.28
Liquidity							
Op asset / op liab	2.01	2.51	2.06	1.52	1.51	1.37	1.11
NOWC Percent of sales		17.4%	16.0%	11.9%	9.2%	7.5%	4.3%
Solvency							
Debt to assets	36.8%	35.5%	35.0%	35.3%	34.6%	34.1%	33.5%
Debt to equity	127.2%	123.9%	117.9%	119.9%	115.2%	112.6%	110.4%
Other liab to assets	29.6%	31.5%	31.0%	30.1%	30.8%	30.8%	30.7%
Total debt to assets	66.4%	67.0%	65.9%	65.5%	65.4%	64.9%	64.1%
Total liabilities to assets	70.8%	71.1%	70.1%	70.4%	69.9%	69.6%	69.6%
Debt to EBIT	4.78	4.49	4.37	7.38	5.17	5.17	5.05
EBIT/interest	4.44	4.65	4.96	4.24	4.91	4.86	4.87
Debt to total net op capital	38.5%	37.0%	36.5%	37.2%	36.2%	35.8%	35.4%
ROIC							
NOPAT to sales		16.3%	14.8%	14.1%	15.3%	15.2%	15.2%
Sales to IC		0.33	0.35	0.28	0.28	0.28	0.29
Total		5.3%	5.2%	4.0%	4.2%	4.3%	4.4%
Total using EOY IC	5.2%	5.2%	5.2%	3.0%	4.2%	4.2%	4.3%
ROE							
5-stage							
EBIT / sales		25.8%	23.8%	23.7%	25.7%	24.9%	24.5%
Sales / avg assets		0.31	0.34	0.27	0.26	0.27	0.28
EBT / EBIT		78.5%	79.8%	76.4%	79.6%	79.4%	79.4%
Net income /EBT		63.0%	61.8%	59.4%	59.5%	60.9%	61.9%
ROA		4.0%	4.0%	2.9%	3.2%	3.2%	3.3%
Avg assets / avg equity		3.47	3.43	3.39	3.36	3.32	3.30
ROE		13.8%	13.6%	9.8%	10.8%	10.7%	10.9%
3-stage							
Net income / sales		12.8%	11.8%	10.8%	12.2%	12.0%	12.1%
Sales / avg assets		0.31	0.34	0.27	0.26	0.27	0.28
ROA		4.0%	4.0%	2.9%	3.2%	3.2%	3.3%
Avg assets / avg equity		3.47	3.43	3.39	3.36	3.32	3.30
ROE		13.8%	13.6%	9.8%	10.8%	10.7%	10.9%
Payout Ratio		57.0%	59.8%	71.3%	65.9%	67.0%	68.3%
Retention Ratio		43.0%	40.2%	28.7%	34.1%	33.0%	31.7%
Sustainable Growth Rate		5.9%	5.5%	2.8%	3.7%	3.5%	3.5%

Appendix 4: 3-stage DCF Model

	Year						
	1	2	3	4	5	6	7
First Stage			**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*4.4%*	*5.7%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
NOPAT / S	*15.2%*	*15.2%*	*15.2%*	*15.2%*	*15.2%*	*15.2%*	*15.2%*
S / NWC	*16.67*	*50.00*	*42.50*	*35.00*	*27.50*	*20.00*	*12.50*
S / NFA (EOY)	*0.28*	*0.29*	*0.29*	*0.29*	*0.30*	*0.30*	*0.30*
S / IC (EOY)	*0.28*	*0.29*	*0.29*	*0.29*	*0.29*	*0.29*	*0.29*
ROIC (EOY)	*4.2%*	*4.3%*	*4.4%*	*4.4%*	*4.4%*	*4.5%*	*4.5%*
ROIC (BOY)		*4.5%*	*4.6%*	*4.6%*	*4.6%*	*4.7%*	*4.7%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$8,127	$8,589	$9,019	$9,470	$9,943	$10,441	$10,963
NOPAT	$1,234	$1,305	$1,370	$1,438	$1,510	$1,586	$1,665
Growth		*5.7%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
- Change in NWC	-135	-316	40	58	91	160	355
NWC	*488*	*172*	*212*	*271*	*362*	*522*	*877*
Growth NWC		*-64.8%*	*23.5%*	*27.5%*	*33.6%*	*44.4%*	*68.0%*
- Chg NFA	829	1107	1232	1286	1341	1399	1459
NFA EOY	*28,718*	*29,824*	*31,057*	*32,342*	*33,683*	*35,082*	*36,542*
Growth NFA		*3.9%*	*4.1%*	*4.1%*	*4.1%*	*4.2%*	*4.2%*
Total inv in op cap	694	791	1273	1344	1432	1559	1814
Total net op cap	29205	29996	31269	32613	34045	35604	37419
FCFF	$540	$514	$97	$95	$78	$27	($149)
% of sales	*6.6%*	*6.0%*	*1.1%*	*1.0%*	*0.8%*	*0.3%*	*-1.4%*
Growth		*-4.8%*	*-81.1%*	*-2.6%*	*-17.1%*	*-66.2%*	*-662.7%*
- Interest (1-tax rate)	254	268	282	296	310	326	342
Growth		*5.6%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
FCFE w/o debt	$286	$246	($184)	($201)	($232)	($299)	($491)
% of sales	*3.5%*	*2.9%*	*-2.0%*	*-2.1%*	*-2.3%*	*-2.9%*	*-4.5%*
Growth		*-14.1%*	*-175.0%*	*9.0%*	*15.4%*	*29.0%*	*64.1%*
/ No Shares	315.6	315.6	315.6	315.6	315.6	315.6	315.6
FCFE	$0.91	$0.78	($0.58)	($0.64)	($0.74)	($0.95)	($1.56)
Growth		*-14.1%*	*-175.0%*	*-9.0%*	*-15.4%*	*-29.0%*	*-64.1%*
Dividends	$656	$707	$743	$780	$819	$860	$903
Payout ratio (DPS/EPS)	67%	68%	68%	68%	68%	68%	68%
Dividend Per share	$2.08	$2.24	$2.35	$2.47	$2.60	$2.73	$2.86
* Discount factor	0.93	0.86	0.80	0.75	0.69	0.65	0.60
Discounted FCFE	$1.93	$1.94	$1.89	$1.85	$1.80	$1.76	$1.72
Third Stage							
Terminal value P/E							
Net income	$979	$1,035	$1,088	$1,143	$1,200	$1,260	$1,323
% of sales	*12.0%*	*12.1%*	*12.1%*	*12.1%*	*12.1%*	*12.1%*	*12.1%*
EPS	$3.10	$3.28	$3.45	$3.62	$3.80	$3.99	$4.19
Growth		*5.7%*	*5.1%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
Terminal P/E							17.00
* Terminal EPS							$4.19
Terminal value							$71.23
* Discount factor							0.60
Discounted terminal value							$42.72

Summary		
First stage	$3.87	Present value of first 2 year cash flow
Second stage	$9.02	Present value of year 3-7 cash flow
Third stage	$42.72	Present value of terminal value P/E
Value (P/E)	**$55.61**	= value at beg of fiscal yr 2017

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

Strengths	Weaknesses
High net margins	High emissions
Economies of scale	Limited ROE
Growing rate base	Reliance on C&I customers
Opportunities	**Threats**
Integrys integration	Rising interest rates
Customer growth	Regulation
Improving reliability	Weather

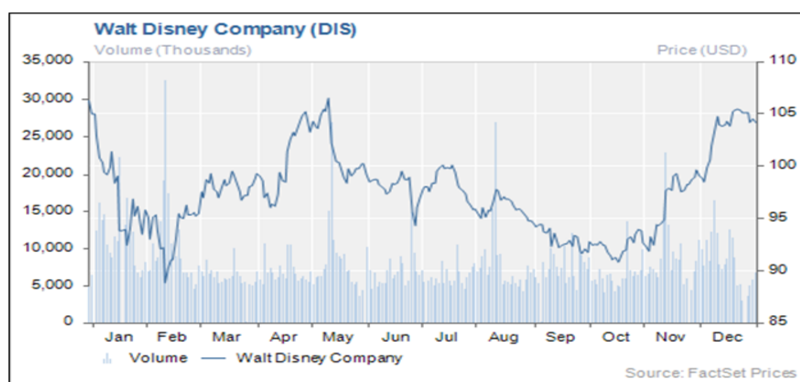
Analyst: Gurcharan Singh

Recommendation	BUY
Target (today's value)	$118
Current Price	$104.22
52 week range	$82.65 - $106.75

Consumer Discretionary - Media Conglomerate

The Walt Disney Company

Share Data	
Ticker:	DIS
Market Cap. (Billion):	$165.86
Inside Ownership	8.2%
Inst. Ownership	59.0%
Beta	0.98
Dividend Yield	1.50%
Payout Ratio	24.8%
Cons. Long-Term Growth Rate	9.4%



	'14	'15	'16	'17E	'18E
Sales (billions)					
Year	$48.81	$52.47	$55.63	$57.10	$62.18
Gr %	8.4%	7.5%	6.0%	2.6%	8.9%
Cons	-	-	-	$57.67	$61.04
EPS					
Year	$4.31	$4.95	$5.76	$5.46	$6.74
Gr %	25.9%	14.8%	16.5%	-5.4%	23.4%
Cons	-	-	-	$5.95	$6.67

Summary: I recommend a buy rating with a target of $118. DIS has an opportunity to improve on popularity of studio entertainment and grow in the Shanghai market. Furthermore, I believe Disney is a long term buy because of its unique brands; however, a decrease in margins and declining revenues from the media network are significant headwinds. The stock is undervalued based on DCF analysis.

Key Drivers:

- Studio entertainment & content creation: Studio entertainment and content creation is the engine for Disney's revenue. DIS's ability to create unique characters/brands, and integrate it over numerous business segments by connecting to consumers, helps them stay popular. Studio entertainment is most vital because it essentially is another form of advertisement, and it also creates a visual for consumers to digest.

- Media network fees & revenue: Over 40% of DIS's revenue comes from the media network segment, and about 17% of revenue comes from the ESPN network. Affiliated fees are increasing to help offset declining margins, but premium prices could impact long-term future earnings potential if Disney's channels are dropped from TV packages or it raises costs to the user so they find substitutes.

- Expansion of parks & resorts: DIS's greatest growth potential is in Asia. Disney has an opportunity to tap into this new market and offer unique products to a demographic that is interested in the entertainment offered by Disney.

- Macroeconomic trends: DIS's success depends heavily on a strong economy because entertainment is cyclical.

Ratio	'14	'15	'16	'17E	'18E
ROE (%)	18.7%	21.4%	21.4%	21.5%	22.0%
Industry	28.1%	36.8%	36.8%	31.1%	45.5%
NPM (%)	16.1%	17.0%	17.0%	16.9%	16.3%
Industry	15.2%	12.7%	12.7%	13.4%	13.7%
A. T/O	0.60	0.61	0.61	0.61	0.64
ROA (%)	9.70%	10.4%	10.4%	10.2%	10.4%
Industry	7.9%	6.6%	6.6%	6.9%	7.3%
D/A	19.7%	21.9%	21.9%		

Valuation	'15	'16	'17E	'18E
P/E	21.4	16.7	18.2	17.5
Industry	22.6	17.2	19.8	16.8
P/S	3.45	2.72	2.98	2.8
P/B	3.5	3.6	3.9	3.8
P/CF	16.5	11.9	14.2	13.7
EV/EBIT	15.1	12.1	12.6	12.6

Valuation: Using a relative valuation approach, Disney appears to be overvalued in comparison to the industry; although, DCF analysis yields a $118 target. A combination of the approaches suggests that Disney is undervalued, as the stock's value is about $118 and the shares trade at $104.22.

Performance	Stock	Industry
1 Month	5.1%	-1.7%
3 Month	12.2%	9.4%
YTD	-0.8%	25.4%
52-week	-2.0%	15.1%
3-year	36.7%	19.3%

Risks: Threats to the business include foreign currency fluctuation, competition, maintenance of intellectual property, and consumer preferences.

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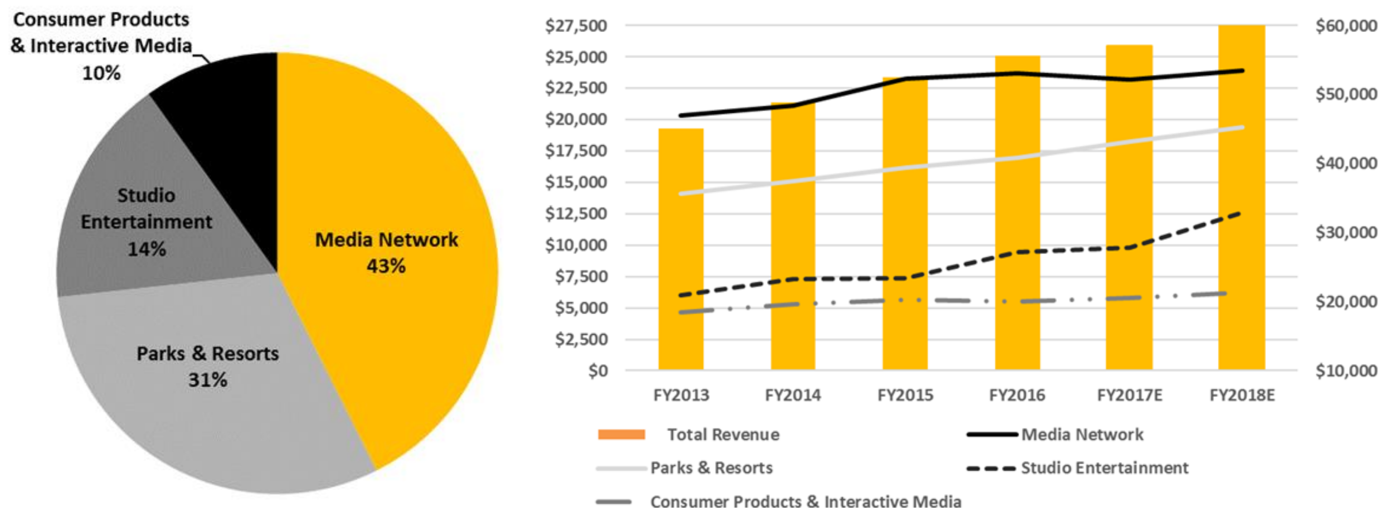
Company Overview

The Walt Disney Company (DIS) along with its subsidiaries is a diversified worldwide media and entertainment conglomerate. The company's mission is to be the world's foremost provider and producer of information and entertainment. Disney also seeks "to develop the most creative, innovative and profitable entertainment experiences and related products in the world." Some of the company's most iconic assets include Lucasfilm, Marvel, ESPN, Pixar, and Disneyland. Disney was founded by brothers Walt and Roy Disney in 1923 and is headquartered in Burbank, California. The company employs approximately 185,000 people, and is one of the most powerful brands in the world.

DIS generates revenue in many geographic regions across the world, which include North & South America, Europe, Asia, Latin America, and others. Although the company is international, 77% of its revenue comes from its operation in the U.S. and Canada. Disney's revenue is derived from the following four business segments:

- Media Networks: revenues are earned from affiliated fees, ad sales, and program sales. Revenue growth was 2% in 2016.
- Parks and Resorts: revenues are earned through sales of food, beverage, merchandise, vacation and cruise packages, rentals and sales of vacation club properties, charges for hotel rooms, and sales from theme park admission. Revenue growth was 5% in 2016.
- Studio Entertainment: revenues earned from the distribution of films in home entertainment, television and theatrical markets, ticket sales from stage plays, licensing from live entertainment events, and the distribution of music. Revenue growth was 28% in 2016.
- Consumer Products & Interactive Media: consumer products portion of revenues are earned from character licensing to third parties for consumer merchandise, tuition from learning centers, publishing of reading material (comic books, magazines, and children's books), selling of Disney merchandise; interactive media portion of revenues are earned through sponsorships and internet advertising, third party licensing to game publishers for devices (smartphones, tablet computers), selling games to distributors and retailers, fees collected through transactions in games, and subscriptions. Revenue declined 3% in 2016. Both segments merged in June 2015 - financial results of merged segments will be reported in fiscal year 2016.

Figures 1 and 2: Revenue sources for DIS, year-end 2016 (left) and revenue history since 2013 in millions (right)



Source: Company reports, 10k

Business/Industry Drivers

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

1) Studio entertainment & content creation
2) Media network fees & revenue
3) Expansion of parks & resorts
4) Macroeconomic trends

Studio Entertainment & Content Creation

In anticipation of the new Lucasfilm movie release, DIS announced plans to construct a new Star Wars-themed park at Disneyland.

Although studio entertainment accounts for only 14% of Disney's revenue (2016), it is a major driver for its current and future growth. The company's popularity, interest, and product demand within its numerous segments are affected by the creation of high quality content with regards to film and television. Essentially, universally acclaimed films will result in more licensing agreements and product variation, further sequels, publishing, television production, and franchise spinoffs. Successful content creation influences the whole brand - it fuels the company. It creates new products and experiences for growth. In addition to being a key driver, the studio entertainment's revenue has been growing over time. The studio segment grew 2.64% from FY12-FY13, a modest 1.21% from FY14-FY15, and an impressive 21.73% from FY13-FY14 due to the positive performance of three Marvel movies and the critically acclaimed Frozen movie. FY15-FY16 grew a high 28% due to the success of proven franchises like Star Wars Episode VII, and unforeseen new franchises like Zootopia. The film business continues to be reliant on sequels and the latest blockbuster releases. Disney will continue to release popular films in FY17 and FY18 (Rogue One: A Star Wars Story, Guardians of the Galaxy Vol. 2, Pirates of the Caribbean: Dead Men Tell No Tales, etc.), so it is poised to outperform its previous year.

Figure 3: Star Wars Episode VII – The Force Awakens (released December of 2015)

Source: Radio Times

DIS purchased Lucasfilm for $4.06 billion in December of 2012.

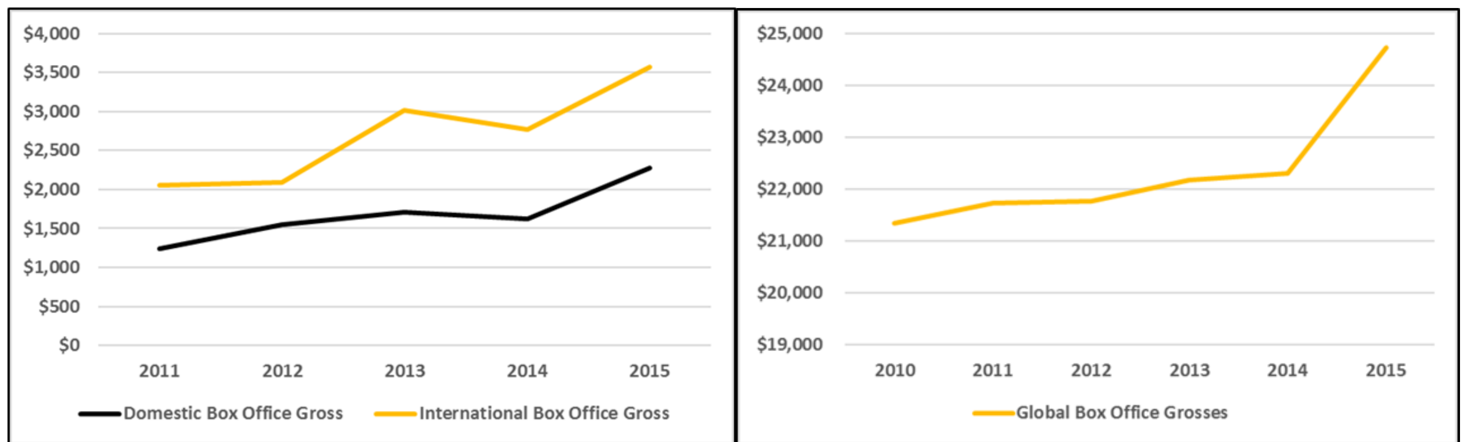
Lucasfilm is a significant asset. Star Wars (rights owned by Lucasfilm) is quite possibly the most popular film franchise in history. Figure 3 displays the recent Star Wars released film that broke numerous box office records. With the first installment already grossing above $2 billion (third film in history to do so), the ROA of the acquisition looks like a bargain. This figure does not take into consideration Star Wars themed merchandise, revenue from other segments, and future releases. History may suggest that acquisitions of this nature drive earnings and growth. Disney's invested in Pixar ($7.4 billion) and Marvel Studios ($4 billion), and Marvel's films alone grossed over $10 billion. To put this into perspective, if Marvel made the $10 billion over 5 years then the purchase price was

a P/S multiple of 2. This compares to 2.7 for DIS stock (2016), so the price was a good deal for the firm. Disney's success at creating content with iconic intellectual property suggests that Lucasfilm is a good asset (two more sequels, multiple spinoffs, etc.).

RottenTomatoes is a popular television and film review "aggregator" website. As a gauge, The Godfather, (often regarded as one of the greatest movies ever made), has a score of 99%.

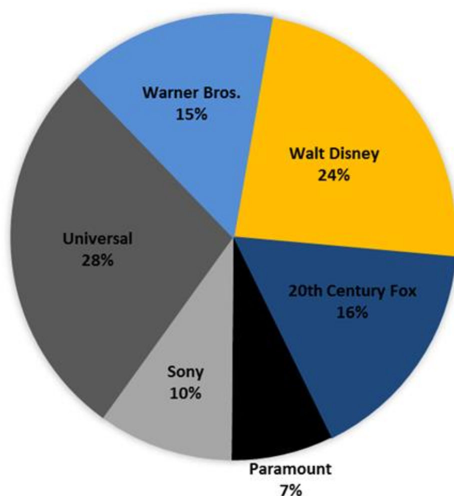
Figure 4 shows Disney's steady increase in box office gross with the exception of a slight dip from 2013 – 2014. Domestic box office growth for Disney rose 41% in 2015 and international box office growth went up almost 29%. In 2016, growth has continued with Walt Disney Studios posting its biggest year ever with $5,851 billion through November 1st 2016. It surpassed Disney's record of $5,844 billion set in 2015. It is important to note that five of Disney's major film brands released in FY16 have an average score of 94% on RottenTomatoes. Figure 5 shows the global box office sales of the top six studios. Sales had been steadily increasing from 2010 – 2014. However, in 2014-2015, growth jumped to 11%. Figure 7 shows the correlation of the major studios. Universal and Disney had a solid 2015. Figure 6 shows that the majority of market share is held by Universal and Disney at 52%; however, figure 7 also shows the very volatile nature of the industry. Past growth does not reflect future earnings for movie studios.

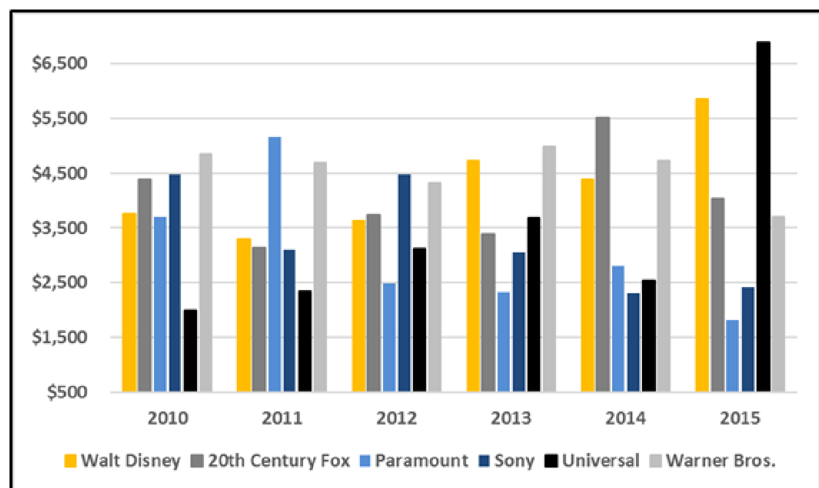
Figures 4 and 5: DIS box office gross in millions (left) and global box office gross of top six studios in millions (right)



Source: Bloomberg

Figures 6 and 7: Market share of the top six highest grossing studios for 2015 (left) and history of global box office gross of the top six highest grossing studios in millions (right)





Source: Bloomberg

Disney owns 80% of ESPN, 100% of Disney Channels, 100% of ABC Family, and 50% of the A&E Television Network.

Networks sell time for commercials and the rates received are reliant on the size and characteristics of the audience that the network can provide to the advertiser, in addition to advertiser demand.

Media Network Fees & Revenue

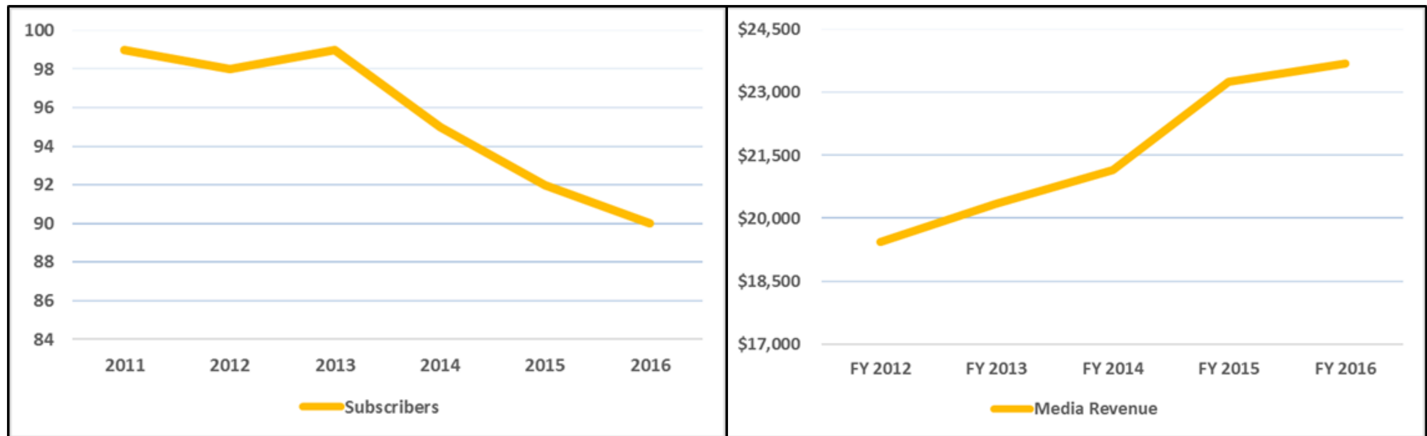
The media network segment of DIS continues to be its greatest revenue-producing segment. Disney's media network segment derives most of its revenue from affiliate fees (carriage fees per month per subscriber from distributors like Dish Network) and advertising. Affiliated fees made up 52% of the media network segment while advertising made up 36% in FY16. There was a 2% increase from affiliated fees and a 2% increase from advertising in FY16. Essentially, the better content it produces and delivers, the more it can earn from advertising and affiliated fees.

Disney's media network business competes for viewership primarily with other cable and television networks, independent television stations, and other media outlets. Moving forward, a concern is the consistent subscriber loss with ESPN and possible concerns with adverse shifts in television pay landscape.

Figure 8 shows a consistent drop in ESPN subscribers. There was a 1% decrease in both 2011 and 2012, decrease of 4% in 2014, decrease of 3% in 2015, and a decrease of 2% in 2016. This could be due to increases in cable fees and competition. This is concerning because the ESPN network is a major revenue generator for DIS - $10.8 billon (2014) through advertising and affiliated fees. That is about 20% of Disney's total revenue. In 2015, ESPN generated $9.2 billion in revenue which is about 17% of total revenue, and a decrease of 15% in ESPN revenue from 2014. The ESPN network is one of the most expensive networks in terms of subscriber fees (paid by cable companies) at more than $7.21 a person (2016). To put that into context, the next closest network is TNT at $1.82 a person (2016). One of the reasons why the ESPN network is expensive is because of sports commitments. The network has sports programming commitments that total over $53 billion between 2016-2020. Disney has been trying to offset cable losses by making its content available across various digital platforms (Netflix, Amazon, wireless mobile devices, video games).

Even though there is cause for concern, 2016 was helped by political advertising, the Olympics, and a 7% increase from higher contractual rates. In figure 9, the decrease in ESPN subscribers did not cause media sales to decline. Revenue rose 10% in FY15 and 2% in FY16.

Figures 8 and 9: ESPN subscribers in millions (left) and Disney media revenue history from 2012 to 2016 in millions (right)



Source: Company reports, 10k

Expansion of Parks & Resorts

The parks and resorts segment accounts for 31% of Disney's revenue. The location of the theme parks, resorts, hotels, and cruises are scattered throughout the world, in places like: California, Florida, Shanghai, Tokyo, Paris, etc. The company is highly dependent on this segment as a driver for revenue, ergo it must be continuously updated and remain popular to attract more consumers. A key characteristic that separates DIS from its competitors is the company's brand-building strategy and ability to provide consumers multiple ways of experiencing its unique homegrown/acquired creations. This sustainable competitive advantage boosts notoriety and popularity for the company. The parks and resorts segment does this by offering exceptional experiences through theme park attractions, cruise, hotels, etc.

Disney's most notable future growth for this segment involves expansion of theme parks. Some of the most noteworthy new and expanding attractions involve: Toy Story Land, Disney's Pandora—The World of Avatar and Star Wars Land. It is important to note that Disney's Pandora is based off the highly successful Avatar movie which has the highest box office number of all time ($2.78 billion). This attraction should garner a very large audience since four sequels are planned, which will help create buzz for the park.

Shanghai Disney Resort's grand opening was June of 2016. DIS owns a 43% interest of the theme park, while Shanghai Shendi Group (state-owned enterprise) owns 57%.

Revenue for the parks and resorts segment increased by 6% for FY16. Growth may be attributed to the opening of Shanghai Disney Resort, and increase in theme park attendance. The success of the Shanghai park can create an "ecosystem" of demand for TV programs, books, toys, movies, clothes, etc. Bob Iger, the CEO of Disney, has called Shanghai "the greatest opportunity the company has had since Walt Disney himself bought land in Central Florida" for Walt Disney World in the 1960s. Tapping into this market moving forward could boost revenue for this segment in 2017 and 2018.

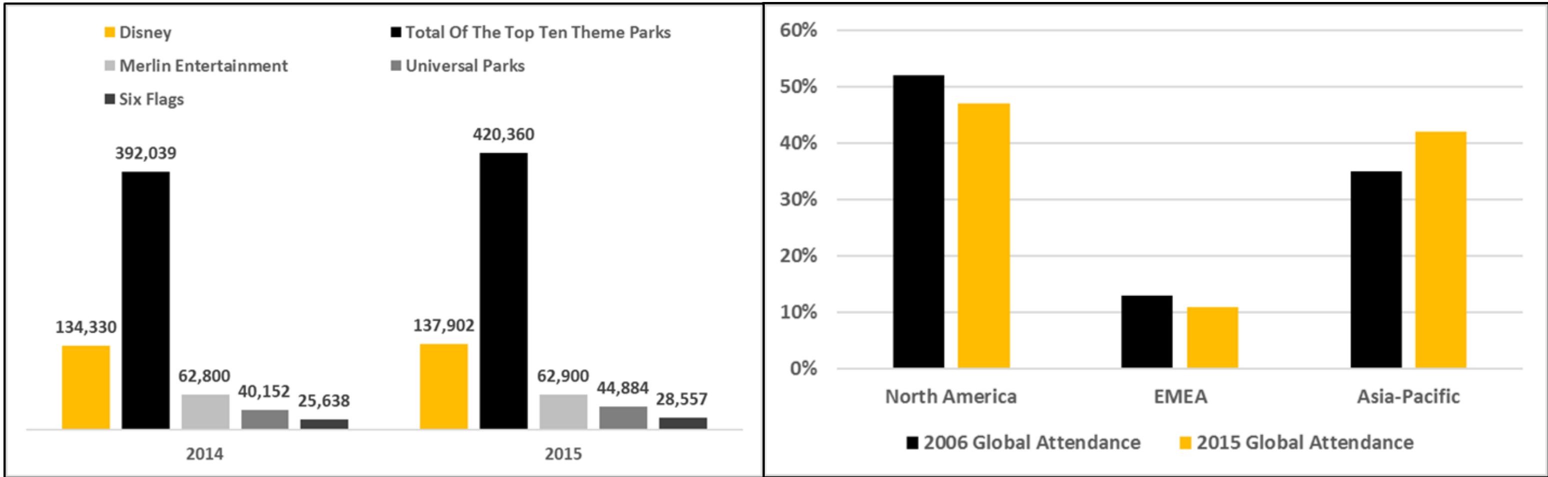
Figure 10 shows the theme park attendance comparison between Disney and its direct competitors. Disney is by far the market leader with attendance at nearly 34% for 2015 compared to the top ten theme parks combined. Taking Disney out the equation results in an even more impressive 49% of the market share compared to the top nine theme parks combined. The next closest rival (Merlin Entertainment) is 15%, followed by Universal Parks and Resorts with 11%. Disney continues to increase its attendance with a 3% gain in 2015, and higher attendance equates to higher revenue potential. I believe this will continue to surge because of the potential in the Asia market.

Figure 11 shows the percentage of attendance by geographical region in 2006 and 2015. The distribution of global attendance has shifted towards the east of the globe, with the Asia-Pacific region obtaining 42% (2015) of the major attractions in the world – up 7% from 2006. Meanwhile, attendance is down in North America by 5% and 2% in the EMEA region.

Disneyland Park in Paris opened in April 12, 1992. Cultural miscues and poor execution has turned it into a theme park with struggling profit.

For FY17 and FY18, the growth and dominance has a strong chance to continue because of the company's constant expansion of attractions. Moving forward, one key headwind to consider is the capital expenditure involved in this segment. Disney has relatively high exposure to the "capital-intensive theme park business" because resources are being tied up to a potential project for a long period. A future disaster like Disneyland Paris could occur if proper research and execution is overlooked.

Figures 10 and 11: Theme park attendance for DIS and competitors in thousands (left) and shares of global attendance by region (right)



Source: Bloomberg

In December 2016, consumer confidence increased to 113.7 – highest level since 2001

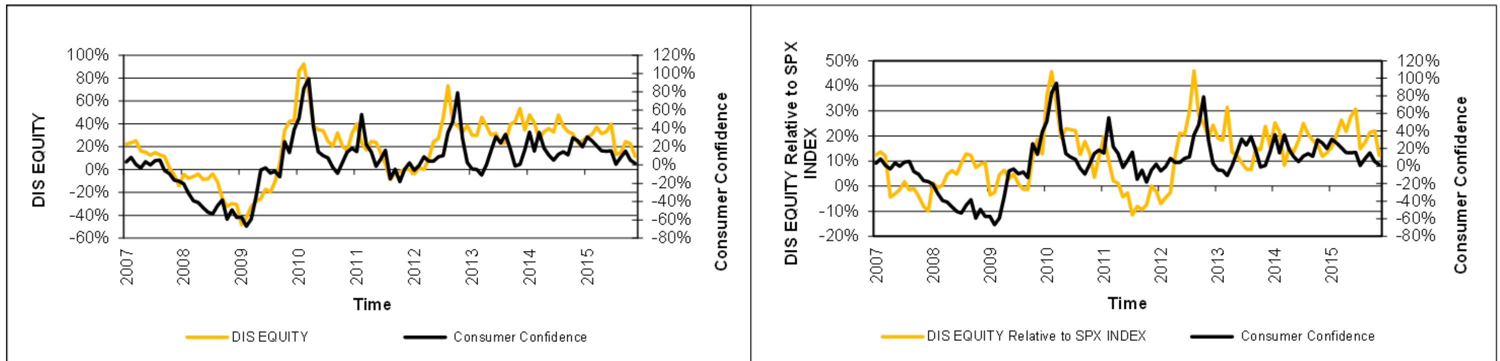
Macroeconomic Trends

The economy is a significant driver for DIS and the media industry. Disney's products are discretionary in nature, so it is subject to economic cycles. An improving economy boosts consumer confidence and discretionary spending.

Figure 12 shows how DIS performs with consumer confidence on an absolute basis. Disney seems to closely resemble the economic variable from 2009 up until mid – 2012. The yearly correlation is 0.809 (high) and R-square is 0.655. Figure 13 compares consumer confidence and DIS relative to the S&P 500. The yearly correlation is 0.514 which is lower than figure 8, and its R-square is 0.264. This implies that DIS is more cyclical than the average of the S&P 500.

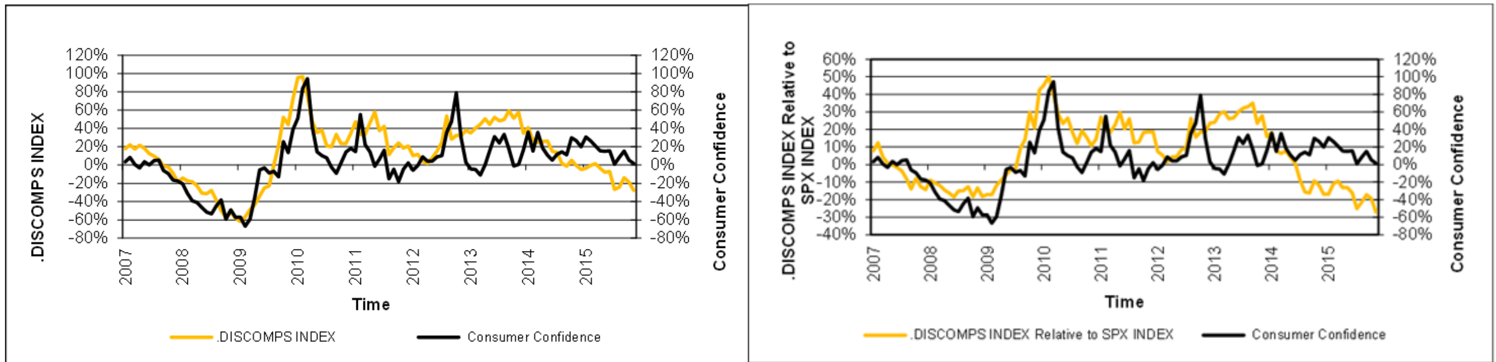
Figures 14 and 15 compare consumer confidence with Disney's closest competitors. The index includes: Time Warner Inc (TWX), CBS Corporation class b (CBS), Viacom class b (VIAB), 21st Century Fox (FOXA), and Comcast Corporation (CMCSA). Figure 10 shows a yearly correlation of 0.724 and a R-square of 0.55. Figure 11 shows a yearly correlation of 0.554 and a R-square of 0.307.

Figures 12 and 13: Consumer confidence compared to DIS (left) and consumer confidence compared to DIS relative to S&P 500 Index (right)



Source: Bloomberg

Figures 14 and 15: Consumer confidence compared to DIS comps (left) and consumer confidence compared to DIS comps relative to the S&P 500 index (right)



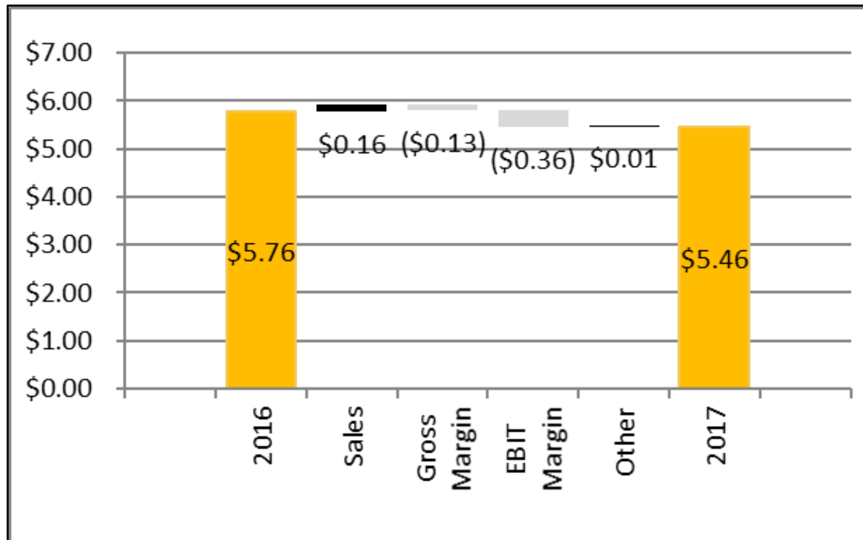
Source: Bloomberg

Financial Analysis

EPS for DIS was $4.31 in 2014 and $4.95 in 2015 – an increase of 15%

I anticipate EPS to decrease to $5.46 in FY 2017. Sales growth is still positive (add $0.16 to EPS) despite lower growth in media revenue, a slowdown of growth in studio entertainment, and a slight increase in international revenue from China. However, the modest increase in sales would be offset by a $0.13 per share decrease in gross margin as direct costs will not slow as much as sales. I further anticipate substantial contraction in EBIT margin by $0.36 due to an increase of about 14% in SG&A. Share buybacks add $0.07 but this is somewhat offset by higher interest and other expenses (-$0.06).

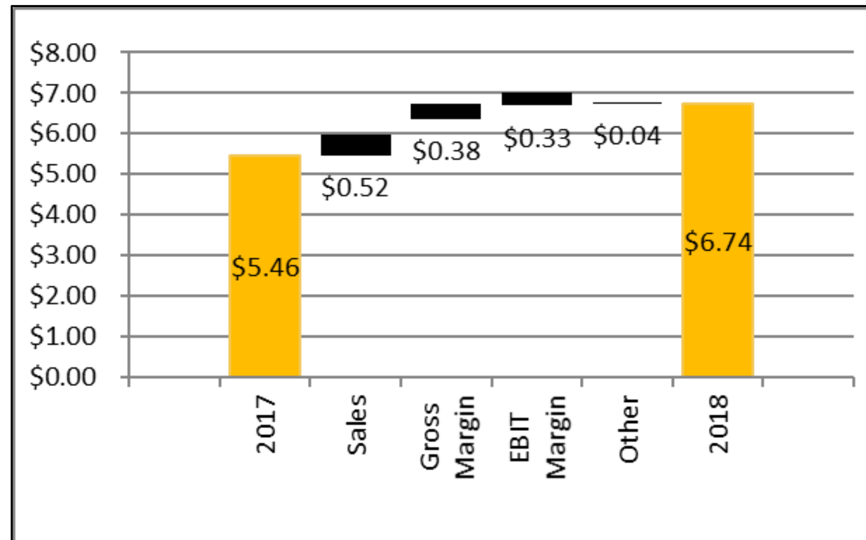
Figure 16: Quantification of 2017 EPS drivers



Source: Company Reports, IMCP

I forecast 2018 EPS to increase $1.28 to $6.74 (22%). Disney will gain $0.52 in EPS from a 9% increase in sales due to growth in the Asia Pacific market, media revenue gaining traction with more direct-to-consumer selections, an increased number of entertainment/products for consumers to stream or experience, and substantial growth of 28.5% for the studio entertainment segment. Gross margin is expected to rise and add $0.38 due to a decrease in sport commitment costs and upcharge for premium pricing for unique content released in 2018. Besides the impact of gross margin on EBIT, I anticipate EBIT margin to rise further ($0.33) because of relatively unchanged SG&A. "Other" is adding $0.04 due to share buybacks.

Figure 17: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

Estimates versus Consensus

My expectations for 2017 are slightly more conservative compared to consensus. My revenue estimate versus consensus has a difference of 1%. My pessimism is mainly due to the decrease in revenue from media networks. This impacts my EPS estimate as well, resulting in a 9% difference from consensus. However, my projections are much more bullish for 2018. Compared with consensus, I estimate a difference of 2% due to improving margins for the ESPN network, and a stronger slate of movies releases in 2018. The EPS difference is about 1%.

Figure 18: EPS, Revenue and growth estimates vs. Consensus

	Estimates		Consensus	
	2017E	2018E	2017E	2018E
Revenue	$57,097	$62,185	$57,671	$61,043
Growth	2.6%	8.9%	3.7%	5.8%
EPS	$5.46	$6.74	$5.95	$6.67
Growth	5.5%	23.4%	3.3%	12.1%

Source: Factset, IMCP

Revenues

Disney's revenue has increased steadily since dipping by 4.5% in 2009. While I expect that trend to continue, I believe revenue will grow at a slower rate in 2017 due to competition in the media space, and diminished interest with expensive subscription based networks like ESPN. Consumer preference has changed drastically with content being available for access on a multitude of devices, instead of a stationary television that requires an expensive cable subscription. As a result, advertising and affiliate revenue will suffer. For my model, I estimated a decline of 2%. Headwinds will ease, therefore I estimate a 3% increase in 2018. Disney's management team is seeking to expand opportunities for growth, as demonstrated by its strategic acquisition of BAMTech (sports streaming service).

Studio entertainment may suffer slightly in 2017 due to the record breaking previous year, so my estimation of 4% growth seems reasonable since the movie schedule for 2017 compared to 2016 is arguably weaker. The industry is volatile as each fiscal year is highly dependent on blockbuster movie releases that correlate with consumer preference. For 2018, my growth assumption is 28.5% due to a strong pipeline of movies that are established brands.

For 2017 and 2018, I anticipate continued growth in the parks and resorts segment of 7.5% and 6.5% because of an increase in revenue from Disney's theme park in Shanghai. Having the full year's contribution for 2017 and 2018 will benefit the segment, with new popular attractions also being introduced to consumers.

Consumer and interactive products will grow 5% in 2017 and 7% in 2018. Due to the overall growth in Disney's other segments, I expect a trickle-down affect because more attendance with parks and resorts, and more box office revenue from studio performance, should boost sales for this segment.

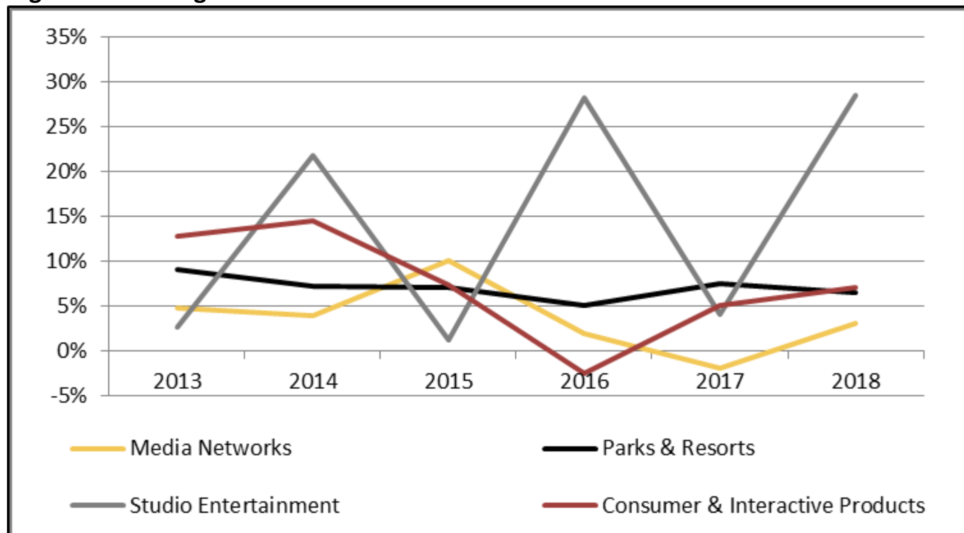
Figure 19: Disney's FY 2017E – FY 2018E revenue segment estimates

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017E	FY 2018E
Revenue/Sales	$ 42,278	$ 45,041	$ 48,813	$ 52,465	$ 55,632	$ 57,097	$ 62,185
Growth		6.5%	8.4%	7.5%	6.0%	2.6%	8.9%
Media Networks	$ 19,436	$ 20,356	$ 21,152	$ 23,264	$ 23,689	$ 23,227	$ 23,924
Growth		4.7%	3.9%	10.0%	1.8%	-2.0%	3.0%
Parks & Resorts	$ 12,920	$ 14,087	$ 15,099	$ 16,162	$ 16,974	$ 18,247	$ 19,433
Growth		9.0%	7.2%	7.0%	5.0%	7.5%	6.5%
Studio Entertainment	$ 5,825	$ 5,979	$ 7,278	$ 7,366	$ 9,441	$ 9,819	$ 12,617
Growth		2.6%	21.7%	1.2%	28.2%	4.0%	28.5%
Consumer & Interactive Products	$ 4,097	$ 4,619	$ 5,284	$ 5,673	$ 5,528	$ 5,804	$ 6,211
Growth		12.7%	14.4%	7.4%	-2.6%	5.0%	7.0%

Source: Company Reports, IMCP

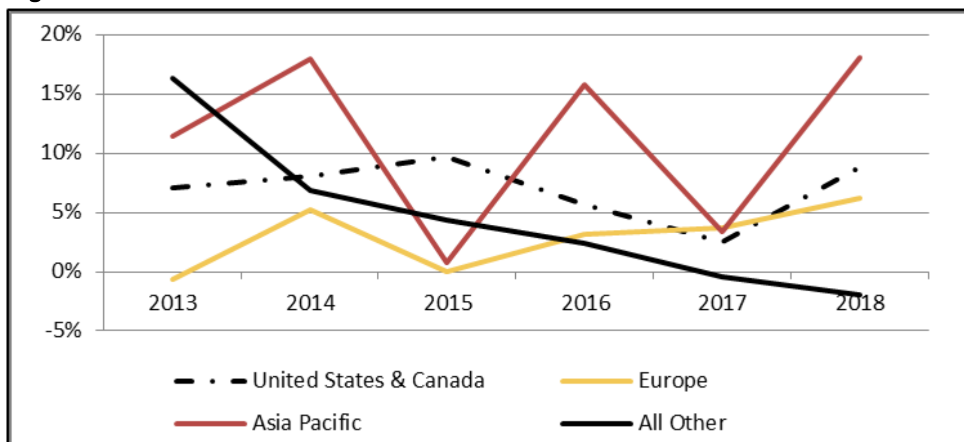
Overall, I anticipate combined international revenue to rise 6.8% in 2017. In 2018, I assume a shift in international revenue to the Asia Pacific region (18% growth) because of consumers in Shanghai being introduced to Disney products and attractions. For domestic revenue (including Canada), I expect an increase of 2.5% for 2017 and 8.8% for 2018. A declining unemployment rate to full employment levels and higher consumer confidence may result in higher discretionary entertainment spending.

