Analyst: David Bieberitz

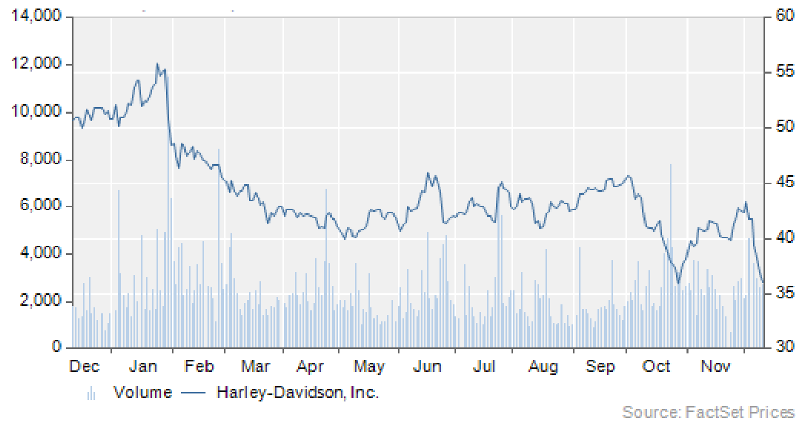
December 31, 2018

Recreational Vehicles

Harley-Davidson, Inc.

Recommendation	BUY
Target (today's value)	$55
Current Price	$36.02
52 week range	$34.79 - $56.50

Share Data	
Ticker:	HOG
Market Cap. (Billion):	$5.87
Inside Ownership	0.2%
Inst. Ownership	91.3%
Beta	1.04
Dividend Yield	4.1%
Payout Ratio	45.9%
Cons. Long-Term Growth Rate	8.2%



	'16	'17	'18E	'19E	'20E
Sales (billions)					
Year	$6.0	$5.7	$5.7	$5.8	$6.0
Gr %		-5.8%	0.6%	2.3%	2.8%
Cons	-	-	$5.1	$5.1	$5.1
EPS					
Year	$3.85	$3.04	$3.71	$4.09	$4.80
Gr %		-21.2%	22.3%	10.2%	17.3%
Cons	-	-	$3.86	$3.70	$4.08

Summary: I recommend a buy rating with a target of $55. HOG has strong brand recognition in the recreational vehicle industry. The company has struggled with appealing to the younger generation of motorcycle riders and expanding internationally. My buy rating is based on my belief that the market has not priced in the anticipated growth potential of the stock as HOG plans to focus heavily on international expansion and new product offerings starting in 2019. The stock is undervalued based on relative and DCF analysis.

Ratio	'16	'17	'18E	'19E	'20E
ROE (%)	36.8%	27.7%	27.7%	33.4%	29.7%
Industry	25.6%	23.7%	23.7%	35.2%	29.0%
NPM (%)	11.5%	9.2%	9.2%	11.1%	11.4%
Industry	6.7%	6.0%	6.0%	7.2%	7.3%
A. T/O	0.60	0.57	0.57	0.50	0.49
ROA (%)	7.0%	5.3%	5.3%	5.5%	5.6%
Industry	12.6%	12.2%	12.2%	13.3%	11.9%
A/E	5.29	5.28	5.12	4.60	4.16

Valuation	'17	'18E	'19E	'20E
P/E	16.2	11.2	9.3	9.7
Industry	25.1	13.6	11.2	10.9
P/S	1.6	1.0	1.2	1.2
P/B	4.7	2.7	3.0	2.8
P/CF	7.4	5.1	6.6	6.4
EV/EBITDA	16.0	16.8	15.5	13.0

Performance	Stock	Industry
1 Month	-11.7%	-14.9%
3 Month	-19.0%	-28.5%
YTD	-29.2%	-36.9%
52-week	-29.4%	-38.2%
3-year	-21.1%	28.3%

Key Drivers:

- Recreational vehicle trends: Many recreational vehicle companies are focusing on offering smaller displacement motorcycles to reach younger and less experienced riders. HOG does not offer small displacement motorcycles as other companies do. Instead, HOG is focusing on offering electric motorcycles to establish dominance in the electric motorcycle market.

- International expansion: HOG plans to release new motorcycles into the Asia Pacific market. HOG has opened 44 new dealerships in the region from 2015-2017. The company plans to move production overseas for its international markets.

- Macroeconomic trends: HOG is positively correlated with the consumer confidence index. If the economy continues to perform well, consumers will be comfortable purchasing recreational vehicles.

Valuation: Using a relative valuation approach, Harley-Davidson appears to be undervalued in comparison to the recreational vehicle industry. DCF analysis suggests the stock is worth $54. A combination of the approaches suggests that Harley-Davidson is undervalued, as the stock's value is $55 and the shares trade at $36.02.

Risks: Threats to the business include loyal customers increasing in age, loss of brand identity, increased difficulty in expansion to India, and new product offerings not attracting new customers.

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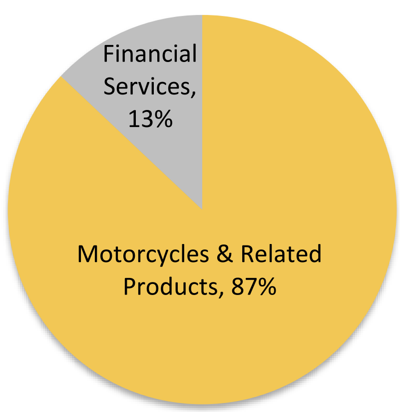
Company Overview

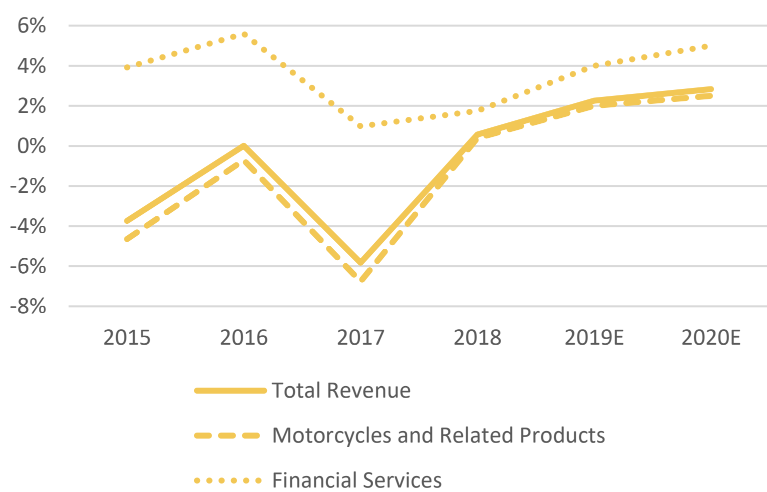
Harley-Davidson (HOG) is a manufacturer of heavyweight motorcycles. Harley manufactures five styles of motorcycles including Touring, Cruiser, Standard, Sport bike and Dual style motorcycles. Over the past 100 years, Harley-Davidson has grown into a global company with a presence in almost 100 countries. HOG's management takes pride in the culture that has grown around its motorcycles by hosting events at its dealerships and plants for its customers and future customers. While most of the firm's motorcycles are shipped to independent dealers within the United States, Harley-Davidson also produces and sells products internationally. The company has dealers in Canada, Europe, Asia Pacific, and Latin America. Harley-Davidson is headquartered in Milwaukee, Wisconsin.

Harley generates 87% of its total revenue from motorcycles and related products and 13% of its total revenue from financial services. HOG has two reporting segments:

- Motorcycles and Related Products: Motorcycles, motorcycle parts, clothing, accessories, and collectables. In 2017, Harley-Davidson shipped 241,498 motorcycles. This is about 7.9% less than the 262,221 motorcycles shipped in 2016. I forecast motorcycles and related products sales to grow by 2.0% in 2019 and 2.5% in 2020.
- Financial Services: Financial services provided to independent dealers and retail customers of those independent dealers. In 2017, Harley-Davidson financed 61.2% of its new motorcycles sold by the independent Harley dealers in the United States. This is 0.5% less than in 2016 when Harley-Davidson financed 61.7% of its new motorcycles. I forecast financial services to grow 4.0% in 2019 and 5.0% in 2020.

