

Date: 3/5/14

Analyst Name: Heath Olson and Grant Schultz

## CIF Stock Recommendation Report (Spring 2014)

Company Name and Ticker: PPG Industries, Inc. (PPG)

### Section (A) Investment Summary

Recommendation Buy: <b>Yes</b> No		Target Price: \$226	Stop-Loss Price: \$181.30
Sector: Basic Materials	Industry: Specialty Chemicals	Market Cap (in Billions): 27.40031	# of Shrs. O/S (in Millions): 138.51
Current Price: \$197.82	52 WK Hi: \$198.15	52 WK Low: \$130.56	EBO Valuation: \$106.98
Morningstar (MS) Fair Value Est.: \$156	MS FV Uncertainty: High	MS Consider Buying: \$93.60	MS Consider Selling: \$241.80
EPS (TTM): \$7.13	EPS (FY1): \$9.66 (Dec 2014)	EPS (FY2): \$10.72 (Dec 2015)	MS Star Rating: 2 stars
Next Fiscal Yr. End "Year": "Month": 2014, December	Last Fiscal Qtr. End: Less Than 8 WK: Y <b>N</b>	If Less Than 8 WK, next Earnings Ann. Date: NA	Analyst Consensus Recommendation: 2.07 – Outperform
Forward P/E: 18.45	Mean LT Growth: 10.41%	PEG: 1.77	Beta: 1.38
% Inst. Ownership: 77.89%	Inst. Ownership- Net Buy: Y <b>N</b>	Short Interest Ratio: 1.00 (Feb 14, 2014)	Short as % of Float: 0.8% (Feb 14, 2014)
<b><u>Ratio Analysis</u></b>	<b><u>Company</u></b>	<b><u>Industry</u></b>	<b><u>Sector</u></b>
P/E (TTM)	27.73	13.16	17.05
P/S (TTM)	1.81	1.94	3.18
P/B (MRQ)	5.6	1.27	3
P/CF (TTM)	16.8	7.53	12.21
Dividend Yield	1.23%	1.38%	2.28%
Total Debt/Equity (MRQ)	0.65 (MS)	31.71	23.12
Net Profit Margin (TTM)	7.65	-105.52	6.55
ROA (TTM)	20.36% (MS)	3.19%	13.81%
ROE (TTM)	71.84% (MS)	6.46%	19.52%

<p><b><u>Investment Thesis</u></b></p> <p>We, as well as the markets, really like PPG's acquisition of Hi-Temp Coatings Technology Co. and their general shift to the growing specialty chemicals industry. To support this we also like their decision to sell off their glass lenses business to focus on coatings as their primary business.</p> <p>We believe the soft spots in the fundamental valuation are too significant to allow us to use the fundamental valuation as a staple in our decision. Target ROE is not near PPG's current or expected ROE.</p> <p>PPG's PEG rating is above most of its competitors, signaling that it's overvalued. Yet we consistently see firms with higher ROE's outperform their competitors and PPG's current ROE is double that of most of its competitors.</p> <p>As the spring and summer seasons approach we expect the stock to perform well as we expect revenue to increase over the next few months. The majority of PPG's revenues (85%) come from its coating business and most painting is done in the warmer, dryer months of the year.</p> <p>Although there aren't many large holders of the stock (&gt;5%), PPG has more holders than any of its competitors.</p> <p>Really high RSI of about 85, signaling the stock is overbought. We view this as an indication that the stock is incredibly desirable at this point in time.</p> <p>PPG swiftly overcame their death cross on the 10 and 50 day moving average chart. The 50 and 200 day moving averages have</p>	<p><b><u>Summary</u></b></p> <p>Provide brief summary of your analysis in each section that follows</p> <p><b><u>Company Profile:</u></b></p> <p>PPG is a worldwide diverse manufacturer of coatings, lens, and glass. They are currently in a mature life cycle, evident by the growth through acquisitions. Over the years PPG has slowly focused more of their resources on paint.</p> <p><b><u>Fundamental Valuation:</u></b></p> <p>PPG's coatings business is very seasonal (Spring and Summer) and we expect the stock to rise during that time. According to Fundamental Valuation, PPG is extremely overvalued; implied price is nearly 50% of current price. If PPG can maintain its current ROE level, long term stock increases could be great.</p> <p><b><u>Relative Valuation:</u></b></p> <p>PPG fared well in the relative valuation. With the median P/E ratio above current price. Also even though PEG is higher than most competitors when looking across the market a PEG 1.77 is not outrageously high.</p> <p><b><u>Revenue and Earnings Estimates:</u></b></p> <p>Current positive trend of earnings per share surprises. Expected slight decrease in sales from last year. Significant upward trends in PPG's earnings per share over the past year. Upward revisions outweigh downward revisions 5:1.</p> <p><b><u>Analyst Recommendations:</u></b></p> <p>Analyst recommendations have been slowly improving over the last three months. In the last recommendation 45% of analysts recommended a buy, with no one suggesting a sell.</p> <p><b><u>Institutional Ownership:</u></b></p> <p>Only three institutions hold more than 5% of the stock. More institutions are decreasing their position rather than increasing. New positions outweigh closed positions almost 3:1.</p> <p><b><u>Short Interest:</u></b></p> <p>PPG short interest has been continuing to decline. This shows that the market has been very bullish on this stock over the last year. Twice over the last year PPG has hit the one day to cover mark.</p>
---	---

<p>not crossed at all. The 200 day moving average has seen an excellent, largely constant, upward trend.</p>	<p><b><u>Stock Price Chart:</u></b></p> <p>For the most part, outperformed over the past three months by Materials and Sherwin-Williams. Outperforms Materials, SHW, and the S&amp;P starting around mid-July 2013 in the 1 year price chart. Has vastly outperformed all three other subjects over 5 years and currently rests at 550% growth over the past 5 years.</p>
--	---

## Section (B) Company Profile

### (B-1) Profile

Include in this section, at the minimum:

**Company Description; major business units and % breakdown of revenue/earnings; % breakdown of domestic and international business; business model; management strategy; competition and competitors of each major business unit; sensitivity to business cycle & macro environment; life cycle; significant merger/acquisition or major restructure in recent years; significant pending litigations, material patents or other intellectual properties-related issues; major risk factors; other company or industry-specific development or issues deemed material (e.g., labor disputes, trade tensions, regulatory or policy changes, technology & product innovations, natural disasters, etc.)**

PPG Industries is a major supplier of high quality paint, specialty materials, and glass products. They are the world's largest producer of coatings. They are divided into 5 different categories which are Performance Coatings, Industrial Coatings, Architectural Coatings, Optical and Specialty Materials and Glass. These materials are used in everything from paints for home use to transition sunglasses. With such a diverse range of products PPG, hopes to be minimally impacted by different trends in today's market. PPG has been able to continue rapid expansion through dominating price, product performance, technology, quality, distribution and technical and customer service. This is a cyclical industry that can be dramatically affected by upward and downward trending markets. Revenues are spread out through many different countries which helps protect this company from a downturn in anyone given nation. In the chart below it is easy to see how much of PPG sales depends on international buyers.

(millions)	Net Sales		
	2013	2012	2011
United States, Canada, Western Europe	\$ 10,977	\$ 9,437	\$ 9,213
Latin America, Eastern Europe, Middle East, Africa, Asia Pacific	4,131	4,075	3,940
<i>Total</i>	\$ 15,108	\$ 13,512	\$ 13,153

### Product Portfolio

The three coatings PPG supplies are refinish coatings, aerospace coatings, and architectural coatings. The refinishing coating that is primarily used for automotive and fleet repair and is sold through independent distributors. The aerospace coatings is sold for commercial, military, and general aircraft. This product is delivered to the consumer through

distribution networks and also directly from PPG. The architectural coating is used in commercial and residential buildings throughout the world. This paint is sold through many different brands. These brands are located in 870 company owned stores in Americas and Asia Pacific. The coating business has been a major reason for PPG rapid expansion as of late (10-K). In 2001, coatings only accounted for 50% compared 85% after they exited the commodity chemical business. This has been accomplished through acquisitions of coating competitors and selling of other products (Jeffery Stafford).