Figure 20: DIS Segment Revenue Growth Rates 2013 – 2018



Source: Company Reports, IMCP

Figure 21: DIS Domestic and International Revenue Growth Rates 2013 – 2018



Source: Company Reports, IMCP

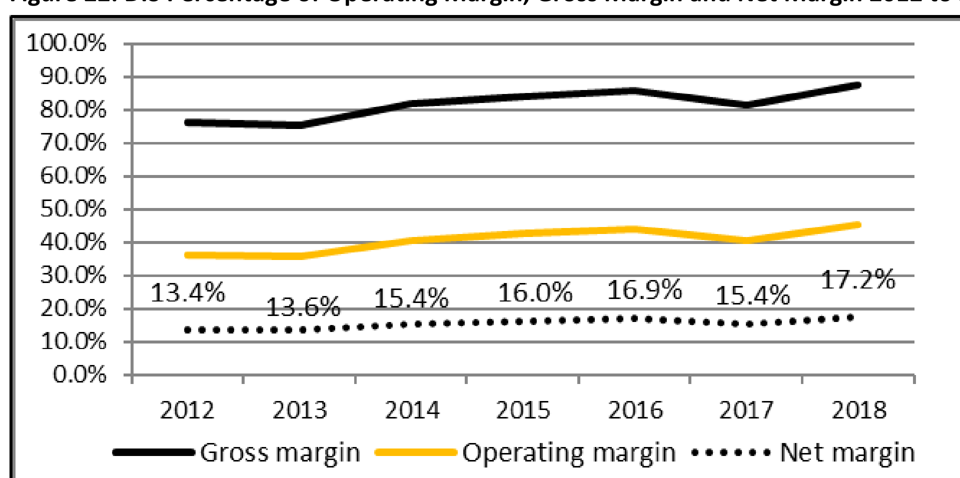
<u>Operating Expenses and Margins</u>

Operating expenses for DIS are primarily of selling, general and administrative, and direct expenses which Include costs such as film amortization, distribution, media programming/production, labor costs etc.

I anticipate margins of 40.5% in FY17, which is a distinct contraction versus FY16's 41.5%. I believe this will be due to sports programming commitment costs. Rights to acquire sports coverage from organizations such as NFL and MLB will jump from $5,030 billion to $5,778 billion – about a 15% increase. Although ESPN is the most expensive network per subscriber, the Disney Channel which features content for children and tweens is the third highest network at $1.49. Moving forward, DIS must control margins for the Disney Channel because increased competition might drive subscriber count down.

For FY18, I project margins recovering to 42.5% because of direct-to-consumer live streaming lowering costs, and reduction of sports commitments. Cost is estimated to be $5,608 which is a decrease of 3%. In figure 22, net margin decreases 9% from 2016 to 2017, and increases 12% from 2017 to 2018.

Figure 22: DIS Percentage of Operating Margin, Gross Margin and Net Margin 2012 to 2018



Source: Company Reports, IMCP

Return on Equity

ROE rose to 19.6% in 2016 which was due to an increase in margins, asset turnover and leverage. This is just continuing the trend since 2013. Better profitability and asset turnover, and higher leverage will cause ROE to rise 1.4% from 2016 to 2018.

Figure 23: ROE breakdown, 2013 – 2018E

5 - Stage DuPont	2013	2014	2015	2016	2017E	2018E
EBIT / sales	21.9%	25.0%	26.7%	27.2%	25.1%	27.9%
Sales / avg assets	0.58	0.59	0.61	0.62	0.61	0.64
EBT / EBIT	97.6%	100.0%	99.2%	98.3%	98.0%	98.3%
Net income /EBT	63.8%	61.3%	60.4%	63.2%	62.5%	62.9%
ROA	7.9%	9.1%	9.7%	10.4%	9.5%	11.0%
Avg assets / avg equity	1.73	1.72	1.78	1.88	1.93	1.91
ROE	13.6%	15.6%	17.3%	19.6%	18.2%	21.0%

Source: Company Reports, IMCP

Free Cash Flow

DIS's free cash flow has been volatile over the last several years. I anticipate both FCFF and FCFE to increase over 22% in 2017. In 2018, they both decline over 40% because of my expectation of DIS investing heavily in capital expenditures in its parks and resorts division - expanding this segment is vital for continued growth and success. NOPAT increases each year, with a slight decrease in 2017 because of the assumption that ESPN operating margins will decrease and affect profit. For 2018, NOPAT increases due to higher growth in studio and parks and resorts segment. As you can see, the firm has nearly $5 billion in FCFE even after the rise in investments in 2018. This FCFE is quite sufficient to fund the firm's share buybacks ($3.5 billion in 2017 and $3 billion in 2018).

Figure 24: Free cash flows 2013 – 2018E

Free Cash Flow						
	2013	2014	2015	2016	2017E	2018E
NOPAT	$6,798	$7,989	$8,927	$9,961	$9,437	$11,424
Growth	6%	18%	12%	12%	-5%	21%
NWC*	-1526	-1537	-3845	-4486	-4604	-5014
Net fixed assets	67132	69010	71424	75067	76130	82913
Total net operating capital*	$65,606	$67,473	$67,579	$70,581	$71,525	$77,898
Growth	12%	3%	0%	4%	1%	9%
- Change in NWC*	965	-11	-2308	-641	-118	-410
- Change in NFA	5943	1878	2414	3643	1063	6783
FCFF*	-$110	$6,122	$8,821	$6,959	$8,492	$5,051
Growth		-5671%	44%	-21%	22%	-41%
- After-tax interest expense	162	-15	75	171	190	197
FCFE**	-$272	$6,137	$8,746	$6,788	$8,302	$4,853
Growth		-2356%	43%	-22%	22%	-42%

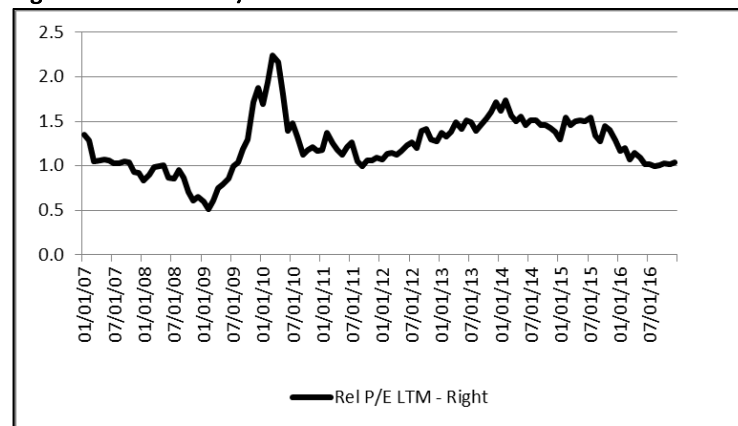
Source: Company Reports, IMCP

Valuation

DIS was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is fairly priced relative to other firms and is worth $91. Relative valuation shows DIS to be expensive relative to other firms, and is worth $90; This metric may be unreliable because it is not factoring in the growth in Asia and the studio entertainment division. A detailed DCF analysis values DIS at $118. I give this value of more importance because it incorporates assumptions that reflect DIS's long term growth potential. I value the stock at $118.

Trading History

Figure 25: DIS LTM P/E relative to S&P 500



Source: Factset, IMCP

DIS is currently trading about the average relative to the S&P 500. The relative P/E dropped as EPS is expected to decline in 2017 after years of solid growth. The market is more skeptical that growth will rebound in 2018. Although, DIS's current LTM P/E is at 18.20 compared to its five year average of 18.81. This implies that the drop in relative P/E is mostly due to the rise in S&P 500's P/E as it expects the economy and market earnings to rebound.

Assuming the firm maintains a 18.20 LTM P/E at the end of 2017, it should trade at $99.37 at the end of the year. Discounting this back to today at a 9.6% cost of capital results in a target of $90.65.

- Price = P/E x EPS = 18.20 x $5.46 = $99.37

Given DIS's potential for earnings growth, continued profitability, and high brand equity, this seems to be an unusually low valuation even with the concerning headwind of the media segment. However, this makes sense because I am less bullish about near-term earnings than consensus (2017). Utilizing the expected 2017 consensus EPS of $5.95 with TTM P/E of 18.20 results in a price of $108.29 (today's value of $98.78).

Relative Valuation

Figure 26: DIS 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
DIS	DISNEY (WALT) CO	$104.22	$165,862	(0.3)	5.1	12.2	6.5	(2.0)	(0.8)	9.4	3.6%	19.2%	11.1%	4.0%	12.1%		1.43	38.1%	A+	1.43%	24.8%
CBS	CBS CORP	$63.62	$28,286	(1.4)	4.8	16.2	16.9	36.1	35.0	17.0	21.2%	11.8%	24.2%	8.0%	17.6%	22.4%	1.71	166.5%	B	1.04%	17.6%
CMCSA	COMCAST CORP	$69.05	$165,225	(1.5)	(0.7)	4.1	5.9	21.8	22.4	9.5	7.0%	10.9%	7.1%	8.3%	13.3%	20.2%	1.04	106.8%	A	1.59%	31.5%
DISCA	DISCOVERY COMMUNICATIONS INC	$27.41	$10,776	(1.0)	1.2	1.8	8.6	3.2	2.7	14.1	25.2%	-4.3%	17.6%	11.1%	13.0%	0.8%	1.66	151.9%	B-	0.00%	0.0%
FOXA	TWENTY-FIRST CENTURY FOX INC	$28.04	$52,023	(0.8)	(0.2)	15.8	3.7	2.7	3.2	9.8	27.1%	11.0%	0.6%	10.4%	11.0%		1.63	137.9%	B+	1.18%	19.7%
TWX	TIME WARNER INC	$96.53	$74,437	(0.2)	5.1	21.3	31.3	49.8	49.3	14.0	2.0%	14.5%	21.7%	2.4%	10.6%	15.5%	1.01	100.6%	B+	1.67%	27.7%
SIX	SIX FLAGS ENTERTAINMENT CORP	$59.96	$5,520	(0.6)	4.0	11.8	3.5	9.3	9.1	8.0	59.5%	105.2%	-23.4%	56.2%	18.5%	-25.0%	1.08	-8979.3%		3.97%	188.6%
VIAB	VIACOM INC	$35.10	$13,928	(0.5)	(6.4)	(7.9)	(15.4)	(14.1)	(14.7)	3.0	5.4%	0.7%	-32.4%	3.8%	7.1%		1.69	278.1%	B+	3.42%	38.8%
Average			$64,507	(0.8)	1.6	9.4	7.6	13.3	13.3	10.6	18.9%	21.1%	3.3%	13.0%	12.9%	6.8%	1.41	-999.9%		1.79%	43.6%
Median			$40,155	(0.7)	2.6	12.0	6.2	6.2	6.2	9.6	14.1%	11.4%	9.1%	8.2%	12.6%	15.5%	1.53	122.3%		1.51%	26.3%
SPX	S&P 500 INDEX	$2,239		(0.5)	1.8	3.3	6.7	8.5	9.5			7.7%	1.2%	7.6%	12.4%						

		2016		P/E							2016	2016			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2014	2015	2016	TTM	NTM	2017	2017E	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
DIS	http://www.thewaltdisneycompany.	21.2%	3.85	24.1	20.2	18.2	18.2	17.6	17.5	15.6	16.4%	2.98	25.6%	16.0%	12.1	12.1		4.1%	6.4%	6.2%	$27.04
CBS	http://www.cbscorporation.com	33.6%	5.20	21.5	19.2	15.5	17.8	14.7	14.3	12.2	12.6%	1.94	21.4%	10.3%	11.0			0.9%	4.0%	-0.2%	$12.24
CMCSA	http://www.comcastcorporation.co	15.6%	3.09	23.6	21.2	19.8	20.2	18.9	18.3	16.2	10.4%	2.06	21.2%	8.2%	12.1			4.5%	6.3%	14.5%	$22.35
DISCA	http://corporate.discovery.com	15.7%	2.08	14.9	15.6	13.2	15.3	12.2	11.9	10.5	12.5%	1.66	31.8%	8.4%	12.0			4.2%	6.4%	11.0%	$13.20
FOXA	http://www.21cf.com	23.3%	3.77	18.1	16.3	16.2	18.4	14.5	14.7	13.2	11.7%	1.90	22.5%	8.0%	11.6			5.5%	4.4%	-3.9%	$7.44
TWX	http://www.timewarner.com	18.4%	3.07	23.3	20.3	16.7	17.2	16.8	16.3	14.7	15.3%	2.55	25.5%	8.1%	11.0			6.3%	5.4%	0.9%	$31.45
SIX	http://www.sixflags.com	-605.3%	-299.93	77.9	37.9	49.6	48.7	30.6	31.7	26.8	8.5%	4.20	23.7%	9.9%	20.3	12.9	10.5	7.8%	3.4%	5.3%	-$0.20
VIAB	http://www.viacom.com	34.2%	3.26	6.5	6.5	9.5	9.7	9.2	9.2	8.6	11.7%	1.12	21.9%	9.0%	9.9			2.4%	2.2%	-3.5%	$10.77
Average		-55.4%	-34.45	26.2	19.7	19.8	20.7	16.8	16.7	14.7	12.4%	2.30	24.2%	9.7%	12.5	12.5	10.5	4.5%	4.8%	3.8%	
Median		19.8%	3.17	22.4	19.7	16.5	18.0	15.8	15.5	14.0	12.1%	2.00	23.1%	8.7%	11.8	12.5	10.5	4.4%	4.9%	3.1%	
spx	S&P 500 INDEX			20.6	19.2	19.0			17.6	15.7											

Source: Factset, IMCP

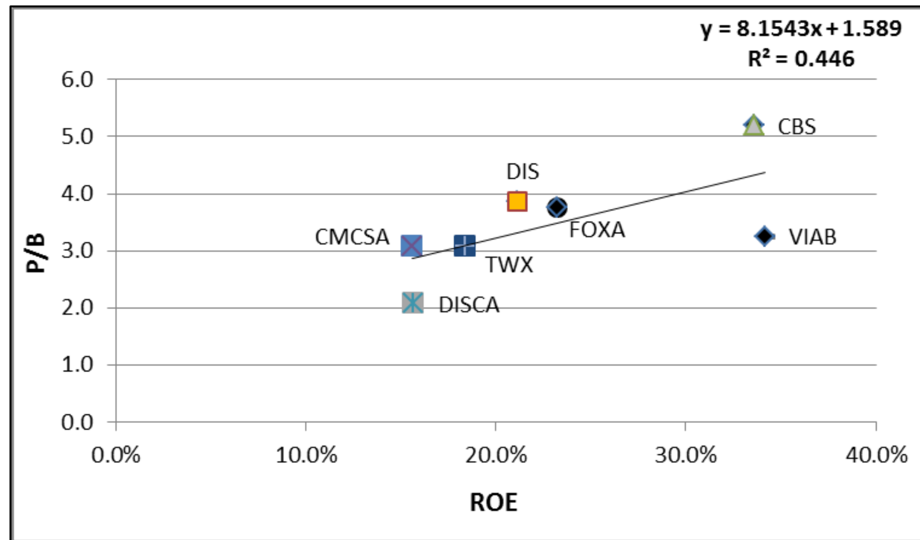
Comparable companies data as of December 31, 2016

Disney is currently trading at a P/E of about the median of its peers (18.0), with a P/E TTM of 18.20 compared to the average of 20.7. The P/E is near the average of the comps, despite difficult 2017 growth, because it is stable compared to its peers since its a conglomerate business with more ways to generate consistent revenue. Long-term, I expect it to trade at a premium as it has a potential for superior growth.

DIS's Long-term debt/equity (38.1%) is considerably lower compared to its peers a (median of 122.3%). Nearly all of Disney's peers have a percentage higher than 100% which suggests that those companies are highly leveraged and more risky. DIS's ROE (21.2%) is higher than the median (19.8%) despite its lower leverage, which means that it is more profitable and/or more efficient with asset

turnover. It has a high P/B (3.85 compared to 3.17 median), but this is due to its higher ROE and lower financial risk.

Figure 27: P/B vs NTM ROE



Source: Factset, IMCP

Netflix's does not sell advertisements or pay fees to cable operators.

A more thorough analysis of P/B and ROE is shown in figure 27. The calculated R-squared of the regression indicates that over 45% of a sampled firm's P/B is explained by its 2016 ROE. Note that SIX is excluded from the regression because it is an outlier since it has negative ROE and P/B ratios. According to the graph, DIS has an above average P/B and ROE, and is about the median of the peer group. However, Disney is above the trend line, so this indicates it is overvalued. This may be a fair assessment given the headwinds that DIS is facing with its media segment. Direct to consumer streaming is becoming more prevalent with services like Netflix gaining in popularity. This will result in declining cable subscriptions, which may decrease affiliated fees, ad revenue and ROE. The fair value is $89.71. Keep in mind that this value does not give the company credit for low financial risk.

- Estimated P/B = Estimated 2016 ROE (21.2%) x 8.1543 + 1.589 = 3.32
- Target Price = Estimated P/B (3.32) x BVPS ($27.04) = $89.71

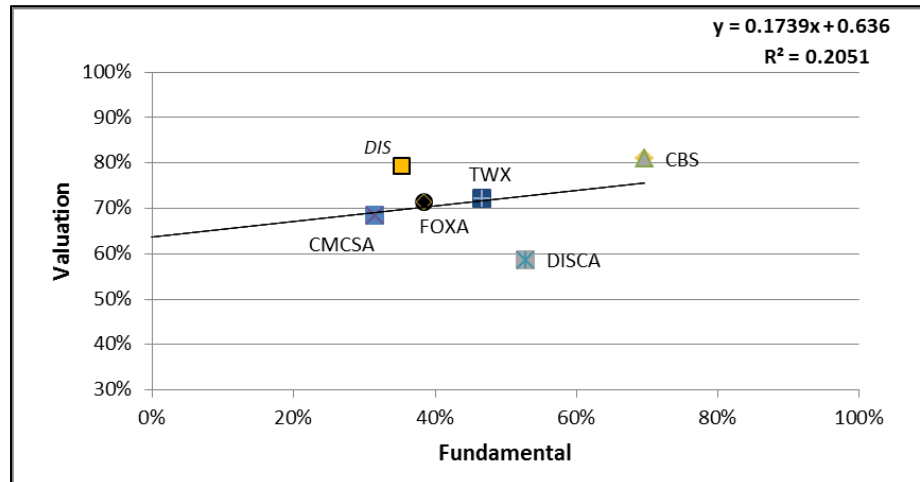
Figure 28: Composite valuation, % of range

		Fundamentals					Valuation				
	Weight	20.0%	20.0%	20.0%	20.0%	20.0%	33.3%	33.3%	33.3%		
		Earnings Growth									
Ticker	Name	LTG	NTM	2016	2017	ROE	P/B	P/S	P/CF	Fund	Value
DIS	DISNEY (WALT) CO	56%	6%	46%	7%	62%	74%	71%	94%	35%	79%
CBS	CBS CORP	100%	36%	100%	14%	98%	100%	46%	97%	70%	81%
CMCSA	COMCAST CORP	56%	12%	29%	15%	46%	59%	49%	97%	31%	68%
DISCA	DISCOVERY COMMUNICATIONS INC	83%	42%	73%	20%	46%	40%	39%	97%	53%	59%
FOXA	TWENTY-FIRST CENTURY FOX INC	57%	46%	2%	19%	68%	72%	45%	97%	38%	71%
TWX	TIME WARNER INC	82%	3%	90%	4%	54%	59%	61%	97%	47%	72%
VIAB	VIACOM INC	18%	9%	-134%	7%	100%	63%	27%	97%	0%	62%

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 of a maximum before calculating the composite score. An equal weighting of long term growth rate, 2016 and 2017 EPS growth, 2016 ROE and NTM earnings growth was compared to an equal weight composite of P/B, P/S, and P/CF. After eliminating SIX, an extreme outlier, the regression line had an R-squared of 0.21. Further analysis of figure 29 displays DIS above the line, which indicates that it is expensive and overvalued based on its fundamentals.

Figure 29: Composite relative valuation



Source: Factset, IMCP

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 9.60% 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 2.45% (12/26/16).
- A beta of 0.95 was utilized since the company is less risky than the market. Although Disney is cyclical, it is a relatively stable business compared to its peers because of its diversified revenue streams.
- 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 9.60% (2.45. + 0.95 (10.0 – 2.45)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $5.16 and $3.05, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $7.25 per share. Thus, stage one of this discounted cash flow analysis contributes $7.25 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 9.60% cost of equity. I assume 7% sales growth in 2019, rising to 9% in 2023. The ratio of NWC to sales will remain at 2017 levels, and NFA turnover will also remain consistent with 2017 levels as capital is expected to grow with sales. Also, the

NOPAT margin will remain at my 2018 forecast, but I assume a constant 6% growth in after-tax interest as the firm raises debt over time.

Figure 30: FCFE and discounted FCFE, 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
FCFE	$5.16	$3.05	$4.12	$5.31	$4.16	$5.51	$4.23
Discounted FCFE	$4.71	$2.54	$3.13	$3.68	$2.63	$3.18	$2.22

Source: Factset, IMCP

Added together, these discounted cash flows total $14.84.

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $5.46 in 2017 to $9.90 in 2023.

Figure 31: EPS estimates for 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$5.46	$6.74	$7.55	$7.93	$8.56	$9.08	$9.90

Source: Factset, IMCP

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. The P/E of DIS currently trades at 1.0x the S&P 500, but this has come down over time. My model assumes that EPS will grow about the same rate as the market or slightly more. The firm also has established brands and stability. Assuming the P/E of the S&P 500 falls by 2023 to more normal levels and that DIS trades at a premium, an 18.5 P/E in 2023 seems reasonable.

Given the assumed terminal earnings per share of $9.90 and a price to earnings ratio of 18.50, a terminal value of $183.15 per share is calculated. Using the 9.60% cost of equity, this number is discounted back to a present value of $96.27.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $118.36 is calculated (7.25 + 14.84 + 96.27). Given DIS's current price of $104.22, this model indicates that the stock is undervalued.

Scenario Analysis

Disney is difficult to value because of its diversified revenue streams. As a result, there can be varied growth rates for each one of its numerous business segments. Possible growth in one industry can be offset by declining growth in another business segment. Since Disney is a conglomerate, this can be beneficial or detrimental as my bull and bear case demonstrates.

Figure 32 illustrates my assumptions for the bear and bull case scenario analysis. Disney is a cyclical company and when the economy is prosperous, advertising is more profitable. Disney benefits from a strong economy. In the bull case, I assume a P/E of 20 as investors get excited about growth during a strong economy. A beta of 0.90 was used because it is more stable than its peers due to its diversification. NOPAT/S and S/NFA also increase as higher sales growth push up margins and asset turnover. The value increased to $136.17, which is 15% higher than the base case.

In contrast, in the bear scenario I dropped sales growth 0.5% to 2% from the base case. I assume management will not manage well the changing environment with subscriber losses and more competition in the sports networks. I chose a P/E of 18 as the growth slows. A beta of 1.10 is utilized due to the ongoing revenue headwinds. NOPATS/S and S/NFA will also decrease with sales. The value decreases to $103.27, which is 13% lower than the base case.

Figure 32: DCF target price scenario analysis

Base Case Expectations	2017	2018	2019	2020	2021	2022	2023
Beta	0.95						
Sales Growth	2.6%	8.9%	7.0%	5.0%	8.0%	6.0%	9.0%
NOPAT/S	16.5%	18.4%	18.4%	18.4%	18.4%	18.4%	18.4%
S/NFA	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Terminal Year P/E	18.5						
Bear Case Expectations	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Beta	1.1						
Sales Growth	2.6%	8.9%	6.5%	3.0%	7.0%	5.0%	8.0%
NOPATS/S	16.5%	18.4%	18.3%	18.2%	18.1%	18.1%	18.0%
S/NFA	0.75	0.75	0.74	0.73	0.72	0.71	0.70
Terminal Year P/E	18						
Bull Case Expectations	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Beta	0.9						
Sales Growth	2.6%	8.9%	7.5%	6.5%	8.5%	7.0%	10.5%
NOPAT/S	16.5%	18.4%	18.5%	18.6%	18.7%	18.9%	19.0%
S/NFA	0.75	0.75	0.76	0.77	0.78	0.79	0.80
Terminal Year P/E	20						

Source: IMCP

Base Case	
Value (P/E) Beginning FY17	$ 118.36
Bear Case	
Value (P/E) Beginning FY17	$ 103.27
Bull Case	
Value (P/E) Beginning FY17	$ 136.17

Business Risks

Although I have numerous reasons to be optimistic about DIS, a company as large and multifaceted as Disney could have a wide range of factors affecting future performance. There are several logical reasons for the stock to face possible headwinds:

Consumer preference:

Creating popular content and experiences for media companies is highly dependent on consumer taste. Over time, society may develop new preferences resulting in a potential decrease in profit. If management does not forecast these changes correctly, consumers may go elsewhere.

Exposure to currency fluctuations:

Adverse currency conditions could weigh down profit, and lack of currency hedging could affect operating income. For FY16, Disney forecasted a $500 million loss in operating income which is due to the increased strength of the U.S dollar. Future strengthening of the dollar could continue to negatively impact Disney.

Competition:

Competition in the media industry is immense, with companies fighting for viewership. On demand and live streaming could help competitors break into the market, and provide a service that is cheaper and easily accessible compared to Disney's programming.

Protection of intellectual property:

Protecting Disney's decades of established content is vital for the long-term success of the company. The stealing of homemade creations would hurt revenue and increase the cost of defending the rights, so it is imperative for Disney to pursue copyright, trademark, and patent infringements.

Maintenance of gross margin:

Disney relies heavily on the ESPN network because it makes almost 17% of sales. Sports programming costs are increasing in 2017 and 2019 which could hurt earnings.

Appendix 1: Sales Forecast

Sales forecast	Sep-12	Sep-13	Sep-14	Oct-15	Oct-16	Oct-17	Oct-18
Sales	$42,278	$45,041	$48,813	$52,465	$55,632	$57,097	$62,185
Growth		*6.5%*	*8.4%*	*7.5%*	*6.0%*	*2.6%*	*8.9%*
Media Networks	19,436	20,356	21,152	23,264	23,689	23,227	23,924
Growth		*4.7%*	*3.9%*	*10.0%*	*1.8%*	*-2.0%*	*3.0%*
% of sales	*46.0%*	*45.2%*	*43.3%*	*44.3%*	*42.6%*	*40.7%*	*38.5%*
Parks & Resorts	12,920	14,087	15,099	16,162	16,974	18,247	19,433
Growth		*9.0%*	*7.2%*	*7.0%*	*5.0%*	*7.5%*	*6.5%*
% of sales	*30.6%*	*31.3%*	*30.9%*	*30.8%*	*30.5%*	*32.0%*	*31.3%*
Studio Entertainment	5,825	5,979	7,278	7,366	9,441	9,819	12,617
Growth		*2.6%*	*21.7%*	*1.2%*	*28.2%*	*4.0%*	*28.5%*
% of sales	*13.8%*	*13.3%*	*14.9%*	*14.0%*	*17.0%*	*17.2%*	*6.0%*
Consumer & Interactive Products	4,097	4,619	5,284	5,673	5,528	5,804	6,211
Growth		*12.7%*	*14.4%*	*7.4%*	*-2.6%*	*5.0%*	*7.0%*
% of sales	*9.7%*	*10.3%*	*10.8%*	*10.8%*	*9.9%*	*10.2%*	*10.0%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
United States & Canada	31,770	34,021	36,769	40,320	42,616	43,679	47,509
Growth		*7.1%*	*8.1%*	*9.7%*	*5.7%*	*2.5%*	*8.8%*
% of sales	*75.1%*	*75.5%*	*75.3%*	*76.9%*	*76.6%*	*76.5%*	*76.4%*
Europe	6,223	6,181	6,505	6,507	6,714	6,966	7,400
Growth		*-0.7%*	*5.2%*	*0.0%*	*3.2%*	*3.8%*	*6.2%*
% of sales	*14.7%*	*13.7%*	*13.3%*	*12.4%*	*12.1%*	*12.2%*	*11.9%*
Asia Pacific	2,990	3,333	3,930	3,958	4,582	4,739	5,597
Growth		*11.5%*	*17.9%*	*0.7%*	*15.8%*	*3.4%*	*18.1%*
% of sales	*7.1%*	*7.4%*	*8.1%*	*7.5%*	*8.2%*	*8.3%*	*9.0%*
All Other	1,295	1,506	1,609	1,680	1,720	1,713	1,679
Growth		*16.3%*	*6.8%*	*4.4%*	*2.4%*	*-0.4%*	*-2.0%*
% of sales	*3.1%*	*3.3%*	*3.3%*	*3.2%*	*3.1%*	*3.0%*	*2.7%*

Appendix 2: Income Statement

Income Statement (in millions)	2013	2014	2015	2016		2017E	2018E
Sales	$ 42,278	$ 45,041	$ 48,813	$ 52,465	$ 55,632	$ 57,097	$ 62,185
Direct costs	25,455	27,226	28,708	30,718	32,520	33,687	35,756
Gross Margin	16,823	17,815	20,105	21,747	23,112	23,410	26,428
SG&A, R&D, and other	7,194	7,960	7,882	7,762	7,984	9,078	9,079
EBIT	9,629	9,855	12,223	13,985	15,128	14,331	17,350
Interest	369	235	(23)	117	260	289	300
EBT	9,260	9,620	12,246	13,868	14,868	14,042	17,050
Taxes	3,087	2,984	4,242	5,016	5,078	4,796	5,823
Income	*6,173*	*6,636*	*8,004*	*8,852*	*9,790*	*9,246*	*11,227*
Other	491	500	503	470	399	470	510
Net income	5,682	6,136	7,501	8,382	9,391	8,776	10,717
Basic Shares	1,794	1,792	1,740	1,694	1,629	1,609	1,591
EPS	$ 3.17	$ 3.42	$ 4.31	$ 4.95	$ 5.76	$ 5.46	$ 6.74
DPS	$ 0.60	$ 0.75	$ 0.86	$ 1.81	$ 1.42	$ 2.18	$ 2.51

Appendix 3: Balance Sheets

Balance Sheet	2012	2013	2014	2015	2016	2017E	2018E
Assets							
Cash	3,387	3,931	3,421	4,269	4,610	4,872	4,265
Operating assets ex cash	110,322	110,178	111,755	112,489	112,356	112,681	113,811
Operating assets	13,709	14,109	15,176	16,758	16,966	17,553	18,077
Operating liabilities	12,813	11,704	13,292	16,334	16,842	17,286	18,826
NOWC	896	2,405	1,884	424	124	268	(749)
NOWC ex cash (NWC)	(2,491)	(1,526)	(1,537)	(3,845)	(4,486)	(4,604)	(5,014)
NFA	61,182	67,132	69,010	71,424	75,067	76,130	82,913
Invested capital	$62,085	$69,537	$70,894	$71,848	$75,191	$76,397	$82,164
Total assets	$74,898	$81,241	$84,186	$88,182	$92,033	$93,683	$100,990
Short-term and long-term debt	17,876	17,337	18,618	19,142	24,189	23,989	25,989
Other liabilities	2,251	4,050	4,098	4,051	3,679	3,309	3,359
Equity	41,958	48,150	48,178	48,655	47,323	49,099	52,816
Total supplied capital	62,085	69,537	70,894	71,848	75,191	76,397	82,164
Total liabilities and equity	$74,898	$81,241	$84,186	$88,182	$92,033	$93,683	$100,990

Appendix 4: Ratios

Ratios	2012	2013	2014	2015	2016	2017E	2018E
Profitability							
Gross margin	39.8%	39.6%	41.2%	41.5%	41.5%	41.0%	42.5%
Operating (EBIT) margin	22.8%	21.9%	25.0%	26.7%	27.2%	25.1%	27.9%
Net profit margin	13.4%	13.6%	15.4%	16.0%	16.9%	15.4%	17.2%
Activity							
NFA (gross) turnover		70.2%	71.7%	74.7%	76.0%	75.5%	78.2%
Total asset turnover		57.7%	59.0%	60.9%	61.7%	61.5%	63.9%
Liquidity							
Op asset / op liab	107.0%	120.5%	114.2%	102.6%	100.7%	101.5%	96.0%
NOWC Percent of sales		3.7%	4.4%	2.2%	0.5%	0.3%	-0.4%
Solvency							
Debt to assets	23.9%	21.3%	22.1%	21.7%	26.3%	25.6%	25.7%
Debt to equity	42.6%	36.0%	38.6%	39.3%	51.1%	48.9%	49.2%
Other liab to assets	3.0%	5.0%	4.9%	4.6%	4.0%	3.5%	3.3%
Total debt to assets	26.9%	26.3%	27.0%	26.3%	30.3%	29.1%	29.1%
Total liabilities to assets	44.0%	40.7%	42.8%	44.8%	48.6%	47.6%	47.7%
Debt to EBIT	185.6%	175.9%	152.3%	136.9%	159.9%	167.4%	149.8%
EBIT/interest	2609.5%	4193.6%	-53143.5%	11953.0%	5818.5%	4957.5%	5785.4%
Debt to total net op capital	28.8%	24.9%	26.3%	26.6%	32.2%	31.4%	31.6%
ROIC							
NOPAT to sales		15.1%	16.4%	17.0%	17.9%	16.5%	18.4%
Sales to IC		68.4%	69.5%	73.5%	75.7%	75.3%	78.4%
Total		10.3%	11.4%	12.5%	13.5%	12.5%	14.4%
Total using EOY IC	10.3%	9.8%	11.3%	12.4%	13.2%	12.4%	13.9%
ROE							
5-stage DuPont							
EBIT / sales		21.9%	25.0%	26.7%	27.2%	25.1%	27.9%
Sales / avg assets		57.7%	59.0%	60.9%	61.7%	61.5%	63.9%
EBT / EBIT		97.6%	100.2%	99.2%	98.3%	98.0%	98.3%
Net income /EBT		63.8%	61.3%	60.4%	63.2%	62.5%	62.9%
ROA		7.9%	9.1%	9.7%	10.4%	9.5%	11.0%
Avg assets / avg equity		173.3%	171.7%	178.0%	187.8%	192.6%	191.0%
ROE		13.6%	15.6%	17.3%	19.6%	18.2%	21.0%
3-stage							
Net income / sales		13.6%	15.4%	16.0%	16.9%	15.4%	17.2%
Sales / avg assets		57.7%	59.0%	60.9%	61.7%	61.5%	63.9%
ROA		7.9%	9.1%	9.7%	10.4%	9.5%	11.0%
Avg assets / avg equity		173.3%	171.7%	178.0%	187.8%	192.6%	191.0%
ROE		13.6%	15.6%	17.3%	19.6%	18.2%	21.0%
Payout Ratio		21.9%	19.9%	36.6%	24.6%	39.9%	37.3%
Retention Ratio		78.1%	80.1%	63.4%	75.4%	60.1%	62.7%
Sustainable Growth Rate		10.6%	12.5%	11.0%	14.7%	10.9%	13.2%

Appendix 5: Cash Flow Statement

Cash Flow Statement							
	2012	2013	2014	2015	2016	2017E	2018E
NOPAT	$6,419	$6,798	$7,989	$8,927	$9,961	$9,437	$11,424
Growth		6%	18%	12%	12%	-5%	21%
NWC*	-2491	-1526	-1537	-3845	-4486	-4604	-5014
Net fixed assets	61189	67132	69010	71424	75067	76130	82913
Total net operating capital*	$58,698	$65,606	$67,473	$67,579	$70,581	$71,525	$77,898
Growth		12%	3%	0%	4%	1%	9%
- Change in NWC*		965	-11	-2308	-641	-118	-410
- Change in NFA		5943	1878	2414	3643	1063	6783
FCFF*		-$110	$6,122	$8,821	$6,959	$8,492	$5,051
Growth			-5671%	44%	-21%	22%	-41%
- After-tax interest expense	246	162	-15	75	171	190	197
FCFE**		-$272	$6,137	$8,746	$6,788	$8,302	$4,853
Growth			-2356%	43%	-22%	22%	-42%

Appendix 6: 3-stage DCF Model

3 Stage Discounted Cash Flow							
	First Stage		Second Stage				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	2.6%	8.9%	7.0%	5.0%	8.0%	6.0%	9.0%
NOPAT / S	16.5%	18.4%	18.4%	18.4%	18.4%	18.4%	18.4%
S / NWC	-12.40	-12.40	-12.40	-12.40	-12.40	-12.40	-12.40
S / NFA (EOY)	0.75	0.75	0.75	0.75	0.75	0.75	0.75
S / IC (EOY)	0.80	0.80	0.80	0.80	0.80	0.80	0.80
ROIC (EOY)	13.2%	14.7%	14.7%	14.7%	14.7%	14.7%	14.7%
ROIC (BOY)		16.0%	15.7%	15.4%	15.8%	15.5%	16.0%
Sales	$57,097	$62,185	$66,538	$69,864	$75,454	$79,981	$87,179
NOPAT	$9,437	$11,424	$12,224	$12,835	$13,862	$14,693	$16,016
Growth		21.1%	7.0%	5.0%	8.0%	6.0%	9.0%
Change in NWC	-118	-410	-351	-268	-451	-365	-580
NWC	-4604	-5014	-5365	-5634	-6084	-6449	-7030
Growth NWC		8.9%	7.0%	5.0%	8.0%	6.0%	9.0%
- Chg NFA	1063	6783	5804	4436	7452	6036	9598
NFA EOY	76130	82913	88717	93153	100605	106641	116239
Growth NFA		8.9%	7.0%	5.0%	8.0%	6.0%	9.0%
Total inv in op cap	944	6373	5453	4168	7002	5671	9017
Total net op cap	71525	77898	83351	87519	94520	100192	109209
FCFF	$8,492	$5,051	$6,771	$8,667	$6,860	$9,022	$6,998
% of sales	14.9%	8.1%	10.2%	12.4%	9.1%	11.3%	8.0%
Growth		-40.5%	34.1%	28.0%	-20.9%	31.5%	-22.4%
- Interest (1-tax rate)	190	197	209	222	235	249	264
Growth		3.7%	6.0%	6.0%	6.0%	6.0%	6.0%
FCFE w/o debt	$8,302	$4,853	$6,561	$8,445	$6,625	$8,773	$6,734
% of sales	14.5%	7.8%	9.9%	12.1%	8.8%	11.0%	7.7%
Growth		-41.5%	35.2%	28.7%	-21.6%	32.4%	-23.2%
/ No Shares	1609	1591	1591	1591	1591	1591	1591
FCFE	$5.16	$3.05	$4.12	$5.31	$4.16	$5.51	$4.23
Growth		-40.9%	35.2%	28.7%	-21.6%	32.4%	-23.2%
* Discount factor	0.91	0.83	0.76	0.69	0.63	0.58	0.53
Discounted FCFE	$4.71	$2.54	$3.13	$3.68	$2.63	$3.18	$2.22
Third Stage							
Terminal value P/E							
Net income	$8,776	$10,717	$12,014	$12,613	$13,626	$14,444	$15,751
% of sale	15.4%	17.2%	18.1%	18.1%	18.1%	18.1%	18.1%
EPS	$5.46	$6.74	$7.55	$7.93	$8.56	$9.08	$9.90
Growth		23.5%	12.1%	5.0%	8.0%	6.0%	9.1%
Terminal P/E							18.5
* Terminal EPS							$9.90
Terminal value							$183.15
* Discount factor							0.53
Discounted terminal value							$96.27

Summary			
First stage	$7.25	Present value of first 2 year cash flow	
Second stage	$14.84	Present value of year 3-7 cash flow	
Third stage	$96.27	Present value of terminal value P/E	
Value (P/E)	**$118.36**	= value at beg of fiscal yr	2017

Appendix 7: Porter's 5 Forces

Threat of New Entrants – Low

The barriers to entry for a media and entertainment company are extremely high. The probability for a new company to disrupt Disney's brand is extremely low given the long history of the company. An extreme advantage DIS has over new entrants is that the company is able to produce long-term growth because it has the capital to invest in R&D and marketing. In addition, because of the company's long history, it can rely on past failures and experiences to determine what the consumer's desire. The most significant threat would be entry of an established foreign brand that taps into changes in consumer preference.

Threat of Substitutes - Moderate

Although competitors would be hard pressed to try and duplicate Disney's iconic character creations, there are substitutes for their sports networks. My analysis suggests that Disney's loyal fan base for beloved characters does not translate to a following for their sports networks like ESPN. With big players like Fox sports competing against Disney's sports division, it gives consumers an alternative, resulting in lower viewership. Streaming and VOD also offer a cheaper and faster substitute to subscription based sports networks.

Supplier Power - Low

The company creates large volumes of unique services and products, and volume is critical to suppliers. Disney is a large company so it can purchase quantities in bulk. The products are unique, so suppliers may have less power and may be dependent on Disney's business.

Buyer Power – High

Consumers of entertainment services goods have a great degree of power over content. High prices may cause consumers to spend money elsewhere, especially when it comes to the parks and resorts segment.

Intensity of Competition – High

Although there are relatively few competitors, competition is fierce. Competition is consistently creating and developing content for entertainment, so companies in this space must evolve and keep up to date with demand/preferences.

Appendix 8: SWOT Analysis

Strengths	**Weakness**
Content Integration Diversified Revenue Streams Brand Equity	Over-Expansion ESPN Margins Capital Expenditures
Opportunities	**Threats**
M&A Activites China Direct to Consumer Streaming	Shift in Consumer Preferences Cable Cord Cutting Competition

Building Products

A.O. Smith Corporation (AOS)

Recommendation	NEUTRAL
Target (today's value)	$47
Current Price	$47.76
52 week range	$30.15 - $51.49

Share Data	
Ticker:	AOS
Market Cap. (Billion):	$8.3
Inside Ownership	2.9%
Inst. Ownership	86.5%
Beta	1.21
Dividend Yield	1.0%
Payout Ratio	24.9%
Cons. Long-Term Growth Rate	11.5%

	'14	'15	'16E	'17E	'18E
Sales (billions)					
Year	$2.4	$2.5	$2.7	$2.9	$3.2
Gr %		7.7%	6.9%	7.9%	8.1%
Cons	-	-	$2.7	$2.9	$3.2
EPS					
Year	$1.15	$0.80	$1.87	$2.12	$2.34
Gr %		-30.4%	128.9%	17.0%	9.9%
Cons	-	-	$1.84	$2.07	$2.30

Ratio	'14	'15	'16	'17E	'18E
ROE (%)	15.3%	20.0%	21.4%	22.7%	23.1%
Rel Industry	0.75	0.98	0.97	0.83	0.81
NPM (%)	9.0%	11.4%	11.9%	12.3%	12.3%
Rel Industry	1.75	2.53	2.03		
A. T/O	0.96	0.98	0.99	1.01	1.03
ROA (%)	8.5%	11.0%	11.6%	12.1%	12.5%
Rel Industry	1.33	2.03	1.47	1.29	1.24
A/E	1.81	1.83	1.85	1.87	1.86

Valuation	'14	'15	'16	'17E
P/E	24.7	24.2	26.1	25.0
Rel Industry	1.08	0.85	1.19	1.35
P/S	2.2	2.7	3.1	2.9
P/B	3.7	4.67	5.5	5.4
P/CF	19.5	19.9	22.2	22.3
EV/EBITDA	10.8	11.5	12.8	11.4

Performance	Stock	Industry
1 Month	-6.1%	-14.5%
3 Month	-4.7%	10.4%
YTD	0.9%	0.6%
52-week	42.1%	30.2%
3-year	83.0%	50.6%

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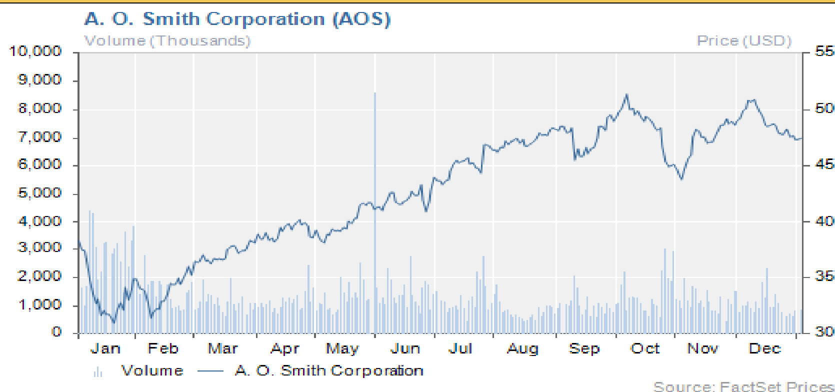


Summary: **Hold**-AOS has great long-term growth potential, but conservative valuation metrics show this company as fairly priced for the near term. Potential for upside exists if India or air purifiers come on line faster than expected. Current models do not show either India nor air purifiers affecting balance sheet in the near term. AOS is exposed to negative yuan devaluation and Chinese economic slowdown risks. The company is under indebted - any increase in debt would increase returns to equity holders. The stock is rated a hold for a 12-18 month time frame, but a long-term buy could be argued given the expected long term growth rates of its markets (as reviewed in the report).

Key Drivers:

- The firm has strong, sustained replacement market for residential water heaters and strong pricing power. It seamlessly passes along price increases from increased regulation and commodity costs.
- Chinese urbanization and digitalization provides a sustained target market growth through 2050. As Chinese consumer earns more, more buy foreign-branded water heaters and consumers pay up for best technology (reverse osmosis water filtration). An ecommerce platform was launched in 2012. Chinese consumers are unafraid to purchase big-ticket items online, unlike US consumers, which drives margin growth, even with heavy advertising.
- Launching commercial leasing of boilers in China: AOS is into its second year of its air filtration product launch. Chinese smog levels are the worst in the world, reaching 10x the healthy limit.
- Average Chinese household dwellings grow in size with income, which will push consumers to more powerful and profitable water heaters

Valuation: Using a relative valuation approach, AOS appears to be slightly undervalued to fairly valued in comparison to the building product industry. Due to the ability to incorporate longer-term forecasts, DCF analysis provides the best way to value the stock. A combination of the approaches suggests that A.O. Smith is fairly valued, as the stock's value is about $47 and the shares trade at $47.76.

Risks: Chinese economy is transitioning into a consumer driven economy. This is guided by government dictate. If the transition does not go well and the rate of urbanization or income growth stalls, AOS's sales will fail to meet expectations. AOS is also exposed to yuan devaluation. If it devalues faster than projections, this too will depress sales when converting to the USD.

Company Overview

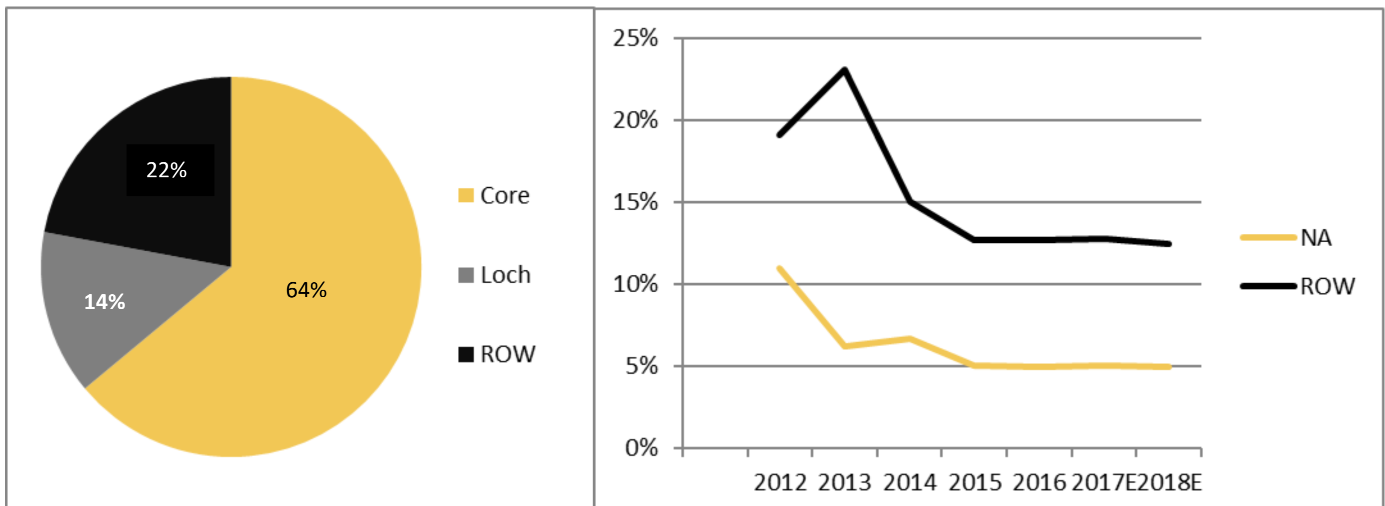
A. O. Smith Corporation (AOS) manufactures and distributes water heater, water treatment, and air purifier products. It serves residential and commercial customers in the North America and residential customers in its Rest of World segment, although AOS just launched commercial water treatment products in China. AOS operates in two segments: North America (NA) and Rest of World (ROW). The North America segment manufactures and markets commercial water heating equipment, condensing and non-condensing boilers, and water treatment tanks. AOS distributes its residential water heaters to the consumer through a 50% wholesale, 50% retail strategy. Replacements constitute 85-90% of the NA water heater volume, with the rest driven by new construction. AOS is the leader in the U.S. residential water heater market and dominates the commercial water heater market segment. The drive for efficiency has caused gas water heater sales to double in the past five years.

The Rest of World segment includes China, India, and Europe. Here AOS manufactures and markets water treatment products, water heaters, and air purifying products. A. O. Smith targets the affluent and mainstream income earners in China and the upper-middle class in India with its premium brands. AOS is able to leverage the trust in foreign brands overseas into higher price points. It primarily competes in the premium residential market and is the market leader in gas and electric water heaters priced at more than $400. It distributes water heaters through its multi-tiered store approach alongside a growing e-commerce platform. Electric water heaters dominate the wall-hung market. AOS launched a line of air purifiers in 2015 targeting the smog season in Q4/Q1.

A.O. Smith focuses on an organic growth strategy centered on expanding its Chinese footprint, servicing North American high efficiency water treatment and boiler needs through its Lochinvar brand, and servicing the replacement market for North American water heaters. AOS estimates it can maintain an eight-percent growth rate with the following strategies, product mix, and expectations:

- China: (15% sales growth, RMB) (currently 30% of sales): Target homeowners, expand geographic footprint, roll out air purifiers, expand e-commerce platform, advertise heavily to leverage foreign brand. Management assumes 2x GDP growth in this segment. 97% ROW sales.
- Lochinvar: (10% sales growth): High-efficiency commercial and residential hydronic space heating, and water heating. Currently 12% of sales.
- NA residential water Market (Core) (4% sales growth): Servicing the residential water-heater replacement market. Annual volume: about 8 million units. Currently 58% of total sales.

Figures 1 + 2: Revenue By Segment (L) + Historical Growth Rates Post 2012 (R) (Constant Margins x ROW)



Source: 2016 Company Investor Slides

Business/Industry Drivers

Although several factors may contibute to A.O. Smith's future success, the following are the most important business drivers:

1) Market expansion in China (30% of sales)
2) Asian product expansion
3) Chinese consumer and demographic trends
4) U.S. industry trends

Market Expansion in China

AOS is now selling in all tiered cities in China

AOS entered China in tier 1 cities, has expanded into tier 2 and 3 cities, and in 2016 began rolling out into tier 4 and 5 cities. AOS increased its presence to more than 8,000 outlets. Thirty-one percent of its outlets are in tier 1 cities and 69% are in tier 2 and 3 cities. It is also diversifying its distribution network. AOS has 23% of sales through regional stores, 29% through AOS specialty stores, and 30% through Suning and Guomei outlets.

