

Diodes Incorporated

BUY

ers

Bradley Smith bw25smit@siena.edu

NASDAQ: DIOD | \$48.02 Target Price: \$73.00

COMPANY STATISTICS:

Market Cap:	\$2.5B
52-week Range:	29.88-49.36
Average Volume:	0.33M
Statistical Beta:	1.27
1 Year Target Price:	\$77.00

EARNINGS SUMMARY:

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FYE Dec		Last 4 Quart
Revenue:	Q3 2019	\$323,674
	Q2 2019	\$322,006
	Q1 2019	\$302,293
	Q4 2018	\$314,446
DEPS:	Q3 2019	\$0.73
	Q2 2019	\$0.70
	Q1 2019	\$0.62
	Q4 2018	\$(0.62)



COMPANY PROFILE:

Diodes Incorporated is a global technology company that designs, markets, and manufactures products in the broad discrete, logic, analog, and mixed signal semiconductor markets. The company is one of the leading suppliers of these products in a number of different market segments, including the industrial, consumer, communications, computing, and automotive industries. While the majority of the company's over \$1 billion in annual revenues comes from regions outside of North America, the company is headquartered in Plano, TX and has been in operation since 1959, and traded on the NASDAQ since the late 1970's.

REPORTING:

Sector: Technology
Industry: Semiconductors
Last Guidance: Nov 4, 2019
Next Earnings Date: Feb, 2020
Expected Revenues: \$300M
Expected GAAP DEPS: \$0.93

TOP COMPETITORS:

ON Semiconductor Corp (ON) Cree Inc. (CREE) Sentech Corp (SMTC) Skyworks Solutions Inc. (SWKS) SMART Global Holdings (SGH) Cirrus Logic (CRUS)

Maxim (Integrated Products (MXIM)

MANAGEMENT:

Keh-Shew Lu, CEO Brett Whitmire, CFO Tim Monaghan, President Gary Yu, President

INVESTMENT THESIS:

Well managed firm strengthening balance sheet while improving operating margins and revenue — presents BUY opportunity.

I am initiating continuing coverage of Diodes Inc. (DIOD) with a BUY rating, and a target price of \$73.00. I believe DIOD is currently being undervalued by the market due to concerns over the firm's exposure to global trade tensions and foreign political risk, along with an anticipated slowdown in the semiconductor industry. However, the firm has shown strong financial performance despite these concerns, and is well positioned to continue its growth into the future.

CATALYSTS:

- China/US Trade and Political Risk: The majority of DIOD's manufacturing, and sales occur in China, the company has not only been exposed to the consequences of US/China trade tensions, but also legal and political issues in China.
- Improved Margins Through Segment Expansion: DIOD is shifting sales focus to its automotive and industrial markets, growth in these areas will be a key driver in margin growth.
- Development & Improvement of Technology: DIOD will need to keep pace with changes in tech in its industry. R&D and patents on new products will be a key driver of rev growth.



EARNINGS PERFORMANCE:

During the FY 2019, DIOD has had consistent earnings that have all met or beaten investors' expectations. Additionally, the company has been experiencing consistent revenue growth along with steadily improving margins. During the company's most recent Q3 earnings call, revenue of \$323.7 million was reported, and revenue growth was recorded at 0.8% overall Y/Y, while gross profit increased 5.9% compared to the same period. Additionally, non-GAAP earnings per share were reported to be \$0.81, representing a 19.1% growth Y/Y.

FY 2019 is expected to be a record year for the company in terms revenues. Guidance for FYE 2019 has been set during the company's last earnings conference call, with revenues expected to be around \$300 million +/- 2%. This would result in an approximately 2.8% growth in revenue compared to FYE 2018. Margins are expected to remain steady over the course of Q4 2019, but expansion in operating margins are expected by the company over the course of the 2020 FY. Additionally, net

Yeae Ended Dec									
	(Proje	ected) 2019	2018		2017			2016	
Revenue	\$	1,248.01	\$	1,214.00	\$	1,054.20	\$	942.20	
Revenue Growth (Y/Y)		2.80%		15.16%		11.89%		10.99%	
EBITDA	\$	288.40	\$	259.30	\$	185.60	\$	137.10	
EBITDA Margin		23.11%		21.36%		17.61%		14.55%	
ROE		14.33%		11.90%		-0.22%		1.94%	
ROA		9.55%		6.81%		-0.12%		1.04%	
ROC		9.89%		8.20%		4.70%		1.90%	
ROIC		11.88%		10.16%		5.68%		2.35%	

income for Q4 2019 is expected to be around \$51 million, which would result in overall DEPS of \$0.93.