Figures 1 and 2: Revenue sources for HOG, year-end 2017 (left) and revenue history growth since 2013 (right)





Business/Industry Drivers

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

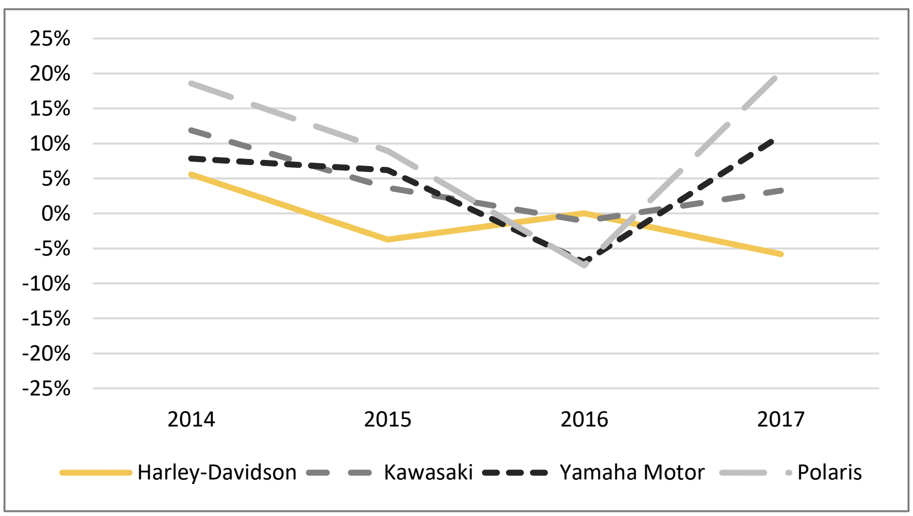
1) Recreational vehicle trends
2) International expansion
3) Competitor analysis
4) Macroeconomic trends

Recreational vehicle trends

HOG has created a recognizable brand in the recreational vehicle industry. The firm is best known for producing large engined cruising and touring motorcycles. Because of the size and quality of Harley-Davidson motorcycles, the prices of its motorcycles are usually more expensive than others. This price premium has created an age trend in the company with few younger riders able to afford HOG's products. Other large motorcycle manufacturers such as Kawasaki, Yamaha and Polaris also offer large, expensive motorycles. However, most of them have recently began focusing on expanding their product offerings in the smaller, entry level motorycle market. In 2013, Harley-Davidson released the 2014 Street 500. This model appeals to individuals who want to ride a Harley-Davidson motorcycle but can not afford larger models. In 2013, HOG had the highest year-over-year sales growth since 2011 at 5.72% when the firm launched the 2014 Street 500. While Harley continues to release new versions of the Street 500, the company has not released any smaller or less expensive models. The Street 500 still sells at a premium compared to other brands. The 2018 Street 500 from the company retails at $6,899. In comparison, the 2018 Rebel 500 from Honda retails at $6,099.

HOG 2017 sales growth lagged the rebounding rates of other large motorcycle manufacturers.

Figure 3: Sales growth of Harley-Davidson and other large motorcycle manufacturers



Source: Company reports

Harley-Davidson announced, "More Roads to Harley-Davidson." This is Harley's plan to introduce new smaller to middle displacement size motorcycles into the market by 2020. The firm will introduce an electric motorcycle, LiveWire™, by 2019, and plans to release additional electric motorcycles through 2022. There are few to no motorcycle manufacturers or recreational vehicle companies currently offering electric motorcycles. The LiveWire™ will not have a manual transmission like most motorcycles, which will help new riders feel more comfortable riding it. I believe this is an intelligent move by Harley-Davidson. This may help the company to establish early dominance in the electric motorcycle market.

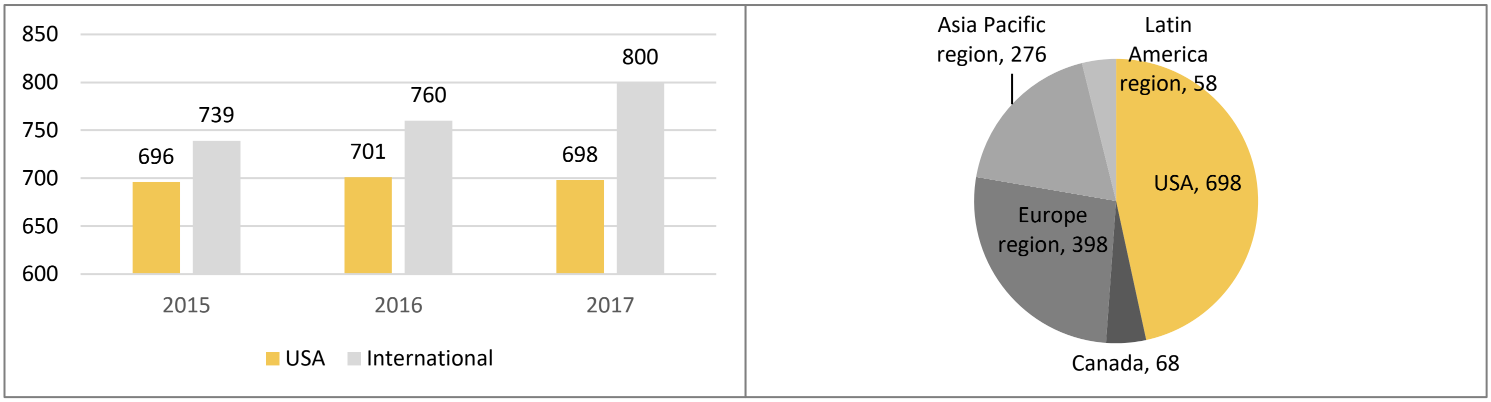
International expansion

From 2015-2017, 44 new dealerships were established in the Asia Pacific region.

While motorcycles are popular forms of transportation and recreational vehicles in the United States, motorcycles and recreational vehicles are incredibly popular worldwide. During 2017, Harley-Davidson closed three United States dealerships and opened 40 internationally. This dramatic international expansion is due to the "More Roads to Harley-Davidson" plan that was announced this summer.

In "More Roads to Harley-Davidson," HOG announced that it is in the process of developing smaller engine size motorcycles for the Asia emerging markets. This helps explain why Harley has so many new dealerships in the Asia Pacific region. The number of Asia Pacific dealerships has been rising since 2015.

Figures 4 and 5: Number of dealerships in the United States and internationally (left) and dealerships by region at year-end 2017 (right)



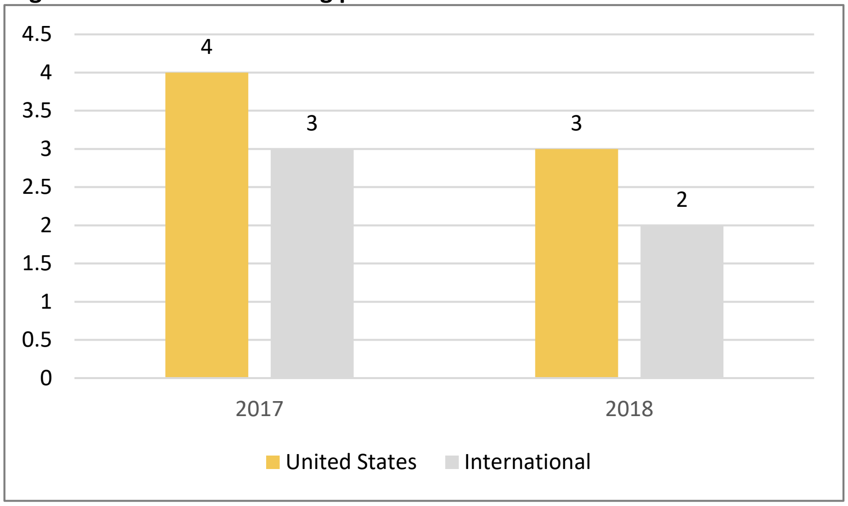
Source: Company reports

Harley-Davidson is focusing on international expansion rather than expansion within the United States.

As the global trade conflict has become increasingly relavant, Harley-Davidson announced that it will be moving production for European markets overseas to avoid the cost of the European tariffs. Although this may move jobs that could have been in America to Europe, this change in European production, which is expected to lower the cost of the product, may improve the overall long-term health of the company.

At year-end 2017, Harley-Davidson had four manufacturing plants in the United States and three international manufacturing plants (Brazil, India and Australia). At the beginning of 2018, the firm announced that it would be closing down manufacturing plants in Kansas City, MO and Adelaide, Australia.

Figure 6: HOG manufacturing plants in the United States and international



Source: Company reports

HOG has not announced if moving production for European markets overseas entails opening a new manufacturing plant. The remaining plants in Brazil and India assemble models for the Brazilian market and the Indian market respectively. The India plant also produces the Street platform for non-North American markets.

Competitor analysis

The recreational vehicles industry is a competitive industry with low barriers to entry. As technology has progressed and trends change, new firms can enter the space by developing a product that large manufacturers have not. Since customers purchase recreational vehicles when consumer confidence is growing, competitors must offer the trendiest products that are still affordable for the general population. Most consumers cannot pay for large recreational vehicles with cash, so it is also important for competitors to have reliable financing options for customers. Brand identity is crucial in the recreational vehicle industry as it allows companies to raise prices and have a consistent competitive advantage.