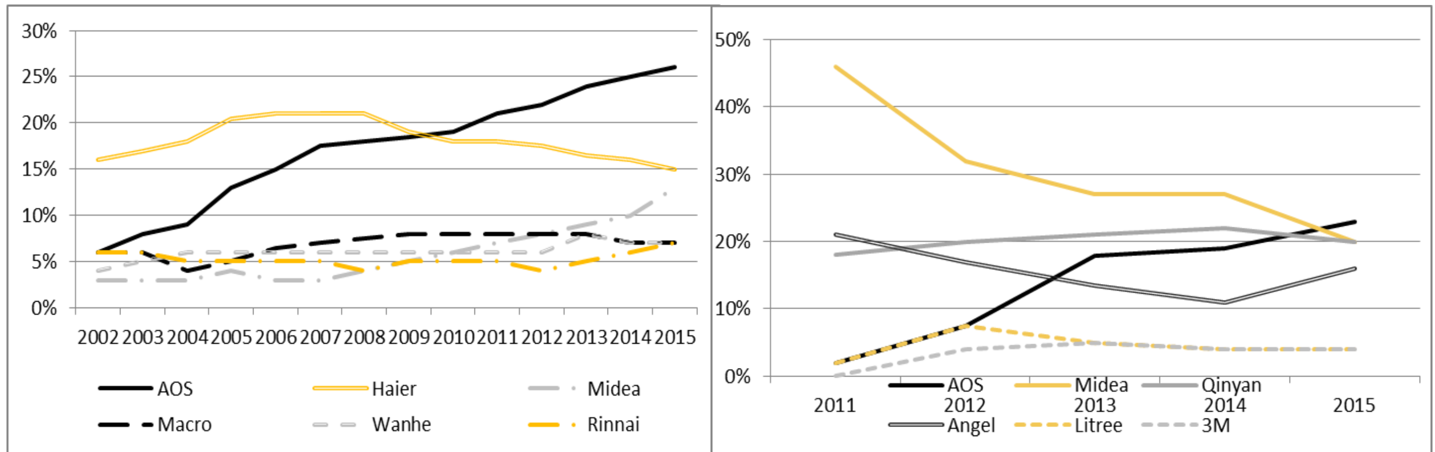
In 2012, AOS launched an e-commerce platform, which caught on quickly. Four years in, it now accounts for 18% of all Chinese sales, allowing digital expansion into even smaller cities and rural areas. Chinese consumers display an affinity for ordering large home goods online that American consumers do not. Consumers use smartphones in 35% of Chinese sales, accelerating the pace of market penetration into lower-tiered cities. This helps somewhat offset the increasing development and advertising costs associated with expansion.

Due to strong growth of the water treatment business in China, the company projects it will soon reach production capacity and is building a new water treatment manufacturing and air purification assembly facility (estimated completion 2018) to meet new demand, doubling current capacity. Sales in local currency were up 20% in 2015; AOS sees 15% organic growth in China for the foreseeable future. AOS uses 2x Chinese consumption growth as a proxy to project water heater market growth. Chinese residential consumption growth expected to grow 7-8% per year for the forseeable future. At current growth rates, China alone adds 4.5% (15% x 30% of sales (roughly $800M)) to overall sales growth.China currently

Water treatment products grew to $110M in 2015, up 47% YOY and added 5% to sales growth in the ROW segment. The water treatment market grew 30% with instant gas water heaters leading the growth. Recall, AOS led its entry into China with water heaters, which still make up the large majority of its sales in China. Water treatment and air purification products are seeing very rapid growth on low bases now as the Chinese consumer gains wealth and can now look outside the most basic of essentials

A.O. Smith is not just entering new markets; it is also gaining market share in current ones. One advantage is the company's American brand. According to a 2012 McKinsey Annual Chinese Consumer Survey, Chinese consumers, young and old, trust foreign companies more than state-run enterprises by overwhelming margins. AOS is an industry leader in the premium (>$400) electric water heater market, with no close competitiors and leads in market share in the competitive premium (>$400) gas water heaters.

Figures 3 and 4: Dollar Volume Water Heater Market Share (L) and Water Treatment Market Share (R)



Source: AOS Summer 2016 Analyst Presentation

Product Expansion In Asia

AOS launched an air purification line in 2015 to complement its existing product line. In 2015, AOS began commercial leasing of its water treatment products. The five-year lease model opens up a new consumer base for AOS. While initially dampening revenue per sale, the decreased volatility of revenue, and growing commercial market share all make commercial leasing a large net positive for continued revenue growth. Per company investor presentations, industry studies predict almost 40% CAGR over the next five years for the Chinese water heater market as the Chinese economy grows and urbanizes.

Water heater replacement market emerges

In addition, a water heater replacement market is emerging in tier 1 cities. As the residential water heater market matures, it will resemble the U.S. water heater market. With lifespans of 10-15 years, the first water heaters are just needing replacement in Tier 1 cities. In the mature U.S. market, replacement represents 85-90% of core AOS residential water heater sales. While 8-10 years off in Tier 2 and 3 cities and 10-15 years off in tier 4 and 5, the larger the market share gained now, the larger the recurring revenue base to be harvested as those markets mature at much lower SGA costs, resulting in much higher margins. AOS water heater revenue has grown 5-7%, in line with market growth.

Air Purification Products just launched 4Q15

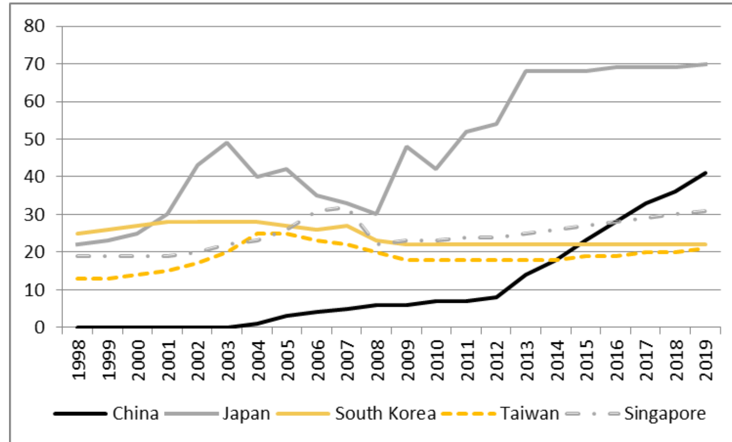
AOS's latest product innovation are its air purification products. These launched to coincide with the Q4/Q1 smog season. In China smog reaches 453 ug/m^3 regularly in peak season, leading to many health concerns. For comparison, San Madera, CA leads the US with air pollution with 69.2ug/m^3 in 2013[1]. The World Health Organization cites 10 ug/m^3 yearly mean and a quick mean of 25ug/m^3 as its 24-hour healthy level as safe levels of particulate matter ($PM_{2.5}$) in the air[2].

Market penetration now is in the very low single digits, but consumer adoption has been quick and air purifiers have a 30% growth rate with sales up $1M YOY (off-peak season) in 2Q16 and up to $5M in 4Q15 (peak season). Current penetration for the air purifier market is at 3.4% of households overall, with 14% penetration in tier 1 cities. At the present time, there are about 19 sales per thousand urban households, which is projected to reach 40 unit sales per thousand urban households over the next five years. If China's air pollution problem worsens, the Japanese usage rate, close to 70 unit sales per thousand, may be possible. In a best case scenario, the market may be

[1] "U.S. Cities Ranked by Air Pollution." Statistic Brain, 18 Oct. 2015, http://www.statisticbrain.com/the-most-polluted-us-cities/.
[2] "Abient (outdoor) air quality and health." World Health Organization. Sept. 2016, http://www.who.int/mediacentre/factsheets/fs313/en/.

almost twice as large as currently projected. However, marketing and consumer education has proven costly, compressing operating margins. Revenue from 2015 was $10M, and $20M (about 0.67% of sales) is expected in 2016. Investment is fueling growth, product expansion, market penetration, and market share growth.

Figure 5: Unit sales rates per thousand urban households across select Pacific Rim Countries



Source: Company report (Eurozone), without replacement for China

ROW OP margin compressed by advertising, education:

Operating Margins:

NA: 23%
ROW: 13%

CMM currently values the Chinese air purifier market at $2 billion (physical sales, online not included), growing 30-35% per year. As AOS just launched its product line, concrete analysis is difficult. Using the population statistics from the following section, I estimate the total market (phyiscal + online) unit size to currently be 7.5 million units, growing to 12.8 million by 2020 and 26.7M units by 2050. Given AOS recent success in rolling out water heating and treatment products in China, penetrating and growing market share looks achievable. If AOS is able to achieve the 30% dollar value market share it has in the water heating/treatment markets by 2050, this could be worth $1.7 billion (using 2020 figures as an target).

An average price of $267 was backed out of current data from CMM and company reports. This price is understated as CMM's market estimation does not include online sales, which represents a noticable portion of sales. This in turn, would understate the value of the AOS and market sales. But that is deliberate, as I am attempting to determine the value's lower bound. The following table assumes no replacement market, which is inherently false, but product lifetimes are not available in company literature.

Figure 6: Approximating cumulative target market share value of first air purifiers purchased
(2020 represents a 10-20 year target) (see appendix 15)

(30% growth)	**2016**	**2017E**	**2018E**	**2019E**	**2020E**	**2050E**
market size $M	2,000	2,600.0	3,380.0	4,394.0	5,712.2	7,153.3
N units	7,476,707	8,979,875	9,983,041	11,277,764	12,743,598	26,741,741
avg unit price	$ 267	$ 290	$ 339	$ 390	$ 448	$ 448
				Tgt mkt share (30%) annual value		
	Premium product/premium price			**AOS unit price**	$ 1,000	$ 1,000
					2020	**2050**
				AOS unit sales (M)	1.71	2.15
			(30% mkt share by $)	**AOS sales ($M)**	$ 1,714	$ 2,146

Source: IMCP, Company reports, later footnotes

This is distant, however, as its current air purifier market share is 0.5%. Even if its sales double every year until 2020, it will only reach 2.8% market share. The building of the new manufacturing plant is an effort to hasten market share growth. Up to date sales numbers will provide crucial insight into AOS's market penetration. If Chinese consumers quickly adopt AOS air purifiers as they did with other products, AOS may quickly capture market share and air purifiers will prove a boon to shareholders in the near future. This lower bound estimate projects a 14.7% long term CAGR for air purifier sales, currently adding (14.7% x 0.67%) 0.1% to company sales growth forecasts. Should air purifiers reach $100M in sales in 2018, this segment would add 0.45% to total company sales growth.

While small when compared to ~$800M in ROW annual sales, consumers are expected to quickly adopt air purifiers, driving sales, according to company forecasts, to a 30% annual growth rate for the near term; it would only take 6 years to reach over $100M in sales of air purfiers. Reaching the target market share after 2020 would require annual sales growth of 12.8% thereafter. Combined sales of water treatment and air purification products are expected to increase the ROW growth rate by 5% in 2016. Longer term, once penetration matures margins will be harvested, driving earnings growth further.

Chinese Consumer and Demographic Trends

China urbanization responsible for urban target market growth into near future

While AOS offers a diversifyied array of products, with the products available in a growing number of markets, its markets are also growing. Government policy encourages the rural population to move into the cities in the east. Chinese urbanization is projected to drive 29% of all global growth. Fifty-six percent of the population now lives in cities with the government target of 60% by 2020 and 70% by 2050. Using current population growth trends from the Chinese government[3], I calculate (from 2015) that an additional 74.5 million people will live in cities by 2020 (in table on next page), and another 375 million people by 2050. Chinese home ownership is unusually high among industrialized countries. Using average household size[4], the number of new households in 2020 is projected to be 24.8 million from emigration alone. AOS recently changed target markets, and is now targeting homeowners instead of apartment builders. This seems reasonable given the 85%[5] home ownership rates among urban centers, leading to about 21 (24.8 x 85%) million new homeowners looking for water heaters and treatment products to enhance their homes. AOS only targets the mainstream and affluent classes, which make up 57% of the population (2020 estimates, company data).

Using the above trends and data (and assuming no change in market share) I calculate the addition of 6.3 million households (lower bound cumulative value ($2.5 billion) buying water heaters from AOS by 2020. This is before identifying those buying second or third homes[5], as is more common in urban China. In light of this, the company's 15% (local currency) near term CAGR estimates for Chinese sales are reasonable. Chinese currency devaluation will cost AOS approximately 2% of sales growth each year.

Figure 7: Dollar value of Chinese sales at 13% CAGR
(-2% from local currency growth due to translation costs)

Chinese Sales	2016	2017	2018	2019	2020
	$ 976	$ 1,103	$ 1,246	$ 1,408	$ 1,591
Total(M)					$ 5,349

When long term water heater sales growth is taken in conjunction with the rapid growth and adoption of water treatment and air purification products, these estimates are even firmer.

[3] "China Statistical Yearbook 2015." National Bureau of Statistics of China, 28 Sept. 2016, www.stats.gov.cn/tjsj/ndsj/2015/indexeh.htm.
[4] "Average number of people living in households in China from 1990 to 2014." Statista, 28, Sept 2016, www.statista.com/statistics/278697/average-size-of-households-in-china/.
[5] "Homeownership Soars in China." Gallup, 1 March 2005, http://www.gallup.com/poll/15082/homeownership-soars-china.aspx.

Figure 8: Calculations Table Projecting New Chinese Water Heater Market Share Value *(See also appendix 1,2) ignores replacement market*

(in millions)		2015	2020E	2050E	Notes
China POP		1,375.0	1,410.7	1,637.2	China pop
Urban Pop *(2020 x 60%, 2050x70%)*		771.4	845.8	1,146.1	Urban pop
Addl Pop *(minus prev urban period)*			74.5	374.7	New pop
			2020E	2050E	
New households			24.8	149.7	Addl pop/3
New Homeowners	*new households x 85%*		21.1	127.3	Owned households
Addl customer households	*new homeowners x 30% mkt sh*		6.3	38.2	At 30% mkt share
mkt value @ 400/unit (lowest) (approx lower bound given current FX trend)	*addl customer households x $400/unit (no replacement)*		$ 2,532	$ 15,271	Viewed from 2015

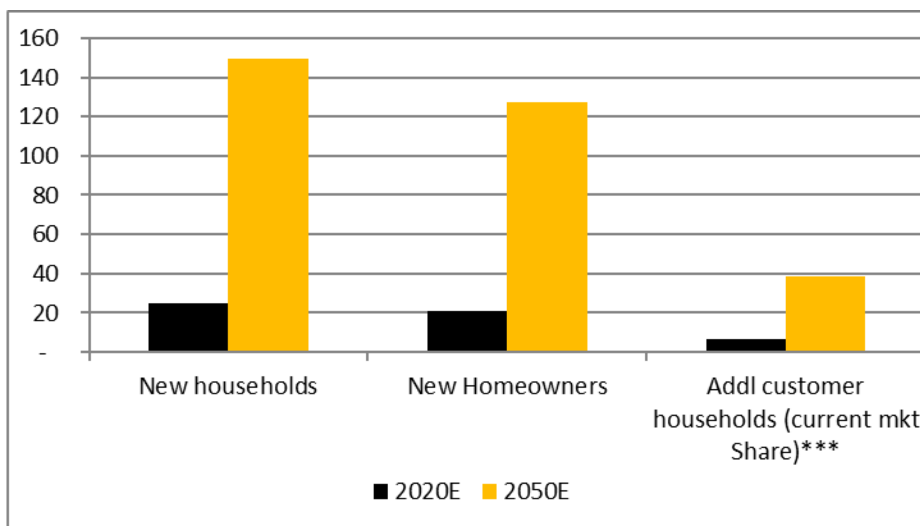
Sources: http://www.stats.gov.cn/tjsj/ndsj/2015/indexeh.htm
http://data.worldbank.org/indicator/SP.POP.GROW?locations=CN
(Assume: No replacement market (extreme lower bound)

Increasing home size may lead to increasing space heating demand

Using the above data, new Chinese water heater sales are projected to grow 6% annually until 2050. Note the figures presented for market value to AOS are cumulative numbers (sum of sales totals), not annual sales approximations.

In addition to new household formation, AOS earnings suggest residential households have increased 20% in square footage. This is backed up by analysis done by the Australian government using information obtained through the Ministry of Statistics of China (CEIC)[6] 2014 data. It found Chinese households increased from about $52m^2$ to $62m^2$. This points to increased demand per household, increasing the average size of water heater purchased, leading to higher margins.

Figure 9: Estimated Water Heater Market growth (In Millions) from 2015 to 2020, 2050



- 1.90% Pop Growth Rate (2015-2020)
- 1.20% Pop Growth Rate (2020-2050)

For Scale
- 1% growth = 10M+ customers/year become possible customers

[6] "Housing Trends in China and India." Reserve bank of Australia, March 2014, http://www.rba.gov.au/publications/bulletin/2014/mar/7.html.

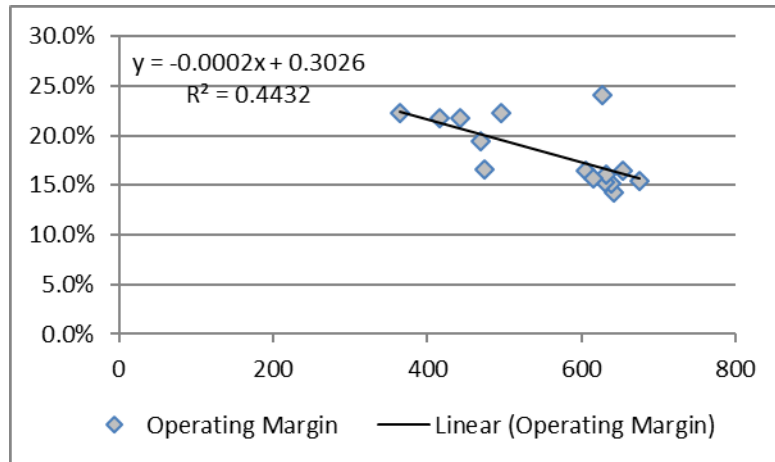
U.S. Industry Trends

Steel's price increases will put increasingly negative pressure on margins

Industry trends can be broken into four parts: steel prices, NAECA 3 (National Appliance Energy Conservation Act 3) /Lochinvar, water heater replacement market, and new demand (to be discussed later).

Steel's demise two years ago provided a helpful tailwind, but now the price of steel has more than doubled since 2015 lows. Steel accounts for 15% of COGS. Given steel's previous rise, AOS passed on a 5-8% price increase to wholesalers to help offset the rising cost of steel. The company noted no negative pushback from wholesalers. Historically, as steel traded higher, this has had a negative impact on NA margins. I expect further price increases in 2017given steel's sharp price increase in 2016. The substantial increase in input cost will make YOY comparisons difficult for the next year.

Figure 10: Effect of Steel Prices on Operating Margins (1Q13-



Source: Factset, Company Slides

See the prior graph. The recent high margins (historically) are actually the driver of the error in the graph (the only quarters with 20%+ margins are the previous 5 quarters) and this weakens the calculated relationship. Also, prices are sticky so margins automatically improve when AOS passes through a price increase. AOS expects to hold 21.5% operating margins in its NA segment, offsetting rising steel costs with increased efficiencies with its ERP systems installation.

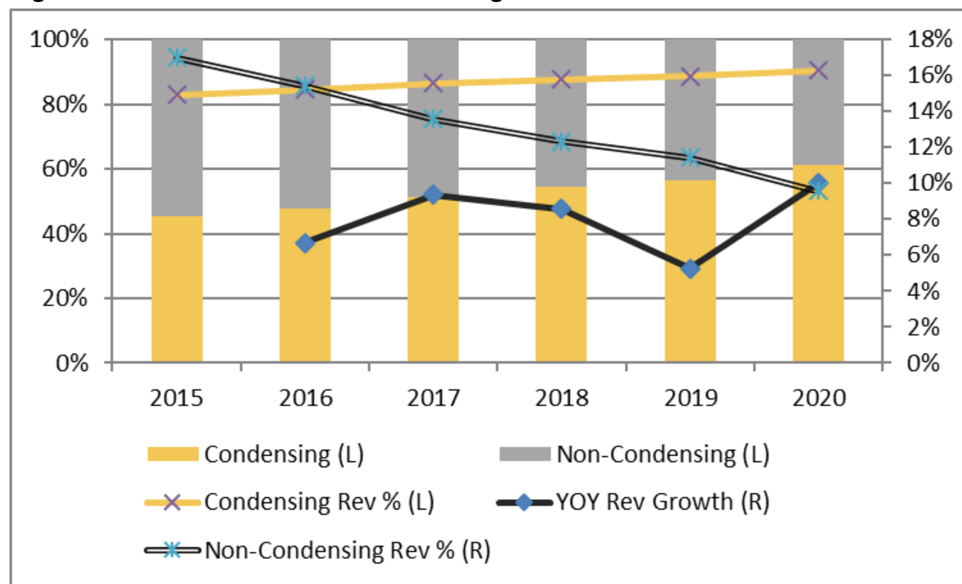
NAECA 3 causing generational shift to high efficiency products- only affects new sales, not existing models

The 2015 NAECA (National Appliance Energy Conservation Act) 3 requires water heaters to become more efficient. It is the most recent act of Congress that regulates energy consumption of specific household appliances through minimum efficiency standards. These standards are put in place to ensure manufacturers are building products at the maximum energy efficiency levels that are technically feasible and economically justified. Units less than 55 gallons are taller and wider by two inches (for added insulation), while units sized over 55 gallons have new, more efficient technology inside. Water heaters less than 55 gallons must be larger to be more energy efficient. Some sizes are no longer manufactured. In tight spaces, smaller sizes may have to be used which opens the market for smaller, high efficiency units produced by the Lochinvar brand as heaters need replacing. As companies seek to become more efficient and cut costs, Lochinvar's premium commercial products stand out in their ability to generate savings. This has propelled Lochinvar to 10% annual CAGR (although 6% growth in 2016 is expected) for those seeking efficency savings, as it leads the industry with some models registering 98% efficiency. Lochinvar is currently 14% of sales, achieving the 10% CAGR would add 1.4% to overall sales growth.

AOS was easily able to pass along a 20% price increase due NAECA 3 costs from increased insulation, design, and upgraded technology on larger models. Operating margins increased to 22.3% from 16.4% (2Q14-3Q16). Discontinuing certain sizes should increase margins overall. Residential demand has fallen while commercial demand is up since the inception of NAECA 3. The company notes consumers may be buying smaller commercial water heaters for multi-family housing (instead of newer residential but data is not provided along the single/multi-family housing divide). This may be because some small residential models are no longer offered (NAECA 3) and a few commercial models are close comparisons.

Lochinvar leads the market in boiler efficiency. As the NA market shifts to condensing boilers (83% of new dollar sales in 2015) to meet regulatory standards and meet cost savings goals, residential and commerical customers will choose Lochinvar since 83% of Lochinvar's boilers rate 90% thermal efficency or better.

Figure 11: Effect of Transition to Condensing Boilers on Revenue



Source: Company Data, 2016 Summer Investor Presentation Slides

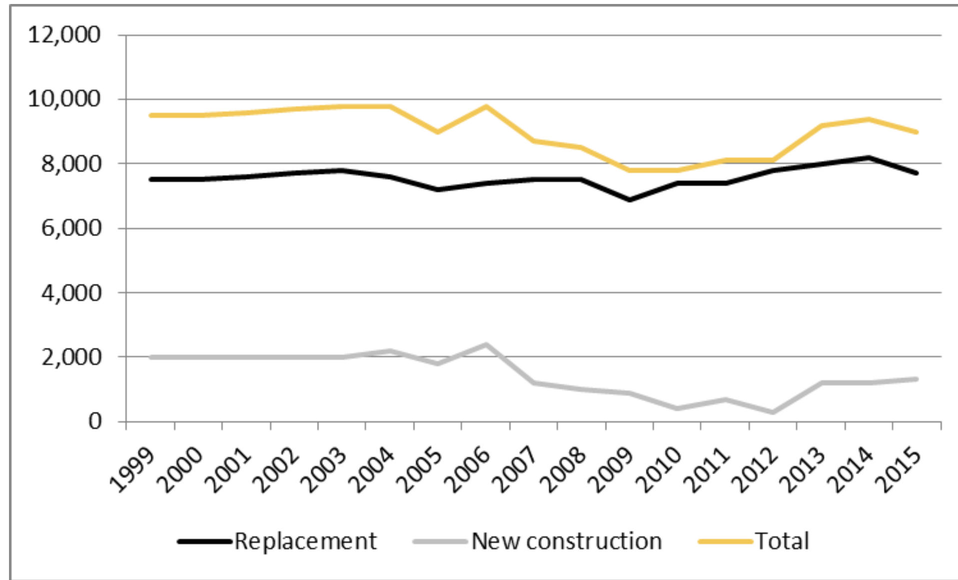
Rotation into high efficiency boilers drives sales growth in slow growing market

The growth in the boiler market, coupled with the rotation into condensing boilers, may drive an 8% 5-year boiler revenue CAGR. Even as unit growth is projected to be 1-2% for the foreseeable future, revenue growth will average (with constant prices) 8% annually because of the rotation into the higher efficency condensing boilers.

NA water heater sales largely replacement, only 10-15% sensitive to new home sales

Water heaters have an average life span of 10-15 years. As a water heater is a necessity for American households, AOS is built on a solid replacement market totaling about 7.9-8.1M units per year. AOS has about 42% market share, meaning AOS churns (sales replacing current water heaters, without market growth or penetration) 3.4M units per year. With residential retail prices ranging from $400-$1,100 (AOS is the wholesaler), using the lowest price to determine a lower sales value bound, and adding in a 30% retail margin (ex. AOS sells to retailer for $280, retailer sells for $400), AOS's sales value lower bound comes to $952 million. On top of this, 15% of the segment is sensitive to new home construction, currently worth about $200 million per year to AOS. This would put the US residential market value around $1.2 billion, or 44.2% of sales. Assuming that US commercial water heater retail price points average $1,500-$2,500, the total 2015 commericial water heater market is 185,500 units (source: company presentations), and AOS retains a 55% market share, the US commercial segment is worth about $200 million in sales to AOS, or 7.4% of sales. In total water heaters make up about $1.4 billion in sales, or 51.6% of total sales.

Figure 12: NA Residential Water Heater Market Mix (Thousands of units)



Source: Company Slides

In the commercial space, all the growth in the commercial gas water heater market comes from the 90%+ efficiency market. Those with less than 90% efficiency represent a base of about 50 thousand units a year (~$75 million). All incremental additions have been energy efficient models.

Financial Analysis

Big data system aims (ERP) to cut SG&A costs, improving EBIT margins

I anticipate EPS to grow to $2.11 in FY 2017. Increased revenues from China and North America should increase earnings by $0.15, driven by further Chinese market penetration and urbanization trends, Chinese market growth, and a continued rotation to high efficiency products in North America. I estimate gross margins decline slightly in from 2015 to 2016 due to much higher steel prices, then hold steady in my base case. In 2017-18, I assume modestly increasing steel prices are offset by the shift to higher efficiency, higher margin products. Gross margins also benefit from the continued growth of Chinese online sales and more big data systems coming online in America (ERP). Overall, gross margins should be flat in 2018. EBIT margins improve in 2016, with slight improvement in 2017, reflecting general improvement trends since FY 2012, and add $0.01 to FY2017 earnings. I keep EBIT margins stable in 2018 as SG&A cost cuts/ efficiency improvements have not been highlighted since the divestiture. Continued share buybacks of $209M add $0.05 to 2017 EPS and $169 in 2018 adds another $0.05 to EPS.

Share buybacks policy continues to add 5 cents to EPS YoY

I am ever slightly more bearish on 2017 revenue (0.3% lower) and slightly more bullish EPS 2% higher) than consensus. Fourth quarter 2016 revenue estimates drive the majority of the difference between my estimates and consensus. Company reports suggested AOS will grow North American sales at 5%, consensus estimates YoY NA sales growth at 3.8%. Company reports also suggested Rest of World sales would grow 12-13%; consensus estimates YoY sales growth to be 10.2%. I also assume tax rates of 30.5% per company reports.

Figure 13: Quantification of 2017 Drivers

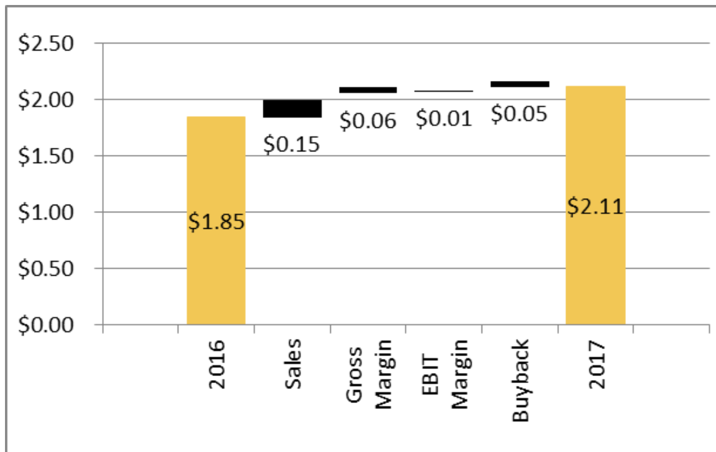
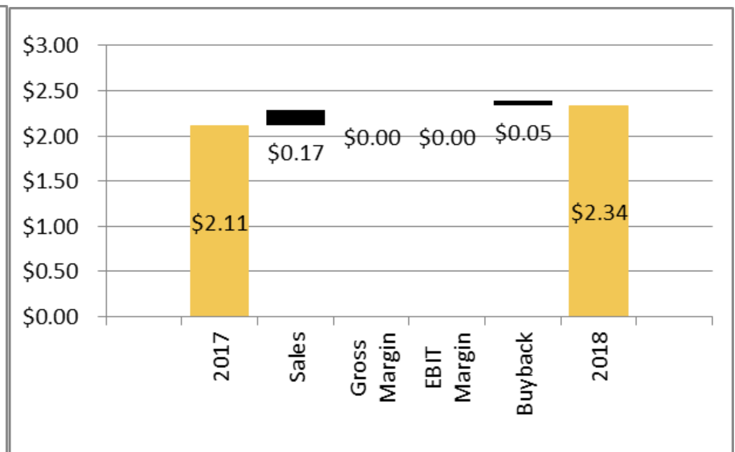


Figure 14: Quantification of 2018 Drivers



Source: IMCP

Below I illustrate the impact of consensus 4Q 2016 sales estimates on FY2017 and FY2018; keeping company estimates for divisional sales growth in FY2017 and FY2018 the same. I show both to show a sensitivity analysis. Matching 16Q4 sales to consensus shaves a penny from FY2016 EPS and two cents from 2018 EPS. For the rest of the report, I model 4Q16 revenues to match consensus.

Figure 15: Future EPS Matched to Consensus 16Q4 Sales Estimates

Source: IMCP

Figure 16: Model vs Consensus-L, Model vs Consensus matched to 4Q16 consensus-R *Source: IMCP*

	FY 2016	FY 2017	FY 2018		FY 2016	FY 2017	FY 2018
Revenue-Estimates ($M)	$2,712	$2,930	$3,167	Revenue-Estimates ($M)	$2,697	$2,911	$3,145
YoY Growth	7%	8%	8%	YoY Growth	6%	8%	8%
Revenue-Consensus ($M	$2,695	$2,938	$3,181	Revenue-Consensus ($M	$2,697	$2,938	$3,181
YoY Growth	6%	9%	8%	YoY Growth	6%	9%	8%
EPS- Estimate	$ 1.85	$ 2.05	$ 2.27	EPS- Estimate	$ 1.84	$ 2.10	$ 2.32
YoY Growth	17%	11%	11%	YoY Growth	16%	14%	10%
EPS- Consensus	$ 1.84	$ 2.07	$ 2.30	EPS- Consensus	$ 1.84	$ 2.07	$ 2.30
YoY Growth	16%	13%	11%	YoY Growth	16%	13%	11%

Higher EPS despite narrowly lower revenue stems from my aggressive projections that AOS continues its stated policy of maintaining a net $300M cash position, returning extra cash to shareholders via repurchases.

Revenues (Base Case)

Water treatment products will need another national event to put water quality at the forefront of consumer consciousness

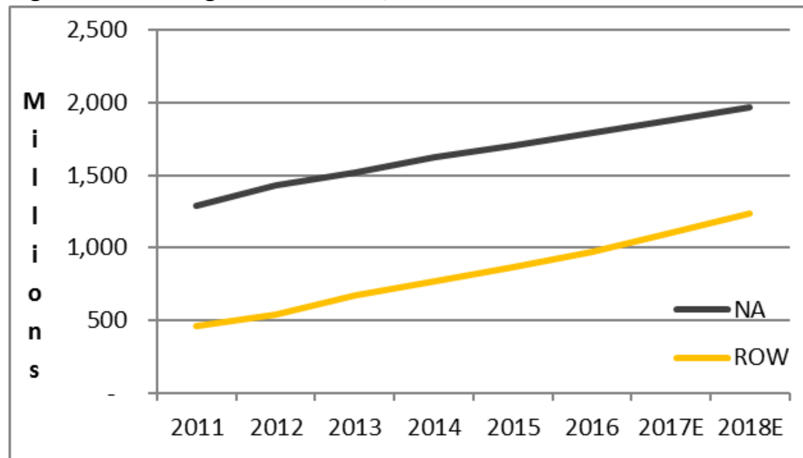
Sales growth in North America will remain steady, growing 5% to $1.8 billion in FY2017 and $2 billion in FY2018. Company objectives are to grow the segment 15% YoY, which will not be achieved in 2016. I then improved sales growth slightly, but not to the 15% the company expects for 2017-18. Strong housing starts will add to sales incrementally, but higher price points as consumers buy NAECA 3 water heaters and further price increases to offset any increase in steel prices will be the main drivers of increased North American sales. The Aquasana purchase will not add substantially to sales in the near term. As Flint's lead laden, undrinkable water recedes from America's memory, AOS will unfortunately have to wait for another water quality crisis to expand the North American consumer awareness.

Air purification and water treatment market to grow at 2x Chinese consumer consumption (currently 7-8%)

Rest of World sales growth will remain strong, growing 13% to $1.1 billion in FY 2017 and $1.25 billion in FY2018. The nascent water heater replacement market in tier one Chinese cities will give AOS another chance to sell its foreign, premium branded water heaters to affluent consumers, possibly growing market share. Ancillary product market growth in air purifiers and commercial leasing of water heaters will prove 2x Chinese consumer consumption growth can be expected far into the future. Air purifiers could drive sales in the near future if AOS is able to double sales yearly for the near future.

Sales of water heaters and treatment products will strengthen as AOS gains market share in tier 4 and 5 Chinese cities using its foreign brand as a draw to pull consumers away from more suspect Chinese branded competitors. The continued growth of online sales in China will strengthen gross margins of the ROW segment (12.9% ROW vs 22.3% in NA).

Figure 17: AOS Segment revenues, 2011-2018E



Source: Company reports

Future EPS Drivers

AOS's next bet is on India. Currently, losses amount to $10 million per year in India, up from a $20 million a few years ago. Water heater sales did not meet expectations as temperatures remained historically high. Water treatment, however, has far exceeded expectations. Strategy has shifted to focus on water treatment products. With less discretionary income than their Chinese counterparts, Indians purchase the cheaper Micro-Filtration and Ultra filtration water

treatment systems. AOS is committed to India for the long term because of its population base and that base's need for clean drinking water. India will not be accretive to the income statement in the near term, however. One could consider investing now in AOS as a long term, out of the money call option on the Indian water treatment market, and collect the benefits of China and North America in the meantime. If the Indian government were to subsidize, partially or fully, water treatment products, this would be a big boon to Indians and AOS alike.

ERP systems aim to push EBIT margins and gross margins.

1% EBIT savings adds 6 cents to FY 2017 EPS.

On the other hand, Enterprise Resource Planning products (big data systems) will be accretive to earnings in the near future. A small number of AOS North American plants are already online, with more coming online with each passing year. EBIT margins will benefit most, as most of the benefits are back-office. Gross margins should increase too, as systems help maximize cost savings and supply chain logistics. As these margins expand, shareholders can expect larger buybacks and dividends with AOS's stated policy of returning value to shareholders. To illustrate possible return to shareholders, a 1% EBIT savings in 2017 would raise FY2017 EPS 6 cents and FY 2018 EPS 7 cents.

As always, AOS's policy of returning cash above $300M to shareholders via buybacks is a constant boost to EPS growth. Current model projections show the buybacks alone increase EPS 5 cents per year (constant price assumed). Share buybacks would be lower if AOS needs funds to finance plant construction or data systems, slowing EPS growth.

Free Cash Flow

Recent history: AOS buys back ~2% shares/year

AOS uses a measured expansion strategy, only expanding into product lines, markets, or acquisitions it can internally finance. Strong North American operations, supported by an ever-growing Chinese market, have created a small cap that buys back nearly 2% of its shares each year while paying out increasing dividends. The company operates with shareholders in mind.

Figure 18: Free Cash Flows 2012-2018E

Free Cash Flow	**2012**	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**
NOPAT	$169	$174	$210	$288	$326	$364	$393
Growth		*2.8%*	*20.6%*	*37.5%*	*13.2%*	*11.6%*	*8.0%*
NWC*	164	143	186	170	216	233	252
Net fixed assets	1,164	1,186	1,196	1,191	1,266	1,366	1,476
Total net operating capital'	$1,328	$1,329	$1,382	$1,361	$1,482	$1,599	$1,728
Growth		*0.0%*	*4.0%*	*-1.5%*	*8.9%*	*7.9%*	*8.0%*
- Change in NWC*		(21)	43	(16)	46	17	19
- Change in NFA		22	10	(5)	75	100	110
FCFF*		$173	$156	$309	$ 205	$247	$265
Growth			*-9.7%*	*97.5%*	*-33.6%*	*20.3%*	*7.3%*
- After-tax interest expense	6	4	4	5	6	7	7
FCFE**		$169	$152	$304	$199	$239	$257
Growth			*-9.9%*	*99.4%*	*-34.6%*	*20.4%*	*7.5%*
FCFF per share		$0.47	$0.43	$0.87	$1.18	$1.45	$1.59
Growth			*-7.9%*	*100.8%*	*35.4%*	*23.3%*	*9.5%*
FCFE per share		$0.46	$0.42	$0.86	$1.14	$1.41	$1.55
Growth			*-8.1%*	*102.7%*	*33.5%*	*23.5%*	*9.7%*

Source: Company Reports, IMCP

AOS's free cash flow has been remarkably steady over the last several years. FFCF and FFCE dropped precipitously in 2016 because of an expansion in NWC and NFA. This was expected as AOS broke ground on a large manufacturing plant in China, expanded other North American plants, and increased its investment in ERP systems in North American plants. AOS's main use of cash are expanding net fixed assets and distributing cash to shareholders.

AOS under indebted compared to peers. Increasing debt would increase ROE

I expect solid growth for FCFF and FCFE into the near future, only dropping to finance new projects. When compared to its industry average (30%), AOS is under indebted. Increasing debt could unlock value and free cash to firm and shareholders. It would do well from a firm value perspective to finance future NFA investments with debt (especially near-future investments as the world is in an artificially low interest rate environment). However, shareholders cannot argue with firm operations much, as the firm returns nearly $250 million a year in buybacks and dividends. This is above FCFE without debt, so my model does assume modestly higher debt in 2016.

Return on Equity

In 2012, AOS completed selling off all operations not related to building materials to refocus the company. Since then, A.O. Smith has had remarkable improvement on all solvency and liquidity ratios. It has been able to deliver high returns on equity without increasing leverage. DuPont analysis reveals increasing margins and increased sales efficiency as measured by average assets drives ROE. Gross margins have increased 2.6% over the previous four years, while AOS has managed to increased EBIT margins 5.8%, meaning AOS has increased SG&A efficiency 3.2%. Net profit margins have increased from 8% to 11.8% since 2013.

Increased sales efficiency and margins are drivers of recent ROE increases

Figure 19: 3-Stage DuPont Analysis

3-Stage DuPont	2012	2013	2014	2015	2016	2017E	2018E
Net income / Sales	8.4%	7.9%	9.4%	11.2%	11.9%	12.3%	12.3%
Sales / avg assets	0.85	0.92	0.96	0.98	0.98	1.00	1.03
ROA	7.2%	7.3%	9.0%	11.0%	11.6%	12.3%	12.6%
Avg assets / avg equity	1.91	1.85	1.81	1.90	1.96	1.97	1.93
ROE	13.7%	13.5%	16.3%	20.8%	22.8%	24.1%	24.3%

Source: Company reports, IMCP

AOS would be able to deliver higher ROE if it shifted financing of new plants and equipment to debt financing (debt is currently 12% of assets, although it is up from 8% in 2013), but history and practice would suggest it will not add debt. It is already delivering remarkable ROE (compared to comps) to shareholders. Sales efficiency has improved greatly since the divestiture and plants will be built as needed to match demand in China. AOS projects to grow at 8%, while its sustainable growth (ROE x Retention rate) rate is 16.6%. This gap explains why AOS has so little debt on its balance sheet; it can finance much more growth internally.

Valuation

Figure 20: Summary valuation table

R_e	11.50%	
Method		Value
NTM PE	$	50
NPM v P/S- Intl	$	39
ROE v P/B- Intl	$	30
NTM ROE v P/B-Dom	$	53
DCF	$	44
Probability Scenario	$	42

P/S and P/B show AOS to be overvalued. Fail to account for future sales of new product lines

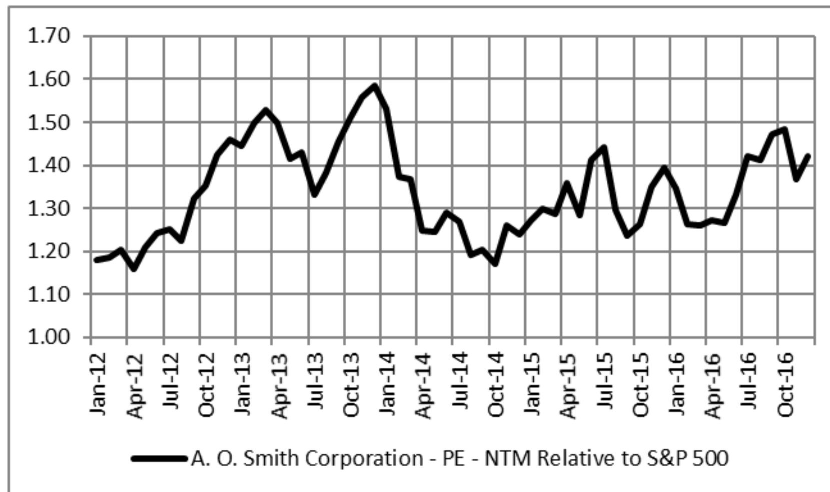
AOS is valued using multiples and a 3-stage discounting cash flow model. Based on the earnings multiples, the stock is expensive relative to its peers, and only one of two among the comps (figure 18, appendix) who maintains a NTM PE above 20. Using multiples and next year's projected earnings, its stock is worth $50. Relative valuation shows the firm overvalued based on its fundamentals (figure #22-23); in fact, its scores on its comps valuation put it in a class of its own. Price to sales valuation yielded a price $39 (using a weak relationship). A DCF valuation using the company's assumption of 8% sales growth yields a value of $44. I disregard international comps, and then take an average of values to arrive a $47 price estimate for proven operations.

Trading History

AOS is currently trading around the midpoint of its 5-year range relative to the S&P 500 of 1.4. Post divestiture, it has oscillated between 1.2x and 1.6x S&P 500 P/E. The market expects continued sales growth in China with nascent product lines adding appreciably to earnings growth. As AOS has proved out its Chinese sales model, and begun to improve margins with its ecommerce platform, the market has rewarded it with historically high P/E multiples (26 TTM).

AOS stock trading around median P/E relative to S&P 500

Figure 21: AOS PE relative to S&P 500



Source: Factset

I do not expect multiple reversion over the next two years. Assuming the firm maintains a 24.1 NTM PE, it should trade at $49.65 today.

- Price = P/E x EPS = 24.1 x $2.10 = $50.61

Relative Valuation-International

AOS a "unicorn": 3x median P/B and P/S of industry and

AOS is currently trading at a P/B and P/S much higher than anything in the industry, at 6.03 (median 2.35) and 3.31 respectively (median 1.09). This is due to its substantially higher ROE and profit margins. Its NTM P/E is 24.1 (median 16.1), but the NTM data has a sample size issue. AOS trades at 26.4 TTM P/E (median 17.7, ex a 98 P/E data point for 5943-JP, which turned losses into a small profit). Investors have long been willing to pay a premium for AOS because it has potential for greater growth in an enormous market. The company combines its foreign brand as an economic moat with local expertise to grow market share in all product lines. It is already the market leader in the premium water heater and water treatment markets in China. Its business model specifically targets fast growing economies with large middle class populations. AOS is positioning itself well to significantly accelerate sales growth as India's economy comes online.

Figure 22: AOS Comparable companies-Intl

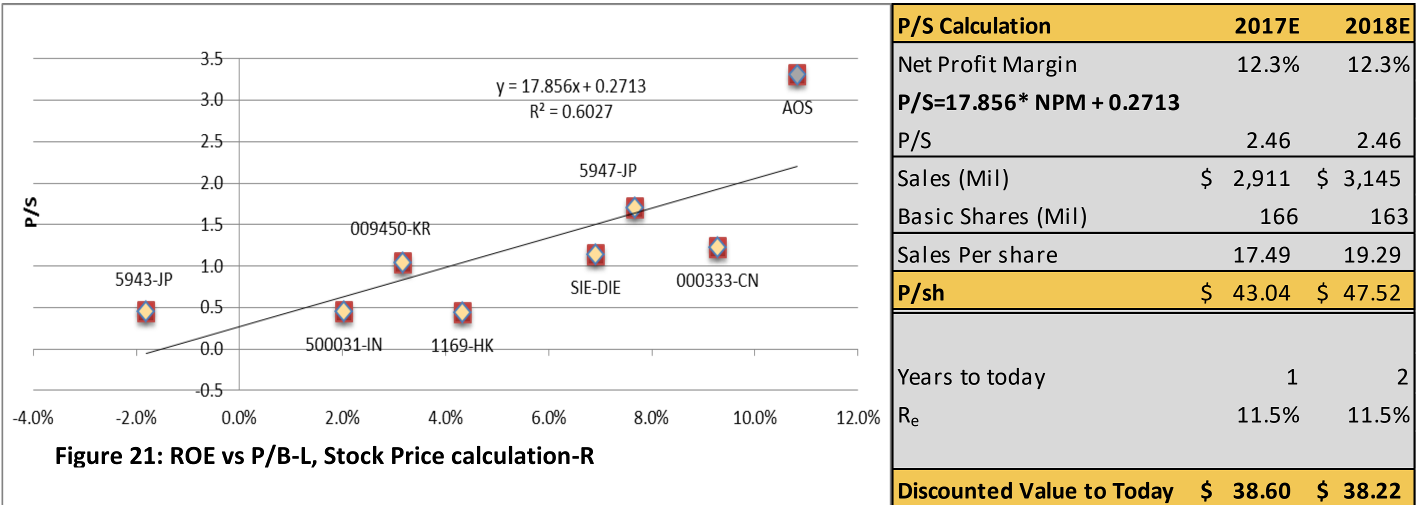
Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
AOS	SMITH (A O) CORP	$48.24	$8,390	0.8	(2.0)	(2.1)	17.9	24.8	25.9	11.5	9.4%	18.4%	29.5%	15.8%	13.1%	21.2%	1.51	21.6%	A-	0.99%	24.9%
5947-JP	RINNAI CORP	$80.69	$4,196	0.1	1.1	(0.5)	8.0	(10.3)	(12.0)	0.2	2.3%	-23.6%	9.7%	9.9%	5.5%	7.0%	0.50	0.0%		0.86%	20.1%
5943-JP	NORITZ CORP	$17.28	$826	0.3	1.1	(4.3)	10.4	12.0	9.4			-52.0%	-213.1%	-172.5%	132.0%		0.72	0.0%		1.57%	147.6%
500031-IN	BAJAJ ELECTRICALS	$3.08	$311	(1.1)	(3.3)	(23.1)	(6.5)	(2.0)	(0.3)	11.8		100.0%	-800.0%	42.9%	20.0%	-8.4%	1.38	12.8%		1.93%	
SIE-DE	SIEMENS AG	$121.10	$97,519	0.5	7.9	11.6	32.5	29.2	28.8	7.2	2.6%	-11.3%	7.7%	9.9%	8.0%	-1.3%	0.94	72.4%		3.38%	
009450-KR	KYUNG DONG NAVIEN	$35.85	$453	(5.3)	(8.2)	(29.1)	(15.8)	34.9	38.6			-20.5%	66.7%	156.4%	45.4%	16.2%	0.63	5.1%		0.21%	4.0%
9911-TW	TAIWAN SAKURA	$0.98	$214	(4.0)	(12.3)	(18.9)	(4.1)	49.5	46.2		7.1%		-100.0%		18.2%	4.9%	1.41	0.0%		4.50%	
1169-HK	HAIER ELECTRONICS	$1.53	$4,267	0.0	(6.2)	(7.8)	7.4	(22.8)	(24.6)	15.0		15.4%	0.0%	-6.7%	7.1%	17.6%	1.34			0.93%	
000333-CN	MIDEA GROUP CO LTD	$4.07	$26,163	0.6	(2.4)	8.2	19.7	33.9	29.3	14.9	4.8%	42.1%	14.8%	9.7%	14.7%	20.8%	0.80	11.5%		2.64%	
Average			$15,815	(0.9)	(2.7)	(7.3)	7.7	16.6	15.7	10.1	5.3%	8.6%	-109.4%	8.2%	29.3%	9.8%	1.03	15.4%		1.89%	49.1%
Median			$4,196	0.1	(2.4)	(4.3)	8.0	24.8	25.9	11.7	4.8%	2.1%	7.7%	9.9%	14.7%	11.6%	0.94	8.3%		1.57%	22.5%
SPX	S&P 500 INDEX	$2,269		0.2	2.5	5.0	13.4	10.1	11.0			7.7%	1.2%	7.6%	12.4%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Curren	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
AOS	http://www.aosmith.com	19.8%	6.03	23.2	24.2	26.3	26.4	24.1	26.4	23.3	10.8%	3.31	17.3%	17.3%	16.4			9.7%	9.9%	11.2%	$8.00
5947-JP	http://www.rinnai.co.jp	8.4%	1.87	18.6	24.4	22.2	21.8	21.3	20.2	19.2	7.7%	1.71	10.5%	9.0%	12.3	14.4	13.2	0.7%		6.0%	$43.05
5943-JP	http://www.noritz.co.jp	-3.7%	0.93	13.6	28.3				34.6	14.9	-1.8%	0.45	4.0%	-3.5%	13.5	6.1	7.0			4.6%	$18.57
SIE-DE	http://www.siemens.com	16.4%	2.70		17.7	16.4	16.5	16.1	15.0	13.8	6.9%	1.14	9.3%	8.8%	14.1	11.2	10.1	1.3%	-1.6%	1.6%	$44.90
500031-IN	http://www.bajajelectricals.com	12.9%	2.83			22.0	21.3		15.4	12.8	2.0%	0.45	4.9%	11.2%	9.6	13.1	24.2			10.9%	$1.09
009450-KR	http://www.kdnavien.co.kr	7.2%	2.35	43.2	54.3	32.6	16.5		12.7	8.7	3.2%	1.04	8.3%	7.8%	18.5	9.9	9.2	14.9%		10.7%	$15.25
9911-TW	http://www.sakura.com.tw	0.0%	1.80		14.0		9.8	9.1	8.9	7.5			12.7%	12.2%	5.9	9.1	9.4	4.6%		8.1%	$0.54
1169-HK	http://www.haier-elec.com.hk	17.8%	1.81	11.8	10.2	10.2			10.9	10.2	4.3%	0.44		18.7%	10.2	9.0	13.7			13.5%	$0.84
000333-CN	http://www.midea.com.cn	23.6%	3.10	21.4	15.1	13.1	11.8	11.3	12.0	10.4	9.3%	1.22	10.5%	28.6%	9.3	9.5	7.5	9.7%		13.2%	$1.31
Average		11.4%	2.60	22.0	23.5	20.4	17.7	16.4	17.3	13.4	5.3%	1.22	9.7%	12.2%	12.2	10.3	11.8	6.8%	4.1%	8.9%	
Median		12.9%	2.35	20.0	21.0	22.0	16.5	16.1	15.0	12.8	5.6%	1.09	9.9%	11.2%	12.3	9.7	9.8	7.1%	4.1%	10.7%	
spx	S&P 500 INDEX			20.9	19.4	19.2			17.9	15.9											

Source: Factset

Both AOS's P/B and P/S are remarkable among its peers. NPM and ROE explain some of the variation in P/S and P/B. A ROE regression on P/B explains 41% of the variation, and a NPM regression on P/S explains 60% of the regression. Remarkably, an OLS model for P/S explains less if I remove AOS from the data set, but a regression on P/B explains more (r^2=61.7%) when I remove AOS. Thus, I calculate a price using a P/B model without the AOS data point and a price using P/S containing the AOS data point. AOS is overvalued by both measures shown here.