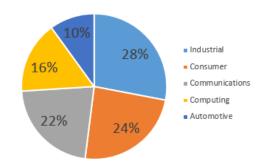
CAPITAL STRUCTURE:

WACC Calculation									
Risk-Free Rate		1.00%							
Market Return		8.00%							
Levered Beta		1.27							
Cost of Equity		9.89%							
Interest Expense	\$	6.16							
Total LT Debt	\$	180							
Tax Rate		25.0%							
After-Tax Cost of Debt		2.57%							
Total Equity	\$	2,451.00							
Total Debt	\$	118							
Total Capital	\$	2,569.00							
Weight of Equity		95.41%							
Weight of Debt		4.59%							
WACC		9.55%							

DIOD's capital structure was calculated to consist of approximately 5% debt and 95% equity. The company's total debt is the sum of its current portion of LT debt, as well as the current portion of capital leases plus its LT debt and capital leases net of the current portion. It's cost of debt was calculated by dividing the interest expense by its current outstanding debt, then multiplying by one minus the effective tax rate. The cost of equity was calculated using CAPM, and given that the majority of the firm's sales come from the Asia Pacific region (74%), followed by Europe (17%), then North America (9%), a market risk premium of 7% was used, which is the approximate weighted average of the three regions. Additionally, the levered beta was calculated by unlevering the firm's 3-year statistical beta, then relevering it based on the firm's D/E ratio of ~17%. Combined, this produced a weighted average cost of capital of 9.55%

BUSINESS MODEL:

DIOD is a designer, marketer, and manufacturer of various types of semiconductors and semiconductor equipment. The company operates out of 21 locations spread throughout the globe, and is headquartered in Plano, TX. DIOD offers semiconductor products that are classified into six main categories. These categories include discrete, analog, power management, connectivity and timing, logic, and automotive. Within these categories, DIOD offers 34 distinct products that service the industrial, consumer, communications, computing, and automotive industries. A breakdown of what market segments DIOD's over \$1 billion in revenues comes from can be seen in the chart to the right.

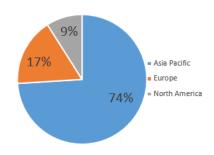


Recently, DIOD has been focusing more on generating sales from the automotive and industrial sectors. This is because the products that are offered, and that are most popular, in these industries generally have higher margins when compared to other types of products. Growth in sales for these sectors will be key for DIOD moving forward, as the company is starting to shift its efforts away from prioritizing revenue growth, and is beginning to focus more on margin expansion. DIOD's financial and operational goals for the coming years include generating \$1 billion in gross profit by 2025. The company expects the majority for this margin expansion to



come from the growth in the automotive and industrial sectors. DIOD's automotive revenue has grown appositely 33% over the past five years, while its industrial sales have grown 14.6%.

Additionally, DIOD's total revenue can be broken down further into geographic segments. The chart to the left depicts from which geographic segments DIOD's revenue is generated from. It can be seen that close to three quarters of the firm's total revenue is generated from the Asia Pacific Region. This is important to note, as it means that the firm is much more exposed to foreign financial and political risk. Consequently, since the majority of DIOD's products are manufactured in China, the company has had to contend with U.S/China trade tensions as well as legal interference from the Chinese government on DIOD's operations. Despite these challenges, the firm has continued to post strong revenue growth, and consistent margins over the course of FY 2018 and 2019, however, major risks and concerns do still exist.



INDUSTRY OUTLOOK/COMPETITOR ANALYSIS:

DIOD operates in the Semiconductor & Semiconductor Equipment industry, within the Information Technology sector. This industry has seen major growth over the past 5 years, with a CAGR of around 20% based off of the NASDAQ semiconductor sector index. Growth for this industry is expected to continue, but at a slower rate than has been seen in previous years. This is due to a number of factors, including global trade issues, and an overall decline in demand in all major markets. Despite the slowdown in the industry as a whole, DIOD's stock has been performing quite well, as can be seen in the chart on page one. DIOD has kept pace with the value weighted index of its closest competitors, and is up just a little under 50% over the past year. A further breakdown of how DIOD compares to its peers based on financial and operational ratios is discussed in detail below. The following values are based on the last twelve months of financial data for each of the companies:

LTM									
	EPS		P/E	MC/BV	Rev/SG&A	Rev/R&D			
Diodes Inc. (DIOD)	\$	2.63	18.24	2.28	6.97	14.33			
ON Semiconductor Corp (ON)		0.77	28.74	2.81	9.35	8.87			
Cree Inc. (CREE)		N/A	N/A	2.37	4.89	6.34			
Sentech Corp (SMTC)	\$	0.73	64.81	4.64	3.78	5.28			
Skyworks Solutions Inc. (SWKS)	\$	4.89	20.72	4.12	16.77	7.96			
SMART Global Holdings (SGH)	\$	2.18	13.61	2.58	11.92	25.30			
Cirrus Logic (CRUS)	\$	1.94	38.23	3.63	9.68	3.33			
Maxim (Integrated Products (MXIM)	\$	2.78	20.65	8.73	7.29	5.12			
Average		2.28	29.29	3.90	8.83	12.02			

LTM									
	Profit Margin	Asset Turnover	Leverage Ratio	ROE					
Diodes Inc. (DIOD)	10.74%	0.78	1.49	12.59%					
ON Semiconductor Corp (ON)	5.71%	0.66	2.63	9.90%					
Cree Inc. (CREE)	N/A	0.37	1.38	N/A					
Sentech Corp (SMTC)	8.71%	0.55	1.51	7.20%					
Skyworks Solutions Inc. (SWKS)	25.28%	0.70	1.17	20.71%					
SMART Global Holdings (SGH)	4.23%	1.72	2.57	18.76%					
Cirrus Logic (CRUS)	9.81%	0.75	1.34	9.92%					
Maxim (Integrated Products (MXIM)	34.87%	0.60	2.07	43.24%					
Average	14.19%	0,77	1,77	17.47%					

	LTM								
	ROE	ROA	ROC	ROIC					
Diodes Inc. (DIOD)	12.59%	8.42%	10.56%	12.68%					
ON Semiconductor Corp (ON)	9.90%	3.76%	9.41%	10.85%					
Cree Inc. (CREE)	N/A	N/A	N/A	N/A					
Sentech Corp (SMTC)	7.20%	4.77%	5.50%	8.08%					
Skyworks Solutions Inc. (SWKS)	20.71%	17.64%	20.60%	25.96%					
SMART Global Holdings (SGH)	18.76%	7.29%	14.11%	17.74%					
Cirrus Logic (CRUS)	9.92%	7.38%	9.00%	10.81%					
Maxim (Integrated Products (MXIM)	43.24%	20.92%	27.00%	67.06%					
Average	17.47%	10.03%	13,74%	21.88%					

Overall, DIDO seems to compare fairly well to its competitors, especially when looking at the company's valuation ratios such as P/E and market cap to book value, where the firm is the number two and number one performer, respectively, as well as EPS where the firm is one of the top three performers.

Additionally, DIOD is one of the top performing firms in the areas of return on research and development spending, as well as total asset turnover. This means that DIOD is quite an efficient company when it comes to generating revenue from its assets and R&D spending. For the rest of the categories, DIOD generally performs slightly under the peer averages, and is not the worst performing firm based on any of the ratios.

Overall, it can be seen that DIOD is a relatively

strong company that is efficient with its spending and revenue generation. Although the company is not a peer group leader in the majority of the performance metrics, for the most part the company performs close to the peer group averages, while at the same time is priced by the market at a much lower value than any of its direct competitors. These strengths my investment thesis that DIOD is currently being undervalued by the market, given that the company's performance is comparable to most of its peers, yet its MC/BV and P/E ratios are much lower than the peer averages.

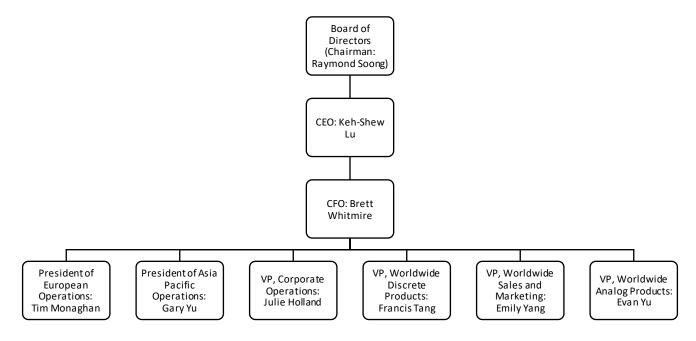


LTM								
Company	INV TO	Days in Inventory						
Diodes Inc. (DIOD)	3.4	106.34						
ON Semiconductor Corp (ON)	2.9	127.9						
Cree Inc. (CREE)	3.7	97.8						
Sentech Corp (SMTC)	3.1	117.3						
Skyworks Solutions Inc. (SWKS)	2.9	125.5						
SMART Global Holdings (SGH)	8.2	44.5						
Cirrus Logic (CRUS)	4.0	92.1						
Maxim (Integrated Products (MXIM)	3.4	108.3						
Average	3.9	102.5						

Lastly, it can also be seen that DIOD performs close to the peer group average for inventory turnover, which is an indicator that the company is not having any trouble selling its inventory, and is also not likely to be experiencing any inventory shortages that could affect its sales.