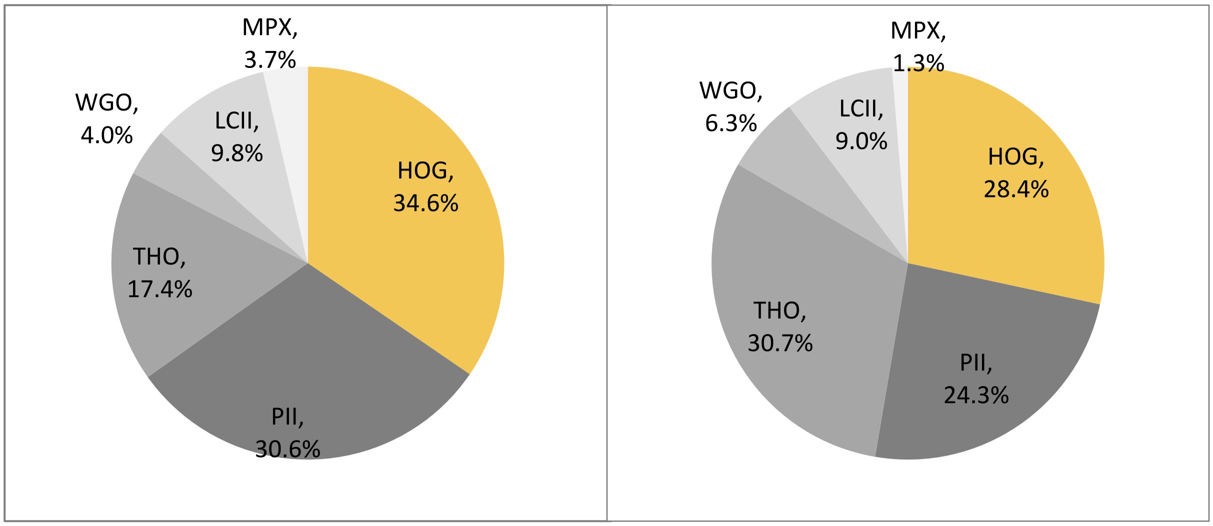
HOG has a strong brand identity, which has allowed it to retain customers with a premium. However, the price premium has limited Harley-Davidson in appealing to a younger population. Harley-Davidson has had difficulty staying trendy and appealing to new customers. Harley-Davidson's financial sector helps it retain customer loyalty by allowing its customers to finance vehicles. Rates start at 3.99% APR for new motorcycles and 4.99% for used motorcycles. During the financial crisis, when even HOG could not find lenders, Warren Buffett's Berkshire Hathaway saved Harley-Davidson. Berkshire Hathaway offered HOG a $303 million loan with a 15% interest rate. Although the interest rate was high, Harley-Davidson took the loan to have the funds to finance customers and keep the company running.

HOG has an impressive brand identity, but management must focus on offering trendy, new models if it wants to stay competitive.

The recreational vehicles industry is dominated in market cap by Harley-Davidson; however, it is dominated in sales by Thor Industries. Although HOG trails in retail sales, its premium market cap to Thor could mean that the market projects better growth for Harley-Davidson, or that it is more profitable than Thor. HOG has an impressive profit margin compared to its peers. HOG's NPM was 11.4% in 2017, while the average of its peers was 6.8%.

Going into 2020, I believe Harley-Davidson will grow in its retail sales with the help of its "More Roads to Harley-Davidson" plan. With the release of the electric motorcycles, the firm will be reaching new customers by bringing a new product to the industry.

Figures 7 and 8: Comparison of HOG comps by market cap (left) and retail sales (right)



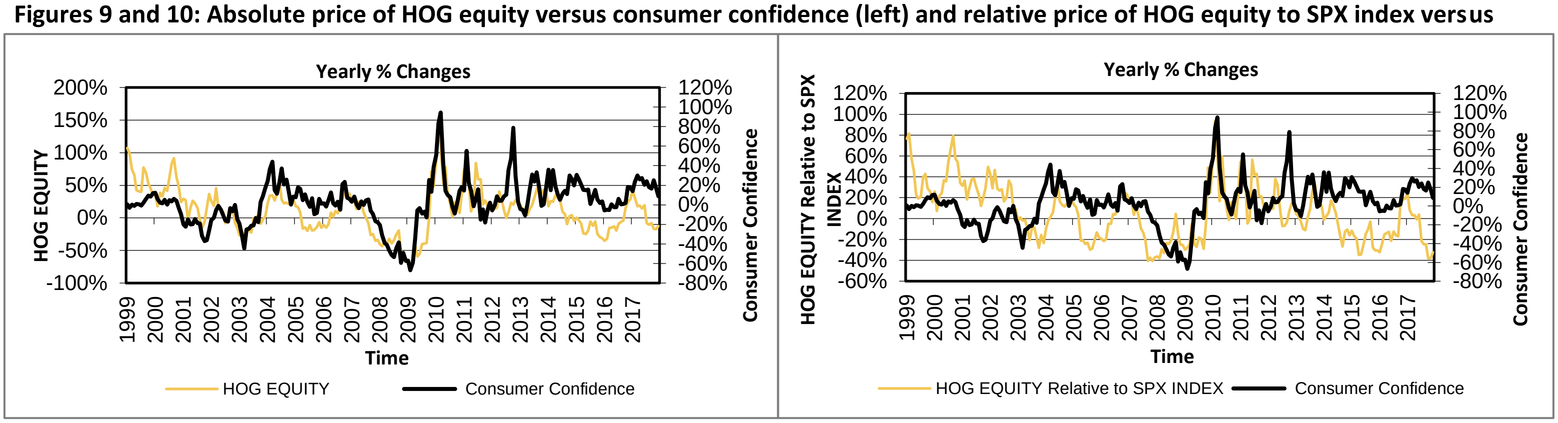
Source: FactSet, IMCP

Macroeconomic trends

The stock rises as consumer confidence increases.

The stock is positively correlated with the consumer confidence index. If consumers believe the economy is doing well and will continue to do well, they are comfortable spending money on recreational vehicles. Harley-Davidson also offers apparel and other merchandise products that are less dependent on consumer confidence; however, motorcycle sales are the largest source of revenue. Figure 9 shows the absolute price of HOG equity versus consumer confidence (a positive correlation of 0.55). Figure 10 shows that HOG equity relative to the SPX index versus consumer confidence has a positive correlation of 0.24.

Figures 9 and 10: Absolute price of HOG equity versus consumer confidence (left) and relative price of HOG equity to SPX index versus

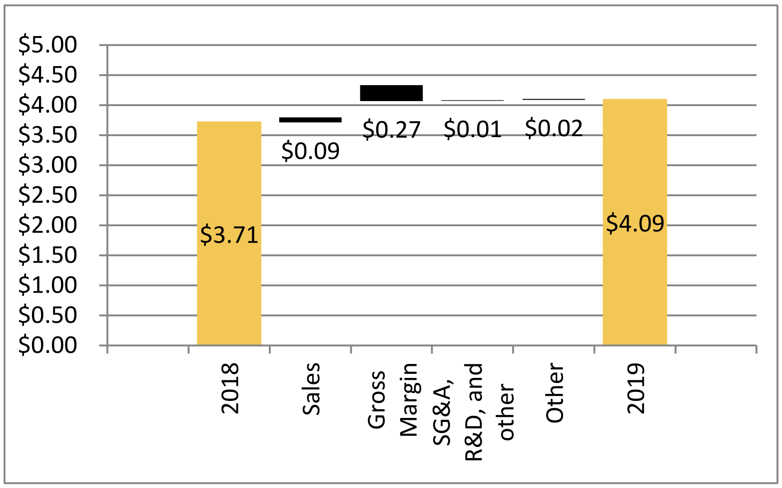


Source: Bloomberg, IMCP

Financial Analysis

I anticipate EPS to grow to $4.09 for fiscal year 2018. An increase in sales and gross margin should boost earnings by $0.09 and $0.27, respectively. I anticipate this growth due to the "More Roads to Harley-Davidson" plan. The international expansion and new product offerings mentioned in the plan have the possibility to positively impact the EPS. With the recent closing of manufacturing plants and expectation to move production overseas for the overseas markets, I expect a minimal increase of $0.01 in earnings due to SG&A, R&D, and Other. The increase in overseas production should replace the SG&A expense amount lost in the closing of the manufacturing plants that occurred in 2018. I expect an increase of $0.02 in earnings driven by stock buybacks and paying off short-term and long-term debt.

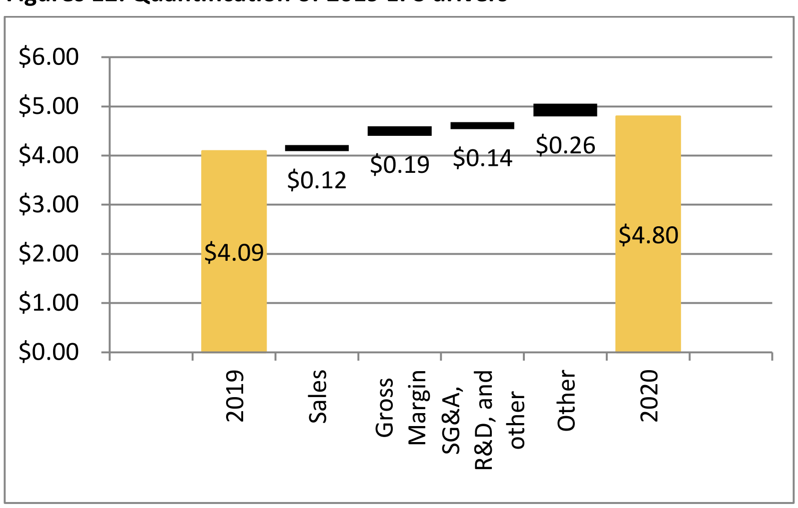
Figures 11: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

I expect 2019 EPS to increase from $4.09 to $4.80. Harley-Davidson should continue to have a positive gain in earnings due to the expected increase in its sales and gross margin by $0.12 and $0.25, respectively. I anticipate this growth due to the continued release of new products into new markets. I expect that SG&A will have a $0.14 positive impact on earnings due to the continued focus on production overseas and expanding into the markets overseas. EPS should increase $0.26 by the continuance of stock buybacks and paying off short-term and long-term debt.

Figures 12: Quantification of 2019 EPS drivers



Source: Company Reports, IMCP

I am more optimistic than consensus estimates for 2019 and 2020. With how much focus HOG has on international expansion, I believe that there will be much higher growth in revenue than consensus estimates. With this increase in revenue growth, there should be more available cash for the company to pay off its short-term and long-term debt and buyback shares to grow EPS at a considerable rate.