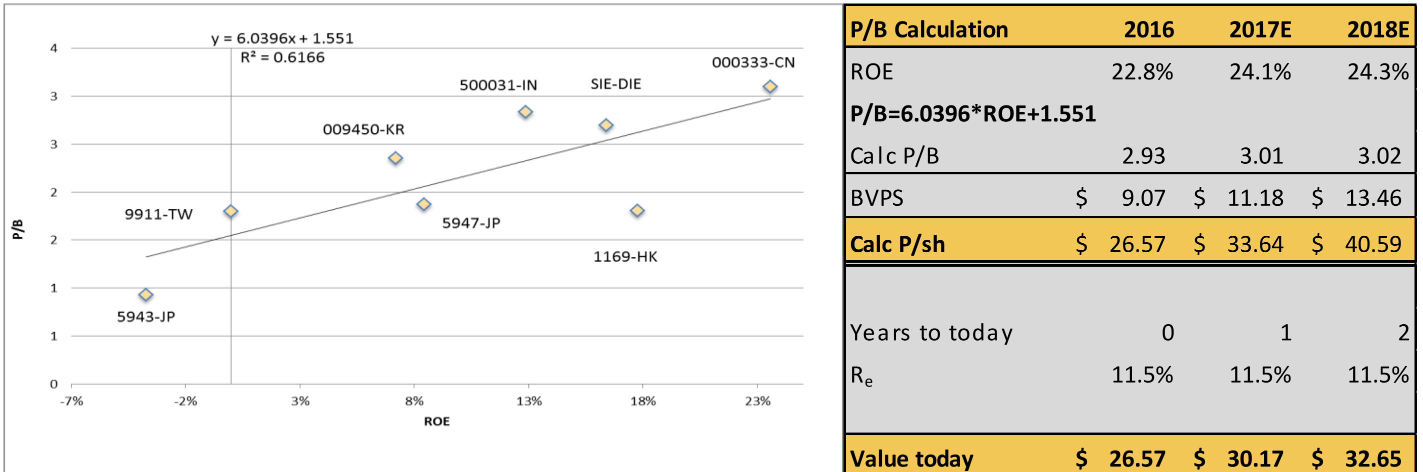
Figure 23: NPM vs P/S-L, Stock price calculation-R, with calculations



P/S Calculation	2017E	2018E
Net Profit Margin	12.3%	12.3%
P/S=17.856* NPM + 0.2713		
P/S	2.46	2.46
Sales (Mil)	$ 2,911	$ 3,145
Basic Shares (Mil)	166	163
Sales Per share	17.49	19.29
P/sh	$ 43.04	$ 47.52
Years to today	1	2
R_e	11.5%	11.5%
Discounted Value to Today	$ 38.60	$ 38.22

Source: IMCP

Figure 24: P/B v ROE-L, Stock price valuation-R



P/B Calculation	2016	2017E	2018E
ROE	22.8%	24.1%	24.3%
P/B=6.0396*ROE+1.551			
Calc P/B	2.93	3.01	3.02
BVPS	$ 9.07	$ 11.18	$ 13.46
Calc P/sh	$ 26.57	$ 33.64	$ 40.59
Years to today	0	1	2
R_e	11.5%	11.5%	11.5%
Value today	$ 26.57	$ 30.17	$ 32.65

Source: IMCP

For the summary valuation table I take an average of the three years values.

For final comparison, I created a composite ranking of several valuation and fundamental metrics. Since variables have different scales, each was converted into a percentile before calculating the composite score. The most explanatory power was found in a model comparing an equal weight of 2016 ROE and 2016 NPM (fundamental) and an equal weight of P/B, P/S, P/CF (valuation). The regression line has an R-squared of 0.503. One can see AOS is well above this line, so it is either quite expensive on fundamentals, or a “unicorn.”

Figure 25: Composite valuation, % of range-International (top) Domestic (Bottom)

		Fundamental		Valuation				
	Weight	50.0%	50.0%	34.0%	33.0%	33.0%		
		2016	2016					
Ticker	**Name**	**ROE**	**NPM**	**P/B**	**P/S**	**P/CF**	**Fund**	**Value**
AOS	SMITH (A O) CORP	84%	100%	100%	100%	71%	92%	90%
5947-JP	RINNAI CORP	36%	71%	31%	52%	100%	53%	61%
5943-JP	NORITZ CORP	-16%	-17%	15%	14%	42%	-16%	24%
500031-IN	BAJAJ ELECTRICALS	55%	19%	47%	14%	91%	37%	50%
SIE-DE	SIEMENS AG	31%	29%	39%	31%	69%	30%	46%
009450-KR	KYUNG DONG NAVIEN	31%	29%	39%	31%	69%	30%	46%
9911-TW	TAIWAN SAKURA	0%	42%	30%	57%	63%	21%	50%
1169-HK	HAIER ELECTRONICS	75%	40%	30%	13%	62%	58%	35%
000333-CN	MIDEA GROUP CO LTD	100%	86%	51%	37%	66%	93%	51%

		Fundamental Percent of Range				Valuation Percent of Range				
		25.0%	25.0%	25.0%	25.0%	33.3%	33.3%	33.3%		
		1/	2016	2016	Sales Growth	P/E			Weighted	
Ticker	**Name**	**Payout**	**ROE**	**NPM**	**NTM**	**NTM**	**P/B**	**P/CF**	**Fund**	**Value**
AOS	SMITH (A O) CORP	80%	19%	100%	40%	50%	58%	50%	60%	53%
aaon-us	AAON INC	100%	75%	82%	44%	100%	92%	100%	75%	97%
fbhs-us	FORTUNE BRANDS HOME & SECUR	80%	0%	0%	30%	9%	27%	42%	28%	26%
tile-us	INSTALLED BLDG PRODUCTS INC	50%	100%	38%	0%	0%	23%	59%	47%	27%
wso-us	WATSCO INC	0%	6%	89%	14%	67%	47%	50%	27%	55%
awi-us	ARMSTRONG WORLD INDUSTRIES	50%	3%	50%	24%	30%	97%	0%	32%	43%
ssd-us	SIMPSON MANUFACTURING INC	35%	4%	36%	7%	25%	13%	49%	20%	29%
bld-us	TOPBUILD CORP	50%	4%	35%	50%	50%	0%	19%	35%	23%

Source: IMCP

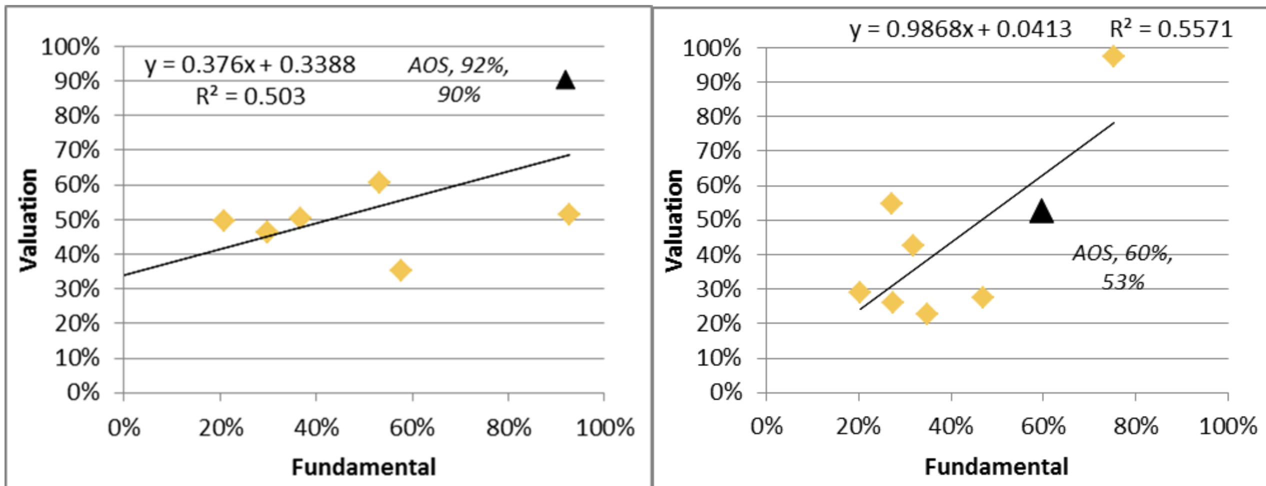
There is support the unicorn theory. AOS's operating margin (17.3%) is over 64% higher than its closest competitor, Midea (10.5%). It also leads the industry in 5-year earnings growth CAGR, although the low starting point explains much of this since the divestiture. AOS delivers an enormous amount of EVA (figure #23) to shareholders. The EVA delivered to shareholders is a partial explanation of why investors are willing to pay such a premium to own AOS. The company has a proven its expansion strategy with regional expertise and a long runway for continued growth into the future in Asia backed by large, low volatility replacement water heater sales in the North American market.

Figure 26: AOS EVA calculations

EVA	**2015**	**2016**	**2017E**	**2018E**
ROIC (using BOY IC)	16.9%	18.4%	19.3%	19.5%
WACC	10.4%	10.4%	10.4%	10.4%
EVA (in percent)	6.5%	8.8%	8.5%	9.4%

Source: IMCP

Figure 27: Composite relative valuation-International-L, Domestic -R



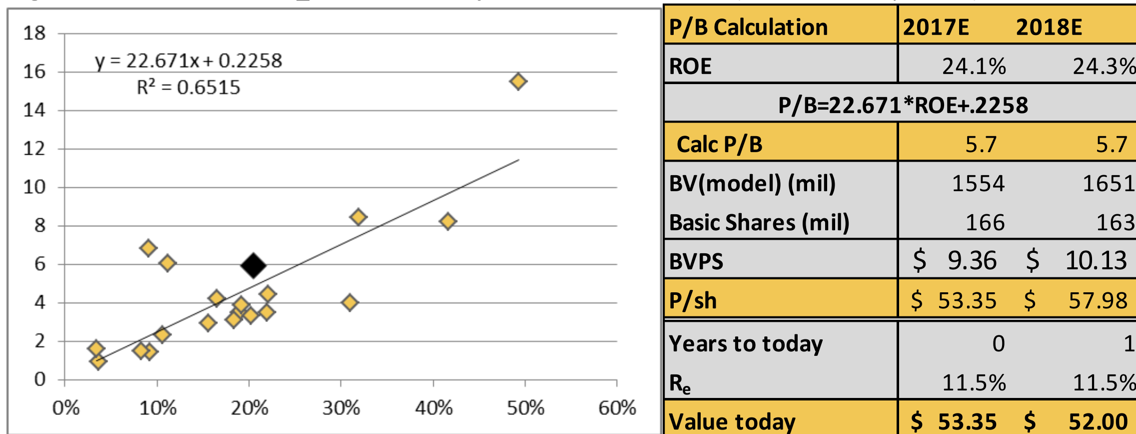
Source: IMCP

Relative Valuation-Domestic

Domestic valuation paints a different picture. While AOS is the strongest company in China in the building material industry, at home it is much closer to its comparables. The comparables are not exact matches, while some of the international companies are better comparisons. I chose comps from the building products industry from FactSet. I determined target prices using a NTM ROE-P/B(current) relationship. The R^2 was quite strong at 65%.

The composite ranking model shows AOS slightly undervalued compared to its domestic comps. This projects either fundamental deterioration or valuation measure increases. I think it is likely and increase in ROE from an increase in leverage, increasing P/E is more likely than deterioration in fundamentals (unless the Chinese economic transition falters)

Figure 28: NTM ROE v P/B_current, -L, Price per share calculation-R *(domestic comps used)*



P/B Calculation	2017E	2018E
ROE	24.1%	24.3%
P/B=22.671*ROE+.2258		
Calc P/B	5.7	5.7
BV(model) (mil)	1554	1651
Basic Shares (mil)	166	163
BVPS	$ 9.36	$ 10.13
P/sh	$ 53.35	$ 57.98
Years to today	0	1
R_e	11.5%	11.5%
Value today	$ 53.35	$ 52.00

Source: IMCP, FactSet

Discounted Cash Flow Analysis

Beta calculated to be 1.2

R_e calculated to be 11.5%

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

For the purpose of 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 the base case rate are as follows:

- The risk free rate, as represented by the ten-year Treasury bond yield, is 2.51%.
- The ten year beta of 1.2 was created by a sales weighted average of 0.9 for North American sales (68%) and 1.4 for ROW sales (32%) as investments in China pose additional risks.
- A long term market rate of return of 10% was assumed, since historically, the market has generated an annual return of about 10%
- 11.5% = 2.51% + 1.2 * (10.0 - 2.51%)

Stage one contributes $2.51 of value

Stage One - the model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $1.41 and $1.55, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $2.51 per share. Thus, stage one of this DCF analysis contributes $2.51 per share.

Stage Two – Stage two of the model focuses on fiscal years 2019 to 2023. During this period, FCFE is calculated based on revenue growth, NOPAT margin and capital growth assumptions (NOPAT 12.3%, sales growth of 8%). The resulting cash flows are then discounted using the company's 11.5% cost of equity. I assume 8% sales growth throughout the period, per company assumptions, which I made the case for earlier. The ratio of NWC to sales will remain at 2018 levels along with NFA turnover (for conservative estimations this is kept constant, but ERP and the new plant in China coming online could affect this). NOPAT growth moves with sales. I also assume 2% share buybacks each year.

Figure 29: FCFE and discounted FCFE, 2017-2023

	2017	2018	2019	2020	2021	2022	2023
FCFE	$1.41	$1.55	$1.71	$1.88	$2.08	$2.29	$2.52
Discounted FCFE	$1.26	$1.24	$1.23	$1.22	$1.21	$1.19	$1.18

Stage two adds $6.02 of value

Adding stage one and two together, yields discounted cash flows total of $8.53.

Stage Three – Net income for the year 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $2.10 (using data EPS estimates matching 4Q16 to consensus, otherwise it would be $2.11) in 2017 to $3.77 in 2023.

Figure 30: EPS estimates for 2017-2025

	2017	2018	2019	2020	2021	2022	2023
EPS	$2.10	$2.32	$2.56	$2.82	$3.10	$3.42	$3.77

Stage three calculates a terminal value adding $35.20 to current value

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 the company grows larger and matures; its P/E ratio will converge near the historical average of the S&P 500. Therefore, a P/E of 20 is assumed at the end of AOS's terminal year. While this may be a high multiple at the end of 2023, 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 of AOS's continued increasing sales in China. It is reasonable to assume the stock could trade at a higher multiple at the end of 2023 if India's sales are appreciably adding to operating earnings. It is important to note, I also assume AOS continues with its stated policy of share buybacks, buying back about 2% of shares a year with excess cash.

DCF gives valuation of current operations of $44/share

Given the assumed terminal earnings per share of $3.77 and a price to earnings ratio of 20, a terminal value of $75.42 is calculated. Using the 11.5% cost of equity, this number is discounted back to the present value of $35.20.

Total Present Value – Given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $43.73 = ($35.20 + 2.51 + 6.02). Given AOS's current price of $47.59, this model indicates it is overvalued by about 9%.

Scenario Analysis

Predicting sales or sales growth in AOS has been a challenge. The company has a handful of nascent products or markets where it is too soon to quantify their addition to sales growth in China (air purifiers or commercial leasing of water heaters), or their quantifiable additions are a decade away (residential water heater replacement market in China). Thus, even the bull and bear cases presented are based on conservative growth rates, as these incremental sales still need to be added.

The market already views AOS as a fast growing company; expectations and targets are already high. Therefore, my scenario analysis considers a bull case only slightly stronger than the base case; sales growth increased from 7.9% in the base case to 9.2% and gross margins rise to 39%, from either falling steel prices, or a stronger than expected rotation into higher margin products or a price increase is passed along seamlessly. The bear case also assumes a recession, a Chinese slowdown, increasing steel prices, or new protectionist policies reducing sales growth to 4.9% YoY. A spike in steel prices that moves faster and higher than AOS can pass along in one year drives the bear case. In 2018, I have AOS passing along a second price increase.

Scenario analysis shows AOS currently priced near perfection

The below scenario analysis below shows AOS's stock is currently fairly valued. Even in an environment of slightly improve margins, alpha from today's stock price is $0.47. Given that steel's current price is below historical averages and steel is about 20% of COGS for water heaters, the bear case represents a case where steel increases more than 25% in the second half of the year. AOS generally passes along price increases in the summer and recent history suggests the company only does one price increase a year.

Given AOS's industry leading, and historically high operating margins, I am unsure how much these can improve. Ecommerce sales in China are one way. It already sells 18% of Chinese business on its e-commerce platform. If American consumers become comfortable buying large products online instead of from subcontractors they currently use, that would drive margins even higher.

Weighting the bear case 25%, the bull case 20% and the base case 55% yields an estimated price of $42. The bear case is more likely to occur in some measure as steel returns to historical averages.

Figure 31: Assumptions and outcomes of scenario analysis

Outcomes	Bear Case			Base Case			Bull Case	
	Dec-17	Dec-18		Dec-17	Dec-18		Dec-17	Dec-18
Income Statement								
Sales	$2,830	$2,970		$2,911	$3,145		$2,943	$3,217
Growth	*4.9%*	*4.9%*		*7.9%*	*8.0%*		*9.1%*	*9.3%*
EBIT	382	431		524	566		524	573
Margin	*13.5%*	*14.5%*		*18.0%*	*18.0%*		*17.8%*	*17.8%*
Tax Rate	30.5%	30.5%		30.5%	30.5%		30.5%	30.5%
NOPAT	266	299		364	393		364	398
Margin	*9.4%*	*10.1%*		*12.5%*	*12.5%*		*12.4%*	*12.4%*
Share Data								
Basic Shares (Mil)	173.537	170.581		169.904	166.434		169.103	165.613
EPS	$1.49	$1.71		$2.10	$2.32		$2.11	$2.36
Multiple	22	22		24.1	25.1		24.5	24.5
Projected Share Price	$32.73	$37.65		$50.61	$58.23		$51.69	$57.79
Discounted to today	**$26.33**	**$30.29**		**$45.39**	**$46.84**		**$46.36**	**$46.48**
Probability		25%			55%			20%
Probabliity weighted Price		$7.08			$25.36			$9.28
Estimated price					$41.72			

Source: IMCP

Risk Factors

AOS must defend its economic moats and continue to deliver high levels of EVA to justify its current market price. Every relative and absolute indicator show AOS overpriced at current levels. This doesn't consider the advantages the company has in operations as well as its proven, long runway to increase sales. There are several risks to continue operations, which could impinge on the AOS's advantages.

Global economy/credit market downturn

If the global economy were to stall it could adversely affect consumer confidence and spending patterns, which could result in decreased demand for products or slower adoption of energy efficient water heaters and boilers.

Instability in Chinese economic transition

Sales growth in china has averaged approximately 19 percent over the past three years and the company expects to maintain 15% sales growth in local currency for 2016 and 2017. If there is a slowdown in the transition to a more consumer driven economy, or the rate of urbanization was to stall, it could adversely affect the results of operations.

Sales growth of Lochinvar brand could stall

Lochinvar's sales growth has averaged 10% since the acquisition in 2011, largely due to the transition in the boiler industry to high efficiency condensing boilers. AOS expects Lochinvar sales to grow 10% annually for the near future. If the transition were to stall because of a recession or technology, AOS's growth rate would slow.

Customer concentration

Net sales to the five largest customers represent 38% of 2015 sales. The company expects this concentration to continue for the near future. The loss of one or more of the largest customers could have a material adverse effect on the company's financial position, results and operations and cash flows.

Model risk

The hold recommendation is based on an attempt to model the existing, established product lines and the 12-18 month timeline. If these lines value the company at the current stock price, then the resulting new businesses are not priced in fully and there exists a buying opportunity. The conservative nature of this model is an attempt to provide for a free roll on future business, not to gauge its value. This stems from my not giving the firm full credit for the air purification and commercial leasing opportunities in China. Anything substantial to the bottom line would factor into the second stage DCF models. Similarly, commercial leasing was just launched in 2016 so this business is young and risky. My model thus attempted to provide a lower bound for valuation. If this lower bound was at or near the current stock price, a significant buying opportunity (although unquantified) exists. If we have better clarity on these markets, I could include further valuation and quantification.

Foreign currency risk

An increase of the USD relative to the renminbi devalues ROW sales. AOS incurs currency transaction risk whenever one of its subsidiaries enters into a transaction using a currency different from the operating subsidiaries' functional currency. The majority of the FX transaction risk is a result of Canadian water heater operations. These risks may hurt reported sales and profits or negatively impact revenues and earnings translated from foreign currencies into USD.

Appendix 1: Quantification and Addition of Water Heater Replacement

Further derivation of sales post 2020 on next page

1.4 M unit mkt share derived from smoothing sales data to model (see following page)

fitting model to data to back out avg sales price (or remitted back to AOS) comes to about $530/unit, then cycled back through

Key Benchmarks

Notes			*nascent replacement marl *Nascent T2/3 mkt				Nascent T4/5 mkt b *replacement mkt fully mature?							
Notes	New Mkt		2015	2016	2017	2018	2019	2020	2025	2030	2035	2040	2045	2050
0.5% pop growth		China Pop (mil)	1,375	1,382	1,389	1,396	1,403	1,410	1,445	1,482	1,519	1,558	1,597	1,637
to 60% 2020, 70% 2050		Urban Rate	56.10%	56.89%	57.68%	58.49%	59.31%	60.00%	61.5%	63.1%	64.7%	66.3%	68.0%	70%
		Urban Pop	771	786	801	816	832	846	889	935	982	1,033	1,085	1,146
3/household		Households	257	262.03	267	272	277	282	296	312	327	344	362	382
85% owned in cities		Owner Households	219	223	227	231	236	240	252	265	278	293	308	325
		AOS mkt sh @ 35%	76.0	78.0	79.4	81.0	82.5	83.9	88.2	92.7	97.4	102.4	107.6	113.7
*see ** at bottom of chart		new AOS units (M)	1.4	1.5	1.5	1.5	1.5	1.4	0.9	0.9	1.0	1.0	1.1	1.6
		$ value @ $530/unit	$ 742	$ 774	$ 788	$ 803	$ 818	$ 731	$ 464	$ 488	$ 512	$ 539	$ 566	$ 867
	Replacement Mkt	# need replacement	-	-	-	-	-	-	-	1.38	0.88	0.92	0.97	1.02
		$ value @ $530/unit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 731	$ 464	$ 488	$ 512	$ 539
	Combined	Total Value (milion)	$ 742	$ 774	$ 788	$ 803	$ 818	$ 731	$ 464	$ 1,219	$ 976	$ 1,026	$ 1,079	$ 1,406

**1.4M derived from 2014 and 2015 mkt size estimates. To be provided in another table

Appendix 2: Derivation of Water Heater Yearly Volume Through 2050

Notes	all values in millions		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	Combined Mkt																	
,@ .5%	China pop (Mil)		1,368	1,375	1,382	1,389	1,396	1,403	1,410	1,417	1,424	1,431	1,438	1,445	1,453	1,460	1,467	1,474
kink at 2020	Urb rate (calculated)		54.8%	56.1%	56.9%	57.7%	58.5%	59.3%	60.0%	60.3%	60.6%	60.9%	61.2%	61.5%	61.8%	62.1%	62.4%	62.8%
	Urban Pop		750	771	786	801	816	832	846	854	863	872	880	889	898	907	916	925
3 per household	Households		250	257	262	267	272	277	282	285	288	291	293	296	299	302	305	308
85% live in owner	owner households		212	219	223	227	231	236	240	242	244	247	249	252	254	257	260	262
aos mantains 35%	aos mkt share @35%		74	76	78	79	81	82	84	85	86	86	87	88	89	90	91	92
In Million	*New AOS units*	*^^urb rate jump/kink, taken out*	1.40	1.46	1.49	1.51	1.54	1.38	0.84	0.85	0.86	0.87	0.88	0.88	0.89	0.90	0.91	
mkt value of New cust	$ value @ $530/unit		742	773	788	803	818	731	446	450	455	459	464	468	473	478	483	
replacement mkt	Assume long life, 10Yr	*fully stable replacement market in 2026 by model- should emerge sooner, lack data from sales to estimate new units																
10 year life assumed	Need replacement														1.46	1.49	1.51	1.54
value replacement	$ value @530/unit	**begin to see replacement m **tier 2/3 should see re **Tier 4/5 should see replacement mark													773	788	803	818
total value	Total $ value sales														1,242	1,261	1,281	1,301
Kinks bc of sudden replacement mkt emergence		assumes Aos maintains same mkt share in replacement as new																

Notes	all values in millions	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
	Combined Mkt																					
,@ .5%	China pop (Mil)	1,482	1,489	1,497	1,504	1,512	1,519	1,527	1,534	1,542	1,550	1,558	1,565	1,573	1,581	1,589	1,597	1,605	1,613	1,621	1,629	1,637
kink at 2020	Urb rate (calculated)	63.1%	63.4%	63.7%	64.0%	64.3%	64.7%	65.0%	65.3%	65.6%	66.0%	66.3%	66.6%	67.0%	67.3%	67.6%	68.0%	68.3%	68.6%	69.0%	69.3%	70.0%
	Urban Pop	935	944	953	963	973	982	992	1,002	1,012	1,022	1,033	1,043	1,053	1,064	1,075	1,085	1,096	1,107	1,118	1,130	1,146
3 per household	Households	312	315	318	321	324	327	331	334	337	341	344	348	351	355	358	362	365	369	373	377	382
85% live in owner	owner households	265	267	270	273	276	278	281	284	287	290	293	295	298	301	304	308	311	314	317	320	325
aos mantains 35%	aos mkt share @35%	93	94	95	95	96	97	98	99	100	101	102	103	104	106	107	108	109	110	111	112	114
In Million	*New AOS units*	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08	1.09	1.10	1.11	1.64
mkt value of New cust	$ value @ $530/unit	488	492	497	502	507	512	518	523	528	533	539	544	550	555	561	566	572	578	583	589	867
replacement mkt	Assume long life, 10Yr																					
10 year life assumed	Need replacement	1.38	0.84	0.85	0.86	0.87	0.88	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00	1.01	1.02
value replacement	$ value @530/unit	731	446	450	455	459	464	468	473	478	483	488	492	497	502	507	512	518	523	528	533	539
total value	Total $ value sales	1,219	938	947	957	967	976	986	996	1,006	1,016	1,026	1,036	1,047	1,057	1,068	1,079	1,089	1,100	1,111	1,123	1,406

Appendix 3: Sales Model Forecast Assumptions

Sales								Bull Case		Bear Case	
Items	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-17	Dec-18	Dec-17	Dec-18
Sales	$1,939	$2,154	$2,356	$2,537	2,697	2,911	3,145	2,943	3,217	2,830	2,970
Growth		*11.1%*	*9.4%*	*7.7%*	*6.3%*	*7.9%*	*8.0%*	*9.1%*	*9.3%*	*4.9%*	*4.9%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
North America	1,431	1,520	1,622	1,703	1,768	1,856	1,949	1,869	1,977	1,843	1,921
Growth		*6.2%*	*6.7%*	*5.0%*	*3.8%*	*5.0%*	*5.0%*	*5.8%*	*5.8%*	*4.3%*	*4.3%*
% of sales	*73.8%*	*70.6%*	*68.8%*	*67.1%*	*65.5%*	*63.8%*	*62.0%*	*63.5%*	*61.5%*	*65.1%*	*64.7%*
ROW	543	668	768	866	961.70	1,086.72	1,228	1,106	1,272	1,019	1,081
Growth		*23.1%*	*15.0%*	*12.7%*	*13.0%*	*13.0%*	*13.0%*	*15.0%*	*15.0%*	*6.0%*	*6.0%*
% of sales	*28.0%*	*31.0%*	*32.6%*	*34.1%*	*35.7%*	*37.3%*	*39.0%*	*37.6%*	*39.5%*	*36.0%*	*36.4%*
Intersegment	(34)	(34)	(34)	(33)	(32)	(32)	(32)	(32)	(32)	(32)	(32)
Growth		*0.0%*	*-0.0%*	*-4.1%*	*-0.0%*	*-0.0%*	*-0.0%*	*-0.0%*	*-0.0%*	*-0.0%*	*-0.0%*
% of sales	*-1.8%*	*-1.6%*	*-1.4%*	*-1.3%*	*-1.2%*	*-1.1%*	*-1.0%*	*-1.1%*	*-1.0%*	*-1.1%*	*-1.1%*

Forecast assumptions											
					*steel price triple, but small price increase passed thru						
Income Statement											
Sales Growth		11.1%	9.4%	7.7%	6.3%	7.9%	8.0%	9.1%	9.3%	4.9%	4.9%
Gross margin	33.6%	35.9%	36.5%	39.8%	38.5%	39.0%	39.0%	39.8%	39.8%	34.0%	36.0%
EBIT margin	12.5%	11.2%	12.4%	16.2%	17.4%	18.0%	18.0%	17.8%	17.8%	13.5%	14.5%
Rate on debt		2.6%	2.7%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
Tax rate	30.5%	28.2%	28.3%	29.7%	30.5%	30.5%	30.5%	30.5%	30.5%	30.5%	30.5%

Appendix 4: Income Statement Generated from Assumptions, Base, Bull, Bear cases

Financial Information						Base Case		Bull Case		Bear Case	
Items	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-17	Dec-18	Dec-17	Dec-18
Income Statement											
Sales	$1,939	$2,154	$2,356	$2,537	$2,697	$2,911	$3,145	$2,943	$3,217	$2,830	$2,970
Growth		*11.1%*	*9.4%*	*7.7%*	*6.3%*	*7.9%*	*8.0%*	*9.1%*	*9.3%*	*4.9%*	*4.9%*
EBIT	243	242	292	410	469	524	566	524	573	382	431
Margin	*12.5%*	*11.2%*	*12.4%*	*16.2%*	*17.4%*	*18.0%*	*18.0%*	*17.8%*	*17.8%*	*13.5%*	*14.5%*
Tax Rate	30.5%	28.2%	28.3%	29.7%	30.5%	30.5%	30.5%	30.5%	30.5%	30.5%	30.5%
NOPAT	169	174	210	288	326	364	393	364	398	266	299
Margin	*8.7%*	*8.1%*	*8.9%*	*11.4%*	*12.1%*	*12.5%*	*12.5%*	*12.4%*	*12.4%*	*9.4%*	*10.1%*
Balance Sheet											
Invested capital	1,595	1,710	1,701	1,685	1,852	1,923	2,056	1,883	2,018	2,003	2,072
Growth		*7.2%*	*-0.5%*	*-1.0%*	*10.0%*	*3.8%*	*6.9%*	*1.6%*	*7.2%*	*8.1%*	*3.4%*
Invested capital ex casl	1,328	1,329	1,382	1,361	1,482	1,599	1,728	1,573	1,719	1,716	1,801
Growth		*0.0%*	*4.0%*	*-1.5%*	*8.9%*	*7.9%*	*8.0%*	*6.2%*	*9.3%*	*15.8%*	*4.9%*
Short-term and long-ter	244	192	224	249	336	336	336	336	336	336	336
Debt/invested capital	*15.3%*	*11.2%*	*13.2%*	*14.8%*	*18.1%*	*17.5%*	*16.3%*	*17.9%*	*16.7%*	*16.8%*	*16.2%*

Appendix 5: Balance Sheet Assumptions

Financial Information					Base Case			Bull Case		Bear Case	
Items	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-17	Dec-18	Dec-17	Dec-18
Balance Sheet											
New marketable securities		(91)	117	99	-	-	-	-	-	-	-
Invested capital											
Op assets ex cash % sal	33.6%	33.4%	33.0%	31.9%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
Op liab % sales	25.1%	26.8%	25.1%	25.2%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
NOWC turnover (EOY)	4.50	4.11	4.67	5.14	4.60	5.23	5.42	5.40	5.79	5.51	5.83
NFA turnover (EOY)	1.67	1.82	1.97	2.13	2.13	2.13	2.13	2.20	2.20	# 1.90	1.90
IC turnover (EOY)	1.22	1.26	1.38	1.51	1.46	1.51	1.53	1.56	1.59	1.41	1.43
Supplied capital											
New short-term and long-term de		(52)	32	25	-	-	-	-	-	-	-
New other liab		(59)	25	(4)	-						
New debt/equity-like securities		-	-	-	-	-	-	-	-	-	-
Stock buyback (issuance)		75	160	175	167	209	169	248	170	32	144
Other equity					-	-	-	-	-	-	-
Share price for buyback (issuance)					$48.71	$48.71	$48.71	$48.71	$48.71	$48.71	$48.71
Dividends	33.3	84.7	108.4	135.0	71.7	77.4	83.7	78.3	85.6	75.3	79.0

Appendix 6: Balance Sheet Generated: Base, Bull, Bear

Financial Information						Base Case		Bull Case		Bear Case	
Items	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-17	Dec-18	Dec-17	Dec-18
Balance Sheet											
Capital											
Cash	267	381	319	324	370	323	328	310	299	287	272
Operating assets ex cas	652	720	777	810	890	960	1,038	971	1,061	934	980
Operating assets	919	1,100	1,097	1,134	1,260	1,284	1,366	1,281	1,360	1,221	1,252
Operating liabilities	488	577	592	640	674	728	786	736	804	708	742
NOWC	431	524	505	493	586	556	580	545	556	514	509
NOWC ex cash (NWC)	164	143	186	170	216	233	252	235	257	226	238
NFA	1,164	1,186	1,196	1,191	1,266	1,366	1,476	1,338	1,462	1,489	1,563
Invested capital	*$1,595*	*$1,710*	*$1,701*	*$1,685*	*$1,852*	*$1,923*	*$2,056*	*$1,883*	*$2,018*	*$2,003*	*$2,072*
Marketable securities	196	105	223	322	322	322	322	322	322	322	322
Total assets	*$2,279*	*$2,392*	*$2,515*	*$2,647*	*$2,849*	*$2,972*	*$3,164*	*$2,941*	*$3,144*	*$3,033*	*$3,137*
Short-term and long-ter	$244	$192	$224	$249	$336	$336	$336	$336	$336	$336	$336
Other liabilities	353	294	319	315	315	315	315	315	315	315	315
Debt/equity-like securit	-	-	-	-	-	-	-	-	-	-	-
Equity	1,194	1,329	1,381	1,442	1,523	1,594	1,727	1,554	1,689	1,674	1,743
Total supplied capital	*$1,791*	*$1,815*	*$1,924*	*$2,006*	*$2,174*	*$2,245*	*$2,378*	*$2,205*	*$2,340*	*$2,325*	*$2,394*
Total liabilities and equi	*$2,279*	*$2,392*	*$2,515*	*$2,647*	*$2,849*	*$2,972*	*$3,164*	*$2,941*	*$3,144*	*$3,033*	*$3,137*

Appendix 7: Common Size Balance Sheets

Financial Information						Base Case		Bull Case		Bear Case	
Items	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-17	Dec-18	Dec-17	Dec-18
Balance Sheet											
Common Size											
Cash	11.7%	15.9%	12.7%	12.2%	13.0%	10.9%	10.4%	10.5%	9.5%	9.5%	8.7%
Operating assets ex casl	28.6%	30.1%	30.9%	30.6%	31.2%	32.3%	32.8%	33.0%	33.8%	30.8%	31.2%
Operating assets	40.3%	46.0%	43.6%	42.8%	44.2%	43.2%	43.2%	43.6%	43.3%	40.3%	39.9%
Operating liabilities	21.4%	24.1%	23.5%	24.2%	23.7%	24.5%	24.8%	25.0%	25.6%	23.3%	23.7%
NOWC	18.9%	21.9%	20.1%	18.6%	20.6%	18.7%	18.3%	18.5%	17.7%	16.9%	16.2%
NOWC ex cash (NWC)	7.2%	6.0%	7.4%	6.4%	7.6%	7.8%	8.0%	8.0%	8.2%	7.5%	7.6%
NFA	51.1%	49.6%	47.6%	45.0%	44.4%	46.0%	46.7%	45.5%	46.5%	49.1%	49.8%
Invested capital	70.0%	71.5%	67.6%	63.7%	65.0%	64.7%	65.0%	64.0%	64.2%	66.1%	66.1%
Marketable securities	8.6%	4.4%	8.8%	12.2%	11.3%	10.8%	10.2%	10.9%	10.2%	10.6%	10.3%
Total assets	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Short-term and long-ter	10.7%	8.0%	8.9%	9.4%	11.8%	11.3%	10.6%	11.4%	10.7%	11.1%	10.7%
Other liabilities	15.5%	12.3%	12.7%	11.9%	11.1%	10.6%	10.0%	10.7%	10.0%	10.4%	10.0%
Debt/equity-like securiti	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Equity	52.4%	55.6%	54.9%	54.5%	53.5%	53.6%	54.6%	52.8%	53.7%	55.2%	55.6%
Total supplied capital	78.6%	75.9%	76.5%	75.8%	76.3%	75.5%	75.2%	75.0%	74.4%	76.7%	76.3%
Total liabilities and equi	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Appendix 8: Ratio Analysis

Financial Information						Base Case		Bull Case		Bear Case	
Items	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-17	Dec-18	Dec-17	Dec-18
Ratios											
Profitability											
Gross margin	33.6%	35.9%	36.5%	39.8%	38.5%	39.0%	39.0%	39.8%	39.8%	34.0%	36.0%
Operating (EBIT) marg	12.5%	11.2%	12.4%	16.2%	17.4%	18.0%	18.0%	17.8%	17.8%	13.5%	14.5%
Net profit margin	8.4%	7.9%	9.4%	11.2%	11.9%	12.3%	12.3%	12.1%	12.1%	9.1%	9.8%
Activity											
NFA (gross) turnover		1.83	1.98	2.12	2.20	2.21	2.21	2.26	2.30	2.05	1.95
Total asset turnover		0.92	0.96	0.98	0.98	1.00	1.02	1.02	1.06	0.96	0.96
Liquidity											
Op asset / op liab	1.88	1.91	1.85	1.77	1.87	1.76	1.74	1.74	1.69	1.73	1.69
NOWC Percent of sales		22.2%	21.8%	19.7%	20.0%	19.6%	18.1%	19.2%	17.1%	19.4%	17.2%
Solvency											
Debt to assets	10.7%	8.0%	8.9%	9.4%	11.8%	11.3%	10.6%	11.4%	10.7%	11.1%	10.7%
Debt to equity	20.4%	14.4%	16.2%	17.3%	22.1%	21.1%	19.5%	21.6%	19.9%	20.1%	19.3%
Other liab to assets	15.5%	12.3%	12.7%	11.9%	11.1%	10.6%	10.0%	10.7%	10.0%	10.4%	10.0%
Total debt to assets	26.2%	20.3%	21.6%	21.3%	22.9%	21.9%	20.6%	22.1%	20.7%	21.5%	20.8%
Total liabilities to as	47.6%	44.4%	45.1%	45.5%	46.5%	46.4%	45.4%	47.2%	46.3%	44.8%	44.4%
Debt to EBIT	1.00	0.79	0.77	0.61	0.72	0.64	0.59	0.64	0.59	0.88	0.78
EBIT/interest	26.41	42.47	51.30	55.39	51.24	49.78	53.79	49.78	54.41	36.30	40.92
Debt to total net op ca	15.3%	11.2%	13.2%	14.8%	18.1%	17.5%	16.3%	17.9%	16.7%	16.8%	16.2%
ROIC											
NOPAT to sales		8.1%	8.9%	11.4%	12.1%	12.5%	12.5%	12.4%	12.4%	9.4%	10.1%
Sales to IC		1.30	1.38	1.50	1.53	1.54	1.58	1.58	1.65	2.83	1.46
Total		10.5%	12.3%	17.0%	18.4%	19.3%	19.8%	19.5%	20.4%	26.5%	14.7%
Total using EOY IC	10.6%	10.2%	12.3%	17.1%	17.6%	18.9%	19.1%	19.3%	19.7%	13.3%	14.4%
ROE											
5-stage											
EBIT / sales		11.2%	12.4%	16.2%	17.4%	18.0%	18.0%	17.8%	17.8%	13.5%	14.5%
Sales / avg assets		0.92	0.96	0.98	0.98	1.00	1.02	1.02	1.06	0.96	0.96
EBT / EBIT		97.6%	105.5%	98.2%	98.0%	98.0%	98.1%	98.0%	98.2%	97.2%	97.6%
Net income /EBT		71.8%	71.7%	70.3%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%
ROA		7.3%	9.0%	11.0%	11.6%	12.3%	12.6%	12.3%	12.8%	8.8%	9.5%
Avg assets / avg equity		1.85	1.81	1.83	1.85	1.87	1.85	1.88	1.88	1.84	1.81
ROE		13.5%	16.3%	20.0%	21.6%	22.9%	23.3%	23.2%	24.1%	16.2%	17.1%
3-stage											
Net income / sales		7.9%	9.4%	11.2%	11.9%	12.3%	12.3%	12.1%	12.1%	9.1%	9.8%
Sales / avg assets		0.92	0.96	0.98	0.98	1.00	1.02	1.02	1.06	0.96	0.96
ROA		7.3%	9.0%	11.0%	11.6%	12.3%	12.6%	12.3%	12.8%	8.8%	9.5%
Avg assets / avg equity		1.85	1.81	1.83	1.85	1.87	1.85	1.88	1.88	1.84	1.81
ROE		13.5%	16.3%	20.0%	21.6%	22.9%	23.3%	23.2%	24.1%	16.2%	17.1%
Payout Ratio		49.9%	49.0%	47.7%	22.4%	21.7%	21.7%	21.9%	21.9%	29.2%	27.1%
Retention Ratio		50.1%	51.0%	52.3%	77.6%	78.3%	78.3%	78.1%	78.1%	70.8%	72.9%
Sustainable Growth Rate		6.7%	8.3%	10.5%	16.7%	17.9%	18.2%	18.1%	18.8%	11.4%	12.5%

Appendix 9: Full Comps Sheet

Comp Sheet (12/31/2016)

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
AOS	SMITH (A O) CORP	$48.24	$8,390	0.8	(2.0)	(2.1)	17.9	24.8	25.9	11.5	9.4%	18.4%	29.5%	15.8%	13.1%	21.2%	1.51	21.6%	A-	0.99%	24.9%
5947-JP	RINNAI CORP	$80.69	$4,196	0.1	1.1	(0.5)	8.0	(10.3)	(12.0)	0.2	2.3%	-23.6%	9.7%	9.9%	5.5%	7.0%	0.50	0.0%		0.86%	20.1%
5943-JP	NORITZ CORP	$17.28	$826	0.3	1.1	(4.3)	10.4	12.0	9.4			-52.0%	-213.1%	-172.5%	132.0%		0.72	0.0%		1.57%	147.6%
500031-IN	BAJAJ ELECTRICALS	$3.08	$311	(1.1)	(3.3)	(23.1)	(6.5)	(2.0)	(0.3)	11.8		100.0%	-800.0%	42.9%	20.0%	-8.4%	1.38	12.8%		1.93%	
SIE-DE	SIEMENS AG	$121.10	$97,519	0.5	7.9	11.6	32.5	29.2	28.8	7.2	2.6%	-11.3%	7.7%	9.9%	8.0%	-1.3%	0.94	72.4%		3.38%	
009450-KR	KYUNG DONG NAVIEN	$35.85	$453	(5.3)	(8.2)	(29.1)	(15.8)	34.9	38.6			-20.5%	66.7%	156.4%	45.4%	16.2%	0.63	5.1%		0.21%	4.0%
9911-TW	TAIWAN SAKURA	$0.98	$214	(4.0)	(12.3)	(18.9)	(4.1)	49.5	46.2		7.1%		-100.0%		18.2%	4.9%	1.41	0.0%		4.50%	
1169-HK	HAIER ELECTRONICS	$1.53	$4,267	0.0	(6.2)	(7.8)	7.4	(22.8)	(24.6)	15.0		15.4%	0.0%	-6.7%	7.1%	17.6%	1.34			0.93%	
000333-CN	MIDEA GROUP CO LTD	$4.07	$26,163	0.6	(2.4)	8.2	19.7	33.9	29.3	14.9	4.8%	42.1%	14.8%	9.7%	14.7%	20.8%	0.80	11.5%		2.64%	
Average			$15,815	(0.9)	(2.7)	(7.3)	7.7	16.6	15.7	10.1	5.3%	8.6%	-109.4%	8.2%	29.3%	9.8%	1.03	15.4%		1.89%	49.1%
Median			$4,196	0.1	(2.4)	(4.3)	8.0	24.8	25.9	11.7	4.8%	2.1%	7.7%	9.9%	14.7%	11.6%	0.94	8.3%		1.57%	22.5%
SPX	S&P 500 INDEX	$2,269		0.2	2.5	5.0	13.4	10.1	11.0			7.7%	1.2%	7.6%	12.4%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Curren	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
AOS	http://www.aosmith.com	19.8%	6.03	23.2	24.2	26.3	26.4	24.1	26.4	23.3	10.8%	3.31	17.3%	17.3%	16.4			9.7%	9.9%	11.2%	$8.00
5947-JP	http://www.rinnai.co.jp	8.4%	1.87	18.6	24.4	22.2	21.8	21.3	20.2	19.2	7.7%	1.71	10.5%	9.0%	12.3	14.4	13.2	0.7%		6.0%	$43.05
5943-JP	http://www.noritz.co.jp	-3.7%	0.93	13.6	28.3				34.6	14.9	-1.8%	0.45	4.0%	-3.5%	13.5	6.1	7.0			4.6%	$18.57
SIE-DE	http://www.siemens.com	16.4%	2.70		17.7	16.4	16.5	16.1	15.0	13.8	6.9%	1.14	9.3%	8.8%	14.1	11.2	10.1	1.3%	-1.6%	1.6%	$44.90
500031-IN	http://www.bajajelectricals.com	12.9%	2.83			22.0	21.3		15.4	12.8	2.0%	0.45	4.9%	11.2%	9.6	13.1	24.2			10.9%	$1.09
009450-KR	http://www.kdnavien.co.kr	7.2%	2.35	43.2	54.3	32.6	16.5		12.7	8.7	3.2%	1.04	8.3%	7.8%	18.5	9.9	9.2	14.9%		10.7%	$15.25
9911-TW	http://www.sakura.com.tw	0.0%	1.80		14.0		9.8	9.1	8.9	7.5			12.7%	12.2%	5.9	9.1	9.4	4.6%		8.1%	$0.54
1169-HK	http://www.haier-elec.com.hk	17.8%	1.81	11.8	10.2	10.2			10.9	10.2	4.3%	0.44		18.7%	10.2	9.0	13.7			13.5%	$0.84
000333-CN	http://www.midea.com.cn	23.6%	3.10	21.4	15.1	13.1	11.8	11.3	12.0	10.4	9.3%	1.22	10.5%	28.6%	9.3	9.5	7.5	9.7%		13.2%	$1.31
Average		11.4%	2.60	22.0	23.5	20.4	17.7	16.4	17.3	13.4	5.3%	1.22	9.7%	12.2%	12.2	10.3	11.8	6.8%	4.1%	8.9%	
Median		12.9%	2.35	20.0	21.0	22.0	16.5	16.1	15.0	12.8	5.6%	1.09	9.9%	11.2%	12.3	9.7	9.8	7.1%	4.1%	10.7%	
spx	S&P 500 INDEX			20.9	19.4	19.2			17.9	15.9											

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
AOS	SMITH (A O) CORP	$47.35	$8,235	(0.7)	(2.6)	(4.1)	7.5	21.4	23.6	11.5	9.4%	18.4%	29.5%	15.8%	13.1%	21.2%	1.51	21.6%	A-	1.01%	24.9%
aaon-us	AAON INC	$33.05	$1,744	(1.5)	0.5	14.7	20.1	39.6	42.3	12.0	6.0%	-23.6%	9.7%	9.9%	5.5%	16.6%	1.06	0.0%	B+	0.73%	21.6%
fbhs-us	FORTUNE BRANDS HOME & SECUR	$53.46	$8,249	(1.1)	(3.1)	(8.0)	(7.8)	(5.0)	(3.7)	15.7	19.4%	-52.0%	-213.1%	-172.5%	132.0%	39.3%	1.16	67.2%		1.20%	24.8%
ibp-us	INSTALLED BLDG PRODUCTS INC	$41.30	$1,300	(0.4)	(0.5)	15.1	13.8	67.6	66.3		50.6%	100.0%	-800.0%	42.9%	20.0%		0.77	99.8%		0.00%	
tile-us	INTERFACE INC	$18.55	$1,202	(1.6)	6.6	11.1	21.6	(5.7)	(3.1)		6.8%	-11.3%	7.7%	9.9%	8.0%	53.6%	1.25	53.7%		1.19%	
wso-us	WATSCO INC	$148.12	$5,262	(0.6)	(0.6)	5.1	5.3	25.7	26.5	15.0	12.7%	-20.5%	66.7%	156.4%	45.4%	14.2%	0.83	21.2%	B+	2.43%	64.2%
awi-us	ARMSTRONG WORLD INDUSTRIES	$41.80	$2,307	(1.6)	0.2	1.2	6.8	4.6	5.5	18.8	11.7%		-100.0%		18.2%	38.9%	1.74	330.5%		0.00%	
ssd-us	SIMPSON MANUFACTURING INC	$43.75	$2,080	(1.2)	(7.2)	(0.5)	9.5	27.2	28.1	13.0	-26.1%	15.4%	0.0%	-6.7%	7.1%	18.8%	1.63	0.0%	B	1.60%	38.0%
bld-us	TOPBUILD CORP	$35.60	$1,354	(0.9)	(1.9)	7.2	(1.7)	15.7	15.7			42.1%	14.8%	9.7%	14.7%		0.49	17.1%		0.00%	
Average			$3,526	(1.1)	(1.0)	4.7	8.3	21.2	22.4	14.3	11.3%	8.6%	-109.4%	8.2%	29.3%	28.9%	1.16	67.9%		0.91%	34.7%
Median			$2,080	(1.1)	(0.6)	5.1	7.5	21.4	23.6	14.0	10.6%	2.1%	7.7%	9.9%	14.7%	21.2%	1.16	21.6%		1.01%	24.9%
SPX	S&P 500 INDEX	$2,239		(0.5)	1.8	3.3	6.7	8.5	9.5			7.7%	1.2%	7.6%	12.4%						