MANAGEMENT:

DIOD has a core management team that consists of two chief executives (CEO, and CFO), two presidents (who oversee the Company's foreign markets), and four vice presidents that each have their own responsibilities, including Corporate operations, Discrete Product Operations & Sales, Analog Product Operations & Sales, and Worldwide Sales & marketing. These executives report to the board of directors, which is chaired Raymond Soong, by a director independent from the executive management team. An organizational chart of the company's upper level management can be seen below:



Additionally, executive compensation figures found in the company's quarterly and annual reports indicate that dilutive share-based compensation is utilized by the firm to compensate its management team. These SBC figures are not out of the ordinary for comparable firms in the company's industry, and is quite common to find in the technology sector in general. It was found that on average, dilution to DIOD's shares are to the magnitude of about 0.6M shares per fiscal year.

SBC and Share Dilution											
		2014		2015		2016		2017	2018		LTM
Stock-Based Compensation	\$	14.10	\$	19.00	\$	14.00	\$	18.60	\$ 20.70	\$	20.10
Weighted Avg. Diluted Shares Out.		48.6		49.5		49.8		48.8	50.9		51.5



OWNERSHIP SUMMARY:

The following charts summarize the number of shares held by insiders and institutions:

Major Holders					
% of Shares Held by All Insider	20%				
% of Shares Held by Institutions	83%				
% of Float Held by Institutions	105%				
Number of Institutions Holding Shares	291				

These next charts summarize who the top institutional holders are:

Top Institutional Holders									
Holder	Shares	Date Reported	% Out	Value					
Blackrock Inc.	6567349	9/29/2019	12.87% \$	263,679,062					
Vanguard Group, Inc. (The)	4722074	9/29/2019	9.25% \$	189,591,271					
Dimensional Fund Advisors LP	3712840	9/29/2019	7.27% \$	149,070,526					
Lsv Asset Management	2320836	9/29/2019	4.55% \$	93,181,565					
Congress Asset Management	2182394	9/29/2019	4.28% \$	87,623,119					

Top Mutual Fund Holders									
Holder	Shares	Date Reported	% Out	Value					
iShares Core S&P Smallcap ETF	2399699	8/30/2019	4.70% \$	87,708,998					
American Beacon Small Cap Value Fd	1791914	4/29/2019	3.51% \$	65,261,507					
Vanguard Total Stock Market Index Fund	1134901	6/29/2019	2.22% \$	41,276,349					
DFA U.S. Small Cap Value Series	1116878	4/29/2019	2.19% \$	40,676,696					
Vanguard Small-Cap Index Fund	1028987	6/29/2019	2.02% \$	37,424,257					

These last charts summarize who the top insider holders are, and how many insider sales there were within the past 6 months:

	Insider Holdings		
Individual or Entity	Most Recent	Date	Shares Owned as of
individual of Entity	Transaction	Date	Transaction Date
GIORDANO MICHAEL R	Stock Award(Grant)	5/16/2019	94376
HOLLAND JULIE A	Sale	10/31/2019	110021
LU KEH-SHEW	Sale	11/26/2019	1534110
SOONG RAYMOND	Stock Award(Grant)	5/16/2019	416000
TANG FRANCIS	Sale	11/26/2019	136930
TSAI MICHAEL KUO CHIH	Stock Award(Grant)	5/16/2019	41625
WHITE RICHARD DALLAS	Sale	11/25/2019	119667
WHITMIRE BRETT R	Sale	8/12/2019	28000
YANG EMILY	Sale	10/27/2019	65722
YU EVAN	Sale	7/29/2019	67026

Insider Transactions	
Insider Purchases Last 6 Months	Shares
Purchases	61700
Sales	91115
Net Shares Purchased (Sold)	-29415
Total Insider Shares Held	10.38M
% Net Shares Purchased (Sold)	-0.30%

From these charts, it can be seen that there has been no real significant change in insider holdings over the past 6 months.



Conclusion:

DIOD is a well-managed firm that has been cleaning up its balance sheet by reducing its total debt by over 50% during the last 4 years. Additionally, the company as shown strong revenue growth and improving margins since the end of FY 2017. I believe DIOD's strategy to improve margins even more in the coming years through the expansion of its automotive and industrial sales will lead to better than anticipated net income growth, and that the company will continue to reduce its total debt even further within the next 1-2 fiscal years. Additionally, although the company does have heavy exposure to foreign trade and political risk, they have historically been able to deal with these issues without significant consequences to their earnings, and I expect this trend to continue into the future. Also, despite the recent slowdown in the semiconductor industry, the firm has continued to grow its sales numbers, and with the rapid expansion of the automotive and industrial sales I believe that the company will be able to continually grow its revenue while improving it operating margins during the industry slowdown.