Figure 13: EPS and YoY growth estimates

	FY 2019E	FY2020E
Revenue - Estimate	$5,807	$5,972
YoY Growth	2%	3%
Revenue - Consensus	$5,055	$5,074
YoY Growth	0%	0%
EPS - Estimate	$4.09	$4.80
YoY Growth	10%	17%
EPS - Consensus	$3.72	$4.08
YoY Growth	-3%	10%

Source: Factset, IMCP

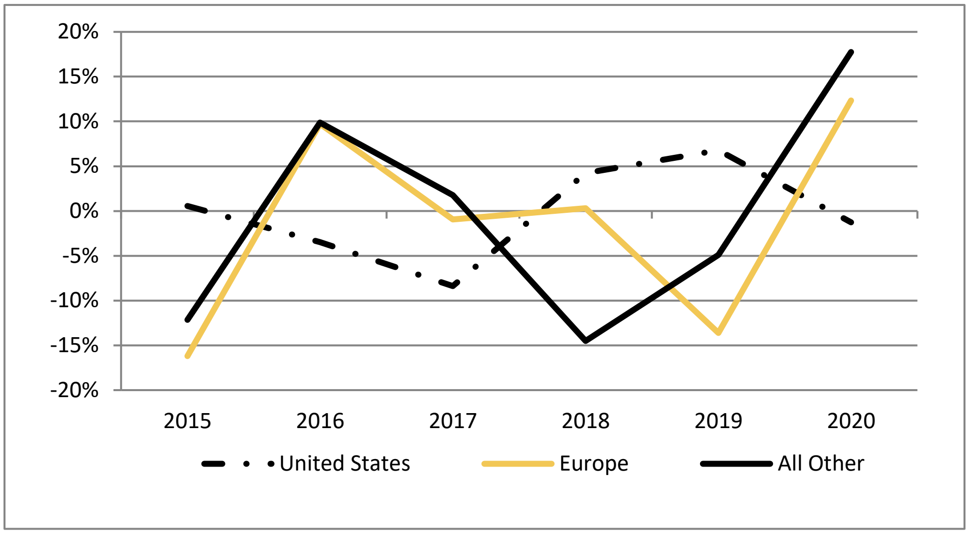
<u>Revenues</u>

Harley-Davidson had a steady decline in revenues since 2013. 2018, however, has appeared to be a better year for HOG. I anticipate that moving into 2019 and 2020, HOG will experience continued growth in its revenues. This expectation is driven by the announcement of new products being released to United States markets. I believe the main contributor to US revenue growth will be the LiveWire^{TM} product line expected to be released in 2019, with new models being released every year until 2022. HOG does not release new and unique models often, so this change has the possibility to rejuvenate its markets in the United States that have been on decline. I anticipate a reasonable amount of growth for 2019, followed by a slight decay in United States sales growth in 2020. Following the release of the new models in 2019, it will be difficult for HOG to continue to mirror that same sales growth unless the new models of the 2020 LiveWire^{TM} model are drastically different than the 2019 model.

Jawa plans to release three new motorcycles into the market.

International revenue, specifically in the Asia Pacific markets, should experience growth in 2019 and 2020. In the coming years, the company is focusing heavily on growing into new markets, especially the Asia Pacific markets. The company's largest focus is in India. I expect the release of new models in India in 2020. Growth could be greater than what I anticipate, however, a new competitor, Mahindra & Mahindra, will restore the Jawa brand. The Jawa brand was introduced in India back in the 1990's but ceased production due to financial issues. With this new competitor entering India's motorcycle market at roughly the same time as Harley-Davidson, the company's growth could be more difficult to achieve.

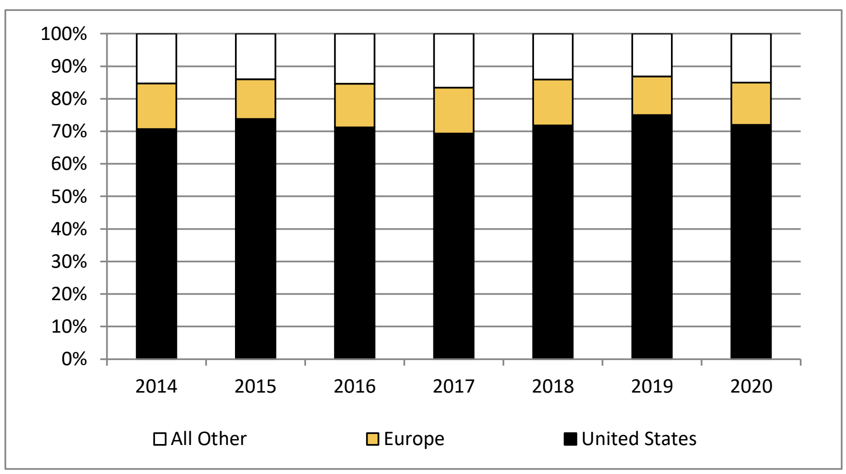
Figure 14: Revenue by region, 2015-2020E



Source: Company Reports, IMCP

Releasing new products in the United States and internationally should keep a somewhat consistent US/international mix through 2020. With the LiveWire™ being released in 2019, I expect the United States to have a larger percentage of sales than previous years. However, with the expectation of new products for the Asia Pacific markets in 2020, I expect the all other region to have a larger percentage of sales than in previous years.

Figure 15: Percentage of revenue by region, 2015-2020E



Source: Company Reports, IMCP

Return on Equity

Harley-Davidson has had a relatively cyclical ROE since 2015. I expect that ROE will plateau after 2018 and stay within 2% of the 2018 ROE. DuPont analysis for HOG reveals that ROE is driven mostly by the tax burden; although, EBIT margins have also fallen. Asset turnover has been consistent and only fluctuating from 0.61 to 0.57 since 2015.

Figure 16: ROE breakdown, 2015-2020E

5-stage DuPont	2015	2016	2017	2018	2019E	2020E
EBIT / sales	18.3%	17.2%	15.9%	15.0%	16.0%	17.2%
Sales / avg assets	0.61	0.60	0.57	0.57	0.58	0.58
EBT / EBIT	104.9%	99.3%	96.1%	95.3%	95.7%	96.3%
Net income /EBT	65.4%	67.6%	60.4%	77.0%	76.0%	78.0%
ROA	7.7%	7.0%	5.3%	6.3%	6.7%	7.5%
Avg assets / avg equity	4.11	5.29	5.28	5.12	4.60	4.16
ROE	31.7%	36.8%	27.7%	32.0%	30.9%	31.3%

Source: Company Reports

In the future, I expect ROE to rise due to the corporate tax law that became effective January 1, 2018. The law stabilizes and lowers the tax burden.

Free Cash Flow

Figure 17: Free cash flows 2015 – 2020E

Free Cash Flow	2014	2015	2016	2017	2018	2019E	2020E
NOPAT	$834	$717	$697	$543	$655	$706	$801
Growth		*-14.0%*	*-2.8%*	*-22.1%*	*20.5%*	*7.9%*	*13.5%*
NWC*	652	508	231	39	410	419	340
Net fixed assets	5,580	6,008	6,036	6,088	6,100	6,238	6,415
Total net operating capital*	$6,232	$6,516	$6,268	$6,127	$6,510	$6,657	$6,755
Growth		*4.6%*	*-3.8%*	*-2.2%*	*6.3%*	*2.3%*	*1.5%*
- Change in NWC*		(144)	(277)	(192)	371	9	(79)
- Change in NFA		428	28	52	12	138	177
FCFF*		$433	$946	$684	$271	$559	$704
Growth			*118.4%*	*-27.7%*	*-60.3%*	*105.9%*	*25.9%*
- After-tax interest expense	(11)	(35)	5	21	31	30	30
FCFE**		$468	$941	$663	$241	$529	$674
Growth			*101.0%*	*-29.5%*	*-63.7%*	*119.7%*	*27.4%*
FCFF per share		$2.14	$5.26	$3.98	$1.62	$3.38	$4.38
Growth			*146.3%*	*-24.4%*	*-59.4%*	*109.3%*	*29.5%*
FCFE per share		$2.31	$5.24	$3.85	$1.43	$3.20	$4.19
Growth			*126.8%*	*-26.4%*	*-62.8%*	*123.3%*	*31.0%*

Source: Company Reports, IMCP

HOG has experienced a considerable amount of volatility in its free cash flows over the past few years. From 2014 to 2015, the company experienced an increase in NFA by $428 million. This is due to the announcement in 2014 for the plan to eventually release an electric motorcycle into the market. In 2014, the company also released the "Project Rushmore" motorcycle lineup. The project consisted of eight new motorcycles. Then, in 2017, NOPAT declined. In 2018, FCF is held back by increasing working capital which declined for several years. Going forward, I expect NOPAT and NFA to continue to grow through 2019 and 2020.