Ticker	Website	2016 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2017E	2016 NPM	2016 P/S	OM	ROIC	EV/ EBIT	P/CF Curren	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
AOS	http://www.aosmith.com	19.8%	5.92	23.2	24.2	26.3	25.9	23.7	25.9	22.9	10.8%	3.25	17.3%	17.3%	16.4			9.7%	9.9%	11.2%	$8.00
aaon-us	http://www.aaon.com	93.6%	8.52	7.6	10.0	9.1	32.4	30.6	8.3	7.9	7.8%	0.71	21.0%	25.9%	17.3	24.3	20.9	10.4%		8.0%	$3.88
fbhs-us	http://www.fbhs.com	-4.5%	3.50	42.1	87.6	-77.5	21.4	17.9	106.9	46.1	-5.9%	4.53	12.8%	9.4%	18.8	15.7	18.3	8.0%	7.5%	7.2%	$15.29
tile-us	http://www.installedbuildingprodu	3.1%	9.12	-4130.0	-2065.0	295.0	35.3	23.4	206.5	172.1	0.6%	1.87	11.0%	13.0%	12.3			20.0%		0.8%	$4.53
ibp-us	http://www.interfaceglobal.com	126.5%	3.18	2.4	2.7	2.5	17.8	16.7	2.3	2.1	0.6%	0.01	7.6%	14.2%	19.9	18.2		2.8%	5.3%		$5.83
wso-us	http://www.watsco.com	3.8%	5.06	178.5	224.4	134.7	29.3	26.0	52.5	36.1	8.9%	12.05	8.1%	13.3%	12.9			5.3%	5.5%	7.7%	$29.25
awi-us	http://www.armstrong.com	0.0%	8.92		597.1		23.4	20.9	380.0	321.5			9.3%	3.1%	20.1	9.3	13.3	6.9%		-2.7%	$4.68
ssd-us	http://www.simpsonmfg.com	0.8%	2.42	336.5	291.7	291.7	14.9	20.2	312.5	291.7	0.1%	0.22	16.2%	7.9%	12.1	16.7	17.7	4.0%	6.6%	7.4%	$18.11
bld-us	http://www.topbuild.com	1.2%	1.42	187.4	131.9	114.8			104.7	91.3	0.1%	0.06	7.5%	7.7%	14.9	12.1					$25.14
Average		27.1%	5.34	-419.0	-77.3	99.6	25.0	22.4	133.3	110.2	2.9%	2.84	12.3%	12.4%	16.1	16.0	17.6	8.4%	6.9%	5.7%	
Median		3.1%	5.06	32.6	87.6	70.6	24.6	22.2	104.7	46.1	0.6%	1.29	11.0%	13.0%	16.4	16.2	18.0	7.4%	6.6%	7.4%	
spx	S&P 500 INDEX			20.6	19.2	19.0			17.6	15.7											

Appendix 10: DCF Calculations

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*7.9%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*
NOPAT / S	*12.5%*	*12.5%*	*12.5%*	*12.5%*	*12.5%*	*12.5%*	*12.5%*
S / NWC	*12.50*	*12.50*	*12.50*	*12.50*	*12.50*	*12.50*	*12.50*
S / NFA (EOY)	*2.13*	*2.13*	*2.13*	*2.13*	*2.13*	*2.13*	*2.13*
S / IC (EOY)	*1.82*	*1.82*	*1.82*	*1.82*	*1.82*	*1.82*	*1.82*
ROIC (EOY)	*22.8%*	*22.8%*	*22.8%*	*22.8%*	*22.8%*	*22.8%*	*22.8%*
ROIC (BOY)		*24.6%*	*24.6%*	*24.6%*	*24.6%*	*24.6%*	*24.6%*
Share Growth		*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*
Sales	$2,911	$3,145	$3,396	$3,668	$3,962	$4,279	$4,621
NOPAT	$364	$393	$425	$459	$496	$535	$578
Growth		*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*
- Change in NWC	17	19	20	22	23	25	27
NWC EOY	*233*	*252*	*272*	*293*	*317*	*342*	*370*
Growth NWC		*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*
- Chg NFA	100	110	118	128	138	149	161
NFA EOY	*1,366*	*1,476*	*1,595*	*1,722*	*1,860*	*2,009*	*2,169*
Growth NFA		*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*
Total inv in op cap	117	129	138	149	161	174	188
Total net op cap	1599	1728	1866	2016	2177	2351	2539
FCFF	$247	$265	$287	$310	$334	$361	$390
% of sales	*8.5%*	*8.4%*	*8.4%*	*8.4%*	*8.4%*	*8.4%*	*8.4%*
Growth		*7.3%*	*8.3%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*
- Interest (1-tax rate)	7	7	8	9	9	10	11
Growth		*0.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*
FCFE w/o debt	$239	$257	$279	$301	$325	$351	$379
% of sales	*8.2%*	*8.2%*	*8.2%*	*8.2%*	*8.2%*	*8.2%*	*8.2%*
Growth		*7.5%*	*8.3%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*
/ No Shares	169.9	166.4	163.1	159.8	156.6	153.5	150.4
FCFE	$1.41	$1.55	$1.71	$1.88	$2.08	$2.29	$2.52
Growth		*9.7%*	*10.5%*	*10.2%*	*10.2%*	*10.2%*	*10.2%*
* Discount factor	0.90	0.80	0.72	0.65	0.58	0.52	0.47
Discounted FCFE	$1.26	$1.24	$1.23	$1.22	$1.20	$1.19	$1.18
	Third Stage						
Terminal value P/E							
Net income	$357	$386	$417	$450	$486	$525	$567
% of sales	*12.3%*	*12.3%*	*12.3%*	*12.3%*	*12.3%*	*12.3%*	*12.3%*
EPS	$2.10	$2.32	$2.56	$2.82	$3.10	$3.42	$3.77
Growth		*10.5%*	*10.2%*	*10.2%*	*10.2%*	*10.2%*	*10.2%*
Terminal P/E							20.00
* Terminal EPS							$3.77
Terminal value							$75.42
* Discount factor							0.47
Discounted terminal value							$35.20

First stage	$2.51	Present value of first 2 year cash flow
Second stage	$6.02	Present value of year 3-7 cash flow
Third stage	$35.20	Present value of terminal value P/E
Value (P/E)	**$43.74**	= value at beg of fiscal yr 2017

Appendix 11: Calculation of NTM ROE and P/B (Today)-Domestic Comps

	NTM Net income	now equity	NTM equity	avg equity	NTM ROE	P/B-today
MAS-US	608	56	82	69		
FBHS-US	487	2404	2748	2576	19%	3.5
AOS-US	318	1521	1587	1554	20%	5.9
LII-US	336	45	80	62.5		
ALLE-US	358	223	428	325.5		
WSO-US	191	1144	1168	1156	17%	4.2
AWI-US	136	255	398	326.5	42%	8.2
SSD-US	96.7	887.5	929.9	908.7	11%	2.3
TREX-US	80.7	125.3	201.6	163.45	49%	15.5
APOG-US	84	406	469	437.5	19%	3.9
BLD-US	89	960	960	960	9%	1.4
IBP-US	59.3	154.8	216.7	185.75	32%	8.4
BMCH-US	81	685	764	724.5	11%	6.0
BLDR-US	114	308	428	368	31%	4.0
AMWD-US	69	281	348	314.5	22%	3.5
TILE-US	77.2	390.7	451.6	421.15	18%	3.1
GFF-US	39	410.9	449.9	430.4	9%	6.8
NCS-US	69	301	380	340.5	20%	3.3
PGEM-US	93	6	102	54		
CBPX-US	51.8	316.5	346.8	331.65	16%	2.9
NX-US	32.2	367.8	406.1	386.95	8%	1.5
PGTI-US	33.3	133.2	167.7	150.45	22%	4.4
AFI-US	23	622	636	629	4%	0.9
LYTS-US	5.4	155.5	160.5	158	3%	1.6

Appendix 12: Determining mkt unit size + 2016 average price point

	2014	2015	2016	2017	2018	2019	2020	2050
China Pop (M)	1375	1382	1389	1396	1403	1410	1445	1637
Urbanization Rate	56%	57%	58%	58%	59%	60%	62%	70%
Urban pop (M)	771	786	801	816	832	846	889	1146
Urban households (M)	257	262	267	272	277	282	296	382
households	257,125,000	262,028,374	267,025,255	272,117,426	277,306,706	281,944,095	296,362,753	382,024,877
N thousand households	257,125	262,028	267,025	272,117	277,307	281,944	296,363	382,025
unit sales rate per 1k urban households	19	23	28	33	36	40	43	70
mkt unit sales	4,885,375	6,026,653	7,476,707	8,979,875	9,983,041	11,277,764	12,743,598	26,741,741
mkt unit sales (M)	4.89	6.03	7.48	8.98	9.98	11.28	12.74	26.74
			mkt ~$2B in 2016 per CMM 2 billion/7,476,707					
avg retail price 2016			$ 267					

Source: IMCP, company reports

Appendix 13: SWOT Analysis

Strengths	Weaknesses
Foreign brand name	Increased advertising expenses in ROW
Foreign comp leading operating margin	No steel hedging
Foreign comp leading net profit margin	Middling ROE compared to domestic comps
Opportunities	**Threats**
Air purification market	Global economic slowdown
Commercial water heating leasing	Chinese economic transition stall
Urbanization sustains growth	Yuan/Renmibi devaluation
Margin harvesting in ROW	Possible future technological obsolesence

Appendix 14: Porter's Five Forces

Threat of New Entrant

A new competitor would need to build large plants and purchase steel in large quantities to achieve economies of scale similar to what AOS in its water heater operations. However, the water treatment and air purification products face lower barriers to entry from a capital-intensive perspective, and face the highest possibility of competition from improved technology. AOS insulates itself by catering to the premium product market, where most low cost competition would service the consumers AOS does not target.

Threat of Substitutes-Medium

Residents do not purchase water heaters often enough to develop brand loyalty. Therefore, when the must purchase one, they purchase one that feeds their needs/space regardless of brand. In China, the threat of substitutes in the premium market is somewhat low. AOS has a foreign-brand, and that draws Chinese consumers, as they trust Chinese companies less than they trust foreign companies.

Supplier Power-Low

AOS buys commodity steel. Suppliers hold very little power as AOS can switch suppliers rather easily should prices deviate too much from the market.

Buyer Power- Moderate (commercial), Low (retail)

The top five commercial customers account for 38% of 2015 sales. AOS may lower premium product prices to keep its business with this buyer. Residential consumers view purchasing a water heater as a once in a decade hassle and will pay up to guarantees they will not have to deal with it for 10 years, price is not a factor.

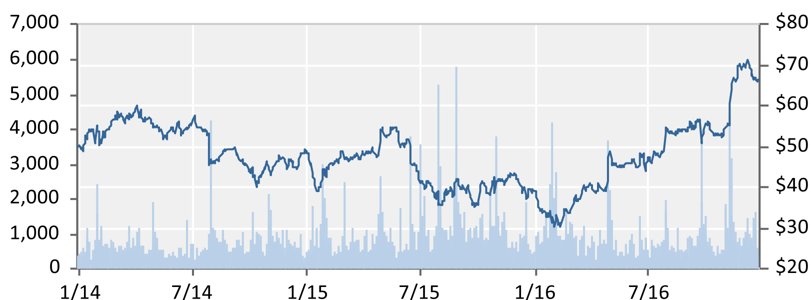
Intensity of Competition-High

Over a dozen companies alone in China and more in North America supply the water heater industry. Ecommerce platforms increase margins, but also make competition global.

Recommendation	NEUTRAL
Target (today's value)	$63
Current Price	$66.72
52 week range	$29.59 - $71.99

Defense and Trucks, Construction, Farm Equipment

Oshkosh Corporation



Share Data	
Ticker:	OSK
Market Cap. (Billion):	$4.97
Inside Ownership	1.1%
Inst. Ownership	90.2%
Beta	1.46
Dividend Yield	1.26%
Payout Ratio	26.1%
Cons. Long-Term Growth Rate	12.9%

Summary: I recommend a neutral rating with a target of $63. OSK has an opportunity to keep improving efficiency, increasing margins, and modestly increasing revenues. I am confident that the expected sales growth will be effective in improving the business; however, the stock is overvalued based on relative and DCF analysis.

	'14	'15	'16	'17E	'18E
Sales (billions)					
Year	$6.81	$6.10	$6.28	$6.60	$6.71
Gr %	-11.2%	-10.4%	3.0%	5.1%	1.6%
Cons	-	-	-	$6.62	$6.73
EPS					
Year	3.68	$2.94	$2.94	$3.23	$3.63
Gr %	1.0%	-20.0%	0.0%	9.7%	12.6%
Cons	-	-	-	$3.35	$3.57

Key Drivers:

- New home and construction of new homes: Over 48% of OSK's revenues come from its access equipment (construction equipment) segment. OSK's access equipment segment has struggled recently but I predict that the segment will recover and see growth in the coming years. Access equipment is expected to recover from -11% growth in 2016 to 1% in 2018.

- Defense spending: Defense contributes 22% to sales and is expected to grow over 34% in 2017, but be flat in 2018. However, OSK has a contract for $6.7 billion for light tactical vehicles that could lead to $30 billion in sales.

- International markets: International is about a quarter of sales, but the firm is expanding this business, and growth outside the U.S. is expected to drive the top line as U.S. growth is projected to be flat from 2016 to 2018. International growth will be reliant on economic growth of foreign countries.

Ratio	'13	'14	'15	'16	'17E
ROE (%)	16.1%	15.1%	11.8%	11.1%	11.6%
Industry	0.20%	13.9%	11.4%	11.2%	14.8%
NPM (%)	4.10%	4.5%	3.8%	3.4%	3.4%
Industry	0.6%	5.9%	6.0%	4.7%	5.7%
A. T/O	1.58	1.46	1.33	1.39	1.47
ROA (%)	6.5%	6.6%	5.0%	4.8%	5.1%
Industry	0.1%	4.3%	3.3%	3.2%	4.6%
A/E	2.45	2.29	2.35	2.33	2.29

Valuation	'14	'15	'16	'17E
P/E	18.1	22.7	22.7	20.7
Industry	17.6	18.9	22.1	21.9
P/S	0.6	0.5	0.7	0.8
P/B	1.7	1.6	2.1	2.30
P/CF	14.6	48.8	14.8	26.2
EV/EBITDA	6.59	8.65	9.44	12.79

Valuation: Using a relative valuation approach, Oshkosh appears to be undervalued in comparison to comparable firms. DCF analysis yields a value of $58. A combination of the approaches suggests that Oshkosh is overvalued, as the stock's value is about $63 and the shares trade at $66.72.

Risks: Threats to the business include highly cyclical markets, tax rates, obtaining and keeping defense contracts, and access equipment rental uncertainties.

Performance	Stock	Industry
1 Month	-5.1%	9.4%
3 Month	19.1%	4.7%
YTD	70.9%	19.1%
52-week	67.4%	11.6%
3-year	33.7%	-3.0%

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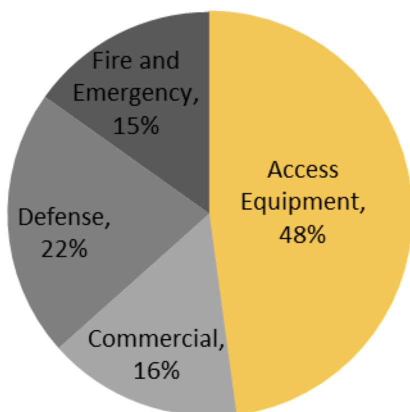
Company Overview

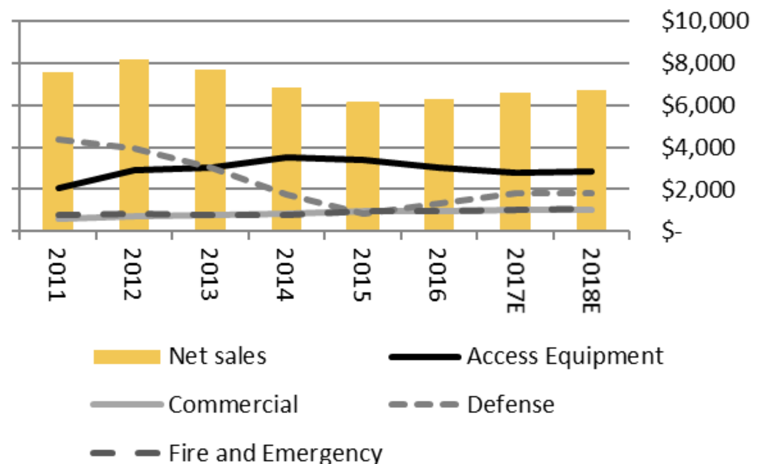
Oshkosh Corporation (OSK) is a leading designer, manufacturer, and retailer of specialty vehicles and vehicle bodies on a global level. OSK focuses on four specific segments including Access Equipment, Commercial, Defense, and Fire and Emergency. OSK designs, manufacturers, and retails construction booms, lifts, telehandlers, different sized armored vehicles, firetrucks, garbage trucks, ready-mixed concrete trucks, field service vehicles, command post vehicles, mobile and stationary concrete batch plants, tow trucks, rotators, airport vehicles, and snow removal vehicles. OSK's quality specialty vehicles are topline products and are well known within the market. The firm has an array of customers worldwide, including but not limited to rental companies, construction contractors, federal governments, local governments/municipalities, ready-mix companies, commercial waste haulers, and mining companies.

OSK is based out of Oshkosh, Wisconsin. Oshkosh Corporation generates its revenue from four segments: 48% from Access Equipment, 16% from Commercial, 22% from Defense, and 15% from Fire and Emergency (figure 1):

- Access Equipment: this segment is made up of subsidiaries JLG and Jerr-Dan. JLG is a manufacturer of construction booms, lifts, and aerial work platforms; Jerr-Dan sells an array of towing vehicles to towing companies globally. Access equipment saw negative growth in 2016 of -11.4%, and is projected to experience negative growth of -7.0% in FY 2017.
- Commercial: this segment is made up of subsidiaries McNeilus, CON-E-CO, and London. McNeilus manufactures concrete mixers and garbage trucks; CON-E-CO provides stationary and mobile concrete batch plants; and London distributes McNeilus and CON-E-CO products in Canada. Commercial grew 0.1% in 2016, and is projected to grow 2.5% in FY 2017.
- Defense: Oshkosh is a leading supplier of the DOD, providing it with severe-duty, heavy and medium payload trucks that are designed and built in a few ways for a variety of uses. Defense saw growth in 2016 of 43.8%, and is projected to grow 34% in FY 2017.
- Fire and Emergency: this segment consists of subsidiaries Pierce, IMT, Frontline Communications, and Oshkosh Airport Products. Pierce designs and manufactures firetrucks and firetruck parts; IMT designs and manufactures field service vehicles and material handling systems; Frontline Communications designs and manufactures customized broadcast and communications vehicles; and Oshkosh Airport Products designs and manufactures aircraft rescue/firefighting vehicles and snow removal vehicles. Fire and Emergency saw growth of 17.0% in 2016 and is projected to grow 17% in FY 2017.

Figures 1 and 2: Revenue Sources for OSK, year-end 2016 (left) and revenue history since 2011 in millions USD (right)





Source: 2016 10K, 2012 10K

Business/Industry Drivers

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

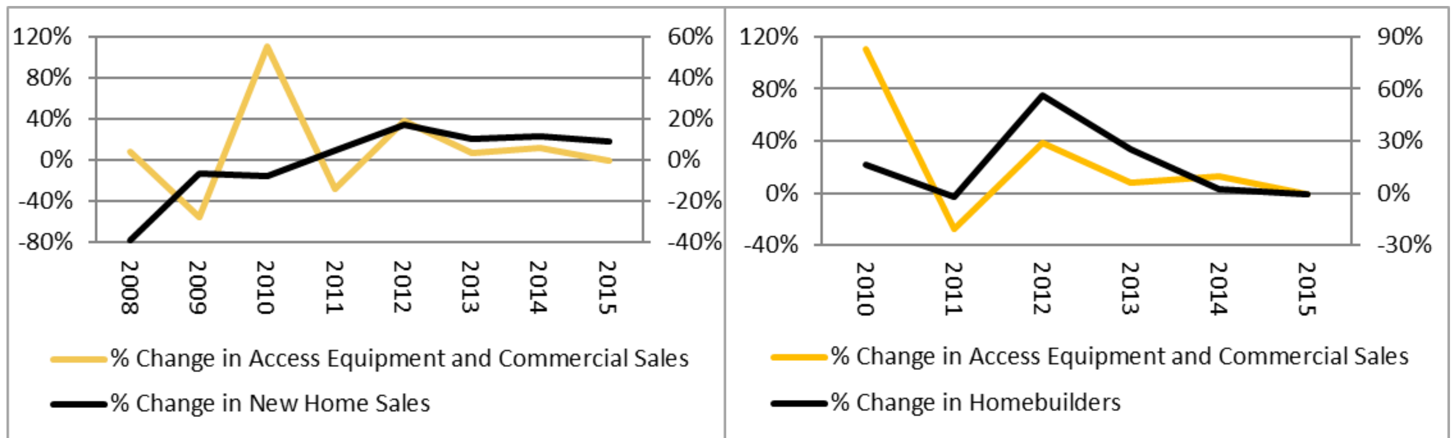
1) New homes and construction of new homes
2) Defense spending
3) International markets
4) Competition
5) Macroeconomic trends

OSK sales grow when new homes are being sold and built.

New Homeowners and Construction of New Homes

New home sales and construction drive OSK, as it produces demand for construction access equipment and commercial concrete products. These segments correlate directly with new home sales and performance of homebuilding companies.

Figures 3 and 4: Percentage change in access equipment and commercial sales (left axis) compared to percentage change in new home sales (right axis) (left), and percentage change in access equipment and commercial sales (left axis) compared to percentage change in S&P Homebuilder Select Industry (right axis) (right)



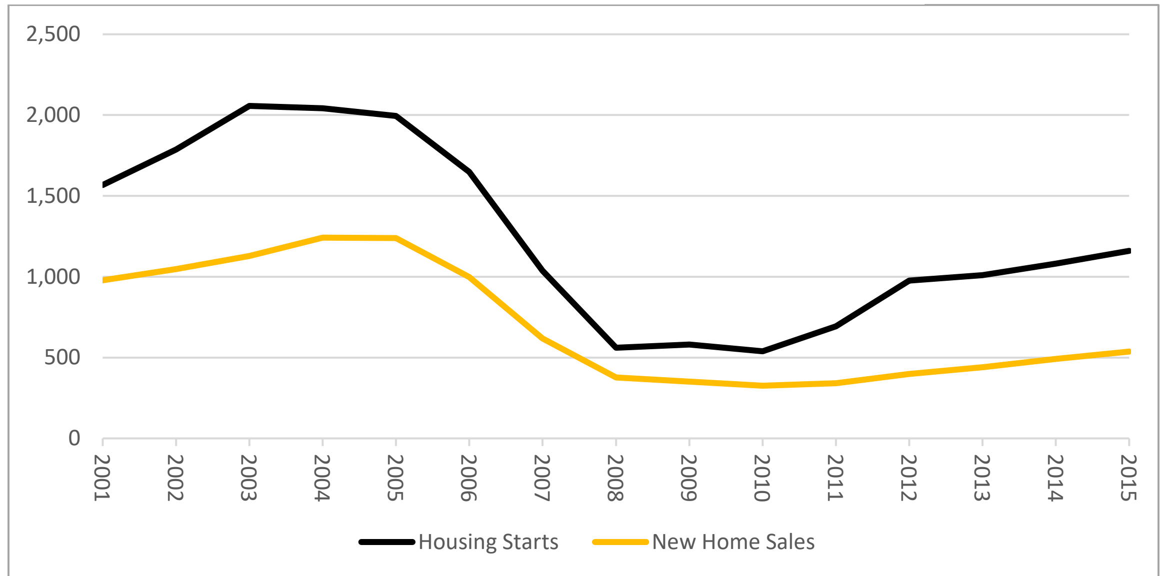
Source: 2015 10K, 2012 10K, 2009 10K, Bloomberg

When new home sales has growth often OSK sales have growth.

OSK benefits with a delay to new home sales. In 2011, sales of access equipment and commercial products fell 28%, while new homes sold grew 4.6%. The following year, 2012, there was 38.2% growth in access equipment and commercial sales. 2010 and 2015 are outliers. In 2010, the segments grew by 110.1%, which did not correlate with the negative growth of -6.6% the year before in new homes sold. At the time, the U.S. machinery sector outperformed the market. At one point, U.S. machinery was up 32% while the S&P 500 was only up 5.5%. In 2015, the segments had -0.7% growth, while new home sales grew 9.4%.

While housing starts are up from the trough of the Great Recession, they are still only half of the prior peak. Thus, there could be more upside for the division.

Figures 5: Levels of housing starts and new home sales for 15 years



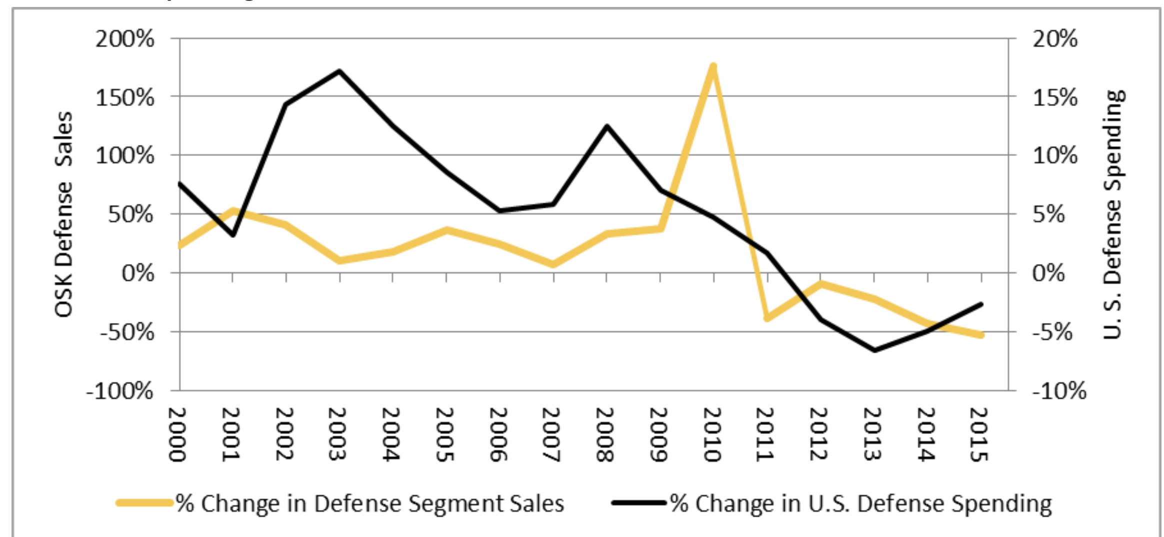
Source: FactSet

Defense Spending

OSK, at various times, has been very dependent on and driven by defense spending. The company produces industry leading armored vehicles of various sizes for the U.S. Department of Defense. While the relationship is not perfect, figure 5 shows that as defense growth slowed, so did OSK's defense business.

OSK defense sales are dependent and correlate with U.S. defense sales.

Figure 6: Percentage change in OSK's Defense segment sales compared to percentage change in U.S. defense spending



Source: 2000-2015 10K's, FactSet

From 2000 to 2011, U.S. defense spending grew 141%. In 2000, the U.S. spent $281 billion on defense, and in 2011, it spent $678 billion. At the same time, OSK's defense segment grew 14x, going from $276 million to $4.4 billion. When defense spending experiences growth, OSK's defense segment grows exponentially as it is on the economic spiral out of defense spending. When defense

spending increases there are more opportunities for defense firms to sell products. OSK capitalizes on defense spending growth and its sales increase as they earn new defense contracts that come about from the increased spending.

OSK has consistently developed and upgraded its defense products. This has led to the DOD extending contracts and picking OSK for new contracts, thus driving defense sales.

Defense spending grew because of the global war on terror. In 2010 when the U.S. government started to pull troops out of the Middle East, the DOD upgraded its worn-down war equipment, and in 2010, OSK defense sales spiked to $7.2 billion. Since 2010, OSK's defense segment has experienced negative growth, as has U.S. defense spending, and defense sales are now only one-third of sales in 2012.

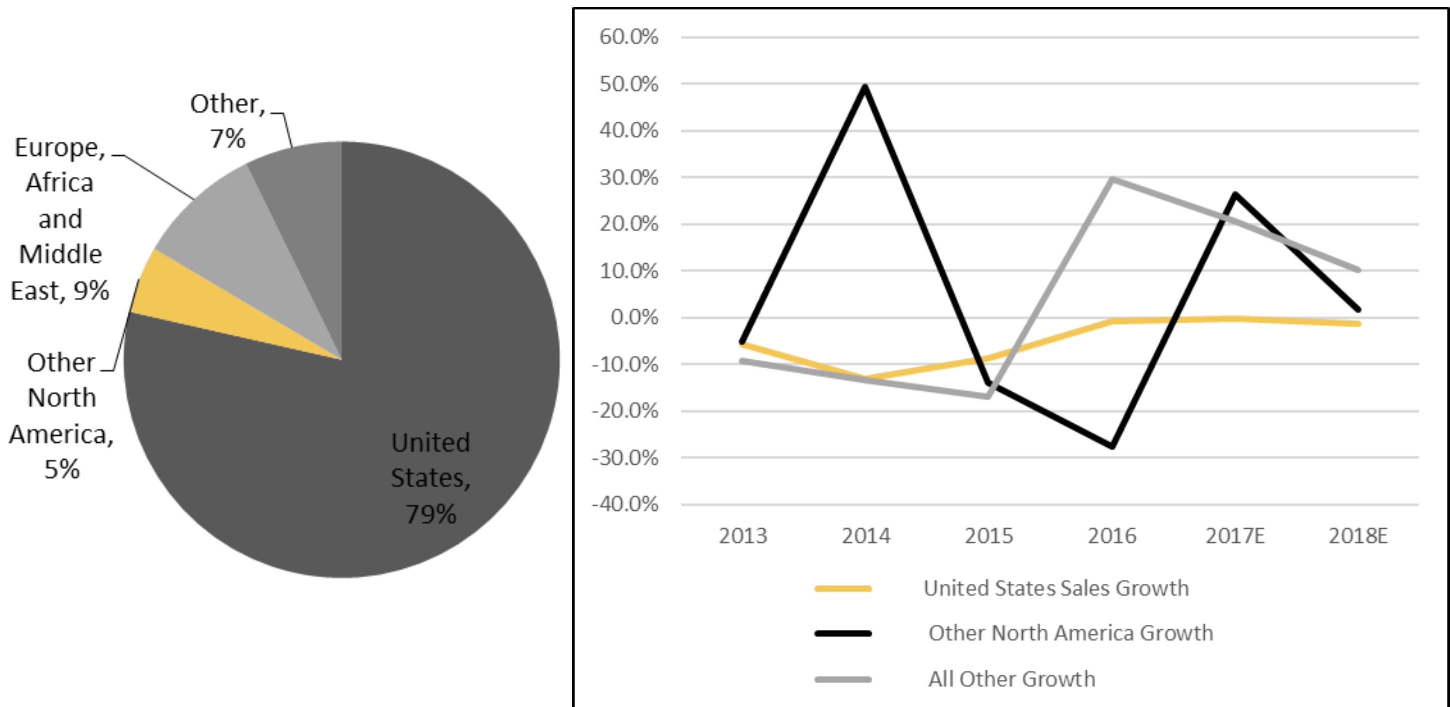
OSK's $6.7 billion contract with the U.S. for the JLTV will drive defense sales.

The good news for OSK is that defense spending is predicted to rise again. This is because of uncertainties in the Middle East and the threat of ISIS. OSK has already obtained a DOD contract worth $6.7 billion to sell its new lightweight tactical vehicles, the JLTV, to the U.S. for the Army and Marines. This contract is predicted to grow above the $6.7 billion of sales, and will most likely lead to $30 billion in sales over the next 10 years and more contracts for different OSK defense vehicles. The segment grew 44% in 2016, and accounts for 21.5% of OSK sales. The JLTV contract provides years of revenues, and shows that OSK still produces a great product, and keeps the firm as a leader in the industry. The JLTV contract has created substantial future sales growth.

International Markets

OSK generates 79% of sales from the U.S. In 2014-15, sales declined as defense spending fell and access equipment slowed. To perhaps diversify and capitalize on more opportunity for growth, the firm is expanding internationally.

Figures 7 and 8: Percent of total sales by region and sales growth by region



Source: 2012 10K, 2015 10K

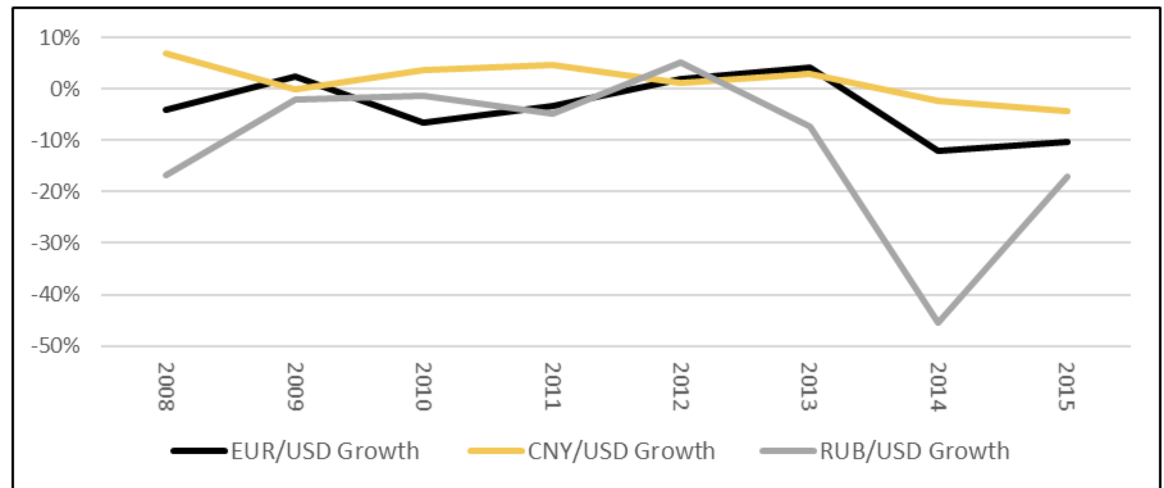
OSK is actively trying to enter new markets all over the world.

OSK has recently opened offices in Russia, India, Saudi Arabia, China, South Korea, and Japan to attempt to target new customers in these markets and sell their access equipment products.

From 2013 to 2015, OSK experienced negative growth outside of North America. This changed in 2016 when sales outside of North America grew 29.5%. To maintain its solid growth internationally, OSK has decided to restructure its international access equipment business in Europe. OSK will be shutting down inefficient manufacturing and inspection centers, centralizing its operations in Romania, and streamlining its telehandler production. OSK expects that this will lead to savings of $20 million to $25 million annually. With this, I expect sales outside North America to grow from 1.3 billion in 2016 to almost 1.6 billion and 1.7 billion in 2017 and 2018 respectively. I expect sales outside of North America to make up 26% of OSK sales by 2018.

The strength of the U.S. dollar has made it hard for OSK to emerge into countries like Russia, Japan, and China.

Figure 9: U.S. dollar per unit of foreign currencies % growth



Source: FactSet

Since 2014, the dollar has risen 17%, 4%, and 10% to the Russian Ruble, Chinese Yuan, and the Euro respectively. This makes OSK's products more expensive and hurts translation of profits to U.S. dollars.

OSK is exploring selling defense products in foreign markets; however, as a defense contractor for the U.S. government, it can only sell to foreign countries approved by the U.S. government. OSK has received interest in the new JLTV from foreign militaries. OSK is actively attempting to expand all segments internationally.

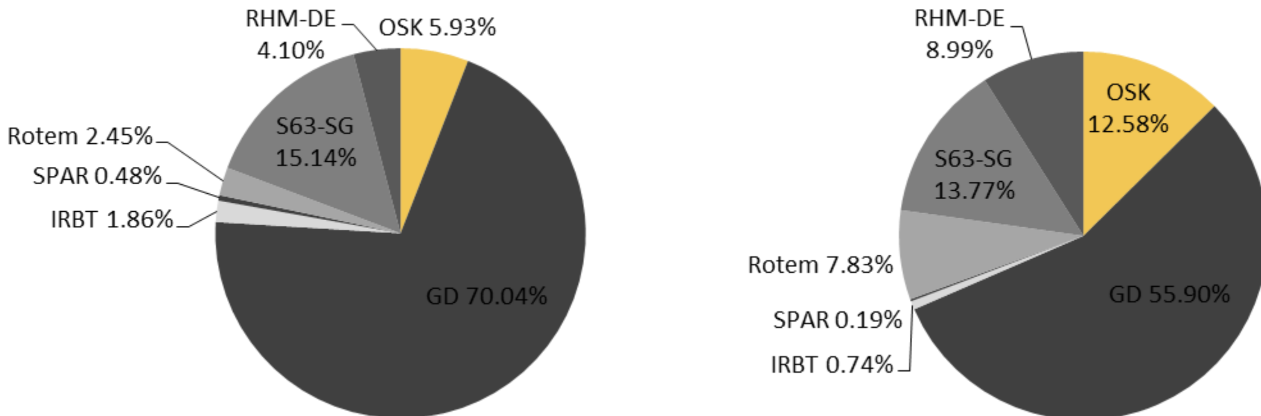
Competition (see also figure 28)

To be successful in the defense industry, a company needs to be established and provide superior products.

The defense industry, and more specifically the manufacturers of armored vehicles industry, is a very competitive industry. It is important to be an established defense contractor like OSK. Companies bid on contracts and must convince the U.S. DOD that they are worthy by providing superior products with the newest technology and innovations. Furthermore, a good defense contractor must be efficient in manufacturing an array of different defense products while managing costs and maintaining leverage on suppliers.

Defense contractors such as General Dynamics (GD) and OSK are well-established and have been in the business for over fifty years. Both GD and OSK are leaders when it comes to DOD contracts for armored vehicles. GD is the leader of defense contractors that produce armored vehicles. GD is a very large company with a market cap of $46 billion. GD is diversified across the entire defense industry. OSK's closest competitors in contracting for armored vehicles are General Dynamics (GD), Singapore Technologies Engineering Ltd (S63-SG) and Rheinmetall AG (RHM-DE). OSK is the second strongest of the four in armored vehicle sales.

Figures 10 and 11: Comparison of OSK defense comps by market cap (left) and defense sales (right)



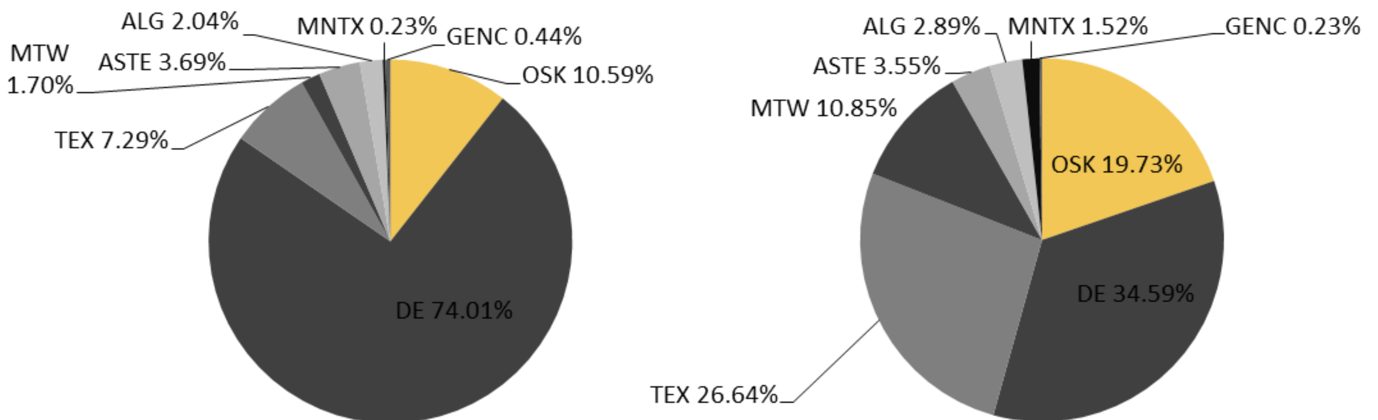
Source: FactSet, Bloomberg

Leaders in the trucks/construction /farm industry are well-known companies that provide superior products

In trucks/construction/farm equipment, OSK also competes with large and established firms. Industry leaders include Deere & Company (DE), which has an established brand (green) and is known to be very reliable. Like the green of Deere & Company, JLG is orange. JLG has become a leader in the innovation and production of some the world's best access equipment for construction. The probability of seeing a JLG machine at a construction site is high. JLG is becoming a "household" name.

DE is a leader in the struggling trucks/construction/farm industry, but this does not mean smaller companies like OSK cannot be successful in this industry. OSK's closest competitors include Terex (TEX) and Astec Industries, Inc. (ASTE). Of the three, TEX is the largest in terms of sales, followed by OSK.

Figures 12 and 13: Comparison of OSK access equipment comps by market cap (left) and access equipment sales (right)



Source: FactSet, Bloomberg

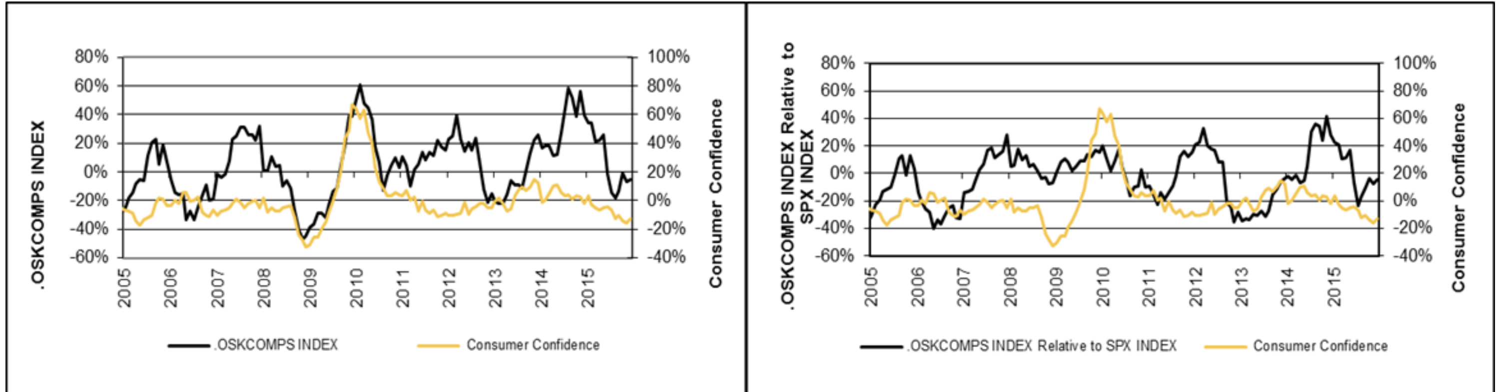
The pie charts show that OSK's percent of sales is higher than percent of market cap for both peer groups. This suggests that investors are less optimistic about OSK. Additional statistics on a smaller comparable group are shown in Figure 28. OSK has above average margins and above average P/S.

Macroeconomic Trends

The truck/construction/farm industry is comprised of many cyclical businesses. As defense spending (war) and the economy are not necessarily correlated, during wartime the defense business is less

cyclical than in time of peace. It may be the case that defense spending is indirectly driven by the economy in times of peace due to the way government budgets are structured.

Figures 14 and 15: Consumer confidence yearly percent change compared to OSK comps yearly percent change (left) and consumer confidence compared to OSK comps relative to the S&P 500 index (right)

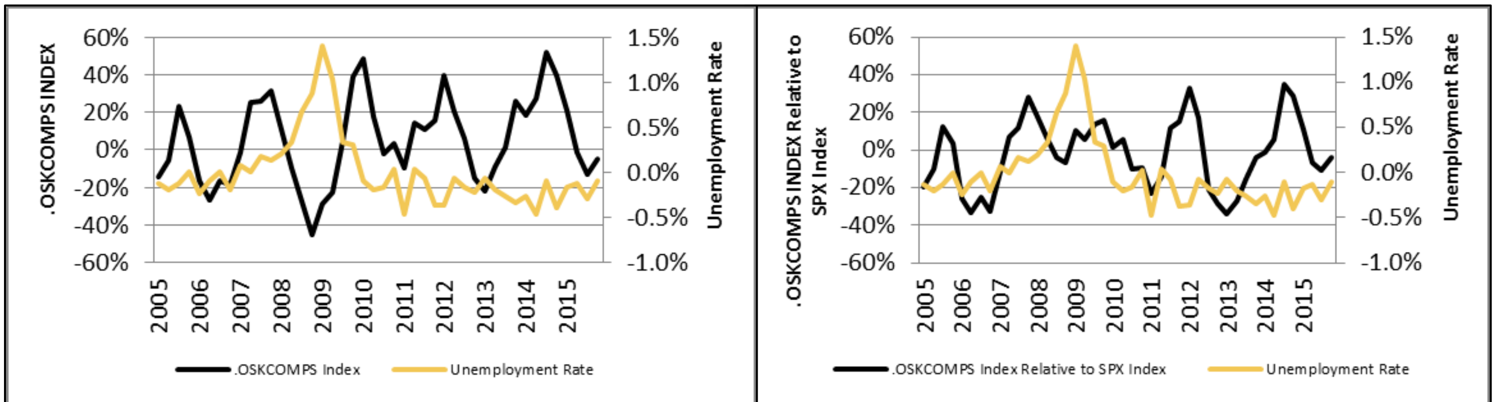


Source: Bloomberg, IMCP

Correation: 0.244
R Square: 0.059

As consumer confidence rises, OSK and its competitors outperform S&P 500, and vice versa. Of course, confidence rises as the economy improves and this is when construction growth picks up.

Figures 16 and 17: Unemployment rate, compared to OSK comps (left) and Unemployment rate, compared to OSK comps relative to the S&P 500 index (right)



Source: Bloomberg, IMCP

Correlation: -0.412

R Square: 0.170

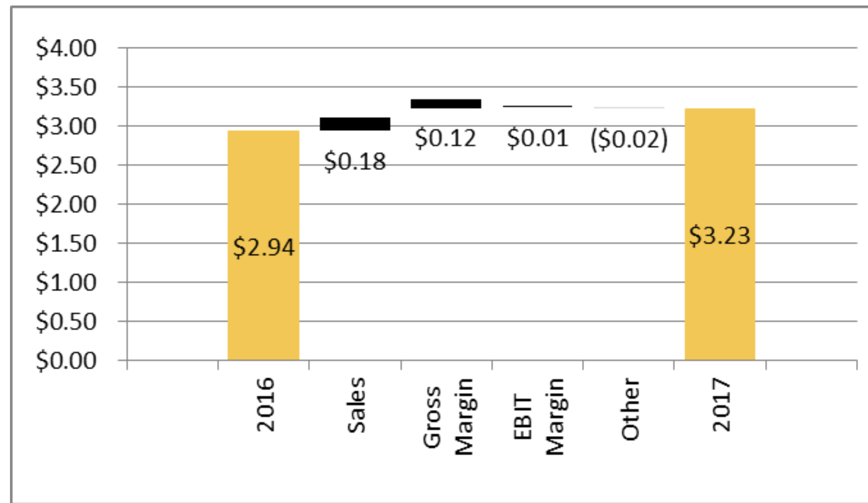
OSK and its competitors perform well relative to the S&P 500 when the unemployment rate is low, and vice versa. Unemployment is negatively correlated with homebuilding, which greatly influences OSK's access business. Similarly, employment levels may influence the government's budget. Thus, higher unemployment may lead to a tight budget for defense spending.

Financial Analysis

I anticipate EPS to grow to $3.23 in FY 2017. Increasing revenues in defense, fire and emergency and commercial segments should increase earnings by $0.18 respectively. As the production of JLTV grows and becomes more efficient, the cost of sales will decrease, and a rising gross margin will further drive up EPS by $0.12. I expect that EBIT margin will increase EPS $0.01 as OSK reduces development of new products that it could sell to federal and state agencies. The tax rate is

expected to rise which more than fully offsets the benefit of stock buybacks for a net loss to EPS of $0.02.

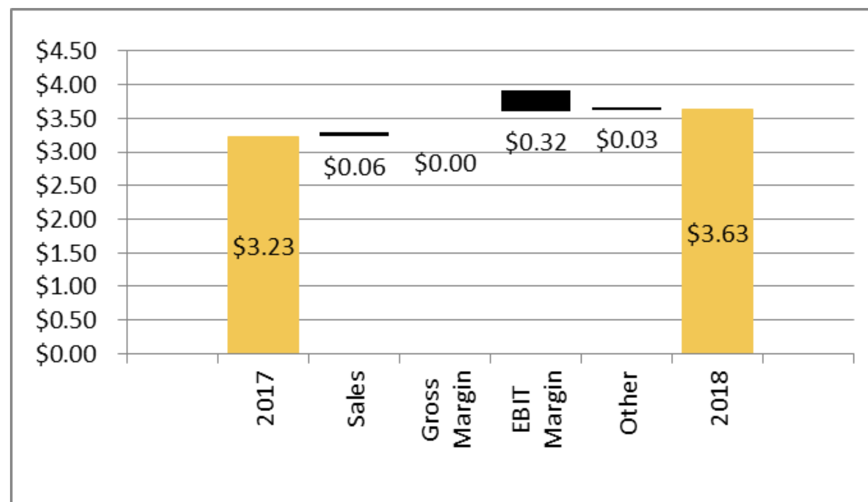
Figure 18: Quantification of 2017 EPS drivers



Source: Company Reports, IMCP

I expect 2018 EPS to increase $0.40 to $3.63. I predict that defense, fire and emergency and commercial segments will see continued sales growth, and the access equipment will see positive sales growth after three years of negative growth, which will ultimately increase EPS by $0.06. Gross margin will see little to no change and will not affect EPS in anyway. I predict that OSK will cut a significant amount of SG&A and R&D in FY 2018 and this will ultimately raise EPS by $0.32. As a light reduction in interest will boost EPS by $0.03.