The coating industry is highly competitive. Some of PPG's competition is Sherwin-Williams, Valspar Corporation, and Axalta Coating Systems. To combat such stiff competition PPG has made some importance alliances with Kansai Paints and Helios Group. Kansai serves automotive based customers in America and Europe; while Helios serves the Ukraine and Russia. By teaming with these two businesses PPG has been able to increase sales of automotive coating. PPG is continuing expansion in this sector with the acquisition of Hi-Temp Coatings Technology Co.

The Optical and Specialty Materials of PPG contains optical lens and performance sunglasses, with a large focus in transition lenses. These lenses are processed by Transitions Optical joint. PPG had 51% ownership in Transition Optical joint, while Essilor owned the other 49%. PPG is expecting to sell it's 51% holding in this company to Essilor later this year (Jeffery Stafford).

PPG has two interest in the glass sector of flat glass and fiber glass. These glass products are sold directly to manufacturing companies. The competition in this sector is Cardinal Glass Industries, Owens Corning, AGY, along with many others.

### Acquisitions

Over the last few years PPG Industries has adopted the philosophy of expansion through acquisitions. In 2013, PPG separated its commodity chemical business and merged the subsidiary holdings of PPG commodity chemicals with subsidiary of Georgia Gulf Corporation (10-k). Along with this in 2013, PPG acquired Akzo Nobel N.V., through this PPG has been able to rapidly expand architectural coating industry. Along with this acquisitions PPG is currently in the midst of obtaining another company. On February 3<sup>rd</sup>, it was confirmed that Hi-Temp Coatings Technology Co. and PPG have reached a deal. Hi-Temp Coatings is a supplier of high temperature resistant and insulative coatings. This deal was complete on March 3<sup>rd</sup>, 2014.

Within the last year PPG agreed to divest 51% ownership of Transition Optical joint and 100% of its business in Essilor. This transaction is expected to be complete in the first half of 2014. Analyst have estimated that this sell of this Joint Venture will bring in between three to four billion dollars in the next twenty-four months (Jeffery Stafford).

## Brands

PPG currently sales its product through many different brands names. These different brand names are for their architectural sector. The different brands are Sigma, Histor, Seigneurie, Guittet, Peintures Gauthier, Ripolin, Johnstone's, Leyland, Primalex, Dekoral, Trilak, Prominent Paints, Gori, and Bondex.

## Environment

The environment is a huge concern for the operation of PPG. As of the last report PPG is in negotiation with 132 current and former waste disposal locations. It is hard to receive an accurate estimate for the cost of cleanup at these sites, since there is still a large degree of uncertainty for the extent of damage occurred. The company has already set aside reserves to pay for these liabilities. These liabilities are believed to occur over a wide range of time. In addition to the money set aside for waste disposal, PPG might also be subject to a loss of approximately \$100 million to \$200 million (10-K). These contingencies losses could be the result of a number of different chromium manufacturing plants.

## Risks

There are a number of different risks that could have a negative impact on PPG Industries stock price over the next year. Most of the risks listed below are also shared with many companies in their industry.

- An increase in the price of raw materials needed along with a decrease in availability
- The uncertainty of the economy
- The constantly changing environmental regulations
- A number of lawsuits have been filed against PPG
- Law suits from asbestos exposure
- Fluctuation of foreign currency
- Acquiring a new business and failing to integrate them properly
- High competition

**(B-2) Revenue and Earnings History (Refer to the guidelines document for revenue and earnings data to be included)**

- 1) What are your observations on revenue? Was there a notable up- or down-trend, year-over-year? Was there seasonable pattern?**
- 2) Likewise, what are your observations on earnings?**

**Revenue**

Periods	2012	2013
March	3333.0	3331.0
June	3528.0	4095.0
September	3408.0	3980.0
December	3243.0	3702.0

Note: Units in Millions of U.S. Dollars

When looking at the net sales of PPG over the last two years it is obvious revenue has been annually increasing. In the first quarter of 2013 revenue was below the previous year's first quarter. Though the next three quarters, PPG solidly outperformed the previous year's revenues for given quarter. This is a positive sign for the company showing that over the last year growth is occurring. Seasonality does affect the revenue in the 4<sup>th</sup> quarter. In the 10K it was mentioned that, "cash flow from operations as been greatest in the fourth quarter due to end use market seasonality, primarily in PPG's architectural coatings" (10k). The reason for this increase in revenues is the demand for this coating is usually greatest in the 2<sup>nd</sup> and 3<sup>rd</sup> quarter. While this product is being bought then a lot of them are categorized as receivables and not paid until the 4<sup>th</sup> quarter.

**Earnings Per Share**

Periods	2012	2013
March	-0.35271	1.48274
June	1.89677	2.35172
September	1.8328	1.51829
December	1.20436	1.78121

Earnings per share has been a little more volatile than revenue. Though this past year earnings have trended up compared to the previous year. All these reports were also positive with the exception of March 2012 which received a -0.35271.

### **(B-3) Most Recent Quarterly Earnings Release**

- 1) When was the company's most recent earning release?**
- 2) In that earnings report, was reported revenue a (1) beat, (2) match, or (3) miss from consensus estimate?**
- 3) Likewise, was reported earnings a (1) beat, (2) match, or (3) miss from consensus estimate?**
- 4) What did the management attribute the beat/miss to?**
- 5) Did the management provide guidance about their current quarter and their outlook for the year? What were the key points of the guidance?**
- 6) How did the stock react to that earnings release?**
- 7) Other observations worth noting?**

The most recent earnings for PPG was released on January 16, 2014. The quarter ending in December had quarterly earnings of \$3,702 million compared to an estimate of \$3,711.32. This means PPG underperformed by .25% (Reuters). Though PPG had a positive surprise of 4.79% in earnings per a share, a 1.81 earnings per share was reported compared to the estimate of 1.73. This was record fourth quarter report. PPG attributes these record earnings to high level of organic sales growth, the stabilization of Europe, along with newly acquired companies. After these earnings were released the stock rallied about 1.5% (8-K).





Next fiscal year end: December 2014  
 Current fiscal month: 3 (March, January being 1)  
 Target ROE: 11.74%  
 \*\*\* Indicate next to the number if you made an adjustment to the target ROE estimate.  
 Justify at the bottom of this panel how you derive the adjusted value, if any \*\*\*  
 Discount rate 10.33%  
     Input for discount rate:  
     Risk-free rate: 3.7%  
     Beta: 1.28 (adjusted from 1.38)  
     Market risk premium: 9%

## Output

Above normal growth period chosen: 2018 (5 years)

\*\*\* Justify at the bottom of this panel your choice of abnormal growth period \*\*\*

EBO valuation (Implied price from the spreadsheet): \$106.98

We chose to alter PPG's beta from 1.38 to 1.28 primarily due to their selling off of their glass lenses business. PPG is moving more into specialty chemicals, specifically coatings, and we believe that this industry will prove to be less sensitive to the business cycle than glass lenses. Plus, as spring and summer are almost here and the vast majority of painting is done within those two seasons, so we believe the next few months could prove very profitable for PPG.

As for our chosen 5 year growth period, Morningstar forecasted that the stock would be profitable over the next 5 years at least. Morningstar expects PPG's return on invested capital to outweigh their weighted average cost of capital by an average of 25% over the next 5 years, so we believe that a 5 year forecast horizon is well justified.

- 1) Comment on the fundamental value obtained in relation to the stock's current price and its 52-week price range.
- 2) What might be the "soft spots" of the inputs? And why?

PPG's implied price of \$106.98 is significantly different from their current price of \$197.82. It is also well outside the 52 week range of \$130.56 - \$198.15. Due to this vast difference we expect there are several considerable soft spots in the inputs. For one the inputs do not factor in the seasonal aspect of PPG's coatings business, which makes up 85% of PPG's revenues. Secondly, we believe the target ROE is an extreme soft spot since the industry

average is 11.74% and PPG's is substantially higher at 71.84%. When the target ROE is altered closer to PPG's, the implied prices from 2021 onward skyrocket.