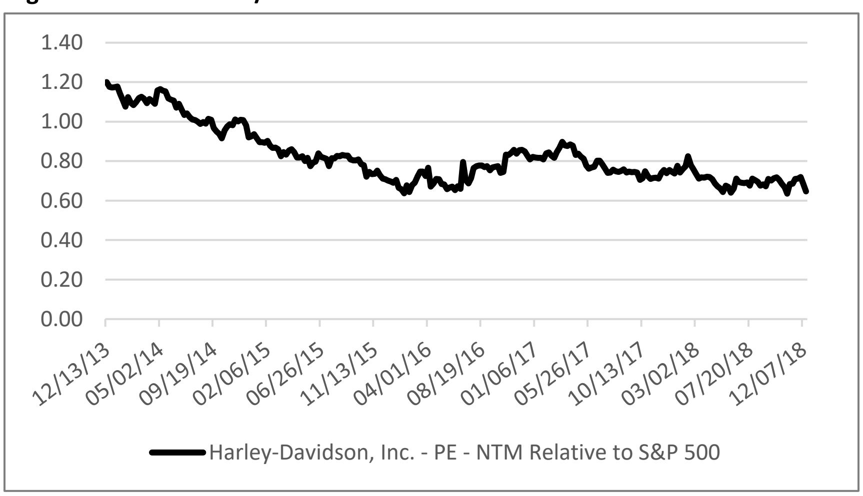
Valuation

HOG was valued using multiples and a 3-stage discounting cash flow model. Based on P/B and NTM ROE analysis, HOG is undervalued compared to its peers. Another valuation approach shows HOG to be slightly overvalued based on its fundamentals versus those of its peers in the recreational vehicle industry. Price to book valuation yielded a price of $60. A DCF analysis values HOG slightly lower, at $54. I give the DCF analysis more weight as it considers continued changes in the company. Because of these valuations, I value the stock at $55.

Trading History

HOG is currently trading near its five year low on relative P/E. This is mainly the result of the slowdown in the market and perhaps because people are worried about the next recession. HOG's five-year average P/E is 15.2, which is much higher than the NTM P/E of 10.3. Over the next economic cycle, I expect the P/E to rise towards the five-year average of 15.2.

Figure 18: HOG NTM P/E relative to S&P 500



Source: Factset

Assuming the firm maintains a 9.7 NTM P/E at the end of 2019, it should trade at $46.56 by the end of the year.

- Price = P/E x EPS = 9.7 x $4.80 = $46.56

Discounting $46.56 back to today at a 10.6% cost of equity (explained in Discounted Cash Flow section) yields a price of $42.10. Given HOG's potential for earnings growth and continued profitability, this seems to be a low valuation.

<u>Relative Valuation</u>

Harley-Davidson is currently trading at a slightly lower P/E compared to its peers, with a P/E TTM of 11.2 compared to the average of 13.6. Investors are willing to pay a premium for HOG's peers as HOG is a mature company and may not have the same potential to grow as its peers. HOG's P/B ratio is slightly lower than the average of its peers, and its P/S ratio is slightly higher than the average of its peers despite its above average ROE and profit margin.

Figure 19: HOG comparable companies

		Current	Market	Price Change						Earnings Growth								LT Debt/	S&P	LTM Dividend	
Ticker	Name	Price	Value	1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	Equity	Rating	Yield	Payout
HOG	HARLEY-DAVIDSON INC	$36.02	$5,865	(0.2)	(11.7)	(19.0)	(16.9)	(29.4)	(29.2)	8.2	7.9%	3.8%	-10.4%	12.5%	-4.1%	1.9%	1.48	194.9%	B+	3.49%	45.9%
PII	POLARIS INDUSTRIES INC	$83.98	$5,188	0.9	(7.5)	(21.5)	(34.2)	(34.4)	(32.3)	16.4	55.8%	-48.4%	39.4%	35.1%	6.6%	-9.4%	1.40	200.1%	A	2.47%	55.7%
THO	THOR INDUSTRIES INC	$55.98	$2,956	(0.6)	(18.8)	(41.0)	(44.3)	(62.5)	(62.9)	10.0	25.1%	30.5%	45.3%	14.8%	-13.4%	14.4%	1.83	0.0%	A-	2.21%	25.1%
WGO	WINNEBAGO INDUSTRIES	$21.13	$674	0.1	(23.0)	(42.6)	(48.1)	(61.5)	(62.0)	3.1	18.2%	10.5%	50.6%	27.3%	16.1%		1.37	54.5%	B	1.60%	12.4%
LCII	LCI INDUSTRIES	$65.87	$1,661	(1.5)	(9.6)	(28.7)	(29.6)	(47.1)	(49.3)	15.0	10.4%	62.5%	10.8%	6.9%	8.4%	26.0%	1.15	33.1%	B+	3.04%	40.2%
MPX	MARINE PRODUCTS CORP	$18.02	$622	1.8	(20.6)	(20.8)	9.8	20.6	41.4		17.0%	12.8%	36.4%	0.45	2.3%	23.6%	0.51	0.0%	B+	1.84%	53.7%
Average			$2,828	0.1	(15.2)	(28.9)	(27.2)	(35.7)	(32.4)	10.5	22.4%	11.9%	28.7%	23.6%	2.7%	11.3%	1.29	80.4%		2.44%	38.8%
Median			$2,309	(0.1)	(15.2)	(25.1)	(31.9)	(40.7)	(40.8)	10	17.6%	11.7%	37.9%	21.0%	4.4%	14.4%	1.39	43.8%		2.34%	43.0%
SPX	S&P 500 INDEX	$2,651		0.5	(2.8)	(8.2)	(4.9)	(0.5)	(0.8)			-3.3%	8.2%	38.2%	8.6%						

		2017		P/E							2017	2017			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2015	2016	2017	TTM	NTM	2018	2019	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
HOG	http://www.harley-davidson.com	25.9%	2.72	12.3	15.2	14.8	11.2	10.3	9.3	9.7	11.4%	1.19	15.4%	8.0%	16.8	5.7	10.4	-13.2%	-1.3%	0.2%	$13.22
PII	http://www.polaris.com	33.4%	5.78	12.7	23.7	25.6	19.7	12.7	12.8	12.0	5.5%	0.96	7.2%	9.1%	21.8	8.7	14.7	12.8%	5.2%	11.1%	$14.54
THO	http://www.thorindustries.com	19.3%	1.52	15.0	20.5	21.3	9.4	7.5	6.9	7.9	4.9%	0.38		23.4%	7.5	6.7		5.8%		20.8%	$36.77
WGO	http://www.winnebagoind.com	14.9%	1.25	13.1	18.8	22.0	6.6	5.6	6.6	5.6	4.7%	0.40	8.1%	13.3%	9.1	5.2		7.3%	10.2%	20.2%	$16.95
LCII	http://www.lci1.com	19.7%	2.26	19.0	20.7	22.6	11.5	10.4	10.7	9.9	6.8%	0.77	8.6%	20.4%	15.3	7.7	13.5	2.9%		19.0%	$29.17
MPX	http://www.marineproductscorp.com	25.7%	7.72	15.5	31.5	21.2	23.1	19.8	20.7	20.2	7.7%	2.33	12.1%	27.7%	14.3	22.1	21.7	7.6%	6.8%	12.4%	$2.33
Average		23.2%	3.54	14.6	21.7	21.2	13.6	11.0	11.2	10.9	6.8%	1.00	10.3%	17.0%	14.1	9.3	15.1	3.8%	5.2%	13.9%	
Median		22.7%	2.49	14.1	20.6	21.6	11.4	10.4	10.0	9.8	6.1%	0.86	8.6%	16.8%	14.8	7.2	14.1	6.5%	6.0%	15.7%	
SPX	S&P 500 INDEX			18.2	20.6	22.8			16.3	15.0											

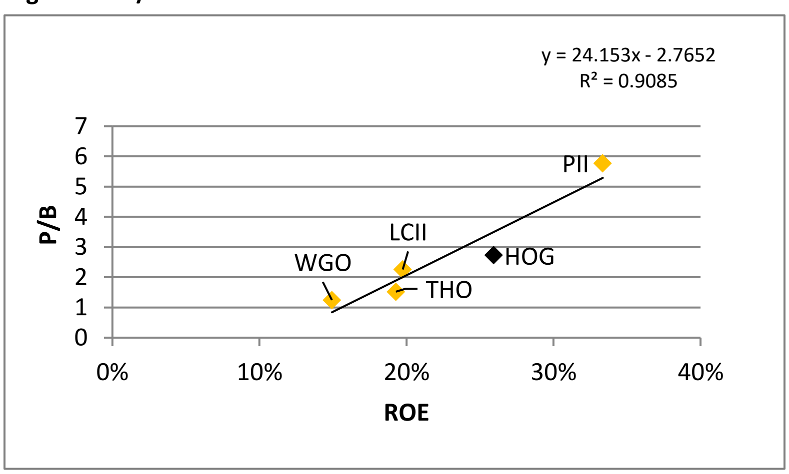
Source: Factset

A more thorough analysis of P/B and ROE is shown in figure 20. The R-squared of the regression shows that that over 90% of the firm's P/B is explained by its NTM ROE. Marine Products Corporation is excluded from this regression as the P/B ratio is an extreme outlier in the dataset. According to this measure, HOG is very undervalued.

- Estimated P/B = Estimated 2019 ROE (30.9%) x 24.153 – 2.7652 = 4.70
- Target Price = Estimated P/B (4.70) x 2019E BVPS (14.08) = $66.18

Discounting back to the present at a 10.6% cost of equity leads to a target price of $59.84.