Figure 19: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

I am, for the most part, in line with consensus estimates for FY 2017 and 2018 EPS estimates. I anticipate continued growth in the defense, fire and emergency and commercial segments. I also predict that the access equipment segment will rebound in FY 2018 after a number of years with negative growth.

Figure 20: Sales and EPS estimated for FY '17 and '18

	2017E	2018E
Revenue	$6,599	$6,707
YoY Growth	5%	2%
Revenue - Consensus	$6,644	$6,810
YoY Growth	6%	2%
EPS	$3.23	$3.63
YoY Growth	10%	13%
EPS - Consensus	$3.35	$3.57
YoY Growth	14%	7%

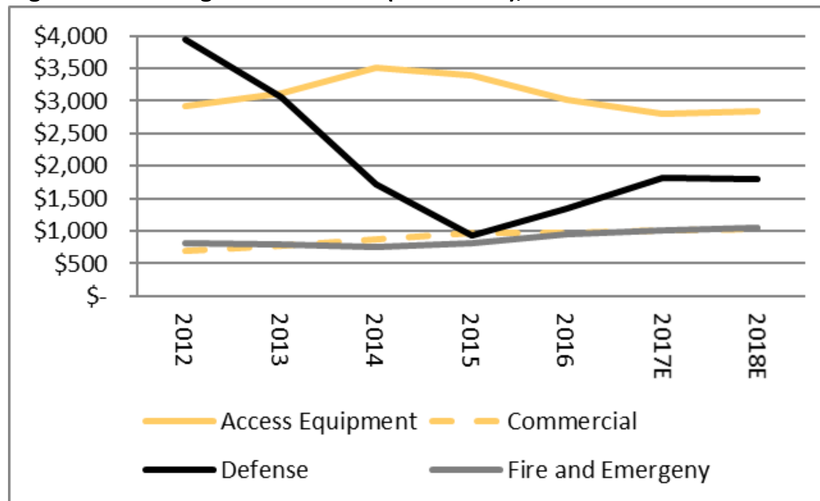
Source: Factset, IMCP

Revenues

Oshkosh Corporation's revenue declined quickly from 2012 through 2015, but has since reverted to positive growth in FY 2016. I expect the positive growth in 2016 to continue into 2017 and 2018. OSK's sales rose from the company's JLTV contract with the DOD. OSK's commercial segment will continue to see growth from a rebounding economy, as will the fire and emergency segment. Most importantly, I expect that the access equipment segment's negative growth to level off in 2017, and then in 2018, experience positive growth in revenue for the first time since 2014 due to an improving economy and possible infrastructure spending.

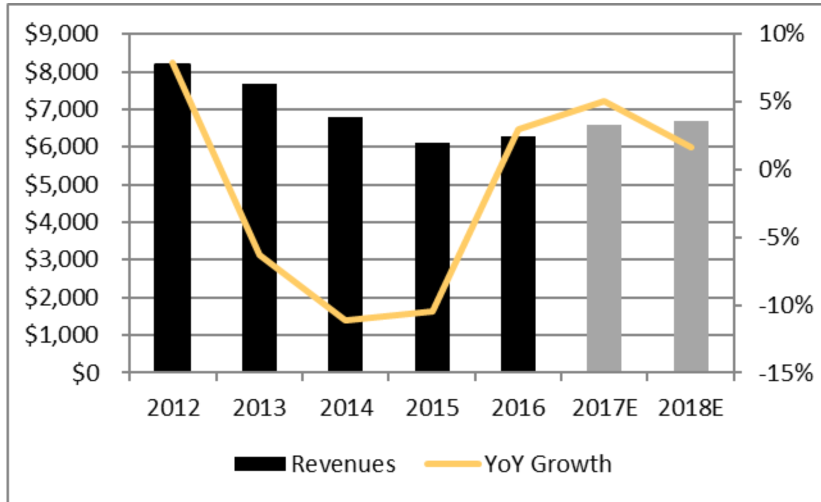
Global sales will increase in 2017 and 2018. OSK will see significant sales growth outside of the USA as the company continues to push for more of a presence in foreign countries.

Figure 21: OSK segment revenues (thousands), 2013 – 2018E



Source: Company Reports, IMCP

Figure 22: Revenue (millions) vs YoY revenue growth, 2012 – 2018E

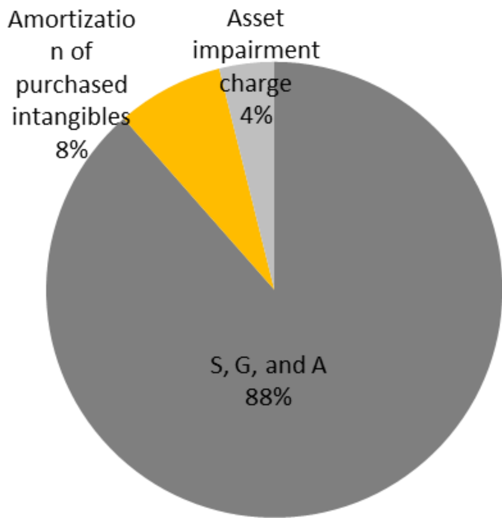


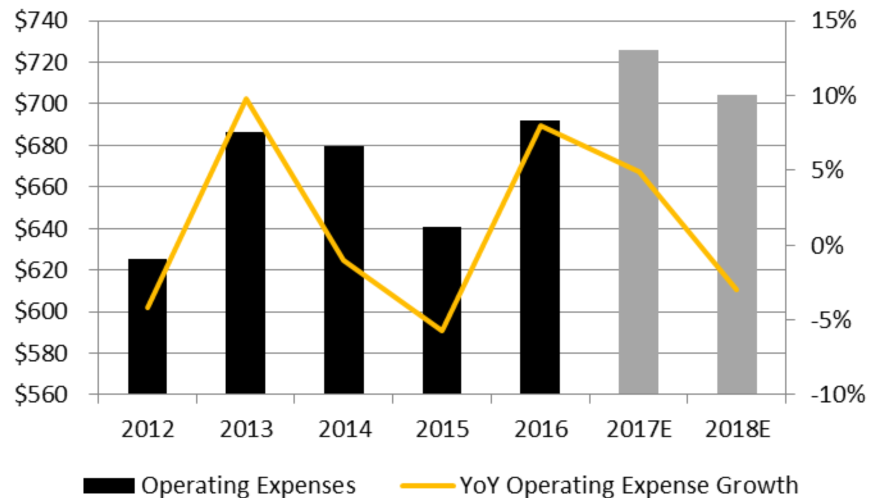
Source: Company Reports

Operating Income and Margins

The majority of the operating expenses are composed primarily of selling, general and administrative expenses. In addition, 8% and 4% of operating expenses are made up of amortization of purchased intangibles and asset impairment charges. I expect operating expenses to grow at the same pace as in 2017, but fall in 2018. I predict that OSK's efforts to restructure its access equipment business in Europe for cost savings reasons will result in operating expenses growing in 2017, and in 2018 OSK will experience the cost savings that it wants and operating expenses will decrease.

Figures 23 & 24: Composition of 2016 operating expenses (left) and operating expenses (millions) vs YoY operating expense





Source: Company Reports

SG&A will increase in 2017 with sales and then decrease exponentially in 2018.

Overall, OSK has had stable gross margins over the last couple of years, but EBIT margins fell in 2016. EBIT margin is down 1.6% since 2014 while gross margins have fallen 0.6%. Operating expenses were difficult to cut as sales fell. OSK's initiative to restructure and make its operations more effective has lowered the company's margins for the time being. By fiscal year 2018, I expect operating margins to increase to 6.5%.

Figure 25: OSK Operating margins, 2015 – 2018E

	2014	2015	2016	2017E	2018E
Sales	$6,808	$6,098	$6,279	$6,599	$6,707
Cost of goods sold	5,626	5,059	5,223	5,477	5,567
Gross income	1,183	1,039	1,056	1,122	1,140
Gross margin	*17.4%*	*17.0%*	*16.8%*	*17.0%*	*17.0%*
Operating expenses	679	641	692	726	704
Growth	*-1.0%*	*-5.7%*	*8.0%*	*4.9%*	*-3.0%*
Operating income	398	399	364	396	436
Operating margin	5.8%	6.5%	5.8%	6.0%	6.5%

Source: Company Reports

Return on Equity

OSK's ROE has decreased over the past four years through 2016. Profit margins and asset turnover have fallen. Going forward, I expect margins and asset turns to rise as sales rebound and push up ROE. However, lower leverage will reduce the ROE gains.

As sales increase, ROE will increase.

Figure 26: ROE breakdown, 2011 – 2016E

3-stage DuPont	2013	2014	2015	2016	2017E	2018E
Net income / sales	4.1%	4.5%	3.8%	3.4%	3.5%	3.8%
Sales / avg assets	1.58	1.46	1.33	1.39	1.47	1.48
ROA	6.5%	6.6%	5.0%	4.8%	5.1%	5.7%
Avg assets / avg equity	2.45	2.29	2.35	2.33	2.29	2.21
ROE	16.1%	15.1%	11.8%	11.1%	11.6%	12.5%

Source: Company Reports

Free Cash Flow

Figure 27: Free cash flows 2012 – 2018E

Free Cash Flow	2012	2013	2014	2015	2016	2017E	2018E
NOPAT	$293	$356	$358	$277	$254	$265	$292
Growth		*21.6%*	*0.4%*	*-22.5%*	*-8.3%*	*4.3%*	*10.1%*
NWC*	449	582	779	960	748	660	570
Net fixed assets	2,253	2,212	2,202	2,176	2,096	2,056	2,274
Total net operating capital*	$2,703	$2,795	$2,981	$3,135	$2,844	$2,716	$2,844
Growth		*3.4%*	*6.7%*	*5.2%*	*-9.3%*	*-4.5%*	*4.7%*
- Change in NWC*		133	197	181	(212)	(88)	(90)
- Change in NFA		(41)	(10)	(27)	(79)	(40)	218
FCFF*		$264	$171	$123	545	$394	$164
Growth			*-35.3%*	*-27.7%*	*341.8%*	*-27.8%*	*-58.3%*
- After-tax interest expense	63	43	51	50	40	39	37
FCFE**		$221	$120	$73	$506	$355	$127
Growth			*-45.8%*	*-39.2%*	*592.5%*	*-29.8%*	*-64.2%*
FCFF per share*		$3.01	$2.03	$1.58	$7.41	$5.57	$2.32
Growth			-33%	-22%	368%	-25%	-58%
FCFE per share**		$2.52	$1.43	$0.94	$6.87	$5.01	$1.79
Growth			*-43.4%*	*-34.4%*	*634.1%*	*-27.0%*	*-64.2%*

Source: Company Reports

OSK's free cash flow has varied extensively in the last couple of years. The company pays about $60 million in dividends and has been paying off debt ($100 million from 2012 to 2016). OSK has also purchased about 20% of its stock between 2012 and 2016. In 2017, I expect $200 million of share purchases. NOPAT is expected to grow while capital will shrink in 2017. However, capital fell even more in 2016, FCFE will decline in 2017. In 2018, capital growth is positive which will reduce cash flow, so I do not forecast buybacks that year even though NOPAT is expected to rise 10%.

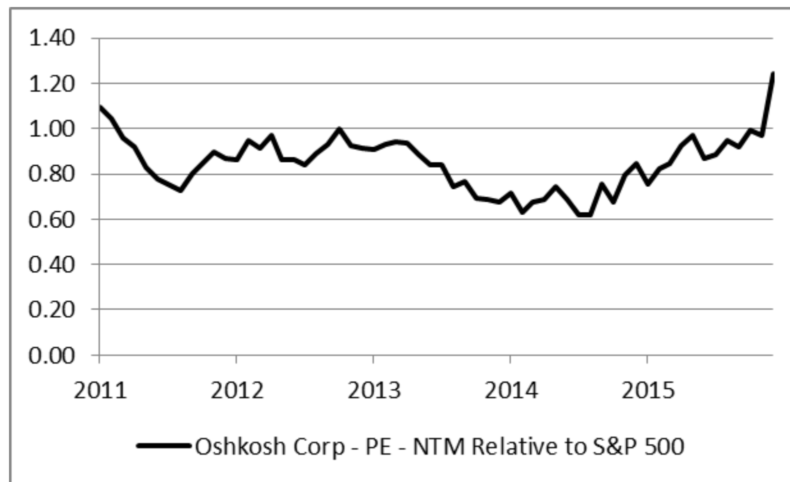
Valuation

OSK was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock price is relatively accurate compared to other firms and is worth $65. Relative valuation shows OSK to be slightly undervalued based on its fundamentals versus those of its peers in the Defense and Trucks/Construction/Farm Machinery industries. Price to book valuation yielded a price of $65. A detailed DCF analysis values OSK slightly lower, at $58. Finally, a probability-weighted scenario analysis yields a price of $69. As a result of these valuations, I value the stock at $63.

Trading History

OSK is currently trading near its five year high relative to the S&P 500. This is the result of increased earnings growth expectations by investors since the election of Trump. OSK's current NTM P/E is at 19.9 compared to its five year average of 12.7. I expect the P/E to be stable or rise in the short term, but in the long-term it will fall somewhere between todays NTM P/E of 19.9 and the five year historical average of 12.7.

Figure 28: OSK NTM P/E relative to S&P 500



Source: Factset

Assuming the firm maintains a 19.9 NTM P/E at the end of 2017, it should trade at $72.37 by the end of the year.

I believe that the market is quite optimistic on OSK as it is fairly valued if we use a lofty P/E to value 2018 EPS which already reflects renewed growth.

- Price = P/E x EPS = 19.9 x $3.63 = $72.37

Discounting $72.37 back to today at a 11% cost of equity (explained in Discounted Cash Flow section) yields a price of $65.00. This implies that it is fairly valued if I use an optimistic P/E.

Relative Valuation

Oshkosh Corporation is currently trading at a P/E just above the average and median of its peers, with a P/E TTM of 22.9 compared to an average of 20.0 and a median of 21.5. Investors have been open to paying a greater premium for OSK as both its defense segment and its access equipment segment turn at the same time. OSK's P/B is in line with its competitors and its P/S ratio is greater than its competitors. This is a reflection of OSK's average ROE and above-average net profit margin.

Figure 29: OSK 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	2014	2015	2016	2017	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
OSK	OSHKOSH CORP	$66.57	$4,957	(0.5)	(0.5)	18.2	38.8	76.6	70.5	12.9	15.4%	1.4%	-20.0%	0.0%	9.7%		1.80	41.8%	B	1.11%	26.1%
GD	GENERAL DYNAMICS CORP	$174.10	$53,017	(0.7)	3.4	13.7	24.9	26.1	26.7	7.3	5.9%	11.4%	16.0%	7.8%	2.8%	5.9%	0.84	34.3%	A	1.69%	31.7%
S63-SG	SINGAPORE TECH ENG	$2.27	$7,027	(0.6)	2.2	0.0	5.1	9.7	9.0	4.1		-13.3%	-7.7%	-8.3%	9.1%	1.0%	0.93	47.9%		2.96%	68.1%
064350-KR	HYUNDAI ROTEM CO L	$15.33	$1,303	(0.8)	(5.7)	(9.0)	0.0	18.1	24.9		-114.2%	-110.8%	1605.6%	-108.1%	104.0%		1.31	74.0%		0.00%	
RHM-DE	RHEINMETALL AG	$66.48	$2,896	0.8	(7.0)	0.3	9.7	4.7	3.6	12.3		-38.1%	547.7%	14.0%	20.6%	-1.8%	0.51	54.2%		1.63%	
DE	DEERE & CO	$103.09	$32,666	(0.5)	11.7	24.1	22.6	36.2	35.2	9.5	-7.6%	-5.1%	-33.1%	-16.6%	-7.3%		0.73	364.4%	B+	2.40%	49.9%
TEX	TEREX CORP	$32.15	$3,405	0.7	12.8	32.9	47.1	74.6	74.0	8.8	-15.5%	44.6%	-52.3%	-42.1%	36.4%		1.70	88.0%	B-	0.92%	28.9%
ASTE	ASTEC INDUSTRIES INC	$66.85	$1,540	(1.5)	5.3	14.8	19.6	73.0	64.3	10.0	44.1%	-11.8%	-4.7%	67.6%	22.7%	0.0%	1.38	0.7%	B	0.60%	19.9%
Average			$13,351	(0.4)	2.8	11.9	21.0	39.9	38.5	9.3	-12.0%	-15.2%	256.4%	-10.7%	24.7%	1.3%	1.15	88.2%		1.41%	37.4%
Median			$4,181	(0.6)	2.8	14.3	21.1	31.1	31.0	9.5	-0.9%	-8.4%	-6.2%	-4.2%	15.1%	0.5%	1.12	51.1%		1.37%	30.3%
SPX	S&P 500 INDEX	$2,265		(0.2)	3.0	4.7	8.4	12.1	10.8			7.7%	1.2%	7.6%	12.4%						

Ticker	Website	2015 ROE	P/B	P/E 2013	2014	2015	TTM	NTM	2016	2017E	2015 NPM	2015 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
OSK	http://www.oshkoshcorporation.com	11.0%	2.49	18.4	18.1	22.6	22.9	19.8	22.6	20.6	6.1%	1.39	6.2%	7.8%	12.0			5.5%	0.5%	-3.7%	$26.74
GD	http://www.generaldynamics.com	24.4%	4.68	24.8	22.2	19.2	18.6	17.5	17.8	17.3	8.8%	1.68	13.7%	20.5%	10.9	14.1	11.0	2.4%	2.8%	-0.6%	$37.16
S63-SG	http://www.stengg.com	27.1%	5.14	15.2	17.5	18.9	21.5		20.7	18.9	8.3%	1.57	9.3%	17.0%	18.0	14.5	14.0			1.1%	$0.44
064350-KR		-22.4%	1.12	9.2	-85.2	-5.0	-6.4	45.3	61.3	30.1	-9.2%	0.46	-5.5%	-11.2%	-16.3	-14.3		0.6%		3.6%	$13.73
RHM-DE	http://www.rheinmetall.com	12.0%	1.89	63.3	102.3	15.8	14.4		13.8	11.5	3.3%	0.51	3.0%	7.3%	17.3	5.9	5.8			5.4%	$35.19
DE	http://www.deere.com	24.4%	4.36	11.3	11.9	17.9	21.4	23.2	21.4	23.1	7.1%	1.27		5.0%	20.4	9.0		-13.0%	1.5%		$23.63
TEX	http://www.terex.com	7.4%	1.80	16.7	11.5	24.2	34.4	40.7	41.8	30.6	2.2%	0.52	4.4%	3.9%	8.9	14.0	7.7	-21.2%	2.9%	8.2%	$17.88
ASTE	http://www.astecindustries.com	5.1%	2.39	39.6	44.9	47.1	33.3	23.1	28.1	22.9	3.3%	1.57	7.1%	5.4%	18.7	16.5	11.7	16.6%	9.2%	5.0%	$27.94
Average		11.1%	2.98	24.8	17.9	20.1	20.0	28.3	28.4	21.9	3.7%	1.12	5.5%	7.0%	11.2	8.5	10.0	-1.5%	3.4%	2.7%	
Median		11.5%	2.44	17.5	17.8	19.1	21.5	23.1	22.0	21.8	4.7%	1.33	6.2%	6.4%	14.6	14.0	11.0	1.5%	2.8%	3.6%	

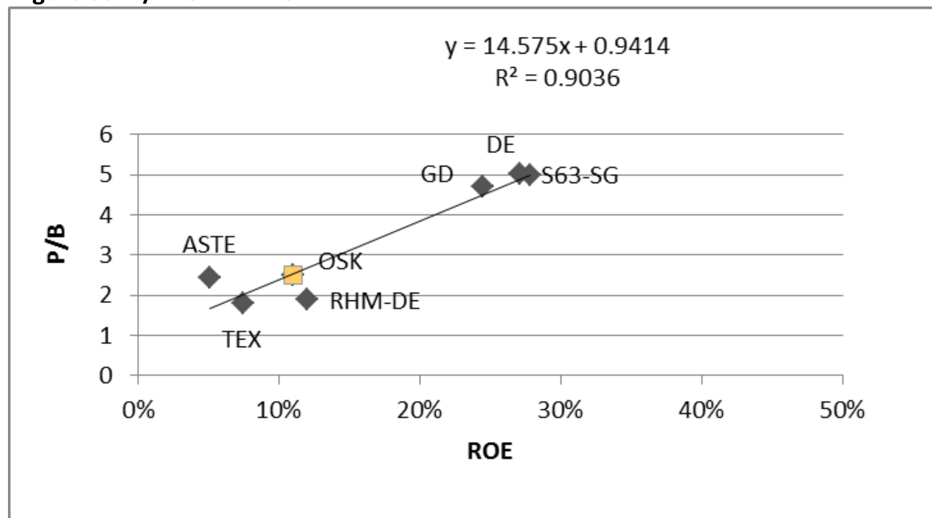
Source: Factset

A more in depth analysis of P/B and ROE is shown in figure 29. The calculated R-squared of the regression indicates that over 90% of a firm's P/B is explained by its 2015 ROE. OSK has an average P/B and ROE among its comparables. According to this, OSK is just slightly undervalued. I believe that this regression is relatively accurate, but undervalues OSK slightly. Hyundai Rotem was removed from this valuation as it has a negative ROE.

- Estimated P/B = Estimated 2017 ROE (11.6%) x 14.575 + (.9414) = 2.63
- Target Price = Estimated P/B (2.63) x 2017E BVPS (27.55) = $72.51

Discounting back to the present at a 11% cost of equity leads to a target price of $65.26 using this metric.

Figure 30: P/B vs NTM ROE



Source: Factset

OSK's BVPS was $26.74 in fiscal year 2016. This is in line with OSK's competitors.

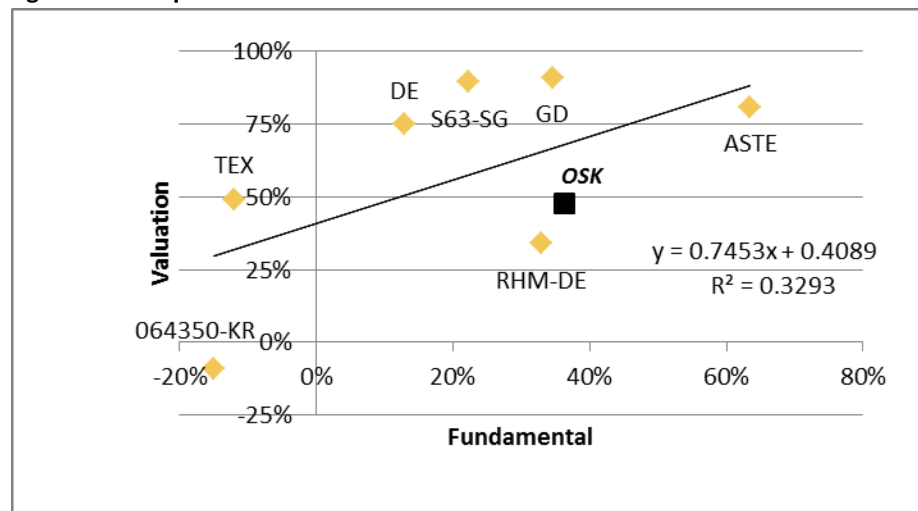
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. An equal weighting of long term growth rate, ROE, 2016 and 2017E earnings growth, and NTM sales growth was compared to an equal weight composite of P/B, P/S and P/CF. The regression line had an R-squared of .33. OSK is below the regression line; it is relatively inexpensive compared to its comparables based on fundamentals.

Figure 31: Composite valuation, % of range

		Fundamental Percent of Max					Valuation				
		20.0%	20.0%	20.0%	20.0%	20.0%	33.3%	33.3%	33.3%		
Ticker	Ticker	LTG	2016 EPS GR	2017 EPS GR	ROE	NTM Sales GR	P/B	P/S	P/CF	Fund	Value
OSK	OSHKOSH CORP	100%	0%	9%	40%	33%	50%	82%	12%	36%	48%
GD	GENERAL DYNAMICS CORP	57%	12%	3%	88%	14%	94%	100%	79%	35%	91%
S63-SG	SINGAPORE TECH ENG	32%	-12%	9%	97%	-14%	100%	91%	78%	22%	89%
064350-KR	HYUNDAI ROTEM CO L	66%	-160%	100%	-80%	-1%	22%	27%	-77%	-15%	-9%
RHM-DE	RHEINMETALL AG	95%	21%	20%	43%	-14%	38%	31%	34%	33%	34%
DE	DEERE & CO	74%	-25%	-7%	100%	-78%	99%	75%	51%	13%	75%
TEX	TEREX CORP	69%	-62%	35%	27%	-128%	36%	31%	81%	-12%	49%
ASTE	ASTEC INDUSTRIES INC	78%	100%	22%	18%	100%	48%	94%	100%	64%	81%

Source: IMCP

Figure 32: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 11.1% 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 2.54%.
- A ten year beta of 1.15 was utilized as it is the average beta of comparables, and the firm is exposed to the economic cycle.

- 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 11.1% (2.54 + 1.15 (10.0 – 2.54)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $5.01 and $1.79, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $5.97 per share. Thus, stage one of this discounted cash flow analysis contributes $5.97 to value.

Stage Two - Stage two of the model focuses on fiscal years 2019 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 11% cost of equity. I assume 5% sales growth in 2019 through 2023 as OSK's markets stabilize and the company maintains stable growth. The ratio of NWC to sales and NFA turnover will remain at 2018 levels. Also, the NOPAT margin is expected to stay the same at 4.4% as OSK will finalize restructuring efforts. Finally, after-tax interest is expected to grow by 5.0% each year as the result of increases in borrowing.

Figure 33: FCFE and discounted FCFE, 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
FCFE	$5.01	$1.79	$1.79	$1.90	$2.01	$2.13	$2.26
Discounted FCFE	$4.51	$1.45	$1.31	$1.25	$1.19	$1.13	$1.08

Added together, these discounted cash flows total $5.95.

Stage Three – Net income for the years 2019 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $3.23 in 2017 to $4.70 in 2023.

Figure 34: EPS estimates for 2017 – 2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$3.23	$3.63	$3.80	$4.01	$4.23	$4.46	$4.70

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. OSK historically trades very closely to the market P/E, but for this case we assume that OSK will trade 1.3x to the market P/E. This is because the company is expected to see improved earnings growth in the coming years. If we assume the market P/E is 17, OSK's P/E will be 20.40 at the end of its terminal year. This P/E may be a bit too high, but investors seem to be enthusiastic about OSK and the firm is currently trading at a high P/E which needs to be taken into account.

Given the assumed terminal earnings per share of $4.70 and a price to earnings ratio of 20.40, a terminal value of $95.95 per share is calculated. Using the 11.1% cost of equity, this number is discounted back to a present value of $45.87.

Total Present Value – Given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $57.79 is calculated (5.97 + 5.95 + 45.87). Given OSK's current price of $66.72, this model indicates that the stock is slightly overvalued.

Scenario Analysis

Oshkosh Corporation is difficult to value because it is difficult to predict U.S. defense spending and hard to predict the housing market that impacts a number of its segments. I valued OSK under twelve scenarios by changing combinations of three key factors.

Sales Growth – Improving growth assumes that OSK is able to continue and even improve its product sales. Sales would grow by 6% each year and exceed 2012 sales levels of $8 billion and almost reach $9 billion by 2023. I give this outcome a 10% probability because of the uncertainties present, especially in the defense segment. Stable growth uses the base case 5% growth, and is given a 50% probability. Weak growth assumes that OSK does not gain as many new defense contracts and access equipment growth is lower. The growth rate is 4%. I give this outcome a 40% probability because defense contracts are uncertain post the presidential election.

EBIT Margin – If OSK improves or maintains its sales growth it will become more efficient and operating expenses will decrease as time goes on. If sales growth is improving or stable, there is a 60% probability that OSK's EBIT margin significantly increases to 7.0% and 8.5% in 2017 and 2018 respectively, and a 40% probability that the margin stays modest at 6% and 6.5% respectively. If there is weak growth, I assign a 50% probability for both significant and modest EBIT cost savings.

Gross Margin – I assume that OSK is either stable and maintains margins (17%) because it has the top products in its industry or it declines and margins decrease (15% and 14% in 2017 and 2018). In times of improving sales growth, I assign a probability of 50% to stable, and 50% to declining margin levels. In times of stable sales growth, I assign a probability of 30% to stable, and 70% to declining margin levels. In times of weak sales growth, I assign a probability 10% to stable, and 70% to declining margin levels. This happens if OSK starts to make shortcuts in production and its products become inferior.

Figure 35: Scenario analysis

Sales Growth	EBIT Margin	Gross Margin	DCF Value	Probablity	Weighted Value
Improving Growth (p=0.1)	Significant (p=0.6)	Stable (p=0.5)	$81.90	3%	**$2.46**
		Declining (p=0.5)	$81.87	3%	**$2.46**
	Modest (p=0.4)	Stable (p=0.5)	$59.27	2%	**$1.19**
		Declining (p=0.5)	$59.23	2%	**$1.18**
Stable Growth (p=0.5)	Significant (p=0.6)	Stable (p=0.3)	$79.58	9%	**$7.16**
		Declining (p=0.7)	$79.55	21%	**$16.71**
	Modest (p=0.4)	Stable (p=0.3)	$57.83	6%	**$3.47**
		Declining (p=0.7)	$57.80	14%	**$8.09**
Weak Growth (p=0.4)	Significant (p=0.5)	Stable (p=0.1)	$77.34	2%	**$1.55**
		Declining (p=0.9)	$77.31	18%	**$13.92**
	Modest (p=0.5)	Stable (p=0.1)	$56.45	2%	**$1.13**
		Declining (p=0.9)	$56.24	18%	**$10.12**
Total of Probability Weighted Values:					$69.43

A value of OSK stock was reached using the same discounted cash flow method outlined in the previous section. Each scenario's value was then multiplied by the scenario's probability to yield a probability-weighted value; the sum of these values is the likely price. This technique results in a target price of $69.43.

One can see from this analysis that OSK is very sensitive to changes in sales growth compared to its sensitivity to gross margin and operating efficiency. OSK struggles when sales growth is depressed. Historically, gross margins have been stable which is good for OSK, and if it maintains a healthy EBIT margin and sees healthy growth, the stock value could increase substantially. If sales do not grow and OSK does not increase efficiency, the firm deserves to be valued much lower.

I recommend paying close attention to OSK's sales growth and operating costs over time. The company can continue to grow in value if sales see growth, but if sales growth is depressed or goes negative, the company will have significant risks.

Business Risks

Even though I am optimistic about Oshkosh Corporation, there are a number of factors that may be causes for concern.

Highly cyclical markets:

In FY 2016, OSK's defense segment made up 21.5% of its sales, and defense sales are a product of U.S. military conflicts. If military conflicts decrease, OSK's defense sales will decline (*Source: OSK 10K 16').*

Tax rates:

Much of OSK's business is dependent on government spending. If federal, state, and local taxes were cut substantially, OSK would be at risk as its defense, commercial, and fire and emergency segment's sales would decrease substantially.

Obtaining and keeping defense contracts:

Obtaining defense contracts is not easy and it is highly competitive. On top of this, OSK cannot guarantee that all contracts will be fulfilled, as the US government can delay the contracts until the contract expires or they can cancel it all together (*Source: OSK 10K 16')*.

Access equipment rental uncertainties:

Construction equipment rental companies are the main buyers of OSK access equipment products, and their business varies with the economy. Thus, OSK's largest business is cyclical (*Source: 10K 16').*

Appendix 1: Sales Forecasts

Sales (Millions)							
Items	**Dec-12**	**Dec-13**	**Dec-14**	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**
Sales	$8,181	$7,665	$6,808	$6,098	$6,279	6,599	$6,707
Growth	*7.9%*	*-6.3%*	*-11.2%*	*-10.4%*	*3.0%*	*5.1%*	*1.6%*
Access Equipment	2,920	3,121	3,507	3,401	3,012	2,802	2,835
Growth		*6.9%*	*12.4%*	*-3.0%*	*-11.4%*	*-7.0%*	*1.2%*
% of sales	*35.7%*	*40.7%*	*51.5%*	*55.8%*	*48.0%*	*42.5%*	*42.3%*
Commercial	697	767	866	978	979	1,004	1,039
Growth		*10.0%*	*12.9%*	*12.9%*	*0.1%*	*2.5%*	*3.5%*
% of sales	*8.5%*	*10.0%*	*12.7%*	*16.0%*	*15.6%*	*2.0%*	*15.5%*
Defense	3,951	3,050	1,725	940	1,351	1,810	1,801
Growth		*-22.8%*	*-43.5%*	*-45.5%*	*43.8%*	*34.0%*	*-0.5%*
% of sales	*48.3%*	*39.8%*	*25.3%*	*15.4%*	*21.5%*	*27.4%*	*26.9%*
Fire and Emergeny	808	792	757	815	953	1,006	1,056
Growth		*-2.0%*	*-4.5%*	*7.7%*	*17.0%*	*5.5%*	*5.0%*
% of sales	*9.9%*	*10.3%*	*11.1%*	*13.4%*	*15.2%*	*15.2%*	*15.7%*
Intersegment eliminations	(195)	(65)	(45)	(35)	(17)	(22)	(24)
Growth		*-66.7%*	*-30.1%*	*-21.7%*	*-52.5%*	*32.0%*	*10.0%*
% of sales	*-2.4%*	*-0.8%*	*-0.7%*	*-0.6%*	*-0.3%*	*-0.3%*	*-0.4%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
United States	6,397	6,035	5,248	4,789	4,757	4,751	4,695
Growth		*-5.7%*	*-13.0%*	*-8.7%*	*-0.7%*	*-0.1%*	*-1.2%*
% of sales	*78.2%*	*78.7%*	*77.1%*	*78.5%*	*75.8%*	*72.0%*	*70.0%*
Other North America	248	235	351	303	220	277	282
Growth		*-5.3%*	*49.3%*	*-13.8%*	*-27.5%*	*26.3%*	*1.6%*
% of sales	*3.0%*	*3.1%*	*5.2%*	*5.0%*	*3.5%*	*4.2%*	*4.2%*
All Other	1,536	1,395	1,209	1,006	1,303	1,571	1,730
Growth		*-9.1%*	*-13.3%*	*-16.8%*	*29.5%*	*20.5%*	*10.2%*
% of sales	*18.8%*	*18.2%*	*17.8%*	*16.5%*	*20.8%*	*23.8%*	*25.8%*

Appendix 2: Income Statement

Income Statements (millions)	2012	2013	2014	2015	2016	2017E	2018E
Sales	$8,181	$7,665	$6,808	$6,098	$6,279	$6,599	$6,707
Direct costs	7190	6473	5626	5059	5223	5477	5567
Gross Margin	991	1192	1183	1039	1056	1122	1140
SG&A, R&D, and other	625	686	679	641	692	726	704
Earnings before Interest and tax	366	506	503	399	364	396	436
Interest	79	61	71	73	57	59	56
Earnings before tax	287	445	432	326	307	337	380
Taxes	57	132	125	99	92	111	125
Income	229	313	307	227	215	226	255
Other	-2	-5	-2	-3	-2	-2	-2
Net income	231	318	309	230	216	228	257
Dividends							
Basic Shares	91.33	87.73	84.12	77.99	73.57	70.71	70.71
Earnings per share	$2.53	$3.62	$3.68	$2.94	$2.94	$3.23	$3.63
Dividends per share	$0.00	$0.00	$0.60	$0.68	$0.76	$0.80	$0.85

Appendix 3: Balance Sheet

Balance Sheets (millions)	2012	2013	2014	2015	2016	2017E	2018E
ASSETS							
Cash	541	734	314	43	322	362	381
Operating assets ex cash	2154	1820	2071	2334	2096	2046	1945
Operating assets	2695	2553	2384	2377	2418	2408	2326
Operating liabilities	1705	1316	1292	1375	1348	1386	1375
NOWC	990	1238	1093	1003	1070	1022	951
NOWC ex cash (NWC)	449	582	779	960	748	660	570
NFA	2253	2212	2202	2176	2096	2056	2274
Invested capital	*$3,243*	*$3,450*	*$3,295*	*$3,178*	*$3,166*	*$3,078*	*$3,224*
Total assets	*$4,948*	*$4,766*	*$4,587*	*$4,553*	*$4,514*	*$4,464*	*$4,599*
LIABILITIES AND SHAREHOLDERS' EQUITY							
Short-term and long-term debt	$955	$955	$895	$928	$846	$826	$811
Other liabilities	435.2	387.2	415.1	339.2	343.5	303.5	268.5
Debt/equity-like securities	0	0	0	0	0	0	0
Equity	1854	2108	1985	1911	1977	1948	2145
Total supplied capital	$3,244	$3,450	$3,295	$3,178	$3,166	$3,078	$3,224
Total liabilities and equity	*$4,948*	*$4,766*	*$4,587*	*$4,553*	*$4,514*	*$4,464*	*$4,599*

Appendix 4: Ratios

Ratios	Sep-12	Sep-13	Sep-14	Sep-15	Sep-16	Sep-17	Sep-18
Profitability							
Gross margin	12.1%	15.5%	17.4%	17.0%	16.8%	17.0%	17.0%
Operating (EBIT) margin	4.5%	6.6%	7.4%	6.5%	5.8%	6.0%	6.5%
Net profit margin	2.8%	4.1%	4.5%	3.8%	3.4%	3.5%	3.8%
Activity							
NFA (gross) turnover		3.43	3.08	2.79	2.94	3.18	3.10
Total asset turnover		1.58	1.46	1.33	1.39	1.47	1.48
Liquidity							
Op asset / op liab	1.58	1.94	1.85	1.73	1.79	1.74	1.69
NOWC Percent of sales		14.5%	17.1%	17.2%	16.5%	15.8%	14.7%
Solvency							
Debt to assets	19.3%	20.0%	19.5%	20.4%	18.7%	18.5%	17.6%
Debt to equity	51.5%	45.3%	45.1%	48.5%	42.8%	42.4%	37.8%
Other liab to assets	8.8%	8.1%	9.1%	7.5%	7.6%	6.8%	5.8%
Total debt to assets	28.1%	28.2%	28.6%	27.8%	26.4%	25.3%	23.5%
Total liabilities to assets	62.5%	55.8%	56.7%	58.0%	56.2%	56.4%	53.4%
Debt to EBIT	2.61	1.89	1.78	2.33	2.32	2.09	1.86
EBIT/interest	4.62	8.33	7.05	5.50	6.39	6.76	7.83
Debt to total net op capital	29.4%	27.7%	27.2%	29.2%	26.7%	26.8%	25.2%
ROIC							
NOPAT to sales		4.6%	5.3%	4.5%	4.1%	4.0%	4.4%
Sales to IC		2.29	2.02	1.88	1.98	2.11	2.13
Total		10.6%	10.6%	8.6%	8.0%	8.5%	9.3%
Total using EOY IC	9.0%	10.3%	10.9%	8.7%	8.0%	8.6%	9.1%
ROE							
5-stage							
EBIT / sales		6.6%	7.4%	6.5%	5.8%	6.0%	6.5%
Sales / avg assets		1.58	1.46	1.33	1.39	1.47	1.48
EBT / EBIT		88.0%	85.8%	81.8%	84.3%	85.2%	87.2%
Net income /EBT		71.5%	71.6%	70.4%	70.5%	67.6%	67.5%
ROA		6.5%	6.6%	5.0%	4.8%	5.1%	5.7%
Avg assets / avg equity		2.45	2.29	2.35	2.33	2.29	2.21
ROE		16.1%	15.1%	11.8%	11.1%	11.6%	12.5%
3-stage							
Net income / sales		4.1%	4.5%	3.8%	3.4%	3.5%	3.8%
Sales / avg assets		1.58	1.46	1.33	1.39	1.47	1.48
ROA		6.5%	6.6%	5.0%	4.8%	5.1%	5.7%
Avg assets / avg equity		2.45	2.29	2.35	2.33	2.29	2.21
ROE		16.1%	15.1%	11.8%	11.1%	11.6%	12.5%
Payout Ratio		0.0%	16.4%	23.1%	25.8%	24.8%	23.4%
Retention Ratio		100.0%	83.6%	76.9%	74.2%	75.2%	76.6%
Sustainable Growth Rate		16.1%	12.6%	9.1%	8.3%	8.7%	9.6%

Appendix 5: Comp Sheet

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	2014	2015	2016	2017	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
OSK	OSHKOSH CORP	$66.72	$4,968	0.6	(4.6)	31.1	37.2	67.1	70.9	12.9	15.4%	1.4%	-20.0%	0.0%	9.7%		1.80	41.8%	B	1.11%	26.1%
GD	GENERAL DYNAMICS CORP	$175.25	$53,367	0.4	2.8	13.9	25.4	25.3	27.6	7.3	5.9%	11.4%	16.0%	7.8%	2.8%		0.84	34.3%	A	1.69%	31.7%
S63-SG	SINGAPORE TECH ENG	$2.22	$6,859	0.0	(1.8)	(2.7)	2.9	5.9	6.6	4.1		-13.3%	-7.7%	-8.3%	9.1%	1.0%	0.93	47.9%		2.96%	68.1%
064350-KR	HYUNDAI ROTEM CO L	$15.30	$1,300	0.8	(4.9)	(9.4)	0.3	18.3	25.6		-114.1%	-110.8%	1605.6%	-108.1%	104.0%		1.31	74.0%		0.00%	
RHM-DE	RHEINMETALL AG	$66.87	$2,913	0.2	(6.3)	(0.2)	8.2	4.5	4.0	12.3		-38.1%	547.7%	14.0%	20.6%	-1.8%	0.51	54.2%		1.63%	
DE	DEERE & CO	$103.12	$32,676	0.0	0.9	23.7	22.3	30.2	35.2	9.5	-7.6%	-5.1%	-33.1%	-16.6%	-7.3%	-6.2%	0.73	364.4%	B+	2.40%	49.9%
TEX	TEREX CORP	$32.25	$3,415	0.8	4.2	40.0	43.4	63.6	74.5	8.8	-15.5%	44.6%	-52.3%	-42.1%	36.4%		1.70	88.0%	B-	0.92%	28.9%
ASTE	ASTEC INDUSTRIES INC	$67.90	$1,565	(0.0)	3.1	17.0	18.8	62.3	66.8	10.0	44.1%	-11.8%	-4.7%	67.6%	22.7%	0.0%	1.38	0.7%	B	0.60%	19.9%
Average			$13,383	0.4	(0.8)	14.2	19.8	34.7	38.9	9.3	-12.0%	-15.2%	256.4%	-10.7%	24.7%	-1.7%	1.15	88.2%		1.41%	37.4%
Median			$4,192	0.3	(0.5)	15.5	20.6	27.7	31.4	9.5	-0.9%	-8.4%	-6.2%	-4.2%	15.1%	-0.9%	1.12	51.1%		1.37%	30.3%
SPX	S&P 500 INDEX	$2,264		0.1	2.7	4.6	7.1	9.7	10.8			7.7%	1.2%	7.6%	12.4%						

Ticker	Website	2015 ROE	P/B	P/E 2013	2014	2015	TTM	NTM	2016	2017E	2015 NPM	2015 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
OSK	http://www.oshkoshcorporation.com	11.0%	2.50	18.4	18.1	22.7	22.9	19.9	22.7	20.7	6.1%	1.39	6.2%	7.8%	12.0			5.5%	0.5%	-3.7%	$26.74
GD	http://www.generaldynamics.com	24.4%	4.72	24.9	22.4	19.3	18.7	17.7	17.9	17.4	8.8%	1.70	13.7%	20.5%	10.9	14.1		2.4%	2.8%		$37.16
S63-SG	http://www.stengg.com	27.1%	5.01	14.8	17.1	18.5	21.0		20.2	18.5	8.3%	1.54	9.3%	17.0%	18.0	13.9	14.0			1.1%	$0.44
064350-KR		-22.4%	1.11	9.2	-85.0	-5.0	-6.4	45.6	61.2	30.0	-9.2%	0.46	-5.5%	-11.2%	-16.3	-13.7		-0.2%		3.6%	$13.73
RHM-DE	http://www.rheinmetall.com	12.0%	1.90	63.7	102.9	15.9	14.5		13.9	11.5	3.3%	0.52	3.0%	7.3%	17.3	6.0	5.8			5.4%	$35.19
DE	http://www.deere.com	27.9%	4.98	11.3	11.9	17.9	21.4	23.2	21.4	23.1	7.1%	1.27	10.8%	5.0%	20.6	9.0		-12.9%	1.5%	-3.7%	$20.71
TEX	http://www.terex.com	7.4%	1.80	16.7	11.6	24.2	34.5	40.8	41.9	30.7	2.2%	0.52	4.4%	3.9%	8.9	14.5	7.7	-21.3%	3.0%	8.2%	$17.88
ASTE	http://www.astecindustries.com	5.1%	2.43	40.2	45.6	47.8	33.8	23.4	28.5	23.3	3.3%	1.59	7.1%	5.4%	18.7	17.9	11.7	16.6%	9.2%	5.0%	$27.94
Average		11.6%	3.06	24.9	18.1	20.2	20.0	28.4	28.5	21.9	3.7%	1.12	6.1%	7.0%	11.2	8.8	9.8	-1.6%	3.4%	2.3%	
Median		11.5%	2.46	17.6	17.6	18.9	21.2	23.3	22.1	21.9	4.7%	1.33	6.7%	6.4%	14.6	13.9	9.7	1.1%	2.8%	3.6%	
spx	S&P 500 INDEX			20.9	19.4	19.2			17.8	15.9											

Appendix 6: 3-stage DCF Model

3 Stage Discounted Cash Flow							
	Year						
	1	2	3	4	5	6	7
First Stage			**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*5.1%*	*1.6%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
NOPAT / S	*4.0%*	*4.4%*	*4.4%*	*4.4%*	*4.4%*	*4.4%*	*4.4%*
S / NWC	*10.00*	*11.76*	*11.76*	*11.76*	*11.76*	*11.76*	*11.76*
S / NFA (EOY)	*3.21*	*2.95*	*2.95*	*2.95*	*2.95*	*2.95*	*2.95*
S / IC (EOY)	*2.43*	*2.36*	*2.36*	*2.36*	*2.36*	*2.36*	*2.36*
ROIC (EOY)	*9.8%*	*10.3%*	*10.3%*	*10.3%*	*10.3%*	*10.3%*	*10.3%*
ROIC (BOY)		*10.8%*	*10.8%*	*10.8%*	*10.8%*	*10.8%*	*10.8%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$6,599	$6,707	$7,042	$7,394	$7,764	$8,152	$8,560
NOPAT	$265	$292	$307	$322	$338	$355	$373
Growth		*10.1%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
- Change in NWC	-88	-90	29	30	31	33	35
NWC EOY	*660*	*570*	*599*	*629*	*660*	*693*	*728*
Growth NWC		*-13.6%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
- Chg NFA	-40	218	114	119	125	132	138
NFA EOY	*2,056*	*2,274*	*2,387*	*2,507*	*2,632*	*2,764*	*2,902*
Growth NFA		*10.6%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
Total inv in op cap	-129	128	142	149	157	165	173
Total net op cap	2716	2844	2986	3135	3292	3456	3629
FCFF	$394	$164	$165	$173	$181	$190	$200
% of sales	*6.0%*	*2.4%*	*2.3%*	*2.3%*	*2.3%*	*2.3%*	*2.3%*
Growth		*-58.3%*	*0.2%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
- Interest (1-tax rate)	39	37	38	38	39	40	40
Growth		*-4.9%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*
FCFE w/o debt	$355	$127	$127	$134	$142	$151	$160
% of sales	*5.4%*	*1.9%*	*1.8%*	*1.8%*	*1.8%*	*1.9%*	*1.9%*
Growth		*-64.2%*	*-0.2%*	*6.0%*	*6.0%*	*6.0%*	*5.9%*
/ No Shares	70.7	70.7	70.7	70.7	70.7	70.7	70.7
FCFE	$5.01	$1.79	$1.79	$1.90	$2.01	$2.13	$2.26
Growth		*-64.2%*	*-0.2%*	*6.0%*	*6.0%*	*6.0%*	*5.9%*
* Discount factor	0.90	0.81	0.73	0.66	0.59	0.53	0.48
Discounted FCFE	$4.51	$1.45	$1.31	$1.25	$1.19	$1.13	$1.08
Third Stage							
Terminal value P/E							
Net income	$228	$257	$269	$284	$299	$315	$333
% of sales	*3.5%*	*3.8%*	*3.8%*	*3.8%*	*3.9%*	*3.9%*	*3.9%*
EPS	$3.23	$3.63	$3.80	$4.01	$4.23	$4.46	$4.70
Growth		*12.6%*	*4.7%*	*5.5%*	*5.5%*	*5.5%*	*5.4%*
Terminal P/E							20.40
* Terminal EPS							$4.70
Terminal value							$95.95
* Discount factor							0.48
Discounted terminal value							$45.87

Summary		
First stage	$5.97	Present value of first 2 year cash flow
Second stage	$5.95	Present value of year 3-7 cash flow
Third stage	$45.87	Present value of terminal value P/E
Value (P/E)	**$57.79**	= value at beg of fiscal yr 2017

Appendix 7: SWOT Analysis

Strengths	Weaknesses
Superior products Brand recognition Market share	Global sales Low ROE Gross margin
Opportunities	**Threats**
International expansion Possible defense contracts Increase in defense spending	Defense contract uncertanties Cost of supplies Interest rate hikes

Appendix 8: Porter's 5 Forces

Threat of New Entrants - Low

There are barriers of entry into the defense industry. The industry has well established defense contractors, but they are not at risk of losing market share. Entrance into the trucks/construction/farm machinery industry is very difficult because of the superior technology of existing firms.

Threat of Substitutes - Medium

The buyers of access equipment products can substitute OSK products with an inferior product, but buyers do not usually compromise on cheaper products.

Supplier Power - High

The parts that OSK uses to produce its products are relatively expensive, and the suppliers to OSK have control over prices. OSK decreases supplier power by buying in bulk, and it is often its own supplier for some segments.

Buyer Power – High

The defense industry is controlled by the buyer. The U.S. government decides how much it pays for the products and the defense contractors are at the will of the government's control over the contracts. The trucks/construction/farm machinery industry has less buyer power than the defense industry as the buyers do not have control over contracts. Also, the industry is more cyclical and this gives more power to the seller.

Intensity of Competition – Very High

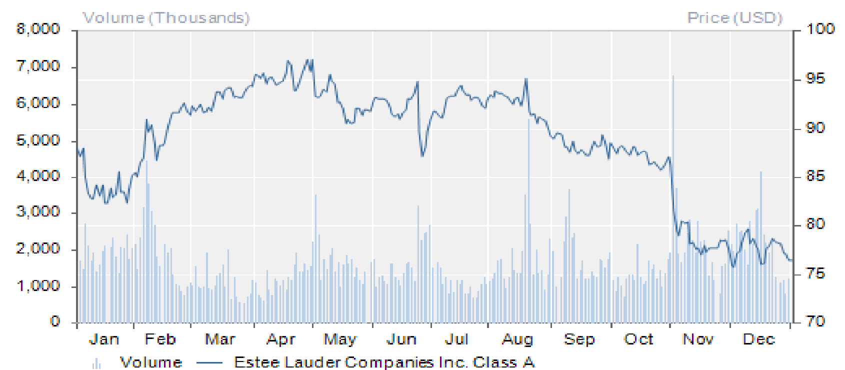
The defense industry is very competitive. Defense contractors are constantly vying for new defense contracts. Competitors will regularly sue for contracts.