Shown below are DCF valuations for DIOD is a bearish, and a bullish scenario. The base DCF and multiple valuation models are displayed on the next page in the valuation section:

						Duilisi		CF Valuation	•••					
		Base Year		Year 1		Year 2		Year 3		Year 4		Year 5	(Continuing Period
Revenue	\$	1,248	\$	1,295	\$	1,295	\$	1,425 \$		1,503	\$	1,556	\$	1,587
Rev growth				3.80%		0.00%		10.00%		5.50%		3.50%		2.00%
EBITDA Margin		23.00%		21.50%		21.50%		21.50%		21.50%		21.50%		21.50%
EBITDA	\$	287	\$	279	\$	279	\$	306 \$		323	\$	335	\$	341
Depreciation	\$	115	\$	119	\$	119	\$	131 \$		139	\$	143	\$	146
Tax Rate		25.00%		25.00%		25.00%		25.00%		25.00%		25.00%		25.00%
NOPAT	\$	129	\$	119	\$	119	\$	131 \$		139	\$	143	\$	146
VWC spending	\$	15	\$	10	\$	8	\$	6 \$		4	\$	2	\$	-
let CAPEX	\$	(2)	\$	137	\$	137	\$	151 \$		159	\$	164	\$	168
CAPEX/Rev		-0.16%		1.35%		1.35%		1.35%		1.35%		1.35%		1.35%
JFCF	\$	143	\$	266	\$	264	\$	288 \$		301	\$	310	\$	314
WACC		9.62%												
PV UFCF	\$	3,690		3,779	\$	3,878	\$	3,963 \$		4,043	\$	4,122		
laims (total debt)	\$	180		165										
Cash	Ś	218	\$	220										
quity	S	3,728	Ś	3,834										
)SO		52		52										
Intrinsic	Value \$	71.88												
	Price \$	73.91												
						Dagwiel	- D	CE Valuatio						
		Rase Vear		Vear 1			h D	CF Valuatio	n	Voar 4		Vear 5		Continuing Period
evenue	Ś	Base Year	\$	Year 1	\$	Year 2		Year 3		Year 4	\$	Year 5		Continuing Period
	\$	Base Year	\$	1,273	\$	Year 2 1,248		Year 3 1,310 \$		1,297	\$	1,323		1,349
ev growth	\$	1,248	\$	1,273 2.00%	\$	Year 2 1,248 -2.00%		Year 3 1,310 \$ 5.00%		1,297 -1.00%	\$	1,323 2.00%		1,349 2.00%
ev growth BITDA Margin		1,248 23.00%		1,273 2.00% 18.00%		Year 2 1,248 -2.00% 15.00%	\$	Year 3 1,310 \$ 5.00% 20.00%		1,297 -1.00% 20.00%		1,323 2.00% 20.00%	\$	1,349 2.00% 20.00%
ev growth BITDA Margin BITDA	\$	1,248 23.00% 287	\$	1,273 2.00% 18.00% 229	\$	Year 2 1,248 -2.00% 15.00% 187	\$	Year 3 1,310 \$ 5.00% 20.00% 262 \$		1,297 -1.00% 20.00% 259	\$	1,323 2.00% 20.00% 265	\$	1,349 2.00% 20.00% 270
Rev growth EBITDA Margin EBITDA Depreciation		1,248 23.00% 287 115	\$	1,273 2.00% 18.00% 229 117	\$	Year 2 1,248 -2.00% 15.00% 187 115	\$	Year 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$		1,297 -1.00% 20.00% 259 119	\$	1,323 2.00% 20.00% 265 122	\$	1,349 2.00% 20.00% 270 124
Rev growth BITDA Margin BITDA Depreciation Tax Rate	\$	1,248 23.00% 287 115 30.00%	\$ \$	1,273 2.00% 18.00% 229 117 30.00%	\$	Year 2 1,248 -2.00% 15.00% 187 115 30.00%	\$ \$ \$	1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00%		1,297 -1.00% 20.00% 259 119 30.00%	\$	1,323 2.00% 20.00% 265 122 30.00%	\$ \$ \$	1,349 2.00% 20.00% 270 124 30.00%