Figure 20: P/B vs NTM ROE



Source: Factset

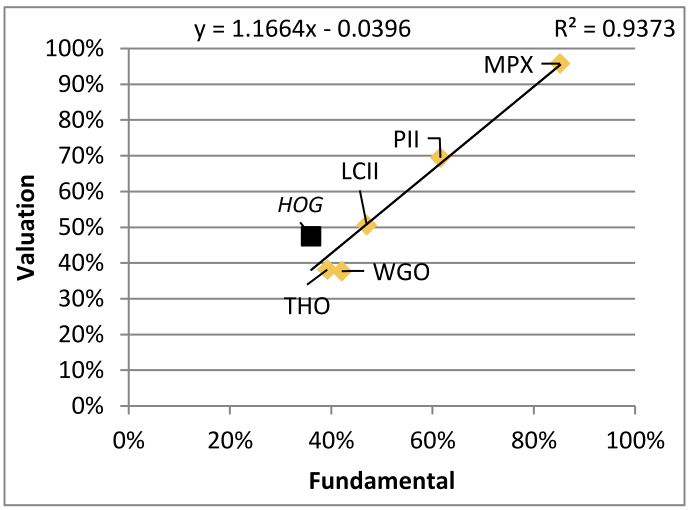
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. A weighting of 1/Beta, 2017 ROE, 2017 NPM and NTM sales growth was compared to an equal weighting of 2017 P/E, 2018 P/E, P/B and P/S. The R-squared resulting from this weighting equated to over 90%. HOG is above the line, so it is expensive compared to its peers.

Figure 21: Composite value, % of range

				Fundamental Percent of Max				Valuation Percent of Max			
			Weight	50.0%	25.0%	12.5%	12.5%	25.0%	25.0%	25.0%	25.0%
		Weighted		1/	2017	2017	Sales Growth	P/E			
Ticker	Name	Fund	Value	Beta	ROE	NPM	NTM	2017	2018	P/B	P/S
HOG	HARLEY-DAVIDSON INC	36%	47%	34%	78%	100%	-104%	58%	45%	35%	51%
PII	POLARIS INDUSTRIES INC	62%	69%	36%	100%	49%	100%	100%	62%	75%	41%
THO	THOR INDUSTRIES INC	39%	38%	28%	58%	43%	45%	83%	33%	20%	17%
WGO	WINNEBAGO INDUSTRIES	42%	38%	37%	45%	42%	57%	86%	32%	16%	17%
LCII	LCI INDUSTRIES	47%	51%	44%	59%	60%	23%	88%	52%	29%	33%
MPX	MARINE PRODUCTS CORP	85%	96%	100%	77%	68%	59%	83%	100%	100%	100%

Source: IMCP

Figure 22: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

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

For this analysis, the company's cost of equity was calculated to be 10.6% using the Capital Asset Pricing Model. The underlying assumptions used in calculating this rate are as follows:

- The risk-free rate, as represented by the ten-year Treasury bond yield, is 2.89%.
- A ten-year beta of 1.08 was utilized since the company has higher risk than the market.
- A long-term market rate of return of 10% was assumed, since historically, the market has generated an annual return of about 10%.

Given the above assumptions, the cost of equity is 10.6% (2.89 + 1.08 (10.0 – 2.89)).

Stage One - The model's first stage simply discounts fiscal years 2019 and 2020 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $2.29 and $3.26, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $4.74 per share. Thus, stage one of this discounted cash flow analysis contributes $4.74 to value.

Stage Two - Stage two of the model focuses on fiscal years 2021 to 2025. During this period, FCFE is calculated based on revenue growth, NOPAT margin and capital growth assumptions. The resulting cash flows are then discounted using the company's 10.6% cost of equity. I assume 2% sales growth in 2021, 1% in 2022, and 0.5% in 2023, 2024, and 2025. The ratio of NWC to sales and NFA turnover will remain at the 2020 levels. The NOPAT margin is expected to slightly decrease from 13.1% in 2021 to 12.0% in 2025. Share growth is expected to be -2% each year from 2021 to 2025 as I anticipate the company will continue to buy back shares.

Figure 23: FCFE and discounted FCFE, 2019-2025

	2019	2020	2021	2022	2023	2024	2025
FCFE	$2.29	$3.26	$3.72	$4.16	$4.39	$4.38	$4.38
Discounted FCFE	$2.07	$2.67	$2.75	$2.79	$2.65	$2.40	$2.17

Added together, these discounted cash flows total $12.76.

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 increase from $4.80 in 2020 to $4.97 in 2025.

Figure 24: EPS estimates for 2019-2025

	2019	2020	2021	2022	2023	2024	2025
EPS	$4.09	$4.80	$4.89	$4.93	$4.95	$4.96	$4.97

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. A P/E ratio of 14.8 is assumed at the end of HOG's terminal year.

Given the assumed terminal earnings per share of $4.97 and a price to earnings ratio of 14.8, a terminal value of $46.88 per share is calculated. Using the 10.6% cost of equity, this number is discounted back to a present value of $36.46.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $53.96 is calculated (4.74 + 12.76 + 36.46). Given HOG's current price of $36.02, this model indicates that the stock is undervalued.

<u>Scenario Analysis</u>

Harley-Davidson is difficult to value with accuracy because its fortunes are somewhat dependent on the economy. HOG's growth has slowed compared to its peers as its peers have appealed to the younger population and have continued releasing new products. In the coming years, Harley-Davidson will be taking big steps towards international expansion and in its product offerings. These opportunities have the possibility to immensely grow the company or backfire. Depending on how much the company grows, I valued HOG in two different scenarios for the years of 2021-2025.

Bull Case: Assuming HOG's focus on international expansion goes well and its new products sell well, I expect the value of the stock to substantially increase. I expect sales will grow at a constant 3% per year from 2021-2025 and the NOPAT margin to continue to grow from 13.7% in 2021 to 15.0% in 2025. I also expect the share growth to drop 2% per year. As a result, I anticipate a target price of $69.58.

Figure 25: Bull case estimated value for 2019

	Summary		
First stage	$4.74	Present value of first 2 year cash flow	
Second stage	$13.85	Present value of year 3-7 cash flow	
Third stage	$50.99	Present value of terminal value P/E	
Value (P/E)	**$69.58**	= value at beg of fiscal yr	2019

Bear Case: Assuming HOG's focus on international expansion does not go well and its new products do not perform as well as expected, I expect the value of the stock to substantially decrease. I expect the sales growth to diminish from 2% growth in 2021 to -2% in 2025. I also anticipate the NOPAT margin to decrease over time from 12.2% in 2021 to 7.5% in 2025. My target price is $35.62.

Figure 26: Bear case estimated value for 2019

	Summary		
First stage	$4.74	Present value of first 2 year cash flow	
Second stage	$10.63	Present value of year 3-7 cash flow	
Third stage	$20.25	Present value of terminal value P/E	
Value (P/E)	**$35.62**	= value at beg of fiscal yr	2019

Business Risks

Although I have many reasons to be optimistic about Harley-Davidson, there are several risks associated with the company that should be noted:

Loyal customers increasing in age:

HOG has continued to market its products to the older generation with its premium prices and encouragement of the older culture that has been built around the company.

Loss of brand identity:

New products in the United States and internationally have the possibility to increase revenue growth. However, there is the possibility that the new products, specifically the LiveWire™ models, backfire on the company. Harley-Davidson is known for having large, loud motorcycles. The LiveWire™ electric motorcycles will not have the typical Harley-Davidson engine and will not have the signature Harley sound.

International expansion to India may be more difficult:

During November 2018, Mahindra & Mahindra announced that the Jawa brand motorcycles will be resurrected. This may harm HOG's growth in India. Jawa motorcycles were originally introduced in the mid 1900's but ceased production in the late 1990's due to financial issues. The return of the Jawa motorcycles will lower HOG's market share and could severely hurt the company's future in India.

New product offerings may not attract new customers:

Harley-Davidson plans to introduce 500cc to 1250cc middleweight motorcycles beginning in 2020. New motorcycle riders are encouraged to start riding on smaller motorcycles, usually in the 250cc range. Since HOG does not offer a 250cc motorcycle, new riders start with other brands. Currently, HOG offers a 500cc model, the Harley-Davidson Street 500. Releasing another motorcycle with the same engine size may appeal to the same market instead of attracting new customers.

Appendix 1: SWOT Analysis

Strengths	Weaknesses
Brand loyalty Brand recognition	Susceptable to economic downturns Dependence on mature generation
Opportunities	**Threats**
International expansion New markets with new models	Competition Tariffs on overseas production

Appendix 2: Porter's 5 Forces

Threat of New Entrants – High

Harley-Davidson has many competitors that produce similar products. A motorcycle company could produce a model with new technology that takes away Harley's market share. Harley-Davidson has a culture formed around its motorcycles that other competitors have not been able to replicate. This culture helps to keep Harley-Davidson in its own motorcycle class and differentiate from competitors.

Threat of Substitutes – High

While Harley-Davidson motorcycles are forms of transportation, many consumers use them for recreational purposes. It is easy for consumers to choose to use a car or public transportation instead of a motorcycle for their commutes. There are many brands and styles of motorcycles available to consumers. Consumers are easily able to switch to another brand.

Supplier Power – Low

The suppliers have minimal leverage over Harley-Davidson and other motorcycle manufacturers. Harley-Davidsons products are manufactured using materials that are stable and readily available.

Buyer Power – High

Consumers have great control over how Harley-Davidson will perform. Consumers can easily switch products if prices rise too much. In the industry, there is a great amount of information available to consumers. Consumers have much information to intelligently compare motorcycle options.