Analyst: Karissa Zanoni

Personal Care and Household Products

Estee Lauder

Recommendation	SELL
Target (today's value)	$78
Current Price	$77.26
52 week range	$75.30-$97.48



Share Data	
Ticker:	EL
Market Cap. (Billion):	28.5B
Inside Ownership	1.36%
Inst. Ownership	42.76%
Beta	0.71
Dividend Yield	1.4%
Payout Ratio	41.0%
Cons. Long-Term Growth Rate	11.4%

	'14	'15	'16	'17E	'18E
Sales (billions)					
Year	11.0	10.8	11.3	11.9	12.6
Gr %		-1.7%	4.5%	6.1%	5.1%
Cons				$11.9	$12.6
EPS					
Year	$3.12	$2.87	$3.01	$3.29	$3.59
Gr %		-7.9%	4.9%	9.0%	9.2%
Cons				$3.30	$3.82

Ratio	'14	'15	'16	'17E	'18E
ROE (%)	29%	29%	30%	34%	38%
Industry	6.8%	16.4%	17.0%	26.7%	19%
NPM (%)	10.1%	10.1%	9.9%	10.7%	11%
Industry	5.4%	4.1%	4.3%	8.0%	7.9%
A. T/O	1.34	1.34	1.29	1.22	1.22
ROA (%)	1.04	1.03	1.02	1.02	1.03
Industry	13.5%	13.5%	12.8%	13.1%	13%
A/E	19.9%	21.8%	26.7%		

Valuation	'15	'16	'17E	'18E
P/E	28.0	28.8	26.0	23.9
Industry	37.4	29.2	55.7	26.0
P/S	3.04	3.02	2.53	2.49
P/B	8.5	8.7	7.7	8.1
P/CF	19.0	18.0	42.2	16.6
EV/EBITDA	21.3	21.3	19.3	18.2

Performance	Stock	Industry
1 Month	-1.6%	-1.7%
3 Month	-13.6%	9.4%
YTD	-13.1%	25.4%
52-week	-14.1%	24.7%
3-year	-0.9%	15.1%

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Summary: I calculate a price target of $78, so I recommend a sell. Estee Lauder leads its industry in stable growth and outperformance of the market, but has many risks from operating globally, entering unstable emerging markets, and continued acquisition of new brands. Core business performance is average among peers, although inventory turnover remains a long-term struggle. The stock is fairly valued now, but there are few catalysts to recognize this value.

Key Drivers:

- Emerging Markets: 21% of Estee Lauder's revenue is exposed to emerging markets and their uncertainty. This is an opportunity, but weak economic growth and FX risk limits sales growth potential.
- Distribution Channels: As foot traffic in department stores decreases, Estee Lauder has focused on expanding its exposure to consumers through E&M (mobile devices) commerce as well as through expansion of freestanding stores.
- Translation Exposure: Nearly 60% of revenues come from outside of the US, so a stronger dollar reduced sales by 4.8% and 4.3% in 2015 and 2016, respectively.
- Acquisitions and New Products: To continue competitiveness, Estee Lauder continues to acquire brands and develop new innovative products. In 2016, new products constituted 25% of sales and R&D is growing.
- Competitive Analysis: The competition is strong, but EL is growing faster than the competition.
- Initiatives: Leading Beauty Forward is a restructuring plan aimed to improve operations, saving $300 million per year, but it may cost up to $600 million by 2021.

Valuation: Using a relative valuation approach, Estee Lauder appears to be overvalued in comparison to the household and personal care products industry. DCF analysis yields an $82 target. A combination of the approaches suggests that Estee Lauder is overvalued, as the stock's value is about $78 and the shares trade at $77.26.

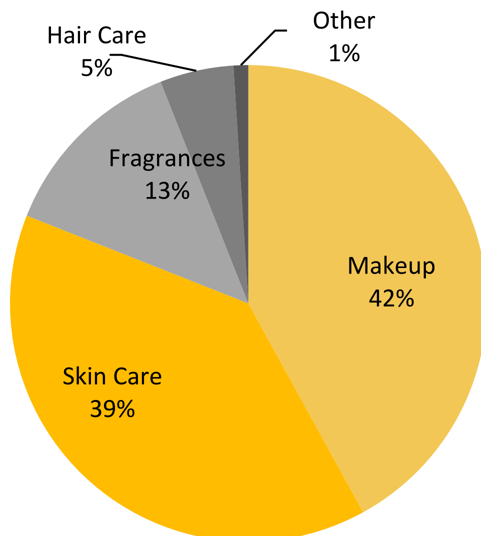
Risks: Business risks include a highly competitive industry, possible inability to anticipate and respond to market trends, general economic downturns, foreign operation risk, the populism movement in Europe, and a possible trade war.

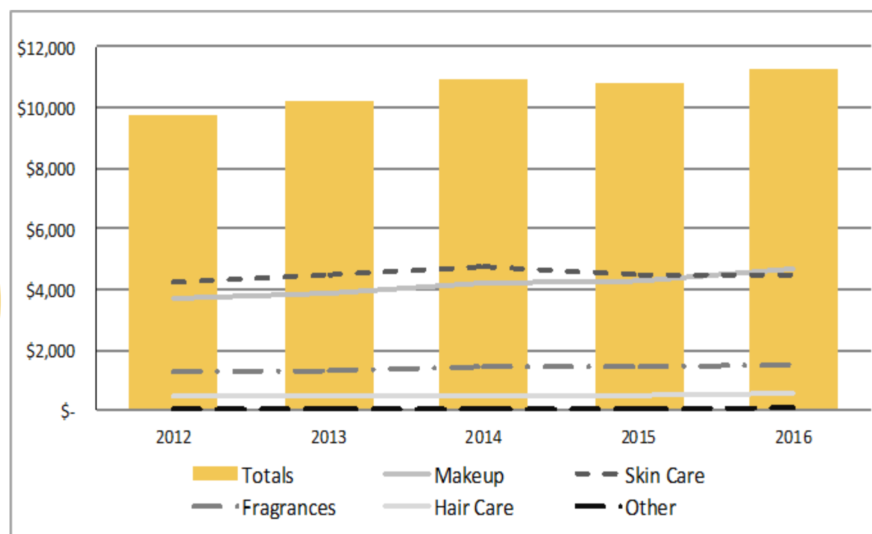
Company Overview

Estee Lauder (EL), established in 1946, is a manufacturer and marketer of personal care products including skin-care, make-up, fragrance and hair care. EL began with a single line of four skin-care products and now contains a product portfolio of twenty-five plus prestige brands. Every brand is unique and high-quality in order to attract a diverse consumer base of both women, particularly Millennials and Gen X, and men of the middle class. Products are priced, on the low end, around $20, to upwards of $3000. EL operates in over 150 countries, with the majority of revenues from the United States, China, Germany and the United Kingdom. Products are distributed through high-end or mid-tier department stores, multi or specialty retail stores, freestanding stores and E&M commerce. EL creates innovative and personalized products in order to adapt to consumer trends and demands.

- **Skin-Care** was the largest net sales segment of EL until the 2016 fiscal year. Large skin care brands held by EL include Clinique, Estee Lauder, La Mer, Origins, GLAMGLOW, and RODIN olio lusso. In order to strengthen skin care product sales, EL will direct attention toward expanding their travel retail locations.
- **Make-up** has grown 10% over fiscal year 2016. EL holds several high-end brands of make-up such as Estee Lauder, Clinique, M•A•C, Smashbox, and Bobbi Brown. These brands are mostly targeted toward Millennials and the incoming Generation X. EL believes this segment has large growth potential in future years, therefore, EL will focus on producing more effective channels for consumers to access. EL will also continue to create personalized products, experiences, and provide services with the company through mobile apps, websites, and up-to-trend products.
- **Fragrances**, over the past five years, have grown about 4% Y/Y in net sales. With continued access to create perfumes under names such as Tommy Hilfiger, DKNY, Donna Karan NY, etc., and holding brands such as Aramis and Ja Malone, EL has a portfolio of fragrances that will continue to attract consumers. In the next fiscal year, EL will focus on expanding Ja Malone due to its success.
- **Hair-Care** contains the competitive brands Aveda and Bumble and bumble. EL sells these products through all channels, including over 9,000 salons and spas. EL will continue hair care growth by releasing new products and distributing products in more regions.
- **Ancillary Services** consistently make up 1% or lower of EL sales.

Figure 1: Revenue sources in millions (left) and Figure 2: Y/Y change (right)





Source: FactSet

Business/Industry Drivers

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

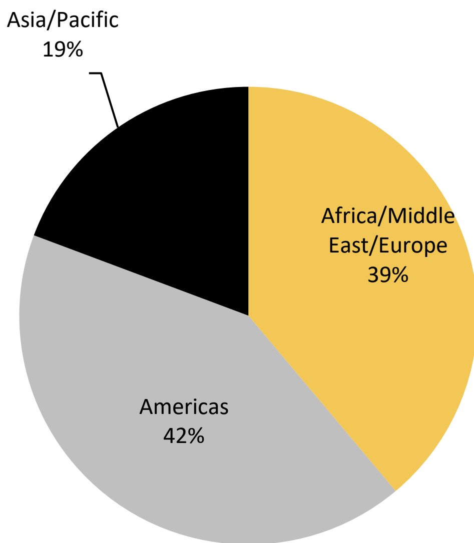
1) Emerging Markets
2) Distribution Channels
3) Translation Exposure
4) Acquisitions and New Products
5) Competition
6) Initiatives: LBF, SMI, GTI

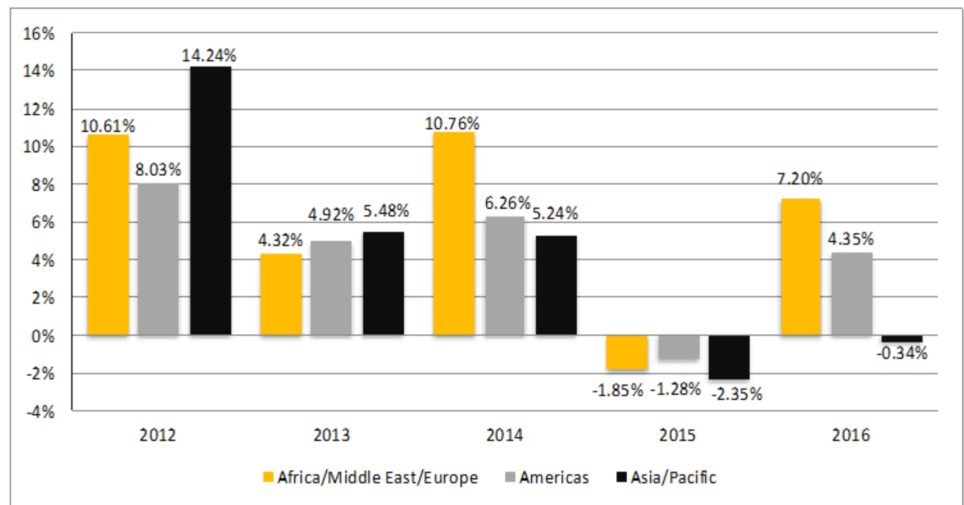
Emerging Markets

Emerging markets for EL grew 15%, but excluding China they grew 25%.

21% of EL's revenue is exposed to emerging markets. There is substantial opportunity to grow in these areas as competition is low and as its large population becomes more affluent, allowing people to buy more cosmetics. Early entry in these markets will enable EL to gain share, brand exposure, and a solid competitive position.EL has had past success entering countries such as Mexico and the United Kingdom, and will continue to look for ways to expand in China, the Middle East, Eastern Europe, Brazil, Russia, India, Mexico, and South Africa. Estee Lauder will most likely focus on expanding the brands Jo Malone, M•A•C, Smashbox, and GLAMGLOW due to their prior success.

Figure 3: 2016 Percentage Net Sales by Region (left), Figure 4: Region Y/Y Growth (right)





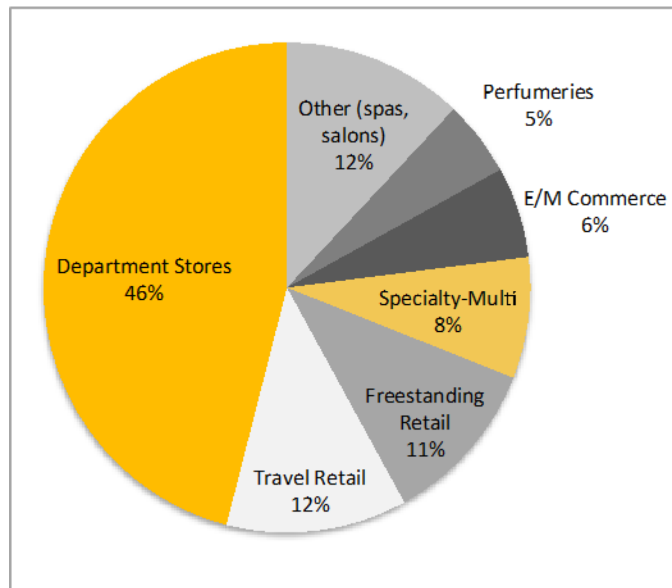
Source: FactSet

The chart above shows recent growth outside the US has been sluggish. This is due to slow economic growth, plus the strong dollar has hurt sales. EL is considered high quality and prestigious, but in a strong dollar environment, consumers may trade-down with personal care products. A survey in China showed that personal care products per household has risen by about 25% ("Chinese Survey Has More Bad News Than Good for Estee Lauder", Jim Swanson). Unfortunately, the survey also discussed that intent to trade up with skin care had declined from 32% in 2015 to 17% in 2016. EL reported that terrorist attacks in Europe limited growth in France. On the other hand, the Middle East experienced high sales growth with the brands Estee Lauder and Smashbox. The heritage brands have done well in these markets; I expect, if marketed properly, newly acquired brands owned by Estee Lauder will also succeed.

Distribution Channels

Estee Lauder distributes its products through high-end and mid-tier department stores, specialty and multi retail stores, freestanding stores, travel retail and E&M commerce. Different channels in different locations are strategically chosen for each brand based targeted consumers. For example, more mature women are inclined to shop at stores like Nordstrom and Boston store, which sell Estee Lauder, Clinique, Bobbi Brown, and Origins products. Millennials and Generation X, on the other hand, are targeted to buy brands like M•A•C, Smashbox, and Bobbi Brown; therefore, EL creates unique freestanding stores that draw in the targeted consumer. EL strategically markets its products in order to maximize profits.

Figure 5: Channels of Distribution



Source: FactSet

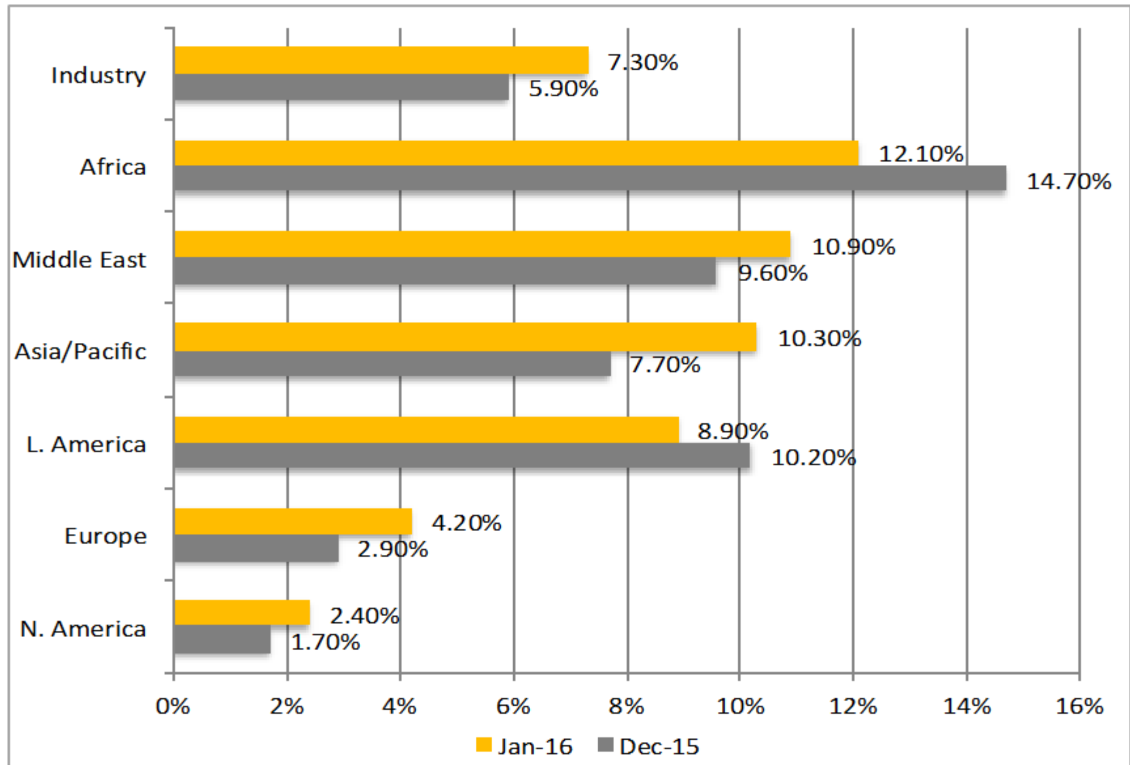
As department store traffic has declined, so have sales. Macy's accounts for 9% of EL's consolidated sales and 12% of EL's accounts receivables. Lower foot traffic from JC Penny and Boston Store is also limiting growth. To maintain sales growth, Estee Lauder is adjusting by finding new ways to market the products sold in department stores. I believe EL will be able to adjust to consumer shopping preferences because it has brands people want, and its products are high-quality and innovative.

Increased Sales in E&M commerce could improve overall margins due to lower SG&A costs associated with this distribution channel.

EL sales are growing from the E&M commerce platform. As the newer generations enter the market, they expect a smooth online and mobile experience. EL reached the $1-billion-mile stone in online sales in fiscal year 2016. I expect online sales to continue to grow due to the accessibility of online-shopping. FY2016 net sales rose 27% in retail e-commerce and brands.

Personal care product companies are looking to increase their profit margin in travel retail which includes airports, airlines, cruises, downtown locations, and border shops. Travel traffic is expected to increase 5% for the next three years. Although the outlook on travel retail is positive, the risks include currency fluctuations and the consumers' willingness to spend while traveling. Companies considering this growth opportunity include Estee Lauder, L'Oréal, Sheisedo, and L'Occitane. EL aims to expand into many different airports and travel locations due to its success in other travel retail locations. Many brands have performed well, but boutique space is limited and there is high competition for personal care companies to obtain this space.

Figure 6: International Passenger Growth by Carrier Region of Registration (% year on year)



Source: IATA.org

Expanding travel retail in Asia, the Middle East, and Europe will help EL growth.

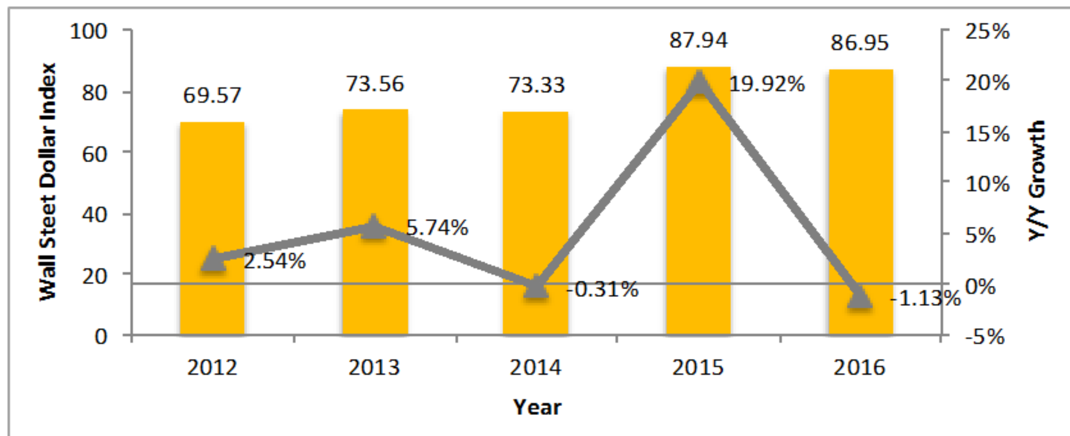
EL is looking to expand more into specialty stores including ULTA, Sephora, and Boots and Douglas. Fragrances and Hair Care have experienced substantial growth, 5.0% and 4.45% respectively, due to more exposure in specialty retailers. In particular, La Mer, Smashbox, Tom Ford, Aveda, and Bumble and bumble have seen substantial growth in these distribution channels.

EL strategically places its freestanding stores to locations where the prestige brands will attract the most consumers. Estee Lauder is not interested in every market, but in places where prestige beauty is in demand. To optimize sales, the stores are created with the culture of its consumers in mind. Estee Lauder plans to add more freestanding stores.

Translation Exposure

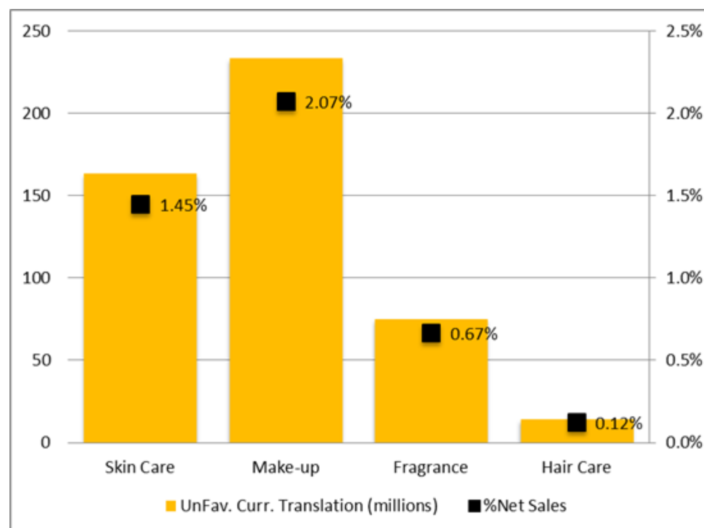
Because EL distributes in over 150 countries, the company inherently has currency translation risk. As discussed in the 10-K, EL translates all assets and liabilities of foreign subsidiaries and affiliates at the year-end rate of exchange, while the revenue and expenses are translated at weighted average rates of exchange for the given period. Current macroeconomic effects have strengthened the dollar and have adversely affected Estee Lauder. A strong dollar makes its products more expensive in foreign countries, which can potentially decrease sales and lowers the amount returned when foreign currencies are exchanged.

Figure 7: Wall Street Dollar Index



Source: Wall Street Journal

Figure 8: 2016 Unfavorable Currency Translation (UCT) and UCT as Percentage of Net Sales



Source: FactSet

The pound and euro are now at a 31-year low and six-year low against the US dollar. In FY2015, countries such as Germany, Italy, and the Iberian Peninsula (Spain, Andorra, Portugal, small portions of France and British owned territories) saw a decline in sales of 2% due to the strong dollar. I believe the continued growing U.S. economy and rise in interest rates in the U.S. will lead to continued negative foreign currency translation effects. Dollar strength resulted in a $485 million loss ($163 from skin care, $233 from makeup, $75 from fragrance and $14 from hair care). I forecast low growth in net sales due to currency translation. I do believe, however, given a constant currency, net sales will continue to grow. Therefore, if the US dollar weakens against the Euro and Pound, this will be very positive for EL.

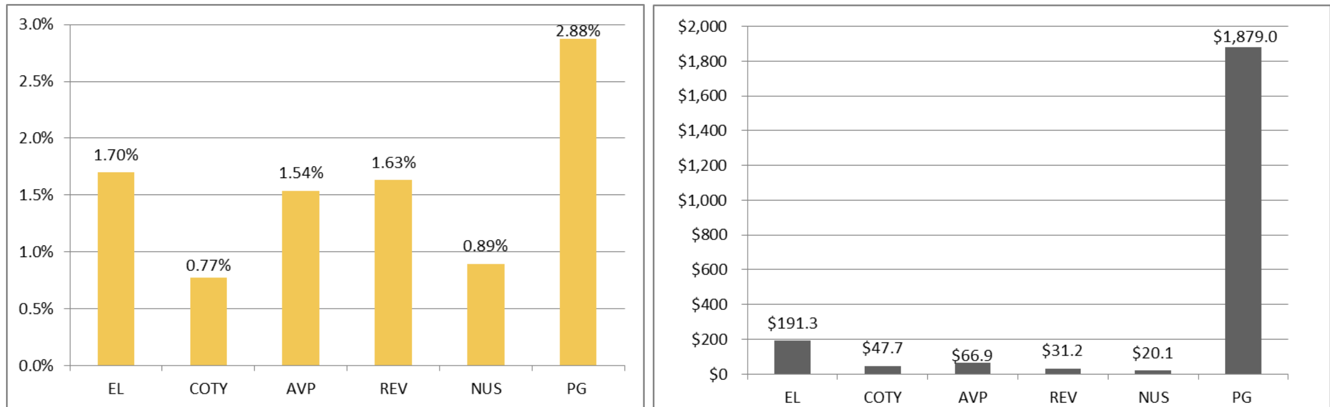
<u>Acquisitions and New Products</u>

EL must keep up to date with makeup trends and skin care formulas to stay competitive in the personal care product industry. New products produce growth and repeat consumer sales, which builds brand loyalty and prestige. EL introduces new products yearly in all of its brands. In FY2016,

new product sales accounted for approximately one-quarter of total net sales. Shown in Figure 9, R&D is rising quicker than sales as the firm commits more to innovation.

The firm is also growing though acquisitions. In 2015, the firm acquired Editions de Parums Frederic Malle and GLAMGLOW, and in 2016, By Kilian. GLAMGLOW and RODIN olio lusso, categorized in skin care, added $108 million in net sales during fiscal 2016.

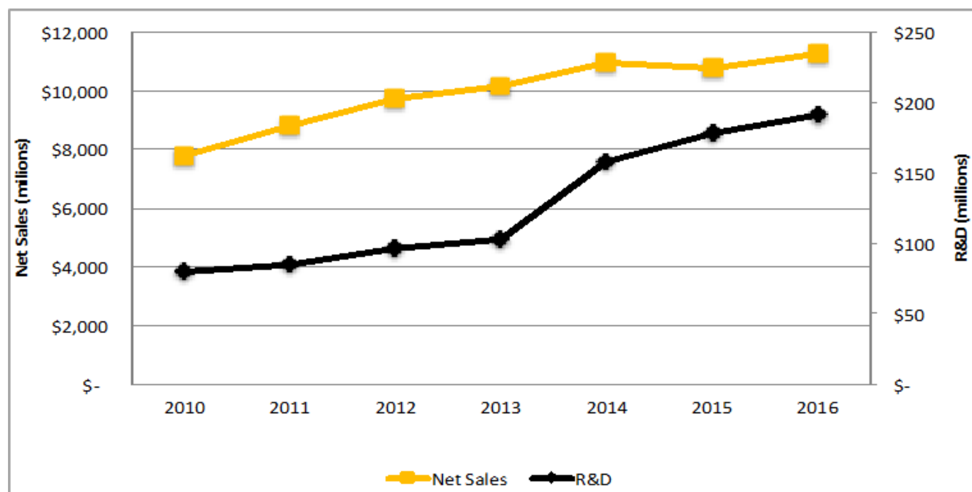
Figure 9: R&D Expenses as a Percent of Sales (left) Figure 10: R&D Expenses in Millions (right)



Source: FactSet

Figure 11: R&D Expenses and Net Sales

EL has a high R&D expense as a percent of sales, right behind PG.

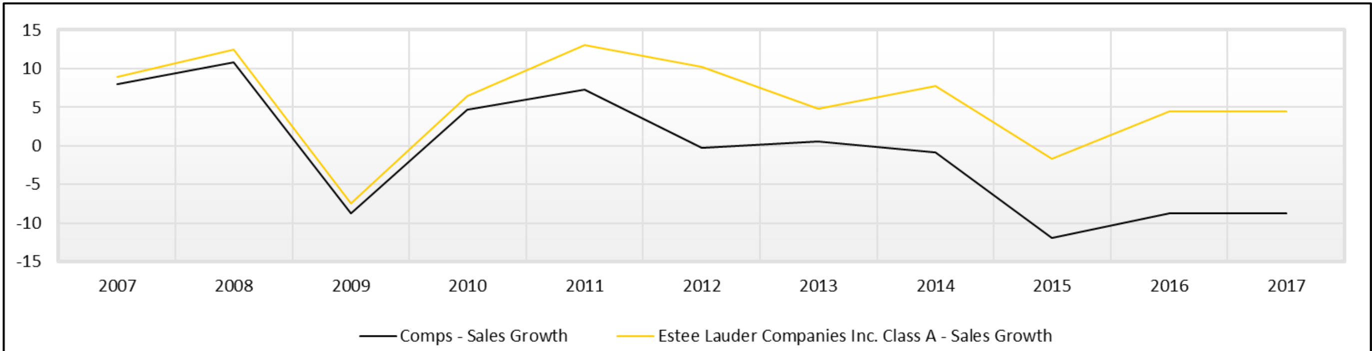


Source: FactSet

Competition

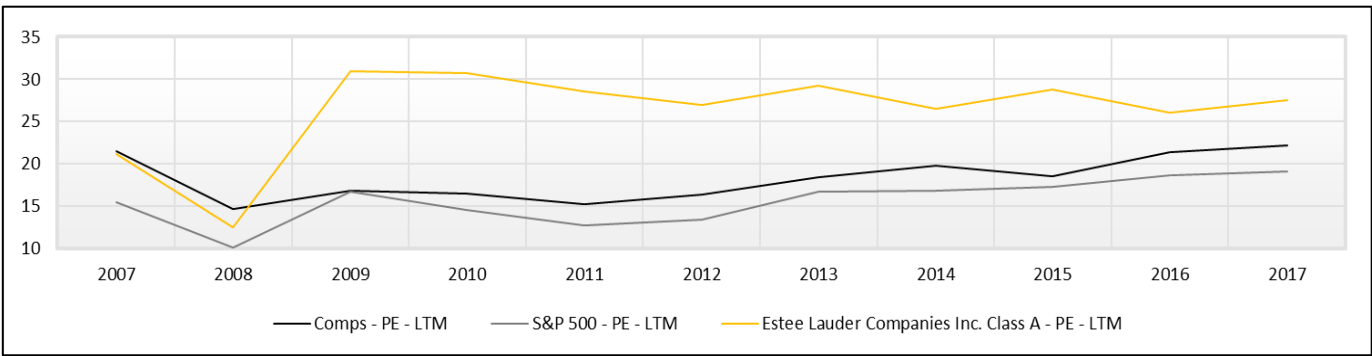
Estee Lauder has grown sales at about 7%, which is above the industry average. Competitors include big brand names such as Avon, Coty, Inter Parfums, Revlon, Nu Skin Enterprises, Procter & Gamble, and Shiseido. Personal care and beauty items are becoming increasingly popular among consumers with demand expected to increase between 3.5% and 4.5% globally over the next five years. The market for these products attracts consumers of all different types, which makes a company with a versatile portfolio of products successful. EL has maintained its competitive advantage by continuing to acquire new brands to expand, adjusting to consumer shopping preferences, and using social media to advertise. EL's above-average growth has also led it to have an above average P/E.

Figure 12: EL vs. Competitors – Sales



Source: FactSet

Figure 13: EL vs. Competitors vs. SP500 –PE-LTM

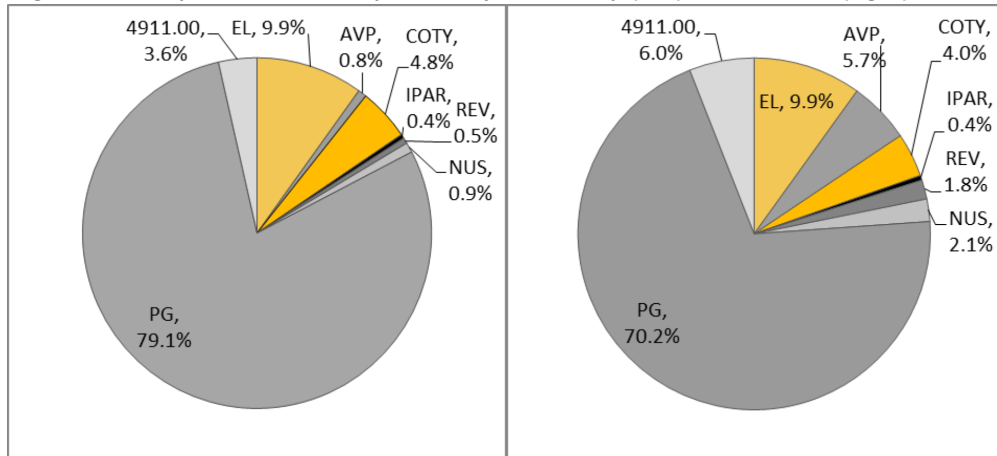


EL continues to outperform its industry and competitors.

Proctor and Gamble is by far the largest company in the household and personal care industry. Unlike EL, it has access to a larger consumer base because it distributes more types of products. The other brands are less versatile, focusing mainly on makeup, haircare, fragrance and/or skincare. Although personal care products are mostly interchangable, consumers often continue to buy their favorite products. Companies in the skin care industry must create quality products in order to build brand awareness and brand loyalty.

Companies in the Comps_EL composite include PG, AVP, COTY, NUS, REV, IPAR, 4911 (Shiseido), and EL.

Figure 14: Comparison of EL competitors by market cap (left) and net sales (right)



Source: FactSet

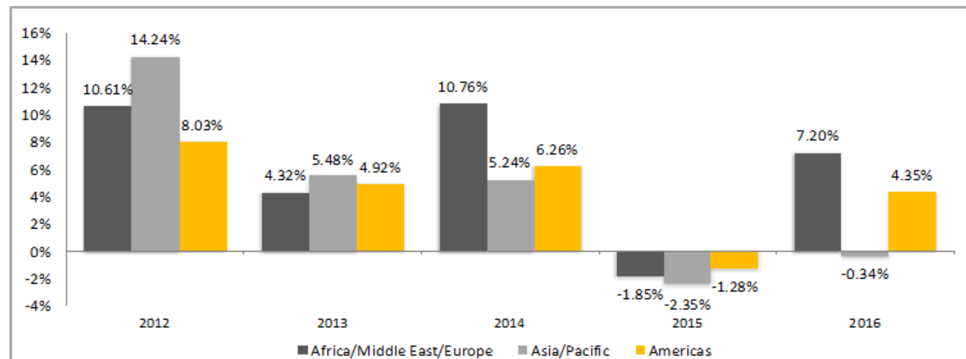
Initiatives

The Leading Beauty Forward (LBF) initative, instituted May 3, 2016, is a plan to optimize the following: corporate functions, supply chain operations, and region market support structures. It also will focus on discontinuing business pertaining to underperforming products, freestanding stores, and other inefficiencies. EL does not expect net benefits from this initiative until after FY2017.

2017Q1 will begin by expensing roughly $35 to $45 million to this process. By 2021, Leading Beauty Forward will cost anywhere between $500 and $600 million. Once FY2018 begins, the Leading Beauty Forward initiative should begin annualizing net benefits. These net benefits, at their maximum before 2021, will save EL between $200-$300 million annually. With the estimated EL's tax rate of 28% and number of shares at roughly 350 million, this cost translates to adding a value of $0.50/share. With these savings, EL plans to reinvest or distribute this savings to its shareholders.

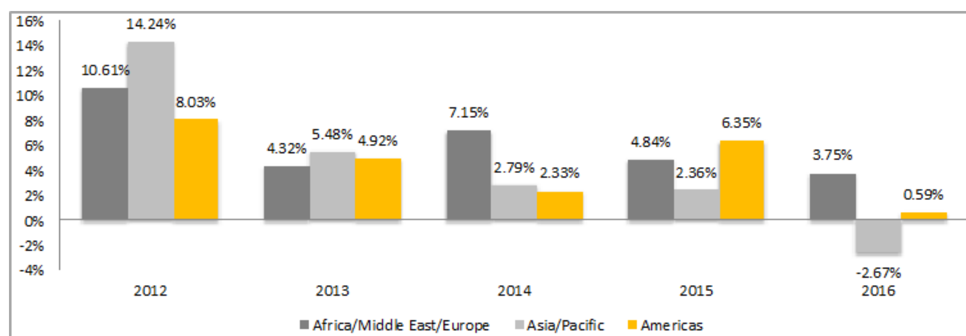
In the past, EL has had other initiatives to cut back costs, grow net sales, and improve the company structure. These initiatives include the Global Technology Infrastructure (GTI) restructuring and the Strategic Modernization Initiative (SMI). Net sales in fiscal year 2015 was negatively effected due to the impact of accelerated orders in 2014 due to SMI rollout. Therefore, FY2014 net sales were overestimated, FY2015 net sales were underestimated, and net sales were overestimated in FY2016.

Figure 15: Y/Y growth



Source: FactSet

Figure 16: Y/Y growth adjusted for SMI rollout

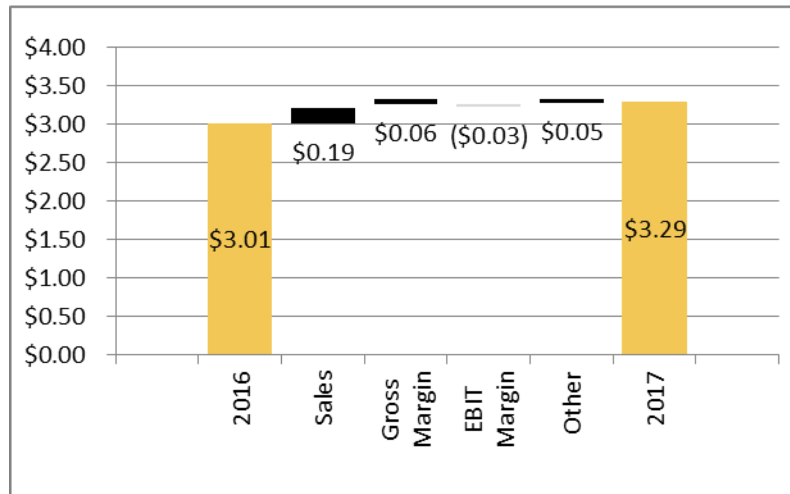


Source: FactSet

Financial Analysis

I expect the EPS for Estee Lauder to be $3.29 for the FY2017. I expect Estee Lauder to achieve a $0.19 positive impact on EPS from sales growth of 6.1%, slightly higher than consensus, to $11.9B. Sales growth will be driven by acquisitions of new brands, expanding EL's market exposure and creating opportunities to introduce newly acquired brands into emerging markets. I expect direct costs to remain relatively similar, allowing the growth in sales to ensure a growth in gross margin, positively impacting EPS by $0.06. Share buybacks will offset higher interest and lead to a $0.05 increase in EPS, while the EBIT margin will suffer slightly, from higher R&D as a percent of sales dragging EPS down by $0.03.

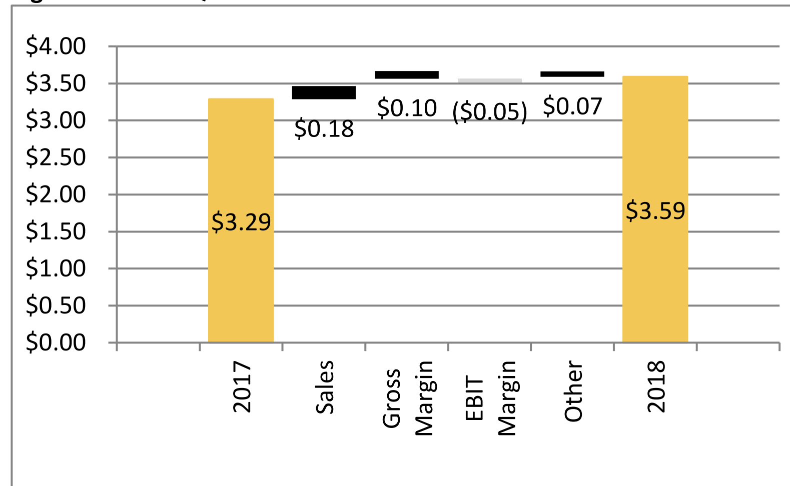
Figure 17: 2017 Quantification of Drivers



Source: FactSet

I anticipate FY2018 EPS will grow $0.30 to $3.59. Again, I expect an increase in sales due to newly acquired companies as well as expansion into new markets for both the older and newer brands. I also believe there will be an increase in sales from EL's ability to anticipate consumer demands and create products in line with trends. The effect on EPS from the sales growth will be $0.18, and a higher gross margin will positively affects EPS by $0.10. Share buybacks again, more than offset higher interest expense and add $0.07 to EPS. Higher marketing costs and R&D limits expansion and hurts EPS by $0.05.

Figure 18: 2018 Quantification of Drivers



Source: FactSet

My sales estimate for 2017 is slightly higher than consensus. I believe the makeup segment will see 7.2% growth, largely due to the acquistions of Too Faced and Becca. I believe EL will continue in strong sales growth in 2018, although my outlook is slightly bearish in comparison to consensus. EL's management believes they can produce 6-8% growth in 2017, so I am also bearish verses management. I believe my estimation is more reasonable rather than the high end 8.0% due to economic conditions.

EL's management expects to achieve 6-8% growth in FY2017.

Figure 19: Estimated Revenues vs. Consensus

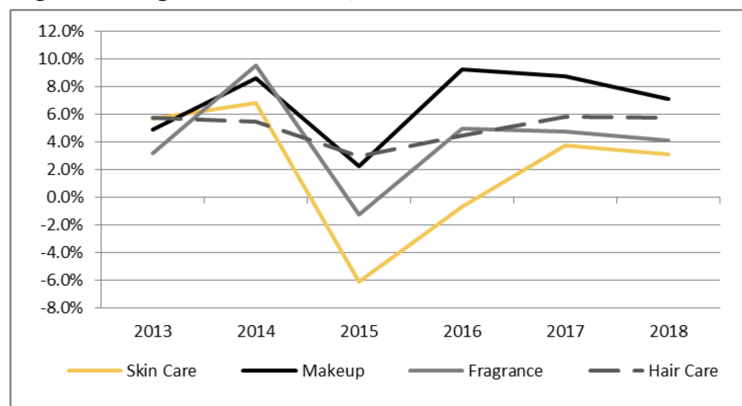
	FY 2017 E	FY 2018E
Revenue - Estimated	$11,944	$12,551
Y/Y growth	6.1%	5.1%
Revenue - Consensus	$11,877	$12,626
Y/Y growth	5.5%	6.3%
EPS - Estimate	$3.29	$3.59
Y/Y growth	9.3%	8.8%
EPS - Consensus	3.30	$3.82
Y/Y growth	9.6%	15.8%

Source: Factset, IMCP

Revenues

Estee Lauder continues to lead the personal care and household products industry in sales growth. I expect EL will continue to focus on sales in the makeup category. I believe Estee Lauder will achieve makeup sales growth of 8.7% and 7.1% in 2017 and 2018, respectively. The company will achieve this growth through expansion of its products in new markets, particularly emerging markets, and continue acquisitions as the company sees fit. The acquisitions of TooFaced and Becca will increase sales in the makeup segment of EL. Department store decline in foot traffic is a threat to growth and EL plans to adjust accordingly. This decline in traffic has affected sales in M●A●C, Estee Lauder, and Clinique, mostly taking place in the skin care segment. EL will maintain its competitiveness by deploying and retracting freestanding stores, as well as by creating effective strategies for E&M commerce. I expect a decline in freestanding MAC stores, while other brands such as Smashbox will expand. I also expect the skin care segment to recover due to expansion in specialty retail with growth of 3.7% and 3.1% in 2017 and 2018, respectively.

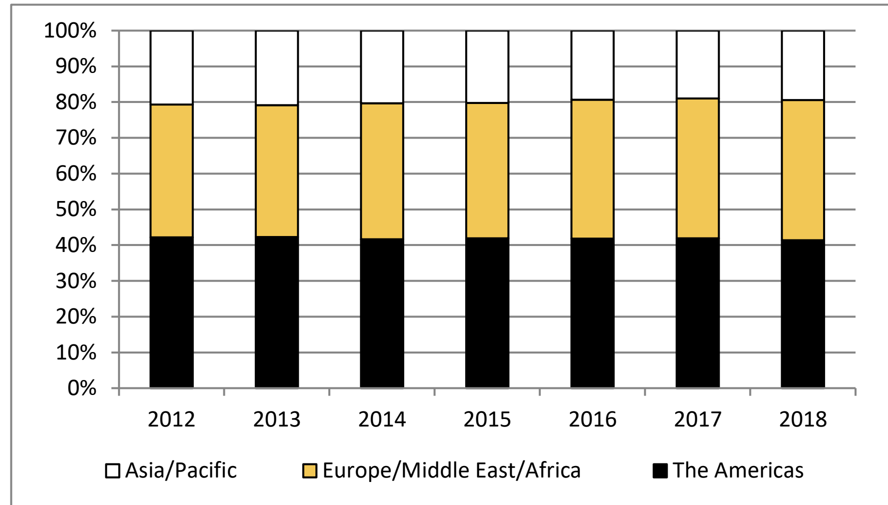
Figure 20: Segment Revenue Y/Y Growth



Source: FactSet

Much of Estee Lauder's sales are obtained from outside the US; therefore, it is essential outside economies remain strong for EL to continue growth. I anticipate sales outside the US to remain difficult to maintain due to geopolitical and economic issues continuing in Europe, the Middle East and Asia. Although there are concerns in these areas, travel retail is expected to grow and EL is expanding travel retail exposure; therefore, I anticipate that Europe and the Middle East will capture a slightly larger proportion of EL's total revenue.

Figure 21: Percentage of Total Sales by Region



Source: FactSet

As the dollar strengthens against other currencies, costs to open stores abroad have decreased. Although this has its advantages, prices of products from the EL brands will be viewed as expensive and could deter consumers from choosing the brand's products. I expect this effect will be most prominent in Asia.

Operating Expenses and Drivers of Growth

Operating expenses consist of research and development, selling, general and administrative expenses, and shipping and handling. I expect Estee Lauder to continue utilizing and exploring strategies to minimize these costs. EL has been successful and consistently diminishing the costs of SG&A and shipping and handling relative to the total operating expenses. I expect this trend to continue because EL holds brands that focus on digital and social media advertisement, which is much less expensive than print and television and therefore increases sales margins.

EL R&D costs have consistently risen the past five years. The Leading Beauty Forward (LBF) initiative was created to leverage EL's cost structure and free resources to invest in future growth, furthering go-to-market capabilities and margin progress. I believe these expenses will continue to rise as they have in the past until 2021, when benefits of LBF are expected to take place. LBF will also be responsible for a net reduction of 900-1,200 positions, 2.5% of EL workforce globally including elimination of positions, retraining, and redeployment of certain employees. I expect SG&A expenses to decrease while these changes take place.

EL redistributes many of its brands through different means and shifts depending on the performance in specific channels, brands, and regions. EL plans to close several freestanding stores which will result in inventory write-offs and a reduction of workforce. The company also plans to exit certain brands from mid-tier department stores, redirecting them through different channels to improve profitability and margins. Other consequences of these actions will be a number of product returns, accelerated depreciation, and termination of contracts.

EL's operating margin is large for its industry, but has been falling the past few years.

Figure 22: Operating Expenses

All Values in Millions	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jul-18
Sales	$ 9,714	$ 10,182	$ 10,969	$ 10,780	$ 11,262	$ 11,944	$ 12,551
Growth		*4.82%*	*7.73%*	*-1.72%*	*4.47%*	*6.05%*	*5.08%*
Direct costs	1,996	2,026	2,158	2,101	2,181	2,281	2,347
Gross Profit	$ 7,718	$ 8,156	$ 8,811	$ 8,680	$ 9,081	$ 9,662	$ 10,204
Gross Margin		*80.10%*	*80.32%*	*80.51%*	*80.63%*	*80.90%*	*81.30%*
Operating Expeses							
R&D	$ 97	$ 104	$ 158	$ 178	$ 191	$ 206	$ 233
SG&A	2,656	2,798	2,840	2,772	2,821	2,915	2,947
Shipping&Handling	312	338	374	364	363	366	373
Other	3,321	3,344	3,594	3,732	4,065	4,421	4,780
Total Operating Expenses	$ 6,385	$ 6,584	$ 6,966	$ 7,045	$ 7,440	$ 7,907	$ 8,334
Growth		*3.11%*	*5.81%*	*1.14%*	*5.60%*	*6.28%*	*5.40%*
EBIT (operating income)	$ 1,333	$ 1,572	$ 1,845	$ 1,635	$ 1,642	$ 1,756	$ 1,870
EBIT Margin		*15.44%*	*16.82%*	*15.17%*	*14.58%*	*14.70%*	*14.90%*
Growth analysis	**Jun-12**	**Jun-13**	**Jun-14**	**Jun-15**	**Jun-16**	**Jun-17**	**Jul-18**
R&D		7.36%	52.41%	12.79%	7.41%	7.52%	13.45%
SG&A		5.36%	1.50%	-2.41%	1.78%	3.33%	1.11%
Shipping&Handling		8.16%	10.57%	-2.68%	-0.28%	0.83%	1.98%
Other		0.71%	7.48%	3.82%	8.93%	8.75%	8.14%
Same Size analysis	**Jun-12**	**Jun-13**	**Jun-14**	**Jun-15**	**Jun-16**	**Jun-17**	**Jul-18**
R&D	1.51%	1.57%	2.27%	2.53%	2.57%	2.60%	2.80%
SG&A	41.59%	42.50%	40.77%	39.34%	37.91%	36.86%	35.36%
Shipping&Handling	4.89%	5.13%	5.36%	5.16%	4.87%	4.62%	4.47%
Other	52.00%	50.79%	51.60%	52.97%	54.64%	55.91%	57.36%

Source: FactSet

Inventory

Compared to its competitors, EL manages its inventory poorly, with an average inventory turnover over the past 6 years of 1.88 and average days in inventory of 194. The figures below were calculated as COGS/average inventory over a span of 6 years. Costs of keeping inventory impact expenses, yet EL has not managed to adjust inventory to consumer demand. In fact, EL's inventory turnover has plummeted from 2.11 in 2009, to 1.76 in 2016.[1] I am not aware of any attempt by EL to more effectively control inventory and believe this cost will continue to negatively impact operating expenses.

Figure 23: Inventory

	Avg inventory turnover	Avg days in inventory
LAUDER (ESTEE) COS INC -CL A	1.88	194
AVON PRODUCTS	3.58	102
COTY INC	3.28	111
INTER PARFUMS INC	1.79	204
REVLON INC -CL A	4.04	90
NU SKIN ENTERPRISES -CL A	2.22	164
PROCTER & GAMBLE CO	6.06	60
SHISEIDO CO LTD	2.24	163
Average	3.14	136

Source: FactSet, GuruFocus.com

[1] See Appendix 9 for EL inventory turnover by year bar graph.