Rev growth EBITDA Margin EBITDA Depreciation Tax Rate	\$ \$	1,248 23.00% 287 115 30.00% 120	\$ \$	1,273 2.00% 18.00% 229 117 30.00%	\$ \$	1,248 -2.00% 15.00% 187 115 30.00% 51	\$ \$ \$ \$	1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$		1,297 -1.00% 20.00% 259 119 30.00% 98	\$ \$	1,323 2.00% 20.00% 265 122 30.00%	\$ \$ \$	1,349 2.00% 20.00% 270 124
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ev growth SITDA Margin SITDA epreciation ax Rate OPAT WC spending et CAPEX APEX/Rev FCF	\$ \$ \$	1,248 23.00% 287 115 30.00% 120 15 (2) -0.16% 134	\$ \$ \$ \$ \$	1,273 2.00% 18.00% 229 117 30.00% 78 10	\$ \$ \$ \$	1,248 -2.00% 15.00% 187 115 30.00% 51 8 113	\$ \$ \$ \$ \$ \$	Year 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$ 6 \$ 119 \$		1,297 -1.00% 20.00% 259 119 30.00% 98 4 117	\$ \$ \$ \$	1,323 2.00% 20.00% 265 122 30.00% 100 2	\$ \$ \$ \$ \$	1,349 2.00% 20.00% 270 124 30.00% 102 - 122 -0.16%
ev growth BITDA Margin BITDA epreciation ax Rate OPAT WC spending et CAPEX APEX/Rev FCF	\$ \$ \$ \$ \$	1,248 23.00% 287 115 30.00% 120 15 (2) -0.16% 134 9.62%	\$ \$ \$ \$ \$	1,273 2.00% 18.00% 229 117 30.00% 78 10 115 -0.16% 204	\$ \$ \$ \$ \$	Year 2 1,248 -2.00% 15.00% 187 115 30.00% 51 8 113 -0.16% 171	\$ \$ \$ \$ \$ \$ \$	Year 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$ 6 \$ 119 \$ -0.16% 223 \$		1,297 -1.00% 20.00% 259 119 30.00% 98 4 117 -0.16% 219	\$ \$ \$ \$ \$	1,323 2.00% 20.00% 265 122 30.00% 100 2 120 -0.16% 222	\$ \$ \$ \$ \$	1,349 2.00% 20.00% 270 124 30.00% 102 - 122 -0.16%
ev growth BITDA Margin BITDA eepreciation ax Rate OPAT WC spending et CAPEX APEX/Rev FCF VACC	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,248 23.00% 287 115 30.00% 120 15 (2) -0.16% 134 9.62% 2,649	\$ \$ \$ \$ \$	1,273 2.00% 18.00% 229 117 30.00% 78 10 115 -0.16% 204	\$ \$ \$ \$ \$	Year 2 1,248 -2.00% 15.00% 187 115 30.00% 51 8 113 -0.16%	\$ \$ \$ \$ \$ \$ \$	76ar 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$ 6 \$ 119 \$ -0.16%		1,297 -1.00% 20.00% 259 119 30.00% 98 4 117 -0.16%	\$ \$ \$ \$ \$	1,323 2.00% 20.00% 265 122 30.00% 100 2 120	\$ \$ \$ \$ \$	1,349 2.00% 20.00% 270 124 30.00% 102 - 122 -0.16%
ev growth BITDA Margin BITDA epreciation ax Rate OPAT WC spending et CAPEX APEX/Rev FCF VACC V UFCF laims (total debt)	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,248 23.00% 287 115 30.00% 120 15 (2) -0.16% 134 9.62% 2,649 180	\$ \$ \$ \$ \$	1,273 2.00% 18.00% 229 117 30.00% 78 10 115 -0.16% 204 2,700 180	\$ \$ \$ \$ \$	Year 2 1,248 -2.00% 15.00% 187 115 30.00% 51 8 113 -0.16% 171	\$ \$ \$ \$ \$ \$ \$	Year 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$ 6 \$ 119 \$ -0.16% 223 \$		1,297 -1.00% 20.00% 259 119 30.00% 98 4 117 -0.16% 219	\$ \$ \$ \$ \$	1,323 2.00% 20.00% 265 122 30.00% 100 2 120 -0.16% 222	\$ \$ \$ \$ \$	1,349 2.00% 20.00% 270 124 30.00% 102 - 122 -0.16%