Intensity of Competition – Very High

There are many companies manufacturing similar motorcycles to Harley-Davidson's. With Harley-Davidson's recent plan to have a stronger focus on international markets, competition will only increase.

Appendix 3: Sales forecast

Sales Forecasts (in thousands)							
Items	**Dec-14**	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**	**Dec-19**	**Dec-20**
Sales	$6,229	$5,995	$5,996	$5,647	$5,679	$5,807	$5,972
Growth		*-3.7%*	*0.0%*	*-5.8%*	*0.6%*	*2.3%*	*2.8%*
Motorcycles and Related Products	5,568	5,309	5,271	4,915	4,934	5,033	5,158
Growth		*-4.7%*	*-0.7%*	*-6.8%*	*0.4%*	*2.0%*	*2.5%*
% of sales	*89.4%*	*88.5%*	*87.9%*	*87.0%*	*86.9%*	*86.7%*	*86.4%*
Financial Services	661	687	725	732	745	775	814
Growth		*3.9%*	*5.6%*	*1.0%*	*1.7%*	*4.0%*	*5.0%*
% of sales	*10.6%*	*11.5%*	*12.1%*	*13.0%*	*13.1%*	*13.3%*	*13.6%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
United States	4,400	4,425	4,272	3,914	4,079	4,356	4,300
Growth		*0.6%*	*-3.5%*	*-8.4%*	*4.2%*	*6.8%*	*-1.3%*
% of sales	*70.6%*	*73.8%*	*71.2%*	*69.3%*	*71.8%*	*75.0%*	*72.0%*
Europe	875	734	805	798	800	691	776
Growth		*-16.2%*	*9.7%*	*-0.9%*	*0.3%*	*-13.6%*	*12.3%*
% of sales	*14.1%*	*12.2%*	*13.4%*	*14.1%*	*14.1%*	*11.9%*	*13.0%*
All Other	953	837	920	936	800	761	896
Growth		*-12.2%*	*9.9%*	*1.8%*	*-14.5%*	*-4.9%*	*17.7%*
% of sales	*15.3%*	*14.0%*	*15.3%*	*16.6%*	*14.1%*	*13.1%*	*15.0%*

Appendix 4: Income Statement

Income Statement (in thousands)							
Items	**Dec-14**	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**	**Dec-19**	**Dec-20**
Sales	$6,229	$5,995	$5,996	$5,647	$5,679	$5,807	$5,972
Direct costs	3,850	3,731	3,783	3,606	3,629	3,653	3,715
Gross Margin	2,379	2,265	2,214	2,041	2,050	2,155	2,257
SG&A, R&D, and other	1,112	1,168	1,183	1,142	1,200	1,225	1,230
EBIT	1,267	1,097	1,031	899	850	929	1,027
Interest	(16)	(54)	7	35	40	40	38
EBT	1,283	1,150	1,024	864	810	889	989
Taxes	439	398	332	342	186	213	218
Income	844	752	692	522	624	676	771
Other	-	-	-	-	-	-	-
Net income	844	752	692	522	624	676	771
Basic Shares	216.3	202.7	179.7	172.0	168.0	165.2	160.7
EPS	$3.90	$3.71	$3.85	$3.04	$3.71	$4.09	$4.80
DPS	$1.10	$1.23	$1.40	$1.46	$1.49	$1.51	$1.56

Appendix 5: Balance Sheet

Balance Sheet (in thousands)							
Items	**Dec-14**	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**	**Dec-19**	**Dec-20**
Cash	849	677	754	688	650	629	652
Operating assets ex cash	3,041	3,261	3,094	3,197	3,210	3,283	3,285
Operating assets	3,891	3,938	3,848	3,885	3,860	3,911	3,937
Operating liabilities	2,389	2,753	2,863	3,158	2,800	2,863	2,944
NOWC	1,501	1,185	986	727	1,060	1,048	992
NOWC ex cash (NWC)	652	508	231	39	410	419	340
NFA	5,580	6,008	6,036	6,088	6,100	6,238	6,415
Invested capital	*$7,081*	*$7,193*	*$7,022*	*$6,815*	*$7,160*	*$7,286*	*$7,407*
Marketable securities	57	45	6	-	-	-	-
Total assets	*$9,528*	*$9,991*	*$9,890*	*$9,973*	*$9,960*	*$10,149*	*$10,352*
Short-term and long-term debt	$3,762	$4,845	$4,667	$4,587	$4,670	$4,520	$4,370
Other liabilities	467	554	441	383	440	440	440
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	2,909	1,840	1,920	1,844	2,050	2,326	2,597
Total supplied capital	*$7,138*	*$7,239*	*$7,028*	*$6,815*	*$7,160*	*$7,286*	*$7,407*
Total liabilities and equity	*$9,528*	*$9,991*	*$9,890*	*$9,973*	*$9,960*	*$10,149*	*$10,352*

Appendix 6: Ratios

Ratios							
Items	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19	Dec-20
Profitability							
Gross margin	38.2%	37.8%	36.9%	36.1%	36.1%	37.1%	37.8%
Operating (EBIT) margin	20.3%	18.3%	17.2%	15.9%	15.0%	16.0%	17.2%
Net profit margin	13.6%	12.5%	11.5%	9.2%	11.0%	11.6%	12.9%
Activity							
NFA (gross) turnover		1.03	1.00	0.93	0.93	0.94	0.94
Total asset turnover		0.61	0.60	0.57	0.57	0.58	0.58
Liquidity							
Op asset / op liab	1.63	1.43	1.34	1.23	1.38	1.37	1.34
NOWC Percent of sales		22.4%	18.1%	15.2%	15.7%	18.1%	17.1%
Solvency							
Debt to assets	39.5%	48.5%	47.2%	46.0%	46.9%	44.5%	42.2%
Debt to equity	129.3%	263.4%	243.1%	248.7%	227.8%	194.3%	168.3%
Other liab to assets	4.9%	5.5%	4.5%	3.8%	4.4%	4.3%	4.3%
Total debt to assets	44.4%	54.0%	51.6%	49.8%	51.3%	48.9%	46.5%
Total liabilities to assets	69.5%	81.6%	80.6%	81.5%	79.4%	77.1%	74.9%
Debt to EBIT	2.97	4.42	4.53	5.10	5.49	4.86	4.25
EBIT/interest	(78.21)	(20.49)	146.64	25.97	21.25	23.40	26.74
Debt to total net op capital	53.1%	67.4%	66.5%	67.3%	65.2%	62.0%	59.0%
ROIC							
NOPAT to sales	13.4%	12.0%	11.6%	9.6%	11.5%	12.2%	13.4%
Sales to NWC		10.33	16.21	41.78	25.29	14.01	15.73
Sales to NFA		1.03	1.00	0.93	0.93	0.94	0.94
Sales to IC ex cash		0.94	0.94	0.91	0.90	0.88	0.89
Total ROIC ex cash		11.3%	10.9%	8.8%	10.4%	10.7%	11.9%
NOPAT to sales	13.4%	12.0%	11.6%	9.6%	11.5%	12.2%	13.4%
Sales to NOWC		4.46	5.52	6.60	6.36	5.51	5.85
Sales to NFA		1.03	1.00	0.93	0.93	0.94	0.94
Sales to IC		0.84	0.84	0.82	0.81	0.80	0.81
Total ROIC		10.0%	9.8%	7.9%	9.4%	9.8%	10.9%
NOPAT to sales	13.4%	12.0%	11.6%	9.6%	11.5%	12.2%	13.4%
Sales to EOY NWC	9.55	11.79	25.92	144.61	13.85	13.85	17.56
Sales to EOY NFA	1.12	1.00	0.99	0.93	0.93	0.93	0.93
Sales to EOY IC ex cash	1.00	0.92	0.96	0.92	0.87	0.87	0.88
Total ROIC using EOY IC ex cash	13.4%	11.0%	11.1%	8.9%	10.1%	10.6%	11.9%
NOPAT to sales	13.4%	12.0%	11.6%	9.6%	11.5%	12.2%	13.4%
Sales to EOY NOWC	4.15	5.06	6.08	7.77	5.36	5.54	6.02
Sales to EOY NFA	1.12	1.00	0.99	0.93	0.93	0.93	0.93
Sales to EOY IC	0.88	0.83	0.85	0.83	0.79	0.80	0.81
Total ROIC using EOY IC	11.8%	10.0%	9.9%	8.0%	9.1%	9.7%	10.8%
ROE							
5-stage							
EBIT / sales		18.3%	17.2%	15.9%	15.0%	16.0%	17.2%
Sales / avg assets		0.61	0.60	0.57	0.57	0.58	0.58
EBT / EBIT		104.9%	99.3%	96.1%	95.3%	95.7%	96.3%
Net income /EBT		65.4%	67.6%	60.4%	77.0%	76.0%	78.0%
ROA		7.7%	7.0%	5.3%	6.3%	6.7%	7.5%
Avg assets / avg equity		4.11	5.29	5.28	5.12	4.60	4.16
ROE		31.7%	36.8%	27.7%	32.0%	30.9%	31.3%
3-stage							
Net income / sales		12.5%	11.5%	9.2%	11.0%	11.6%	12.9%
Sales / avg assets		0.61	0.60	0.57	0.57	0.58	0.58
ROA		7.7%	7.0%	5.3%	6.3%	6.7%	7.5%
Avg assets / avg equity		4.11	5.29	5.28	5.12	4.60	4.16
ROE		31.7%	36.8%	27.7%	32.0%	30.9%	31.3%
Payout Ratio		33.1%	36.5%	48.2%	40.1%	37.0%	32.4%
Retention Ratio		66.9%	63.5%	51.8%	59.9%	63.0%	67.6%
Sustainable Growth Rate		21.2%	23.4%	14.4%	19.2%	19.5%	21.2%