### **Sensitivity Analysis**

- 1) Explain the input values used in sensitivity analysis. Compare the fundamental values obtained here in relation to the value from the base case**
- 2) Other observations worth noting**

**EBO valuation would be (you can include more than one scenario in each of the following):**

**\$100.90 if changing above normal growth period to 2023**

**\$111.00 if changing growth rate from mean (consensus) to the highest estimate 11.9%**

**\$103.28 if changing growth rate from mean (consensus) to the lowest estimate 9%**

**\$113.33 if changing discount rate to 10%**

**\$106.98 (no change) if changing target ROE to 35%**

**\$182.79 if changing target ROE to 35% and above normal growth period to 2023**

We changed the above normal growth period to 2023 because we view the stock as a good long term investment, especially since the mutual fund ownership is 38.15%, which we will go in more detail on in section G. The lowest and highest growth rate estimates were obtained from Reuters. We chose a discount rate of 10% because that is the result of altering PPG's beta even lower, which we felt was justified for the sensitivity analysis, but probably not for our actual fundamental valuation. We believe adjusting the target ROE to 35% was highly justified since PPG's own ROE is 71.84%. We did not alter it higher since PPG saw a lot of swing in its ROE since 2012. It swung from 25.74% in 2012 to its current level and we don't think its current ROE will return to that level in the near future. Assuming PPG can maintain an ROE of 35% over the next 10 years, we would see a substantial increase in its implied price for 2023; a price much more even to its current price.

## Section (D) Relative Valuation

Copy/paste your completed relative valuation spreadsheet here

Cougar Investment Fund Relative Valuation Template													
Please download and save this template to your own storage device													
You only need to input values to cells highlighted in "yellow"													
The rest of the spreadsheet is calculated automatically													
Please read "Stock Recommendation Guidelines" document carefully													
PPG													
Mean FY2													
Ticker	Name	Mkt Cap	Current Price	Earnings Estimate (next fiscal year)	Forward P/E	Mean LT Growth Rate	PEG	P/B (MRQ)	ROE 5 yr ave	Value Ratio	P/S TTM	P/CF TTM	
1 SHW	Sherwin-Williams	\$ 20,100.00	\$ 200.48	\$ 10.38	19.31	13.57%	1.42	11.60	44.00%	0.26	1.97	18.7	
2 Val	The Valspar Corp	\$ 6,383.38	\$ 74.25	\$ 4.73	15.70	14.10%	1.11	5.89	11.89%	0.50	1.53	16.65	
3 EMN	Eastman Chemical Co	\$ 13,333.08	\$ 87.16	\$ 7.68	11.35	8.20%	1.38	3.75	21.56%	0.17	1.44	11.02	
4 DD	El du Pont de Nemours	\$ 61,804.51	\$ 65.89	\$ 4.85	13.59	8.04%	1.69	3.86	28.10%	0.14	1.71	13.86	
PPG	PPG Industries	\$ 27,400.31	\$ 197.82	\$ 10.72	18.45	10.41%	1.77	5.60	71.84%	0.08	1.81	16.8	
Implied Price based on:					P/E		PEG	P/B		Value	P/S	P/CF	
1 SHW	Sherwin-Williams				\$207.05		\$158.83	\$409.77		\$669.04	\$215.31	\$220.19	
2 Val	The Valspar Corp				\$168.28		\$124.24	\$208.06		\$1,257.14	\$167.22	\$196.05	
3 EMN	Eastman Chemical Co				\$121.66		\$154.45	\$132.47		\$441.40	\$157.38	\$129.76	
4 DD	El du Pont de Nemours				\$145.64		\$188.57	\$136.35		\$348.60	\$186.89	\$163.20	
	High				\$207.05		\$188.57	\$409.77		\$1,257.14	\$215.31	\$220.19	
	Low				\$121.66		\$124.24	\$132.47		\$348.60	\$157.38	\$129.76	
	Median				\$156.96		\$156.64	\$172.21		\$555.22	\$177.05	\$179.63	

**Note:** Your discussions in this section should address all of the following valuation metrics: forward P/E, PEG, P/B (MRQ), P/S (TTM), and P/CF (TTM). If you made a decision excluding a competitor from calculation of median of a particular valuation multiple, you must justify your decision (i.e., reasons why you feel strongly that particular valuation multiple from a particular competitor is not a good indicator).

- 1) Discuss various valuation multiples of your stock and its peers. Comment if any of these stocks have multiples far off from the others and explain whether it makes sense.
- 2) Discuss the various implied prices of your stock derived from peers' ("Comparables") multiples. Compare these implied prices to current price and 52-week high and low. How different are the prices derived from the various valuation metrics? Note any valuation metrics that seem to yield outlier prices and explain whether it makes sense.
- 3) Compare your findings with comments from analysts from *Morningstar Direct* and other online resources.
- 4) Other observations worth noting?

PPG Industries had a relatively smaller market cap of \$27,400.31 million, compared to other companies in the relative valuation. El du Pont de Nemours had by far the biggest market cap of 61,804.51 million, this is more than twice the size as PPG. The forward price to earnings ratios of these five companies was quite wide with a range of 11.35 to 19.31. PPG had a forward P/E of 18.45 which was second out of the five companies.

When looking at the PEG ratio, all the companies were fairly similar. PPG had the highest PEG ratio of 1.77 compared to Valspar Corps PEG of 1.11. While the lower PEG could show that a stock is undervalued. The higher PEG shows that many investors believe this is a strong stock with potential to continue its growth.

PPG's P/B of 5.6 was middle of the pack compared to the competition. Four out of five of the companies were within 3.75 to 5.89 P/B of each other. While Sherwin-Williams was the outlier with a P/B of 11.68, Reuters did not have Sherwin-Williams P/B listed so Yahoo Finance was used. This make the 11.68 a little skeptical because of the use of a different source.

Another important statistics used in finding the value of a certain stock is P/S. The data we obtained showed that all of the companies were below the sector average. This shows us investors are paying less for every dollar sold compared to other stocks in the market. The P/S ranged from 1.97 to 1.44, with PPG having a PS of 1.81. The last ratio is P/CF, in this ratio PPG had the highest ratio of competitors. PPG had P/CF of 16.8, compared to the low of 11.02 which is Eastman Chemical P/CF.

I feel the two companies that business model identifies the most with PPG are Sherwin-Williams and Valspar. The reason I have picked these two companies is the products manufactured by these companies includes coatings which is PPG main product.

The median price based on the P/E ratio was \$156.96, this is well below the current price of \$197.82. The P/E of the four competitors ranged from \$200.48 to \$65.89. The PEG median was \$41.18 lower than the current trading price. The reason for this dramatic difference is that PPG had the highest PEG of the five companies.

The P/B brought forth a median of \$172.21 with is \$25.61 below the trading price. This is a number that could be inaccurate, because Reuters did not have some P/B ratio for some of the companies. With Sherwin-Williams PB being so much higher than all other competitors it leaves one wondering if it is accurate.

The median P/S ratio was \$177.05 which is \$20.77 below the current trading price of \$197.82. The last valuation that will be looked at is P/CF which has a median of \$179.63. This valuation is in a similar ballpark as the P/S and P/B.

## Section (E) Revenue and Earnings Estimates

(E-1) Copy/Paste “*Historical Surprises*” Table from <http://www.reuters.com/>, “*Analysts*” tab (include both revenue and earnings; make note that revenues might be in “millions”)

Review recent trends in company’s reported revenue and earnings, and discuss whether (1) the company has a pattern of “*surprising*” the market with numbers different from analysts’ estimates; (2) Were the surprises positive(actual greater than estimate) or negative (actual less than estimate)? (3) Were the surprises more notable for revenue or earnings? (4) Look up the stock chart to see how the stock price reacted to the “surprises.

NOTE: Reuters does not put the sign on the surprise. You need to put a “negative” sign when it is a negative surprise.