ev growth BITDA Margin BITDA eperceiation ax Rate IOPAT IWC spending let CAPEX APEX/Rev IFCF VACC V UFCF laims (total debt) ash	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,248 23.00% 287 115 30.00% 120 15 (2) -0.16% 134 9.62% 2,649 180 218	\$ \$ \$ \$ \$ \$	1,273 2.00% 18.00% 229 117 30.00% 78 10 115 -0.16% 204 2,700 180 180	\$ \$ \$ \$ \$	Year 2 1,248 -2.00% 15.00% 187 115 30.00% 51 8 113 -0.16% 171	\$ \$ \$ \$ \$ \$ \$	Year 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$ 6 \$ 119 \$ -0.16% 223 \$		1,297 -1.00% 20.00% 259 119 30.00% 98 4 117 -0.16% 219	\$ \$ \$ \$ \$	1,323 2.00% 20.00% 265 122 30.00% 100 2 120 -0.16% 222	\$ \$ \$ \$ \$	1,349 2.00% 20.00% 270 124 30.00% 102 - 122 -0.16%
Revenue Revenue Reverous Reverous	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,248 23.00% 287 115 30.00% 120 15 (2) -0.16% 134 9.62% 2,649 180 218 2,687	\$ \$ \$ \$ \$ \$	1,273 2,00% 18.00% 229 117 30.00% 78 10 115 -0.16% 204 2,700 180 180 2,700	\$ \$ \$ \$ \$	Year 2 1,248 -2.00% 15.00% 187 115 30.00% 51 8 113 -0.16% 171	\$ \$ \$ \$ \$ \$ \$	Year 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$ 6 \$ 119 \$ -0.16% 223 \$		1,297 -1.00% 20.00% 259 119 30.00% 98 4 117 -0.16% 219	\$ \$ \$ \$ \$	1,323 2.00% 20.00% 265 122 30.00% 100 2 120 -0.16% 222	\$ \$ \$ \$ \$	1,349 2.00% 20.00% 270 124 30.00% 102
ev growth BITDA Margin BITDA BITDA eprociation ax Rate OPAT WC spending et CAPEX APEX/Rev FCF VACC V UFCF laims (total debt) ash quity	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,248 23.00% 287 115 30.00% 120 15 (2) -0.16% 134 9.62% 2,649 180 218	\$ \$ \$ \$ \$ \$	1,273 2.00% 18.00% 229 117 30.00% 78 10 115 -0.16% 204 2,700 180 180	\$ \$ \$ \$ \$	Year 2 1,248 -2.00% 15.00% 187 115 30.00% 51 8 113 -0.16% 171	\$ \$ \$ \$ \$ \$ \$	Year 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$ 6 \$ 119 \$ -0.16% 223 \$		1,297 -1.00% 20.00% 259 119 30.00% 98 4 117 -0.16% 219	\$ \$ \$ \$ \$	1,323 2.00% 20.00% 265 122 30.00% 100 2 120 -0.16% 222	\$ \$ \$ \$ \$	1,349 2.00% 20.00% 270 124 30.00% 102 - 122 -0.16%
ev growth BITDA Margin BITDA epreciation ax Rate OPAT WC spending ete CAPEX APEX/Rev FCF VACC VUFCF laims (total debt) ash	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,248 23.00% 287 115 30.00% 120 15 (2) -0.16% 134 9.62% 2,649 180 218 2,687	\$ \$ \$ \$ \$ \$	1,273 2,00% 18.00% 229 117 30.00% 78 10 115 -0.16% 204 2,700 180 180 2,700	\$ \$ \$ \$ \$	Year 2 1,248 -2.00% 15.00% 187 115 30.00% 51 8 113 -0.16% 171	\$ \$ \$ \$ \$ \$ \$	Year 3 1,310 \$ 5.00% 20.00% 262 \$ 121 \$ 30.00% 99 \$ 6 \$ 119 \$ -0.16% 223 \$		1,297 -1.00% 20.00% 259 119 30.00% 98 4 117 -0.16% 219	\$ \$ \$ \$ \$	1,323 2.00% 20.00% 265 122 30.00% 100 2 120 -0.16% 222	\$ \$ \$ \$ \$	1,349 2.00% 20.00% 270 124 30.00% 102 - 122 -0.16%