Appendix 7: 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	2016	2017	2018	2019	Pst 5yr	Beta	Equity	Rating	Yield	Payout
HOG	HARLEY-DAVIDSON INC	$36.02	$5,865	(0.2)	(11.7)	(19.0)	(16.9)	(29.4)	(29.2)	8.2	7.9%	3.8%	-10.4%	12.5%	-4.1%	1.9%	1.48	194.9%	B+	3.49%	45.9%
PII	POLARIS INDUSTRIES INC	$83.98	$5,188	0.9	(7.5)	(21.5)	(34.2)	(34.4)	(32.3)	16.4	55.8%	-48.4%	39.4%	35.1%	6.6%	-9.4%	1.40	200.1%	A	2.47%	55.7%
THO	THOR INDUSTRIES INC	$55.98	$2,956	(0.6)	(18.8)	(41.0)	(44.3)	(62.5)	(62.9)	10.0	25.1%	30.5%	45.3%	14.8%	-13.4%	14.4%	1.83	0.0%	A-	2.21%	25.1%
WGO	WINNEBAGO INDUSTRIES	$21.13	$674	0.1	(23.0)	(42.6)	(48.1)	(61.5)	(62.0)	3.1	18.2%	10.5%	50.6%	27.3%	16.1%		1.37	54.5%	B	1.60%	12.4%
LCII	LCI INDUSTRIES	$65.87	$1,661	(1.5)	(9.6)	(28.7)	(29.6)	(47.1)	(49.3)	15.0	10.4%	62.5%	10.8%	6.9%	8.4%	26.0%	1.15	33.1%	B+	3.04%	40.2%
MPX	MARINE PRODUCTS CORP	$18.02	$622	1.8	(20.6)	(20.8)	9.8	20.6	41.4		17.0%	12.8%	36.4%	0.45	2.3%	23.6%	0.51	0.0%	B+	1.84%	53.7%
Average			$2,828	0.1	(15.2)	(28.9)	(27.2)	(35.7)	(32.4)	10.5	22.4%	11.9%	28.7%	23.6%	2.7%	11.3%	1.29	80.4%		2.44%	38.8%
Median			$2,309	(0.1)	(15.2)	(25.1)	(31.9)	(40.7)	(40.8)	10	17.6%	11.7%	37.9%	21.0%	4.4%	14.4%	1.39	43.8%		2.34%	43.0%
SPX	S&P 500 INDEX	$2,651		0.5	(2.8)	(8.2)	(4.9)	(0.5)	(0.8)			-3.3%	8.2%	38.2%	8.6%						

		2017		P/E							2017	2017			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2015	2016	2017	TTM	NTM	2018	2019	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
HOG	http://www.harley-davidson.com	25.9%	2.72	12.3	15.2	14.8	11.2	10.3	9.3	9.7	11.4%	1.19	15.4%	8.0%	16.8	5.7	10.4	-13.2%	-1.3%	0.2%	$13.22
PII	http://www.polaris.com	33.4%	5.78	12.7	23.7	25.6	19.7	12.7	12.8	12.0	5.5%	0.96	7.2%	9.1%	21.8	8.7	14.7	12.8%	5.2%	11.1%	$14.54
THO	http://www.thorindustries.com	19.3%	1.52	15.0	20.5	21.3	9.4	7.5	6.9	7.9	4.9%	0.38		23.4%	7.5	6.7		5.8%		20.8%	$36.77
WGO	http://www.winnebagoind.com	14.9%	1.25	13.1	18.8	22.0	6.6	5.6	6.6	5.6	4.7%	0.40	8.1%	13.3%	9.1	5.2		7.3%	10.2%	20.2%	$16.95
LCII	http://www.lci1.com	19.7%	2.26	19.0	20.7	22.6	11.5	10.4	10.7	9.9	6.8%	0.77	8.6%	20.4%	15.3	7.7	13.5	2.9%		19.0%	$29.17
MPX	http://www.marineproductscorp.com	25.7%	7.72	15.5	31.5	21.2	23.1	19.8	20.7	20.2	7.7%	2.33	12.1%	27.7%	14.3	22.1	21.7	7.6%	6.8%	12.4%	$2.33
Average		23.2%	3.54	14.6	21.7	21.2	13.6	11.0	11.2	10.9	6.8%	1.00	10.3%	17.0%	14.1	9.3	15.1	3.8%	5.2%	13.9%	
Median		22.7%	2.49	14.1	20.6	21.6	11.4	10.4	10.0	9.8	6.1%	0.86	8.6%	16.8%	14.8	7.2	14.1	6.5%	6.0%	15.7%	
SPX	S&P 500 INDEX			18.2	20.6	22.8			16.3	15.0											

Appendix 8: 3-stage DCF Model

	First Stage		Second Stage				
Cash flows	2019	2020	2021	2022	2023	2024	2025
Sales Growth	*2.3%*	*2.8%*	*2.0%*	*1.0%*	*0.5%*	*0.5%*	*0.5%*
NOPAT / S	*12.2%*	*13.4%*	*13.1%*	*12.8%*	*12.6%*	*12.3%*	*12.0%*
S / NWC	*13.85*	*17.56*	*17.56*	*17.56*	*17.56*	*17.56*	*17.56*
S / NFA (EOY)	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
S / IC (EOY)	*0.87*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
ROIC (EOY)	*10.6%*	*11.9%*	*11.6%*	*11.4%*	*11.1%*	*10.9%*	*10.6%*
ROIC (BOY)		*12.0%*	*11.8%*	*11.5%*	*11.2%*	*10.9%*	*10.7%*
Share Growth		*-2.8%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*
Sales	$5,807	$5,972	$6,091	$6,152	$6,183	$6,214	$6,245
NOPAT	$706	$801	$800	$791	$777	$763	$749
Growth		*13.5%*	*-0.2%*	*-1.2%*	*-1.7%*	*-1.8%*	*-1.8%*
- Change in NWC	9	-79	7	3	2	2	2
NWC EOY	*419*	*340*	*347*	*350*	*352*	*354*	*356*
Growth NWC		*-18.9%*	*2.0%*	*1.0%*	*0.5%*	*0.5%*	*0.5%*
- Chg NFA	138	177	128	65	33	33	33
NFA EOY	*6,238*	*6,415*	*6,543*	*6,608*	*6,642*	*6,675*	*6,708*
Growth NFA		*2.8%*	*2.0%*	*1.0%*	*0.5%*	*0.5%*	*0.5%*
Total inv in op cap	147	98	135	69	35	35	35
Total net op cap	6657	6755	6890	6959	6994	7029	7064
FCFF	$559	$704	$665	$722	$742	$728	$714
% of sales	*9.6%*	*11.8%*	*10.9%*	*11.7%*	*12.0%*	*11.7%*	*11.4%*
Growth		*25.9%*	*-5.5%*	*8.5%*	*2.8%*	*-1.9%*	*-1.9%*
- Interest (1-tax rate)	30	30	30	29	29	29	28
Growth		*-0.7%*	*-1.1%*	*-1.2%*	*-1.2%*	*-1.2%*	*-1.2%*
+ Net new debt	-150	-150	-50	-50	-50	-50	-50
Debt	4520	4370	4320	4270	4220	4170	4120
Debt / tot net op capital	*67.9%*	*64.7%*	*62.7%*	*61.4%*	*60.3%*	*59.3%*	*58.3%*
FCFE w debt	$379	$524	$585	$642	$663	$650	$636
% of sales	*6.5%*	*8.8%*	*9.6%*	*10.4%*	*10.7%*	*10.5%*	*10.2%*
Growth		*38.3%*	*11.8%*	*9.8%*	*3.3%*	*-2.0%*	*-2.1%*
/ No Shares	165.2	160.7	157.4	154.3	151.2	148.2	145.2
FCFE	$2.29	$3.26	$3.72	$4.16	$4.39	$4.38	$4.38
Growth		*42.2%*	*14.1%*	*12.0%*	*5.4%*	*0.0%*	*-0.1%*
* Discount factor	0.90	0.82	0.74	0.67	0.61	0.55	0.49
Discounted FCFE	$2.07	$2.67	$2.75	$2.79	$2.65	$2.40	$2.17
Third Stage							
Terminal value P/E							
Net income	$676	$771	$770	$761	$748	$735	$721
% of sales	*11.6%*	*12.9%*	*12.6%*	*12.4%*	*12.1%*	*11.8%*	*11.5%*
EPS	$4.09	$4.80	$4.89	$4.93	$4.95	$4.96	$4.97
Growth		*17.3%*	*1.9%*	*0.8%*	*0.3%*	*0.2%*	*0.2%*
Terminal P/E							14.83
* Terminal EPS							$4.97
Terminal value							$73.67
* Discount factor							0.49
Discounted terminal value							$36.46

First stage	$4.74	Present value of first 2 year cash flow
Second stage	$12.76	Present value of year 3-7 cash flow
Third stage	$36.46	Present value of terminal value P/E
Value (P/E)	$53.96	= value at beg of fiscal yr 2019