### Historical Surprises

Sales and Profit Figures in US Dollar (USD)

Earnings and Dividend Figures in US Dollar (USD)

Estimates vs Actual	Estimate	Actual	Difference	Surprise %
<b>Sales (in millions)</b>				
Quarter Ending Dec-13	3,711.32	3,702.00	-9.32	-0.25%
Quarter Ending Sep-13	3,960.97	3,980.00	19.03	0.48%
Quarter Ending Jun-13	4,092.63	4,095.00	2.37	0.06%
Quarter Ending Mar-13	3,435.60	3,331.00	-104.60	-3.04%
Quarter Ending Dec-12	3,590.15	3,648.00	57.85	1.61%
<b>Earnings (per share)</b>				
Quarter Ending Dec-13	1.73	1.81	0.08	4.79%
Quarter Ending Sep-13	2.34	2.44	0.10	4.11%
Quarter Ending Jun-13	2.35	2.45	0.10	4.46%
Quarter Ending Mar-13	1.54	1.58	0.04	2.58%
Quarter Ending Dec-12	1.53	1.53	0.00	0.07%

In terms of sales PPG hasn’t had a significant pattern of surprises. Over the past five quarters they have averaged -.228% surprises for sales. Alternatively, PPG’s EPS have seen a trend of positive surprises in the past few quarters. Each of these surprises resulted in a short term increase in their stock price of about \$5, which goes back down to pre-surprise levels usually within a week or two.

(E-2) Copy/paste “*Consensus Estimates Analysis*” Table from <http://www.reuters.com/>, “*Analysts*” tab (include both revenue and earnings)

Review the range and the consensus of analysts’ estimates. (1) Calculate the % difference of the “high” estimate from the consensus (mean); (2) Calculate the % (negative) difference of the “low” estimate from the consensus; (3) Are the divergent more notable for the current or out- quarter, FY1 or FY2, revenue or earnings? (4) Note the number of analysts providing LT growth rate estimate. It that roughly the same as the number of analysts providing revenue and earnings estimates?

### Consensus Estimates Analysis

Sales and Profit Figures in US Dollar (USD)

Earnings and Dividend Figures in US Dollar (USD)

	# of Estimates	Mean	High	Low	1 Year Ago	% difference high and mean	% difference low and mean
<b>Sales (in millions)</b>							
Quarter Ending Mar-14	13	3,818.83	3,884.62	3,743.02	3,882.38	1.723%	-1.985%
Quarter Ending Jun-14	13	4282.92	4,436.21	4,102.00	3,941.13	3.579%	-4.224%
Year Ending Dec-14	17	15,961.90	16,388.00	15,207.00	15,992.40	2.669%	-4.729%
Year Ending Dec-15	17	16,484.40	17,269.20	15,795.00	16,820	4.761%	-4.182%
<b>Earnings (per share)</b>							
Quarter Ending Mar-14	18	2.07	2.75	1.93	1.89	32.850%	-6.763%
Quarter Ending Jun-14	18	2.88	3.09	2.71	2.48	7.292%	-5.903%
Year Ending Dec-14	19	9.66	10.45	8.69	8.95	8.178%	-10.041%
Year Ending Dec-15	19	10.72	12.10	9.50	9.81	12.873%	-11.381%
LT Growth Rate (%)	4	10.41	11.90	9.00	8.60	14.313%	-13.545%

Year ending FY2 sees the highest divergence rates overall in both sales and earnings. However, quarter ending Mar-14 shows a substantial divergence of 32.85% in earnings. This difference between the high and the mean is likely due to high expectations due to strong performance by PPG in Q4 of 2013. LT Growth Rate receives a fraction of the estimates that sales and earnings do, which is likely the cause of its higher divergence rates.

(E-3) Copy/paste “*Consensus Estimates Trend*” Table from <http://www.reuters.com/>, “*Analysts*” tab (include both revenue and earnings)

Review recent trend of analysts’ consensus (mean) estimates on revenue and earnings. (1) Are the consensus estimates trending up, down, or stay the same? (2) Is the trend more notable for the near- or out- quarter, FY1 or FY2, revenue or earnings?

### Consensus Estimates Trend

Sales and Profit Figures in US Dollar (USD)

Earnings and Dividend Figures in US Dollar (USD)

	Current	1 Week Ago	1 Month Ago	2 Months Ago	1 Year Ago
<b>SALES (in millions)</b>					
Quarter Ending Mar-14	3,818.83	3,818.83	3,818.11	3,733.72	3,882.38
Quarter Ending Jun-14	4,282.92	4,282.92	4,282.25	4,174.73	3,941.13
Year Ending Dec-14	15,961.90	16,009.10	16,000.00	15,816.20	15,992.40
Year Ending Dec-15	16,484.40	16,527.50	16,512.20	16,386.70	16,820.00
<b>Earnings (per share)</b>					
Quarter Ending Mar-14	2.07	2.02	2.01	1.98	1.89
Quarter Ending Jun-14	2.88	2.88	2.88	2.79	2.48
Quarter Ending Dec-14	9.66	9.72	9.66	9.51	8.95
Quarter Ending Dec-15	10.72	10.79	10.77	10.71	9.81

Over the past couple months there has been an upward trend in PPG's sales, although for the most part sales are expect to decrease slightly from one year ago. Earnings have shown a significant upward trend over the past couple months as well as the past year.

**(E-4) Copy/paste the "Estimates Revisions Summary" Table from <http://www.reuters.com/>, "Analysts" tab (include both revenue and earnings)**

**Review the number of analysts revising up or down their estimates (both revenue and earnings) in the last and last four weeks. (1) Note whether there are more up or down revisions; (2) are the revisions predominantly one directional? (3) Any notable difference last week versus last four weeks, revenue versus earnings?**



## Estimates Revisions Summary

Number Of Revisions:	Last Week		Last 4 Weeks	
	Up	Down	Up	Down
<b>Revenue</b>				
Quarter Ending Mar-14	0	0	1	0
Quarter Ending Jun-14	0	0	1	0
Year Ending Dec-14	0	0	1	1
Year Ending Dec-15	0	0	2	0
<b>Earnings</b>				
Quarter Ending Mar-14	1	0	2	0
Quarter Ending Jun-14	0	0	1	0
Year Ending Dec-14	0	0	1	1
Year Ending Dec-15	0	0	2	0

Over the last four weeks, upward revisions of PPG outnumber downward revisions more than 5:1. All revisions are spread out equally between revenue and earnings. Over the last week there has only been one revision; an upwards revision to quarter ending Mar-14. Although there has not been a substantial number of revisions made (only 14), we can still say there is a significant upward trend.

### (E-5) “Consensus Earnings Revisions” from CNBC

Go to <http://www.cnbc.com/>, “news”, “earnings”, “calendar”, “consensus revisions”. Look for whether your stock had consensus earnings revision today. Copy/paste the information to the following table if any. Go back one day, copy/paste the information if there was consensus earnings revision. Repeat the process back one month. Add rows to the table if needed.

Revision Date	Revision Type	Revision Up/Down	Current	Previous	% Change	# of Analysts Reporting
2/27/14	Up	2/0	\$2.07	\$2.02	↑2.22	18
2/12/14	Up	5/3	\$2.02	\$2.02	↑0.40	19
2/7/14	Up	4/3	\$2.02	\$2.01	↑0.25	19
1/27/14	Down	5/5	\$2.01	\$2.01	↓0.15	18

- 1) Make note of the company’s (1) last earnings reporting date, and (2) next earnings reporting date.
- 2) Review revisions day by day, and comment on (1) whether they tend to be clustered, and (2) if clustered, were they near earnings reporting date?

- 3) Were there any greater than 10% consensus revisions? What is the maximum % consensus revision?**
- 4) Observe stock price chart, how did the stock trade around dates of greater than 10% consensus revisions?**
- 5) Other observations worth noting?**

PPG's recently released their 2013 annual report on 2/20/14. Their next release has not been officially announced but will more than likely occur around 4/16/14 for Q1 2014. It seems revisions take place every week or two. The largest revision made was a mere 2.22%, the others were all under 0.5%. The one negative revision seems to have resulted in a slight dip in the stock price. The other three revisions, all positive, seemed to occur on an upward trend; so after the stock price was already seen to be on the rise.

## Section (F) Analysts' Recommendations

### (F-1) Reuters Most Recent Three Months Analysts Recommendations

Copy/paste the "Analyst Recommendations and Revisions" Table from

<http://www.reuters.com/>, "Analysts" tab. NOTE: Make sure you copy the entire table including "Mean Rating" at the bottom of the table.