Return on Equity

Estee Lauder has a high return on equity in comparison to its competitors. I expect it to increase to 38.06% by fiscal year 2018 as profit margin (margins due to initiatives) and leverage rises (debt is rising and equity falls due to share buybacks).

Figure 24: 5-Stage DuPont

5-Stage DuPont ROE	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jul-18
EBIT / sales	15.4%	16.8%	15.2%	14.6%	14.7%	14.9%
Sales / avg assets	1.48	1.46	1.34	1.29	1.26	1.27
EBT / EBIT	95.3%	96.3%	95.5%	94.7%	93.8%	93.3%
Net income /EBT	68.1%	67.8%	69.8%	71.7%	71.8%	71.8%
ROA	14.8%	16.0%	13.5%	12.8%	12.5%	12.7%
Avg assets / avg equity	2.27	2.09	2.14	2.41	2.70	3.00
ROE	33.7%	33.6%	28.9%	30.8%	33.8%	38.1%

Source: FactSet

Free Cash Flow

EL continues to produce positive FCFF. FCFF will rise substantially in 2017 as the firm slows long-term asset growth to $300 million from $950 million the year before and as NOPAT rises 7%. Continued moderate capital growth and NOPAT pushes FCFF to above $1 billion in 2018. Share purchases are about $900 million and dividends are over $400 million, so the firm needs to raise debt to distribute this cash. Historically, in 2015 FCFF fell due to a small drop in sales, associated NOPAT, and because EL purchased short and long term investment with available cash, significantly decreasing the cash account.

Figure 25: Free Cash Flow without Cash and Debt

Free Cash Flow (without cash and debt)	2012	2013	2014	2015	2016	2017E	2018E
NOPAT	$ 913	$ 1,099	$ 1,255	$ 1,145	$ 1,183	$ 1,265	$ 1,348
Growth		20.3%	14.3%	-8.8%	3.3%	7.0%	6.5%
NWC	$ 601	$ 885	$ 1,158	$ 559	$ 493	$ 523	$ 549
Net fixed assets	$ 2,738	$ 2,848	$ 3,044	$ 4,043	$ 4,998	$ 5,301	$ 5,570
Total net operating capital	$ 3,339	$ 3,733	$ 4,201	$ 4,602	$ 5,491	$ 5,823	$ 6,119
Growth		11.8%	12.5%	9.5%	19.3%	6.1%	5.1%
- Change in NWC		$ 285	$ 273	$ (599)	$ (66)	$ 30	$ 27
- Change in NFA		$ 110	$ 196	$ 1,000	$ 955	$ 302	$ 269
FCFF		$ 704	$ 787	$ 745	$ 294	$ 933	$ 1,052
Growth			11.8%	-5.4%	-60.6%	217.5%	12.7%
- After-tax interest expense	$ 42	$ 52	$ 46	$ 52	$ 62	$ 79	$ 91
FCFE		$ 652	$ 741	$ 693	$ 232	$ 855	$ 961
Growth			13.6%	-6.5%	-66.6%	268.8%	12.5%
FCFF per share		1.82	2.04	1.96	0.79	2.59	3.01
Growth			12.2%	-3.6%	-59.6%	226.6%	16.2%
FCFE per share		1.68	1.92	1.83	0.63	2.38	2.75
Growth			14.0%	-4.8%	-65.7%	279.4%	15.9%

Source: FactSet

Valuation

EL was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is overpriced in comparison to its peers and is worth $78. Relative valuation shows EL to be overvalued based on fundamentals versus those of its peers in the household and personal care products industry. Price to book valuation yielded a price of $61. A detailed DCF analysis values EL at $82 in opposition of the other valuation methods used. I place more weight on DCF in relation to the other valuation methods because it considers EL's buyback program and improving operations. With a 20% weight on the earnings multiple valuation and relative valuation, and a 60% weight on the DCF, I conclude that EL is valued at $78.

Trading History

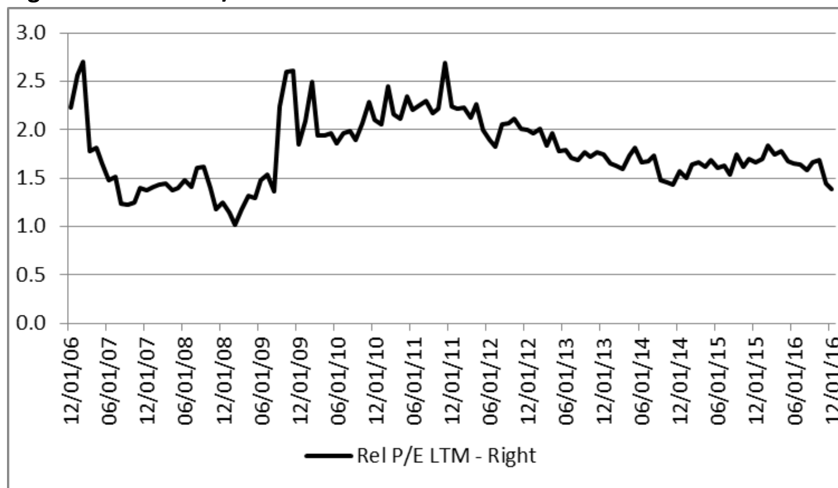
EL's price dropped to $77.26 from the year high at $97.48. EL dropped 8.1% and quickly recovered due to the Brexit vote in June, then continued in a negative trend, substantially dropping 9.3% Oct 31-Nov 4 due to missed revenue expectations. Over the past ten years, Estee Lauder's P/E has traded at a higher P/E relative to the S&P 500, but it has been decreasing relatively to S&P 500 for the past 5 years. EL's current NTM P/E is at 22.1 which is less than its five year average of 23.9. I believe EL's P/E will continue to decrease over time.

Assuming the firm maintains a 22.1 NTM P/E at the end of 2017, it should trade at $79.34

- Price=P/E x EPS = 22.1 x $3.59 = $79.34

The target price for 2017 using the NTM P/E multiple is $79.34. I expect sales to grow moderately and margins to expand due to completion of initiatives in coming years, and these benefits will not be realized by 2018, so this value could be low.

Figure 26: EL LTM P/E Relative to S&P 500



Source: FactSet

Relative Valuation[2]

Estee Lauder TTM P/E is 26.4, above the industry average P/E multiple of 19.3, excluding an outlier P/E (COTY). Due to Estee Lauder's historical above average growth, investors are willing to pay higher multiple for EL's earnings. I expect this to decrease in the future years as growth will be

[2] See Appendix 5 for Competitors Table

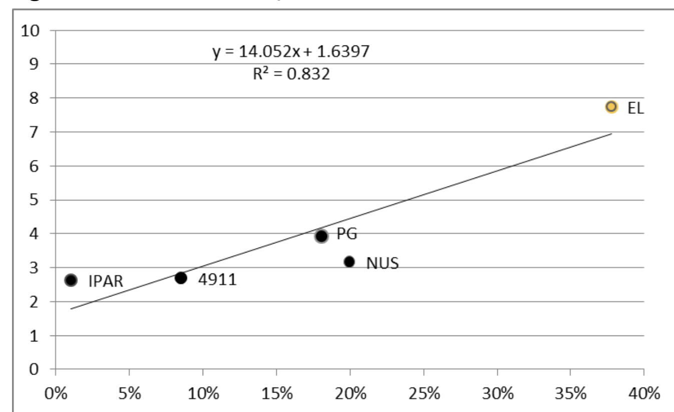
difficult to maintain at past rates (5-yr EPS growth rate: $49.24%). EL also has P/B value of 7.74 which is over double the peer average of 2.15 (excluding COTY) and a P/S multiple of 2.5, which is 25% higher than its peer group average of 2.02.

A more thorough analysis of P/B and NTM ROE is shown in figure 27. The calculated R-squared of the regression indicates that over 83.2% of a sampled firm's P/B is explained by its 2016 NTM ROE. Note that Revlon, Avon and Coty all have NTM ROE and P/B values that are extreme outliers and therefore have been removed from the graph. EL has the largest P/B value and NTM ROE, which somewhat justifies the P/B, but the company is still overvalued.

- Estimated P/B = Estimated 2017 ROE (38%) x 14.052 + 1.6397 = 6.98
- Target Price = Estimated P/B (6.98) x 2017E BVPS ($9.48) = $66.17

The target price for 2017 is $66.17 using this metric.[3]

Figure 27: NTM ROE v. P/B



Source: FactSet

Figure 28: Composite relative valuation, % of range

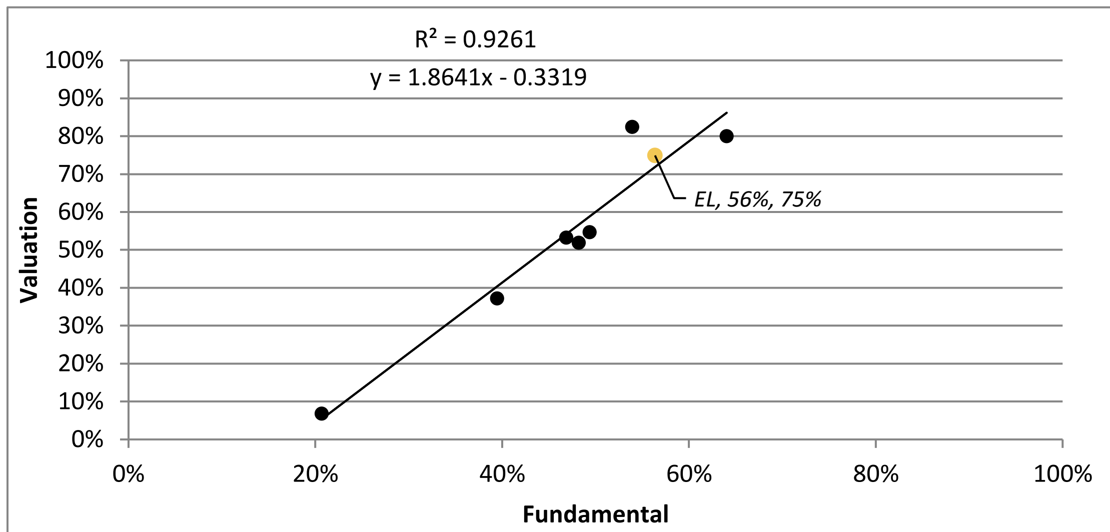
		Fundamentals					Valuation					
	Weight	4.0%	9.0%	15.0%	47%	25.0%	13.0%	7%	50%	30%		
Ticker	Name	2016 Earning Growth	1/(LTD/ Equity)	1/ Payout	2016 NPM	Sales Growth STM	P/E TTM	P/B	P/S	EV/ EBIT	Weighted Fund	Weighted Value
EL	LAUDER (ESTEE) COS INC -CL A	1%	31%	52%	44%	100%	68%	100%	73%	76%	56%	75%
AVP	AVON PRODUCTS	100%	-6%	52%	4%	30%	-68%	-37%	11%	42%	21%	7%
COTY	COTY INC	3%	1%	4%	100%	65%	16%	32%	91%	100%	64%	80%
IPAR	INTER PARFUMS INC	1%	100%	37%	28%	86%	85%	34%	58%	41%	49%	55%
REV	REVLON INC -CL A	0%	-3%	52%	52%	65%	100%	-36%	56%	45%	48%	52%
NUS	NU SKIN ENTERPRISES -CL A	0%	38%	37%	30%	65%	50%	41%	34%	36%	39%	37%
PG	PROCTER & GAMBLE CO	-1%	48%	29%	64%	61%	60%	51%	100%	70%	54%	82%
4911	SHISEIDO CO LTD	0%	91%	100%	16%	65%	52%	41%	40%	78%	47%	53%

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. Weightings of 4% 2016 earnings growth, 9% 1/(LTD/Equity), 15% 1/Payout, 47% 2016 NPM and 25% STM sales growth were compared to a composite of 13% TTM P/E, 7% P/B, 50% P/S and 30% EV/EBIT. The regression line had an R-squared of 0.92. One can see that EL is above the line, so it is considered slightly expensive based on its fundamentals.

[3] See Appendix 7 for NTM ROE and P/B table

Figure 29: Composite Valuation



Source: FactSet

Discounted Cash Flow Analysis[4]

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

For the purpose of this analysis, the company's cost of equity was calculated to be 6.99% 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 2.44%.
- A ten year beta of 0.75 will be used because Estee Lauder is more stable than the market. The peer beta average is 0.74, excluding an outlier (Avon).
- A long term market rate of return of 8.5% was assumed, since historically, the market has generated an annual return of about 8.5%.

Given the above assumptions, the cost of equity is 6.99% (2.44 + 0.75 (8.5 – 2.44)).

Stage One - The model's first stage simply discounts fiscal years 2017 and 2018 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $2.38 and $2.75, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $4.63 per share. Thus, stage one of this discounted cash flow analysis contributes $4.63 ($2.22+$2.41) to value.

Figure 30: FCFE and discounted FCFE for 2017-2023

	2017	2018	2019	2020	2021	2022	2023
FCFE	$ 2.38	$ 2.75	$ 3.14	$ 3.51	$ 3.09	$ 3.75	$ 4.24
Discounted FCFE	$2.22	$2.41	$2.56	$2.68	$2.20	$2.50	$2.64

Source: FactSet

Stage Two - Stage two of the model focuses on fiscal years 2019 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 6.99% cost of equity. I expect growth in sales to

[4] See Appendix 9 for in-depth 3-stage DCF table

decline in 2019-2020 due to continued difficult economic conditions, with the strength of the dollar and geopolitical issues continuing in many nations. In 2021, I expect growth to rise to 7.0% due to benefits of initiatives, expansion of brands, possible acquisitions, and development of new product. I expect EL to continue decreasing shares through share buybacks of roughly 2.0% per year. As expenses fall from EL initiative, I anticipate a growing profit margin, leading NOPAT/S to increase to 11.1% by 2023 from 10.75% in 2018. I expect net working capital and net fixed assets to rise with sales.

Added together, the 2019-2023 discounted cash flows total $12.58.

Figure 31: EPS for 2017-2023

	2017	2018	2019	2020	2021	2022	2023
EPS	$ 3.29	$ 3.59	$ 3.85	$ 4.08	$ 4.48	$ 4.84	$ 5.17
Growth		*9.2%*	*7.3%*	*5.9%*	*10.0%*	*7.9%*	*6.9%*

Source: FactSet

Stage Three – Net income for the years 2017 – 2023 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $3.29 in 2017 to $5.17 in 2023.

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 S&P 500. Therefore, a P/E ratio of 20 is assumed at the end of EL's terminal year. I believe this multiple is reasonable because EL has been a high growth company for the past 10 years, rarely seeing much downturn. Also, the average P/E among EL's peers is 27 (excluding Avon, an outlier) which is strong, but as the economy is growing I expect company's P/E and the industry P/E to decrease overall. Also, I believe EL's sales growth will slow, resulting in a lower P/E value in year 7 than the TTM P/E of 26.4.

Given the assumed terminal earnings per share of $5.17 and a price to earnings ratio of 20, a terminal value of $103.4 per share is calculated. Using the 6.99% cost of equity, this number is discounted back to a present value of $64.45.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $81.66 is calculated (4.63 + 12.58 + 64.66). Given EL's current price of $77.26, this model indicates that the stock is slightly undervalued.

Scenario Analysis

Estee Lauder is difficult to value with certainty because customers can change purchase location preferences, new products may be developed and gain share, and discretionary income changes with the economy. Also, acquisitions have risk and there is pressure to create profitable and go-to-market ventures for each different brand. EL's ability to globally manufacture and market each brand successfully depends on great execution of their plans and stable economic and political conditions of each country. The following discussion uses the DCF framework above to determine the value under bull and bear case scenarios.

Sales Growth (Base Case: 6.1% and 5.1% in 2017 and 2018 respectively):

I expect a **bull case** scenario to result in sales growth of 8.0% and 8.4% in 2017 and 2018, respectively. I anticipate sales to dramatically escalate in skin care, a segment Estee Lauder has been struggling to grow. I believe it is possible for this growth because EL has accepted that high-end and mid-tier department store distribution customers are declining and is dramatically adjusting distribution channels for affected brands. EL is largely increasing its

presence in specialty multi-retailers, which customers prefer as a place where they can find new products and all their favorite personal care products in one spot, easing the customer experience.

I expect a **bear case** scenario to result in sales growth of 4.0% and 4.1% in 2017 and 2018, respectively. I don't believe EL will miss out on the opportunity to grow makeup due to its acquisitions of TooFaced and BECCA in 2016. MAC has had difficulty in growing revenue, but EL is taking action to correct the profitability of MAC by discontinuing certain freestanding stores and allocating savings to distribute products through different channels. In this scenario, I expect sales in skin care to continue to slow, and EL would not be successful expanding travel retail and specialty retail.

Bear Case: 5% chance

Bull Case: 10% chance

Figure 32: Scenario Analysis

	2017E		2018E	
	Bull Case	**Bear Case**	**Bull Case**	**Bear Case**
Sales	$12,167	$11,708	$13,191	$12,189
Growth	*8.0%*	*4.0%*	*8.4%*	*4.1%*
Segments				
Skin Care	4,713	4,491	4,996	4,545
Growth	*6.0%*	*1.0%*	*6.0%*	*1.2%*
Makeup	5,173	5,032	5,742	5,389
Growth	*10.0%*	*7.0%*	*11.0%*	*7.1%*
Fragrance	1,606	1,531	1,726	1,577
Growth	*8.0%*	*3.0%*	*7.5%*	*3.0%*
Hair Care	599	580	646	602
Growth	*8.0%*	*4.6%*	*8.0%*	*3.8%*
Other	77	75	81	77
Growth	*6.0%*	*3.0%*	*5.0%*	*2.5%*

Source: FactSet

Gross Margins (Base Case: 80.9% and 81.3% in 2017 and 2018, respectively):

I expect in a **bull case** scenario that gross margins will be 81.0% and 81.5% for 2017 and 2018, respectively. I believe these are reasonable estimates because margins have improved over the last few years and are close to the base case. In a bull case scenario, they will be able to profit more by reducing direct costs and will have less need for discounting products to compete.

I expect in a **bear case** scenario that gross margins will be 80.5% and 80.6% for 2017 and 2018, respectively. I believe gross margins will be similar to values of prior years and that direct costs will not increase to the point of threatening the margin. Further, this scenario anticipates more pressure on prices by consumer choices of substitute brands. Recall that Chinese customers are less likely to trade up to EL's brands than in the past.

Operating Efficiency (Base Case: EBIT margin of 14.7% and 14.9% in 2017 and 2018, respectively): I believe operating efficiency should remain relatively near the base case, as EL remains focused on implementing its initiatives to improve operations, profitability and margins.

In a **bull case** scenario, I expect the EBIT margin to be 15.5% and 16.0% for 2017 and 2018, respectively. This is an extra 0.7% and 0.9% improvement on top of my bull gross margin scenarios for 2017 and 2018, respectively. These are reasonable estimates because operating margins continue to be a priority of EL's initiatives. Although EL has struggled to improve its EBIT margin, I believe achieving a 15.5% operating margin is possible if R&D costs per sales decrease. Also, EL has consistently decreased SG&A and shipping and

handling expenses relative to sales and I anticipate this is something they will continue to achieve.

In a **bear case** scenario, I expect the EBIT margin to be 14.2% and 14.0% for 2017 and 2018, respectively. These are reasonable estimates because operating margins have decreased the past few years, and in a bear case, I believe this trend will continue. Costs for forgoing initiatives could have been underestimate and R&D costs could increase to create new products.

Valuation[5]:

In a **bull case** scenario, DCF analysis yields a value of $108.71 in 2017. This DCF case assumes that buybacks will reduce 3% of shares every year and growth will be, on average, 6% per year in stage 2. Due to past performance, I believe this scenario has a 10% chance of happening. I also adjusted the terminal P/E to 22 from 20 in the base case scenario. I believe this scenario is more likely than the bear scenario. EL's initiatives and movements of brands to different channels will likely be successful.

I expect EL's valuation to fall between the base and bull case.

In a **bear case** scenario, DCF analysis implies a value of $60.82. This DCF case assumes that buybacks will be smaller at 0.5% of shares. I also lowered the terminal P/E to 17 and projected an average sales growth of 4.0%. I believe this scenario is very unlikely and the valuation is too low to be considered seriously. I believe this scenario has a 5% chance of taking place.

Business Risks

Some of the following risks can be found in the 10-k of Estee Lauder (FY2016). I chose risks I found most noteworthy and important to discuss, due to being either very prominent or showing the most potential downfall if the risk were to occur.

Populism Movement in Europe

As votes continue to take place in the nations of Europe, threats to the fallout of ECB become more serious. As EL participates largely in operations among many of these countries, the company is likely to be affected. Operations could become more expensive as more currencies emerge, possibly heightening the currency exchange rate risk EL faces already.

Possible Trade War

Currently, much is being discussed politically in the US to re-establish production and manufacturing domestically. EL runs its operations worldwide which will expose it to regulations, if any, are made during the next presidential term. I expect it will be important to view the taxes and tariffs that will affect businesses such as EL to proficiently evaluate their financial health.

Highly Competitive Industry

The Personal care product industry is highly competitive, with bargaining power highly with the consumer. Companies that wish to succeed must keep up with trends to maintain their profit margin incase competition drives prices down. The ability of Estee Lauder to compete depends on the continued strength of its brands, the ability to attract and retain key talent and other personnel, the efficiency of its manufacturing facilities and distribution network,

[5] *View Appendix 6&7 for more in-depth Base-Bull-Bear case views of 3 stage DCF and 2017-2023 EPS*

and the ability to maintain and protect the intellectual property and the rights used in the business *(EL Company Filings, 10-k, pg 14).*

Anticipation and Response to Market Trends

To remain profitable, Estee Lauder must anticipate market trends and react in a timely and cost-effective manner. They must maintain and adapt their "High-Touch" services while consumer preferences in shopping platform changes to a more digitalized forum. This is significantly more challenging due to the increased use of digital and social media where the speed of consumer opinions is rapidly shared *(EL Company Filings, 10-k, pg 14).*

Acquisition Risk

Although acquisitions bring many benefits to the company, there are some costs that must be considered. These include: difficulties in integrating acquired operations or products, including the loss of key employees from, or customers of, acquired businesses; diversion of management's attention from the existing businesses; adverse effects on existing business relationships with suppliers and customers; adverse impacts of margin and product cost structures different from those of EL's current mix of business; and risk of entering distribution channels, categories or markets in which they have limited or no prior experience *(EL Company Filings, 10-k, pg 15).*

General Economic Downturn

Estee Lauder's profits, although considered consumer staples and relatively stable, tend to decline when recessionary periods occur. With lower disposable income, consumers lean toward substitutes that are cheaper. If the economic downturn were to cause liquidation of a major retailer, where EL sells a substantial number of products, the firm may incur additional costs *(EL Company Filings, 10-k, pg 15).*

Foreign Operation Risk

The majority of 2016 net sales and operating income were generated outside the US. With foreign operations, come risks that include: fluctuations in foreign currency exchange rates and the relative costs of operations, prices, and cost of inventory in different places; foreign laws, regulations and policies, including restrictions on trade, import and export license requirements, and tariffs and taxes, as well as United States laws and regulations relating to foreign trade, operations and investment; lack of well-established or reliable legal and administrative systems in certain countries; and adverse weather conditions, currency exchange controls, and social, economic and geopolitical conditions, such as terrorist attacks, war or other military actions *(EL Company Filings, 10-k, pg 17).*

Recommendation Disclaimers

I recommend EL as a sell and a value of $78 through multiple valuation techniques to the best of my ability. After careful consideration of values such as terminal P/E, sales growth, and industry beta I used my discretion to best imply what I believe the market will dictate for Estee Lauder's future. Although I have completed thorough research of the company and its industry, it is not possible to process information that is not made known for investors or to predict future political issues, economic downturns, natural disasters, or other unpredictable events. This is one of the reasons I have provided bull, base, and bear scenarios.

My recommendation of a sell could be incorrect as EL management is strong and the firm has opportunity for growth. Buying EL at its current price is a viable option. Although I expect a lower P/E moving forward, EL has a high P/E in comparison to its peers and could

continue in this trend. This could mean EL's terminal value would be higher and therefore a buy today may be a good deal.

One should also consider the bear case scenario. If movement into the specialty retail, travel retail, and freestanding store distribution channels are slow, EL could lose out on much of the market share and sales opportunity. This would worsen inventory conditions and heighten costs throughout the business.

Appendix 1: Sales Forecast 2017 & 2018

Sales	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18
Items							
Sales	$9,716	$10,183	$10,979	$10,780	$11,262	11,944	12,551
Growth		*4.8%*	*7.8%*	*-1.8%*	*4.5%*	*6.1%*	*5.1%*
Skin Care	4,225	4,465	4,770	4,479	4,446	4,612	4,755
Growth		*5.7%*	*6.8%*	*-6.1%*	*-0.7%*	*3.7%*	*3.1%*
% of sales	*43.5%*	*43.8%*	*43.4%*	*41.5%*	*39.5%*	*38.6%*	*37.9%*
Makeup	3,697	3,877	4,210	4,305	4,703	5,113	5,476
Growth		*4.9%*	*8.6%*	*2.2%*	*9.2%*	*8.7%*	*7.1%*
% of sales	*38.0%*	*38.1%*	*38.3%*	*39.9%*	*41.8%*	*42.8%*	*43.6%*
Fragrance	1,271	1,311	1,435	1,416	1,487	1,557	1,621
Growth		*3.1%*	*9.5%*	*-1.3%*	*5.0%*	*4.7%*	*4.1%*
% of sales	*13.1%*	*12.9%*	*13.1%*	*13.1%*	*13.2%*	*13.0%*	*6.0%*
Hair Care	462	489	516	531	554	586	620
Growth		*5.7%*	*5.5%*	*2.9%*	*4.4%*	*5.8%*	*5.7%*
% of sales	*4.8%*	*4.8%*	*4.7%*	*4.9%*	*4.9%*	*4.9%*	*4.9%*
Other	60	41	48	50	73	76	80
Growth		*-31.5%*	*16.5%*	*4.2%*	*10.2%*	*5.0%*	*5.0%*
% of sales	*0.6%*	*0.4%*	*0.4%*	*0.5%*	*0.6%*	*0.6%*	*0.6%*
Total	100.0%	100.0%	99.9%	99.8%	100.0%	100.0%	100.0%
The Americas	4,101	4,303	4,572	4,514	4,710	5,007	5,199
Growth		*4.9%*	*6.3%*	*-1.3%*	*4.4%*	*6.3%*	*3.8%*
% of sales	*42.2%*	*42.3%*	*41.6%*	*41.9%*	*41.8%*	*41.9%*	*41.4%*
Europe/Middle East/Africa	3,603	3,759	4,164	4,068	4,381	4,670	4,920
Growth		*4.3%*	*10.8%*	*-2.3%*	*7.7%*	*6.6%*	*5.4%*
% of sales	*37.1%*	*36.9%*	*37.9%*	*37.7%*	*38.9%*	*39.1%*	*39.2%*
Asia/Pacific	2,011	2,122	2,233	2,180	2,173	2,268	2,434
Growth		*5.5%*	*5.2%*	*-2.4%*	*-0.3%*	*4.4%*	*7.3%*
% of sales	*20.7%*	*20.8%*	*20.3%*	*20.2%*	*19.3%*	*19.0%*	*19.4%*

Appendix 2: Income Statement

	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jul-18
Income Statement							
Sales	$9,714	$10,182	$10,969	$10,780	$11,262	$11,944	$12,551
Direct costs	1,996	2,026	2,158	2,101	2,181	2,281	2,347
Gross Margin	7,718	8,156	8,811	8,680	9,081	9,662	10,204
SG&A, R&D, and other	6,385	6,584	6,966	7,045	7,440	7,907	8,334
EBIT	1,333	1,572	1,845	1,635	1,642	1,756	1,870
Interest	61	74	68	74	86	109	126
EBT	1,272	1,498	1,777	1,561	1,555	1,647	1,744
Taxes	401	451	568	467	434	460	487
Income	871	1,047	1,209	1,093	1,121	1,187	1,257
Other	14	27	5	5	6	5	5
Net income	857	1,020	1,204	1,089	1,115	1,182	1,252
Basic Shares	389	388	386	379	370	360	349
EPS	$2.20	$2.63	$3.12	$2.87	$3.01	$3.29	$3.59
DPS	$0.52	$1.08	$0.78	$0.92	$1.14	$1.31	$1.55

Appendix 3: Balance Sheet

	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jul-18
Balance Sheet 1							
Cash	1,348	1,496	1,629	1,021	914	904	807
Operating assets ex cash	2,507	2,802	3,196	2,659	2,842	3,014	3,167
Operating assets	3,855	4,297	4,825	3,680	3,756	3,918	3,974
Operating liabilities	$1,907	$1,916	$2,038	2,100	2,349	2,491	2,618
NOWC	1,948	2,381	2,787	1,580	1,407	1,427	1,356
NOWC ex cash (NWC)	601	885	1,158	559	493	523	549
NFA	2,738	2,848	3,044	4,043	4,998	5,301	5,570
Invested capital	*$4,686*	*$5,229*	*$5,831*	*$5,623*	*$6,405*	*$6,727*	*$6,926*
Marketable securities	-	-	-	504	469	469	469
Total assets	*$6,593*	*$7,145*	*$7,869*	*$8,227*	*$9,223*	*$9,688*	*$10,013*
Short-term and long-term debt	$1,288	$1,344	$1,343	$1,625	$2,242	$2,642	$2,992
Other liabilities	651	583	618	848	1,046	1,144	1,243
Equity	2,748	3,302	3,869	3,654	3,587	3,411	3,161
Total supplied capital	*$4,686*	*$5,229*	*$5,831*	*$6,127*	*$6,874*	*$7,197*	*$7,395*
Total liabilities and equity	*$6,593*	*$7,145*	*$7,869*	*$8,227*	*$9,223*	*$9,688*	*$10,013*

Appendix 4: Balance Sheet II

Balance Sheet (in millions)					
Items	2012	2013	2014	2015	2016
Assets					
Current Assets					
Cash and cash equivalents	1,348	1,496	1,629	1,021	914
Short-term investments	0	0	0	504	469
Accounts receivables, net	1,060	1,172	1,379	1,175	1,258
Inventroy and promotional merchandise, net	984	1,114	1,294	1,216	1,263
Prepaid expenses and ther current assets	464	516	523	268	320
Total current assets	3,855	4,297	4,825	4,184	4,225
Property, Plant and Equipment, net	1,232	1,351	1,503	1,409	1,583
Other Assets					
Long-term investments	0	0	0	420	1,108
Goodwill	883	882	893	1,145	1,228
Other intangible assets, net	190	170	157	327	345
Other assets	433	446	491	661	735
Total other assets	1,506	1,497	1,541	2,553	3,415
Total Assets	6,593	7,145	7,869	8,146	9,223
Liabilities and Equity					
Current Liabilities					
Current debt	219	18	18	30	332
Accounts payable	494	482	525	635	717
Accrued income taxes	97	0	0	0	0
Other accrued liabilities	1,316	1,435	1,514	1,465	1,632
Total current liabilities	2,126	1,935	2,057	2,130	2,681
Noncurrent Liabilities					
Long-term debt	1,069	1,326	1,325	1,595	1,910
Accrued income taxes	106	0	0	0	0
Other noncurrent liaibilities	544	583	618	848	1,046
Total noncurrent liabilities	1,720	1,909	1,943	2,443	2,956
Common Stock	6	6	6	6	6
Paid in capital	2,006	2,290	2,563	2,872	3,161
Retained Earnings	4,765	5,364	6,266	7,004	7,693
Accumulated other comprehensive loss	(213)	(158)	(100)	(382)	(545)
Less: Treasury stock	(3,830)	(4,215)	(4,879)	(5,857)	(6,743)
Noncontrolling interes	14	15	15	11	15
Total stockholders equity	2,748	3,302	3,869	3,654	3,587
Total liabilities and shareholder equity	6,593	7,145	7,869	8,227	9,223

Appendix 5: Competitors

Ticker	Name	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 2015	Earnings Growth 2016	Earnings Growth 2017	Earnings Growth 2018	Earnings Growth Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	LTM Dividend Payout
EL	LAUDER (ESTEE) COS INC -CL A	$77.27	$28,315	0.1	(1.7)	(11.1)	(13.9)	(13.6)	(12.3)	11.4	19.1%	-7.2%	13.1%	6.6%	11.7%		0.72	52.2%	A	1.60%	41.0%
AVP	AVON PRODUCTS	$5.14	$2,249	(0.6)	(5.9)	(6.9)	34.9	20.9	26.9		-254.7%	-98.7%	1200.0%	169.2%	322.9%		1.99	-282.2%	B-	1.12%	
COTY	COTY INC	$18.41	$13,740	(0.4)	(5.8)	(20.2)	(28.4)	(28.9)	(28.2)	0.4	870.6%	22.2%	38.4%	-32.1%	19.4%		0.32	1678.2%		2.81%	525.0%
IPAR	INTER PARFUMS INC	$33.00	$1,026	(0.3)	(5.6)	6.0	16.1	40.2	38.5		22.9%	3.2%	12.2%	13.6%	12.8%	2.2%	1.47	15.9%	B+	1.68%	58.0%
REV	REVLON INC -CL A	$29.20	$1,533	0.5	2.5	(19.2)	(6.5)	3.2	4.9			110.4%	-2.5%	-100.0%		-29.9%	0.41	-476.4%	B-	0.00%	0.0%
NUS	NU SKIN ENTERPRISES -CL A	$48.48	$2,640	0.0	(9.6)	(23.4)	10.2	25.8	27.9	7.6	29.4%	-32.3%	4.3%	9.9%	7.8%	1.3%	0.99	41.7%	A-	2.72%	57.3%
PG	PROCTER & GAMBLE CO	$84.35	$225,720	0.3	1.8	(4.4)	0.5	5.0	6.2	7.7	9.6%	-4.7%	-8.7%	5.4%	7.8%		0.52	33.0%	A	3.24%	74.0%
4.91E+03	SHISEIDO CO LTD	$25.44	$10,150	(0.8)	1.4	10.1	14.2	19.4	17.1	22.4	-73.3%	12.9%	-2.9%	1.5%	24.6%	-2.9%	0.74	17.5%		1.03%	21.2%
Average			$35,672	(0.1)	(2.9)	(8.6)	3.4	9.0	10.2	9.9	89.1%	0.7%	156.7%	9.3%	58.1%	-7.3%	0.90	135.0%		1.77%	110.9%
Median			$6,395	(0.1)	(3.6)	(9.0)	5.3	12.2	11.7	7.7	19.1%	-0.8%	8.3%	6.0%	12.8%	-0.8%	0.73	25.3%		1.64%	57.3%
SPX	S&P 500 INDEX	$2,249		(0.0)	2.0	4.6	8.6	8.2	10.0			7.6%	1.0%	0.7%	11.7%						

Ticker	Website	2016 ROE	P/B	P/E 2014	P/E 2015	P/E 2016	P/E TTM	P/E NTM	P/E 2017	P/E 2017E	2016 NPM	2016 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
EL	http://www.elcompanies.com	32.1%	7.74	25.3	27.3	24.1	26.4	22.1	22.7	20.3	10.4%	2.51	16.2%	20.8%	19.3			6.9%	6.2%	5.0%	$9.98
AVP	http://www.avoncompany.com	-7.2%	-2.85	6.9	514.0	39.5	-26.5	17.1	14.7	3.5	1.0%	0.39	6.2%	-41.1%	10.6	7.5	7.1	16.5%	1.9%	-10.7%	-$1.80
COTY	http://www.coty.com	183.6%		22.7	18.6	13.4		19.0	19.8	16.6	23.5%	3.16	11.4%	4.0%	25.5			98.6%		1.2%	$0.75
IPAR	http://www.interparfumsinc.com	8.8%	2.64	34.7	33.7	30.0	33.0	26.9	26.4	23.4	6.7%	2.01	13.0%	7.4%	10.4	21.0	17.6	7.6%	5.4%	0.4%	$12.49
REV	http://www.revlon.com	-18.6%	-2.76	30.4	14.5	14.8	38.9						12.1%	4.9%	11.5					7.7%	-$10.59
NUS	http://www.nuskinenterprises.com	19.1%	3.17	11.7	17.3	16.5	19.6	15.2	15.1	14.0	7.1%	1.18	11.8%	12.5%	9.0			0.5%		7.9%	$15.31
PG	http://www.pg.com	17.2%	3.94	20.0	21.0	23.0	23.4	21.4	21.8	20.2	15.0%	3.46	22.3%	12.6%	17.8	18.4		0.9%	3.8%	-4.6%	$21.39
4911.00	http://www.shiseidogroup.jp	8.4%	3.14	41.0	36.3	37.4	20.4	76.2	36.9	29.6	3.7%	1.40	6.3%	6.5%	19.8	14.1	12.0	-7.8%		9.6%	$8.10
Average		30.4%	2.15	24.1	85.3	24.9	19.3	28.3	22.5	18.2	9.6%	2.02	12.4%	3.5%	15.5	15.3	12.2	17.6%	4.3%	2.1%	
Median		13.0%	3.14	24.0	24.1	23.6	23.4	21.4	21.8	20.2	7.1%	2.01	11.9%	7.0%	14.6	16.3	12.0	6.9%	4.6%	3.1%	
spx	S&P 500 INDEX			20.7	19.3	19.1			18.9	16.9											

Appendix 6: Base-Bear-Bull Case EPS

Base Case	2017	2018	2019	2020	2021	2022	2023
EPS	$ 3.29	$ 3.59	$ 3.85	$ 4.08	$ 4.48	$ 4.84	$ 5.17
Growth		*9.2%*	*7.3%*	*5.9%*	*10.0%*	*7.9%*	*6.9%*
Bear Case	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
EPS	$ 3.14	$ 3.29	$ 3.52	$ 3.71	$ 3.91	$ 4.11	$ 4.33
Growth		*4.8%*	*6.9%*	*5.3%*	*5.3%*	*5.3%*	*5.2%*
Bull Case	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
EPS	$ 3.55	$ 3.83	$ 4.38	$ 4.74	$ 5.14	$ 5.57	$ 6.04
Growth		*7.8%*	*14.3%*	*8.4%*	*8.4%*	*8.4%*	*8.4%*

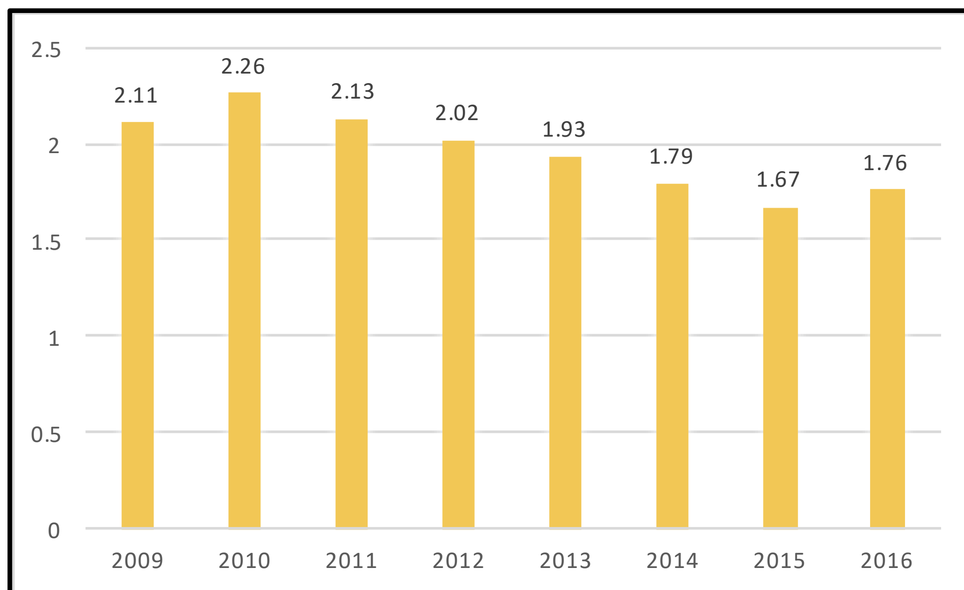
Appendix 7: NTM ROE v P/B Values

	NTM NI	2016 Equity	NTM Equity	Avg Equity	NTM ROE	P/B-Today
EL	$ 1,263	$ 3,576	$ 3,114	$ 3,345	37.76%	7.7
NUS	$ 149	$ 826	$ 667	$ 747	19.96%	3.2
IPAR	$ 33	$ 2,808	$ 3,563	$ 3,186	1.05%	2.6
PG	$ 10,533	$ 57,983	$ 58,602	$ 58,293	18.07%	3.9
4911	$ 271	$ 2,808	$ 3,563	$ 3,186	8.51%	2.7

Appendix 8: Base-Bear-Bull DCF Valuation

BASE CASE	Summary	
First stage	$4.63	Present value of first 2 year cash flow
Second stage	$12.58	Present value of year 3-7 cash flow
Third stage	$64.45	Present value of terminal value P/E
Value (P/E)	**$81.66**	= value at beg of fiscal yr 2017
BEAR CASE	**Summary**	
First stage	$4.67	Present value of first 2 year cash flow
Second stage	$11.16	Present value of year 3-7 cash flow
Third stage	$44.98	Present value of terminal value P/E
Value (P/E)	**$60.82**	= value at beg of fiscal yr 2017
BULL CASE	**Summary**	
First stage	$8.55	Present value of first 2 year cash flow
Second stage	$16.54	Present value of year 3-7 cash flow
Third stage	$83.63	Present value of terminal value P/E
Value (P/E)	**$108.71**	= value at beg of fiscal yr 2017

Appendix 9: EL Inventory Turnover by Year



Appendix 10: 3-Stage DCF Model

	Year						
	1	2	3	4	5	6	7
	First Stage		**Second Stage**				
Cash flows	2017	2018	2019	2020	2021	2022	2023
Sales Growth	*6.1%*	*5.1%*	*4.0%*	*3.0%*	*7.0%*	*5.0%*	*4.0%*
NOPAT / S	*10.6%*	*10.7%*	*10.8%*	*10.9%*	*11.0%*	*11.0%*	*11.1%*
S / NWC	*22.86*	*22.86*	*22.86*	*22.86*	*22.86*	*22.86*	*22.86*
S / NFA (EOY)	*2.25*	*2.25*	*2.25*	*2.25*	*2.25*	*2.25*	*2.25*
S / IC (EOY)	*2.05*	*2.05*	*2.05*	*2.05*	*2.05*	*2.05*	*2.05*
ROIC (EOY)	*21.7%*	*22.0%*	*22.2%*	*22.3%*	*22.5%*	*22.6%*	*22.8%*
ROIC (BOY)		*23.1%*	*23.1%*	*23.0%*	*24.0%*	*23.7%*	*23.7%*
Share Growth		*-3.0%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*
Sales	$11,944	$12,551	$13,053	$13,445	$14,386	$15,105	$15,709
NOPAT	$1,265	$1,348	$1,411	$1,463	$1,576	$1,666	$1,744
Growth		*6.5%*	*4.7%*	*3.7%*	*7.7%*	*5.7%*	*4.7%*
- Change in NWC	30	27	22	17	41	31	26
NWC EOY	*523*	*549*	*571*	*588*	*629*	*661*	*687*
Growth NWC		*5.1%*	*4.0%*	*3.0%*	*7.0%*	*5.0%*	*4.0%*
- Chg NFA	302	269	223	174	418	319	268
NFA EOY	*5,301*	*5,570*	*5,793*	*5,967*	*6,384*	*6,704*	*6,972*
Growth NFA		*5.1%*	*4.0%*	*3.0%*	*7.0%*	*5.0%*	*4.0%*
Total inv in op cap	332	296	245	191	459	351	295
Total net op cap	5823	6119	6364	6555	7014	7364	7659
FCFF	$933	$1,052	$1,166	$1,272	$1,117	$1,315	$1,449
% of sales	*7.8%*	*8.4%*	*8.9%*	*9.5%*	*7.8%*	*8.7%*	*9.2%*
Growth		*12.7%*	*10.9%*	*9.1%*	*-12.2%*	*17.7%*	*10.2%*
- Interest (1-tax rate)	79	91	94	97	104	109	113
Growth		*15.4%*	*4.0%*	*3.0%*	*7.0%*	*5.0%*	*4.0%*
FCFE w/o debt	$855	$961	$1,072	$1,175	$1,013	$1,206	$1,336
% of sales	*7.2%*	*7.7%*	*8.2%*	*8.7%*	*7.0%*	*8.0%*	*8.5%*
Growth		*12.5%*	*11.6%*	*9.6%*	*-13.8%*	*19.0%*	*10.8%*
/ No Shares	359.7	348.9	341.9	335.1	328.3	321.8	315.3
FCFE	$2.38	$2.75	$3.14	$3.51	$3.09	$3.75	$4.24
Growth		*15.9%*	*13.8%*	*11.9%*	*-12.0%*	*21.4%*	*13.0%*
* Discount factor	0.93	0.87	0.82	0.76	0.71	0.67	0.62
Discounted FCFE	$2.22	$2.41	$2.56	$2.68	$2.20	$2.50	$2.64
		Third Stage					
Terminal value P/E							
Net income	$1,182	$1,252	$1,317	$1,366	$1,472	$1,557	$1,630
% of sales	*9.9%*	*10.0%*	*10.1%*	*10.2%*	*10.2%*	*10.3%*	*10.4%*
EPS	$3.29	$3.59	$3.85	$4.08	$4.48	$4.84	$5.17
Growth		*9.2%*	*7.3%*	*5.9%*	*10.0%*	*7.9%*	*6.9%*
Terminal P/E							20.00
* Terminal EPS							$5.17
Terminal value							$103.40
* Discount factor							0.62
Discounted terminal value							$64.45

Summary

First stage	$4.63	Present value of first 2 year cash flow
Second stage	$12.58	Present value of year 3-7 cash flow
Third stage	$64.45	Present value of terminal value P/E
Value (P/E)	**$81.66**	= value at beg of fiscal yr 2017

Appendix 11: Ratios

Ratios	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jul-18
Profitability							
Gross margin	79.5%	80.1%	80.3%	80.5%	80.6%	80.9%	81.3%
Operating (EBIT) margin	13.7%	15.4%	16.8%	15.2%	14.6%	14.7%	14.9%
Net profit margin	8.8%	10.0%	11.0%	10.1%	9.9%	9.9%	10.0%
Activity							
NFA (gross) turnover		3.65	3.72	3.04	2.49	2.32	2.31
Total asset turnover		1.48	1.46	1.34	1.29	1.26	1.27
Liquidity							
Op asset / op liab	2.02	2.24	2.37	1.75	1.60	1.57	1.52
NOWC Percent of sales		21.3%	23.6%	20.3%	13.3%	11.9%	11.1%
Solvency							
Debt to assets	19.5%	18.8%	17.1%	19.8%	24.3%	27.3%	29.9%
Debt to equity	46.9%	40.7%	34.7%	44.5%	62.5%	77.4%	94.6%
Other liab to assets	9.9%	8.2%	7.9%	10.3%	11.3%	11.8%	12.4%
Total debt to assets	29.4%	27.0%	24.9%	30.1%	35.6%	39.1%	42.3%
Total liabilities to assets	58.3%	53.8%	50.8%	55.6%	61.1%	64.8%	68.4%
Debt to EBIT	0.97	0.86	0.73	0.99	1.37	1.50	1.60
EBIT/interest	21.81	21.27	27.13	22.00	19.02	16.11	14.87
Debt to total net op capital	27.5%	25.7%	23.0%	28.9%	35.0%	39.3%	43.2%
ROIC							
NOPAT to sales		10.8%	11.4%	10.6%	10.5%	10.6%	10.7%
Sales to IC		2.05	1.98	1.88	1.87	1.82	1.84
Total		22.2%	22.7%	20.0%	19.7%	19.3%	19.7%
Total using EOY IC	19.5%	21.0%	21.5%	20.4%	18.5%	18.8%	19.5%
ROE							
5-stage							
EBIT / sales		15.4%	16.8%	15.2%	14.6%	14.7%	14.9%
Sales / avg assets		1.48	1.46	1.34	1.29	1.26	1.27
EBT / EBIT		95.3%	96.3%	95.5%	94.7%	93.8%	93.3%
Net income /EBT		68.1%	67.8%	69.8%	71.7%	71.8%	71.8%
ROA		14.8%	16.0%	13.5%	12.8%	12.5%	12.7%
Avg assets / avg equity		2.27	2.09	2.14	2.41	2.70	3.00
ROE		33.7%	33.6%	28.9%	30.8%	33.8%	38.1%
3-stage							
Net income / sales		10.0%	11.0%	10.1%	9.9%	9.9%	10.0%
Sales / avg assets		1.48	1.46	1.34	1.29	1.26	1.27
ROA		14.8%	16.0%	13.5%	12.8%	12.5%	12.7%
Avg assets / avg equity		2.27	2.09	2.14	2.41	2.70	3.00
ROE		33.7%	33.6%	28.9%	30.8%	33.8%	38.1%
Payout Ratio		41.1%	25.1%	32.1%	37.9%	39.8%	43.1%
Retention Ratio		58.9%	74.9%	67.9%	62.1%	60.2%	56.9%
Sustainable Growth Rate		19.9%	25.2%	19.6%	19.1%	20.3%	21.7%

Appendix 12: SWOT Analysis

Strengths	Weaknesses
Brand Recognition	Inventory Turnover
Relatively Large Growth Ability	Limited Distribution
Marketing Techniques	Decreasing Operating Margin
Opportunities	**Threats**
Transition to Freestanding Stores	Currency Translation
Brand Acquisition	Intense Competition
Emerging Market Expansion	Decreasing Foot Traffic

Appendix 13: Porter's 5 Forces

Threat of New Entrants: Low

To enter the industry, a company must have a quality product that will penetrate the market. To create this product, the company must have significant means to both research, develop, manufacture and market the product. The cost is very high. Economies of scale are required to effectively participate in this market; the more products sold, the higher the profit margin. Without customer loyalty, it is difficult to enter the market. Personal care products are not required to be FDA-approved, unless they are used to affect the body (antiperspirants, SPF products, dandruff products). They are however, regulated by the FDA.

Threat of Substitutes: High

Personal care products are similar to one another and there are as many other manufactures, there is a high threat of substitutions. The only thing that separates products from one another is customer experience. Innovative products are essential to win over customers.

Supplier Power: High

Estee Lauder uses a variety of direct and indirect suppliers for their products. Some of EL's products rely on a single or limited number of suppliers. EL is aware that changing financial conditions of their suppliers will affect their ability to bring products to market.

Buyer Power: High

With so many competitors, consumers can influence prices because they can shop around for similar quality for a lower price, or for sales or discounts.

Intensity of Competition: High

Competition is intense. This is partly what gives consumers power over prices. There are plenty of substitutes and each company continues to research and develop innovative products that will catch the attention of consumers. Most competitors market through social media.