It can be clearly seen in the above discounted cash flow models that, even in a bearish scenario, with lower than anticipated re venue growth and EBITDA margin numbers, the firm is still undervalued at its current price of \$48.02. Additionally, in the valuation section shown on the next page, it can be seen that the firm is significantly undervalued when using the anticipated growth and margin values in a DCF model, as well as when comparing the firm's valuation ratios to its competitors, and calculating the implied share price based on those values. Regardless of the valuation model that you use, or whether you use base, bearish, or bullish assumptions, the firm is undervalued across the board, and deserves to be trading at a much higher price than it currently is.



VALUATION:

Bullish Weighted Valuation
DCF Weight 25%
EV/Rev Weight 25%
EV/EBITDA Weight 0%
P/E Weight 25%
P/S Weight 25%
P/S Weight 0%
Asset Based Weight 0%
Intrinsic Value 574.71
1 Yr Target Price 579.44

Bearish Weighted Valuation
DCF Weight 25%
EV/Rev Weight 25%
EV/EBITDA Weight 25%
P/E Weight 25%
P/S Weight 25%
P/BV Weight 0%
Asset Based Weight 0%
Intrinsic Value \$69.69
1 Yr Target Price \$73.94

Asset Based	d Valuation	
Book Value of Equity	\$	1,077
Proj BV Equity	\$	1,150
DSO		51.869
Intrinsic Value	\$	20.77
1 Yr Target Price	\$	22.17

BUY Su	mmary	
Current Price:	\$	48.02
Buy Below:	\$	73.05
Sell Above:	\$	77.58
Potential Upside:		61.56%

	EV Valu	ation Sur	mmary	=					EV Tar	get	Price					
	EV/Rev		EV/E	BITDA		Measure	Avg EV/Rev		Projected Rev		Projected EV	Projected [ebt	Projected Cash		Projected Equity Value
Average EV/Rev	\$	4	Average EV/EBITDA	\$	21	EV/Rev	3.74	\$	1,283	\$	4,796	\$	170	\$	200	\$ 4,826
Enterprise Value	\$	4,719	Enterprise Value	\$	6,139	Measure	Avg EV/EBITDA	Pr	ojected EBITDA		Projected EV	Projected [ebt			Projected Equity Value
Equity Value	\$	4,320	Equity Value	\$	6,177	EV/EBITDA	20.95	\$	257	\$	5,374	\$	170	\$	200	\$ 5,404
DSO	\$	52	DSO	\$	52											
	Intrinsic Value \$	83.30	Intrinsic Value	e \$	119.09											
	1 Yr Target Price \$	93.04	1 Yr Target Price	e \$	104.19											

P/E	Valuation Su	mmary	P/S Valuation	on Sur	nmary	P/BV Valuation Summary					
Average P/E		19.4	8 Average P/S		3.81	Average P/BV		3.96			
EPS		\$ 2.6	RPS	\$	24.34	Book Value of Equity	\$	20.77			
Projected EPS		\$ 2.9	Projected RPS	\$	24.73	Projected BVPS	\$	22			
Im	plied Share Price	\$ 50.9	Implied Share Price	\$	92.73	Implied Share Price	\$	82.27			
	1 Yr Target Price	\$ 56.5	1 Yr Target Price	\$	94.24	1 Yr Target Price	\$	87.84			

Asset Based V	'alua	tion
Book Value of Equity	\$	1,077
Proj BV Equity	\$	1,150
DSO		52
Intrinsic Value	e \$	20.77
1 Yr Target Prio	e \$	22.17

DCF Valuation														
		Base Year		Year 1		Year 2		Year 3		Year 4		Year 5		Continuing Period
Revenue	\$	1,248	\$	1,283	\$	1,270	\$	1,376	\$	1,445	\$	1,488	\$	1,518
Rev growth				2.80%		-1.00%		8.32%		5.00%		3.00%		2.00%
EBITDA Margin		23.00%		20.00%		20.00%		20.00%		20.00%		20.00%		20.00%
EBITDA	\$	287	\$	257	\$	254	\$	275	\$	289	\$	298	\$	304
Depreciation	\$	115	\$	118	\$	117	\$	127	\$	133	\$	137	\$	140
Tax Rate		25.0%		25.0%		25.0%		25.0%		25.0%		25.0%		25.0%
NOPAT	\$	129	\$	104	\$	103	\$	111	\$	117	\$	120	\$	123
NWC spending	\$	15	\$	10	\$	8	\$	6	\$	4	\$	2	\$	-
Net CAPEX	\$	(2)	\$	136	\$	134	\$	145	\$	153	\$	157	\$	160
CAPEX/Rev		-0.16%		1.35%		1.35%		1.35%		1.35%		1.35%		1.35%
UFCF	\$	143	\$	249	\$	245	\$	263	\$	273	\$	280	\$	283
WACC		9.55%												
PV UFCF	\$	3,373	\$	3,446	\$	3,531	\$	3,605	\$	3,676	\$	3,748		
Claims (total debt)	\$	180	\$	170										
Cash	\$	218	\$	200.00										
Equity	\$	3,411	\$	3,476										
DSO		51.869		51.869										
Intrinsic Value	\$	65.77												
Target Price	\$	67.02												