1-5 Linear Scale	Current	1 Month Ago	2 Month Ago	3 Month Ago
(1) BUY	9	9	9	8
(2) OUTPERFORM	4	5	5	6
(3) HOLD	6	6	7	7
(4) UNDERPERFORM	0	1	0	0
(5) SELL	0	0	0	0
No Opinion	0	0	0	0
Mean Rating	1.84	1.95	1.90	1.95

- 1) Review the trend of analyst recommendations over the last three months. Is there a notable change of analyst opinions, turning more bullish or bearish?
- 2) How many different ratings out of the five possible ones did the company receive currently, one, two, and three months ago?
- 3) Is there a notable trend of opinion convergence or divergence?
- 4) Cross check (1) *Morningstar* analyst's research report; and (2) media or other analysts' comments from online financial sites. Is what you see here consistent to comments elsewhere?
- 5) Other observations worth noting?

**NOTE:** On a Five-point scale, Reuters assigns "1" to "Buy", the most bullish recommendation, and "5" to "Sell", the most bearish recommendation. Some other online sites have opposite scale, with their "1" being the most bearish and "5" being the most bullish recommendations.

### Reuters

There has not been a huge fluctuation of the last three months in analyst recommendation. The current recommendations do not have any analysts predicting anything lower than a hold, with a mean of 1.84. Over the last three months, 1.84 is the best mean recommendation for this stock. This average of 1.84 means that analysts believe that PPG Industries will be able to outperform market expectations. Over the last three months analysts have slowly become more bullish with 45% currently recommending a buy. The fact that there are no analysts currently recommending an underperform or a sell is a very good sign for PPG.

Three months ago the analyst recommendation for PPG Industries was eight buys, six

outperform, and seven holds. Two months ago analyst became more bullish recommending nine buys, five outperform, and seven holds. One month ago one analyst downgraded PPG, nice buys, five outperform, six holds, and one under perform. Currently the recommendations stand at nine buys, four outperform, and six holds. As one can tell these numbers are all very similar with only one or two analyst changing their opinions each time.

Compare Reuters recommendations to Morningstar analysts who recommend three buys, two holds, and one sell. This is obviously not as bullish as estimates as were received on Reuters. Though looking at the average of these six analysts, they believe it is still a positive stock.

#### **(F-2) Most Recent One Month Analysts Upgrades/Downgrades from CNBC**

Go to <http://www.cnbc.com/>, “news”, “earnings”, “calendar”, “upgrades” and “downgrades”. Look for whether your stock was up- or down-graded by one or more analysts today. Copy/paste the information to the following table if any. Go back one day, copy/paste the information if there was (were) upgrades or downgrades. Repeat the process back one month. Add rows to the table if needed.

<b>Revision Date</b>	<b>Current Recommendation</b>	<b>Previous Recommendation</b>	<b>Firm</b>	<b>Last Revision</b>
2/21/14	\$156	\$150	Morningstar	10/17/13

- 1) Make note of the company’s (1) last earnings reporting date, and (2) next earnings reporting date.**
- 2) Add up the number of upgrades on weekly basis. Do the same for downgrades. Were there more up- or down-grades? Were there any consistent trend you observe in the recent month? Were there any up- or down-grades of more than “one grade”?**
- 3) Were there clustering of up- or down-grades? If so, were they clustered around earnings report date?**
- 4) Observe stock price chart, how did the stock trade around dates of up- or down-grades?**
- 5) Other observations worth noting?**

There has been one analyst to change his estimate on PPG over the last month. Jeffery Stafford changed has fair value price from \$150 to \$156 on February 21. There are a few reasons for this upgrade in fair value. The reasons that were listed by Jeffery Stafford was, “shedding its commodity chemicals business, acquiring North American architectural coatings assets of AkzoNobel, and announcing the decision to sell its joint venture in Transitions lenses to partner Essilor” (Jeffery Stafford). As you can see many of these business activities were to help specialize PPG. Officially this analyst likes the idea of PPG not having such a wide range of products.

## Section (G) Institutional Ownership

Copy/paste the completed “CIF Institutional Ownership” spreadsheet here.

PPG

Ownership Activity	# of Holders	% Beg. Holders	Shares	% Shares
Shares Outstanding			138,504,460	100.00%
# of Holders/Total Shares Held/% Shares	885	106.37%	107,881,124	77.89%
# New Positions	90	10.82%		
# Closed Positions	37	4.45%		
# Increased Positions	320	38.46%		
# Decreased Positions	369	44.35%		
Beg. Total Inst. Positions	832	100.00%	110,030,233	79.44%
# Net Buyers/3 Mo. Net Chg	-49	46.44%	-2,149,109	-1.55%

Ownership Information	% Outstanding
% Institutional Ownership	84.59%
Top 10 Institutions % Ownership	35.82%
Mutual Fund % Ownership	38.15%
5%/Insider Ownership	0.47%
Float %	100.00%

> 5% Ownership			
Holder Name	% Change	% Outstanding	Report Date
PPG Industries Master Trust	NA	7.63%	12/31/2009
Vanguard Group, Inc.	1.64%	5.78%	12/31/2013
State Street Corp	0.61%	5.13%	12/31/13

**Combine information provided in all three sections to discuss:**

- 1) Whether institutions, on net basis, have been increasing or decreasing ownership and whether the change can be considered as substantial**
- 2) Whether the stock has sizable institution interests/support**
- 3) The extent of the (> 5%) owners by adding up all >5% ownership, and make an attempt to identify those that are mutual funds**

**Note:**

**Select “mutual fund ownership” in the view box, it will bring up large mutual fund ownership. Cross check the two lists. You need to know that the “institution ownership” list is reported at the fund family level, while the “mutual fund ownership” list is reported at the fund level.**

**Alternatively, you can google funds included in the “institution ownership” list to learn if they are mutual fund family or hedged funds, etc.**

- 4) Other observations worth noting?**

Overall more institutions have decreased their holdings in PPG as opposed to increase. We believe this is minor since the decreases have been offset by new holdings in the stock. There is an almost perfect 50/50 relationship between new buys/increases and closes/decreases. There are only three institutional holders with more than a 5% stake in PPG, one of them (PPG Industries Master Trust) being a 401k plan offered by PPG that holds PPG at 33.32% of its entire portfolio. Even though there aren't many >5% holders there are still a great number of holders of the stock. And although none of the >5% holders are mutual funds, we still consider PPG a good long term investment since the mutual fund ownership is 38.15%.

## Section (H) Short Interest

(H-1) Short Interest Data from <http://www.nasdaq.com/> (NASDAQ's website)

Copy/paste or type the information from "short interest" table for (1) your stock and (2) two competitors (in separate tables). You will start from the most recent release date, and go back for a year (some stocks may not have data going back 1 year)

Copy/paste the chart to the right of the "short interest" table, immediately follow the table below

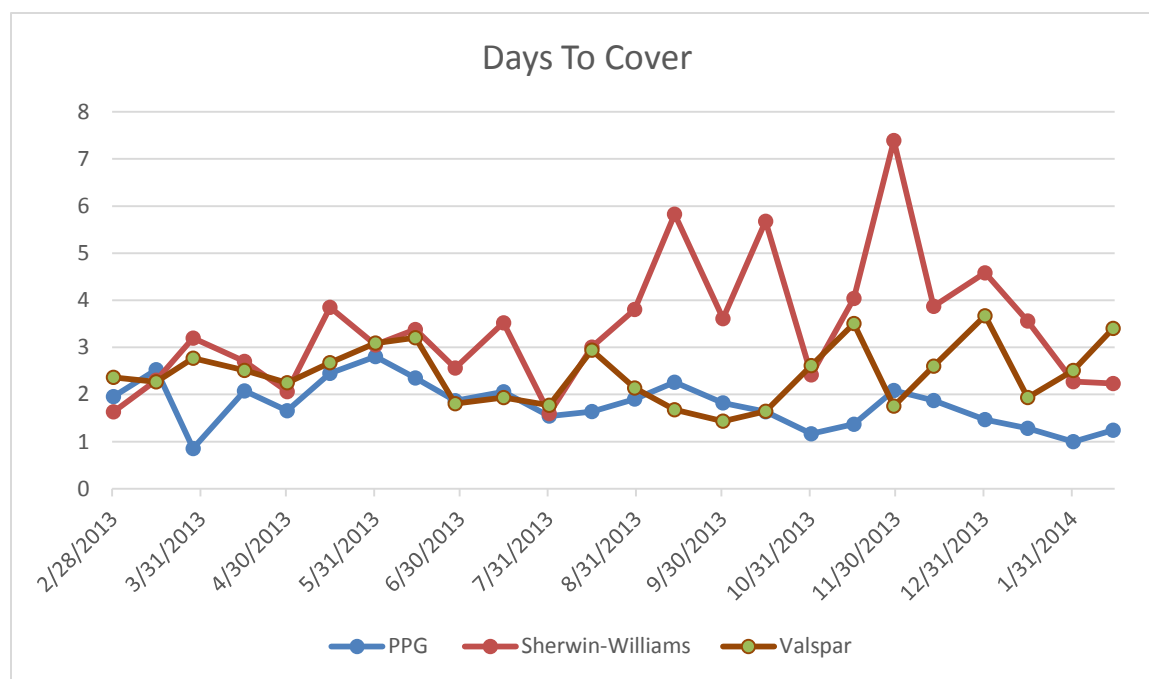
PPG Industries (PPG)			
Settlement Date	Short Interest	Avg. Daily Share Volume	Days To Cover
02/14/14	1,131,914	910,937	1.242582
1/31/2014	1,179,611	1,245,114	1.000000
1/15/2014	1,232,596	960,669	1.283060
12/31/2013	1,119,828	762,583	1.468467
12/13/2013	1,422,071	759,387	1.872656
11/29/2013	1,021,275	489,711	2.085465
11/15/2013	1,031,629	753,572	1.368985
10/31/2013	1,038,698	890,487	1.166438
10/15/2013	1,336,647	817,802	1.634438
9/30/2013	1,173,487	643,845	1.822623
9/13/2013	1,097,568	485,442	2.260966
8/30/2013	1,102,148	578,661	1.904652
8/15/2013	1,007,500	614,589	1.639307
7/31/2013	1,175,615	761,668	1.543474
7/15/2013	1,346,625	654,160	2.058556
6/28/2013	1,679,030	898,493	1.868718
6/14/2013	1,266,518	538,522	2.351841
5/31/2013	1,551,655	553,050	2.805632
5/15/2013	1,830,816	747,323	2.449832
4/30/2013	1,853,982	1,119,480	1.656110
4/15/2013	2,269,582	1,092,788	2.076873
3/28/2013	2,692,438	943,525	2.853595
3/15/2013	2,741,380	1,084,671	2.527384
2/28/2013	3,793,452	1,939,079	1.956316

Sherwin-Williams Company (SWH)			
Settlement Date	Short Interest	Avg Daily Share Volume	Days To Cover
2/14/2014	2,105,462	942,600	2.233675
1/31/2014	1,913,646	841,935	2.272914
1/15/2014	2,594,506	728,703	3.560444
12/31/2013	2,753,741	600,930	4.582466
12/13/2013	2,607,714	673,500	3.871884
11/29/2013	2,718,141	367,760	7.391073
11/15/2013	2,591,653	641,588	4.039435
10/31/2013	2,260,163	934,858	2.417654
10/15/2013	3,301,239	581,444	5.677656
9/30/2013	3,074,169	851,403	3.610710
9/13/2013	2,691,416	461,789	5.828238
8/30/2013	2,728,678	716,934	3.806038
8/15/2013	2,543,592	846,110	3.006219
7/31/2013	2,166,829	1,358,517	1.594996
7/15/2013	1,863,490	529,179	3.521474
6/28/2013	1,794,565	700,183	2.562994
6/14/2013	1,874,892	554,657	3.380273
5/31/2013	1,796,904	588,433	3.053710
5/15/2013	2,432,180	631,600	3.850823
4/30/2013	2,170,858	1,053,087	2.061423
4/15/2013	1,772,203	655,552	2.703375
3/28/2013	1,627,507	509,057	3.197102
3/15/2013	1,714,306	743,966	2.304280
2/28/2013	1,761,597	1,078,877	1.632806

Valspar Corp (Val)			
Settlement Date	Short Interest	Avg. Daily Share Volume	Days To Cover
2/14/2014	1,144,510	932,129	1.227845
1/31/2014	1,297,649	644,339	2.019323
1/15/2014	1,169,908	603,962	1.937056
12/31/2013	1,183,381	322,377	3.670798
12/13/2013	1,155,418	443,981	2.602404
11/29/2013	1,326,531	756,031	1.754599
11/15/2013	1,573,070	448,518	3.507262
10/31/2013	1,633,298	624,801	2.614109



10/15/2013	1,080,900	657,216	1.644665
9/30/2013	823,220	573,460	1.435532
9/13/2013	915,227	545,760	1.676977
8/30/2013	963,199	474,913	2.138916
8/15/2013	981,580	814,121	1.205693
7/31/2013	855,924	483,030	1.771989
7/15/2013	919,252	474,913	1.935622
6/28/2013	1,073,024	594,334	1.805423
6/14/2013	1,228,780	383,311	3.205700
5/31/2013	1,473,135	476,260	3.093132
5/15/2013	1,798,828	672,207	2.676003
4/30/2013	1,526,816	678,502	2.250275
4/15/2013	1,403,254	558,684	2.511875
3/28/2013	1,127,290	406,828	2.770925
3/15/2013	1,160,719	511,370	2.269822
2/28/2013	1,305,248	550,465	2.365183



**(H-2) Short Interest Data From <http://finance.yahoo.com/>**

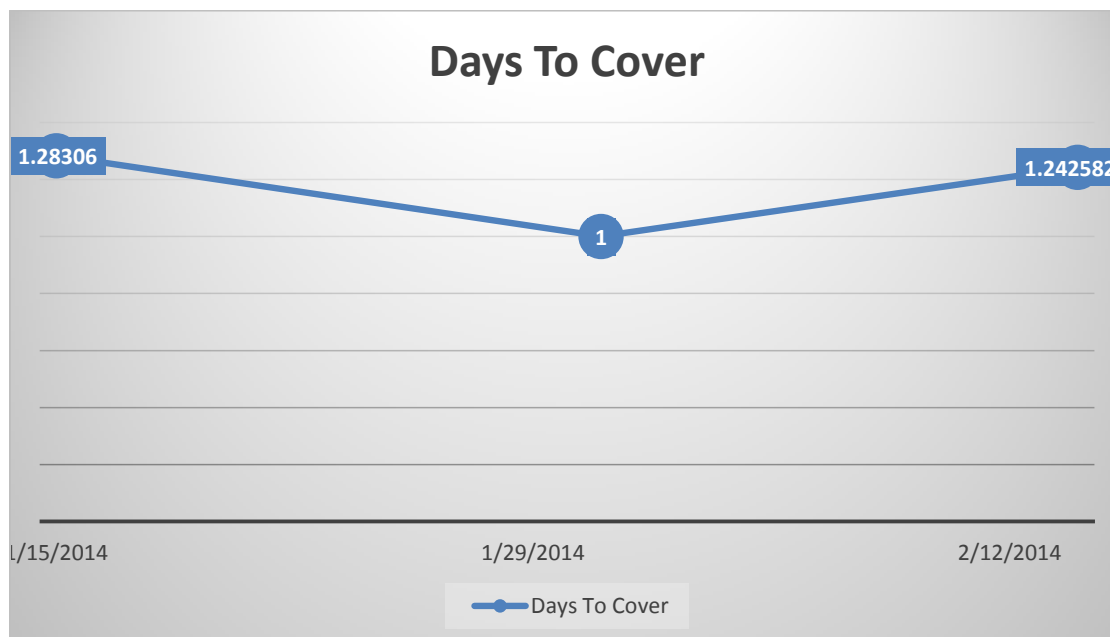
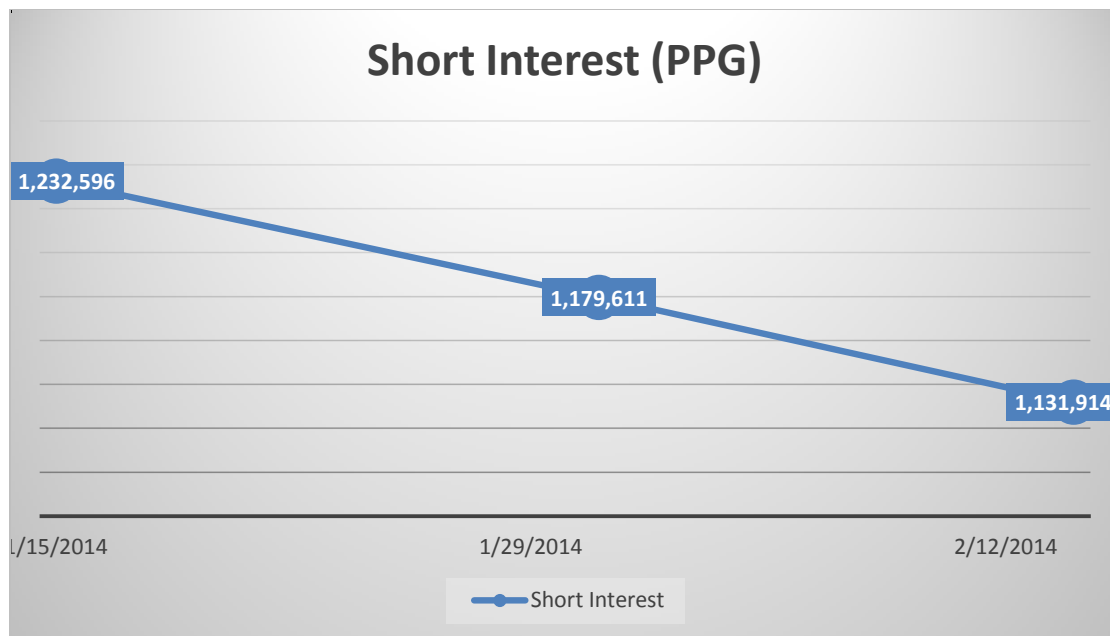
**Copy/paste required data from the “share statistics” table to the following table for (1) your stock, and (2) two competitors (in separate tables).**

<b>Avg Vol (3 month)</b>	<b>Avg Vol (10 day)</b>	<b>Shares Outstanding</b>	<b>Float</b>
938,574	955,662	138.51 million	137.72 million
<b>Shares Short (Most recent date)</b>	<b>Short Ratio (Most recent date)</b>	<b>Short % of Float (Most recent date)</b>	<b>Shares Short (2 weeks prior)</b>
1.13 million (Feb 14, 2014)	1.00 (Feb 14, 2014)	0.8% (Feb 14, 2014)	1.18 million (prior month)

- 1) Make note of the company's (1) last earnings reporting date, and (2) next earnings reporting date.
- 2) Discuss market sentiment on the stock based on the short interest statistics, recent trend reported in in (H-1) and (H-2)? Has the sentiment turned more bullish or bearish over the last year? How about in more recent month and why?
- 3) From (H-1), observe "short interest" and "# of days to cover" values for two reporting dates immediately before and one reporting date immediately after earnings report. (1) Were there notable increase or decrease in the values, right before or right after earnings report? (2) Observe stock price chart and comment on how stock traded around those dates.
- 4) Other observations worth noting?

When looking over the short interest for the last year it seems that investors have become more bullish on PPG. The evidence for this is PPG days to cover have decreased while some of their main competitors have seen an increase in days to cover shorts. Not only has PPG decreased over the last year they have been steadily trending downward. This decline could be from the acquisitions made by PPG to continue their growth.

Over the last month PPG has made a slight improvement in the days to cover to a short. On January 15, 2014 they were at 1.283060 days to cover, while they last report on February 14, 2014 indicated a 1.242582. Since this is such a small improvement it is hard to tell what the driving force behind it was but it could be from the acquisition of Hi-Temp Coatings Technology Co on February 3<sup>rd</sup>.



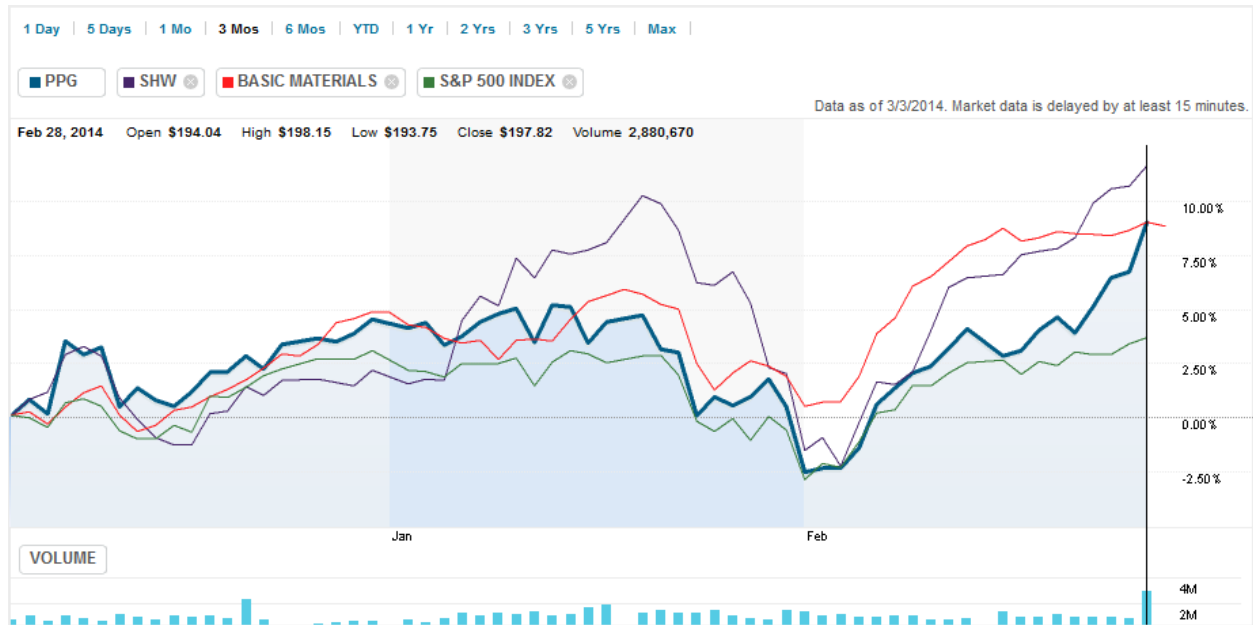
On January 16<sup>th</sup>, PPG released their most recent earnings. In this report PPG's revenue underperformed by .25%. This was a minor disappointment for the company though their earnings outperformed expectations by 4.79%. After this information became public PPG reported noticeably lower short interest and days to cover. This shows that even though PPG barely missed the mark on revenue their high earnings per share made up for the miss. Once this information was made public there was an uptick in trading to about 1.8 million shares traded. This is huge increase of trading considering the 90 day average is .86 million shares (Nasdaq). Along with this increase in trading, PPG stock price moved. The stock price drop about \$5 or 2.5%.

## Section (I) Stock Charts

For (I-1) – (I-3), the stock price charts should include (1) your stock, (2) 1 competitor, (3) sector ETF, and (4) SP500

### (I-1) A three months price chart

Copy/paste the “3 Mos.” stock chart here



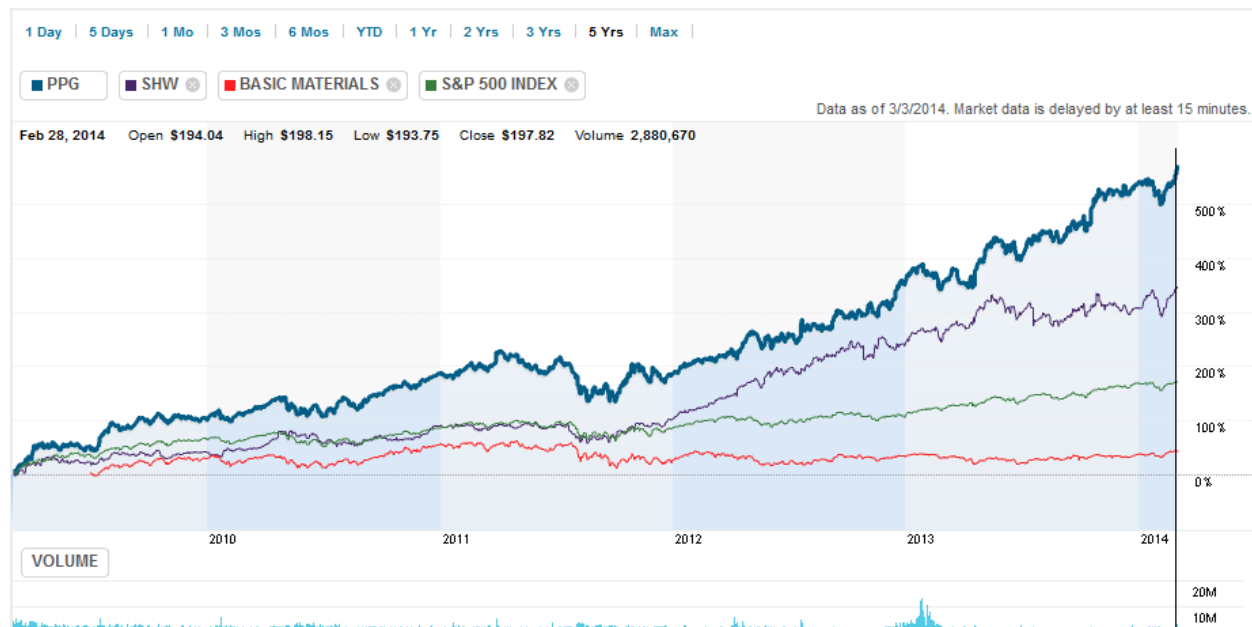
### (I-2) A one year price chart

Copy/paste the “1 Yr” stock chart here



### (I-3) A five year price chart

Copy/paste the “5 Yrs.” stock chart here



1) (I-1) – (I-3) Discuss what you observe from the above stock price charts. This should include comparing your stock to competitors, sector, and SP500 over the three different time horizons.

2) Other observations worth noting?

#### 3 month:

PPG, SHW, Materials, and the S&P follow a similar trend until about early January when SHW broke away. We found this increase interesting since this is right around the time SHW (among a couple other paint manufacturers) were court ordered to pay \$1.15 billion to replace or contain lead paint in millions of homes across California.

#### 1 year:

All four subjects again tend to have similar trends. Around mid-April 2013 PPG broke away from Materials following its sale of its \$2.5 billion commodity chemicals business. Around mid-July 2013 it starts to break away from all the others and sees another substantial increase in its stock price around mid-October 2013 following its Q3 2013 earnings report. PPG then reported an increase of 17% in its net sales.

### 5-year:

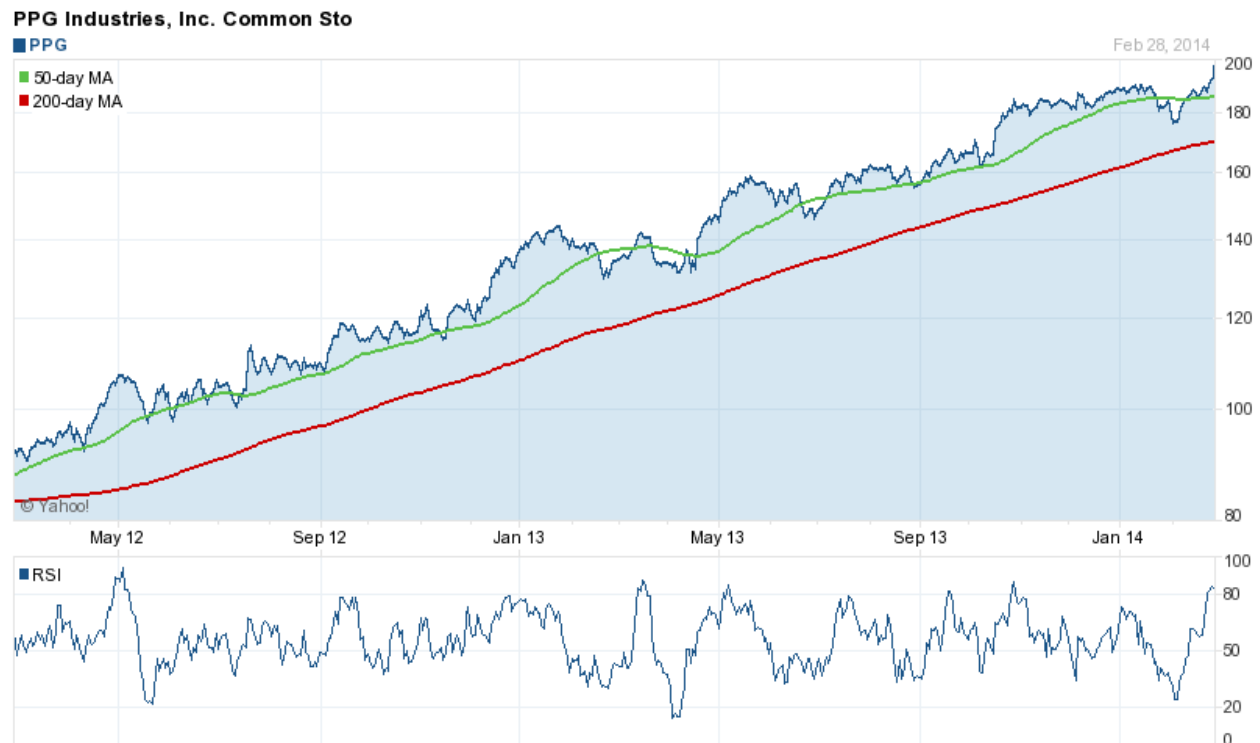
Over the past 5 years PPG has substantially outperformed the other three subjects, especially Materials. All four took a dip from August – September 2011 (PPG taking the largest dip) and then continued to grow. PPG stands now at above 500% growth with SHW following at about 350%.

### (I-4) Technical Indicators (“Moving Average” and “Relative Strength Index” from <http://finance.yahoo.com/>)

Click “**basic tech. analysis**” for your stock. From “**technical analysis**” panel, select “**6m**” as “**range**”, “**10**” and “**50**” as “**moving avg.**”, “**RSI**” as “**indicators**”. Copy/Paste both charts to the report



Repeat the above steps except changing “range” to “2y”, “moving avg.” to “50” and “200”.



- 1) Discuss your findings from these sets of technical indicators. Compare your findings here to findings from fundamental analysis. Are findings from technical analysis supportive of your other findings?
- 2) Other observations worth noting?

In the top chart, we see that the 10 day moving average dips below the 50 day for about a two week period. Likewise, PPG’s stock price took a dip as well. This all occurred starting in mid-January, right as PPG announced their Q4 2013 earnings. PPG’s report was positive, but its revenues fell short of estimates, which resulted in a dip in the stock price. As can be seen in the bottom chart, the 50 and 200 day moving averages have not crossed once in two years. This shows just how incredibly stable this stock truly is, especially in the long run. PPG’s RSI is right around 85 at the moment, indicating that the stock is largely overbought. We view this as proof that the stock has extraordinary growth potential and all else considered we believe the stock will continue its fantastic upward trend.

## References

"10-K" PPG Industries. Sec Filings. 20 February 2014

"8-K" PPG Industries. Sec Filings. 1 January 2014

"PPG Industries, Inc. Stock Quote& Summary Data." NASDAQ.com. N.p., n.d. Web 2 March 2014

Morningstar "used for various equity analysis." Web. 2 March 2014

Reuters (Relative valuation and financial information) "Used for various analysis" Web. 2 March 2014.

Stafford, Jeffery. "PPG has plenty of capital ready to deploy and may seek to further consolidate the coating industry." *Morningstar*. 17 Oct. 2013. Web 2 March 2, 2014.

Stafford, Jeffery. "Raising Our Fair Value Estimate for PPG to \$156." *Morningstar*. 21 Feb. 2014. Web 2 March 2, 2014.

Yahoo Finance "Used for various equity analysis" Web. 2 March 2014