Company Valuation

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BUS 431_L. Gorman

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Executive Summary

As of June 2nd, 2016, Simpson Manufacturing Co. (SSD) is trading at $39.41 per share. After conducting a multi-faceted analysis of the company, we find that the stock is currently overvalued by 14.75%. Our 2-part valuation model projects that the fair price of SSD is $33.94 based off of fiscal year 2015 metrics, and we believe that the stock is still overvalued today. Before discussing the methods and reasoning behind our valuation models, it is critical to clarify exactly what SSD does.

Simpson Manufacturing is in the business of engineering, designing, manufacturing and selling wood and concrete construction products through its wholly owned subsidiaries. SSD markets its products primarily to the residential construction, light commercial construction, light industrial construction, and do-it-yourself market segments. Increasingly so, the company is providing engineering services and design software that facilitates the specification, selection and use of its products. SSD mainly sells and operates in the United States, however, SSD has a noteworthy presence abroad, with a large manufacturing plant in China that directly distributes products to markets in Europe, Asia and more.[1] Simpson Strong-Tie benefits from strong brand name recognition among architects and engineers who specify the use of the company's products, making the company a leader in wood construction connectors. As such, SSD's core business strategy is to retain and attract customers by offering high quality products that are easy-to-use and cost-effective.

Businesses in the building materials industry vary greatly in both size and structure. As a result, SSD faces a large variety of competitors, from branches of large multi-national conglomerates to small regional manufacturers, which makes it difficult to specify similar companies for comparison. Adding to this difficulty is the fact that building codes and practices differ significantly by region, meaning Simpson's markets and product specifications also vary by region.

Despite these complexities, we've chosen 3 companies that share many similar traits in their operation when compared to SSD. These similarities materialize in the form of similar input materials (steel), similar target markets, and similar macroeconomic influences. The first, Illinois Tool Works Inc. (ITW), is by far the largest competitor out of the three, however, only 2 of their 7 business segments are directly comparable to Simpson's operations. ITW's polymers and fluids division along with their construction product segment are the most similar to SSD's business. NCI Building Systems (NCI) is another competitor for Simpson Manufacturing. NCI is a manufacturer of steel building components and other engineered building systems, however, NCI focuses more on commercial construction as opposed to residential. Despite this difference, SSD and NCI share the common input of steel for their product manufacturing, with NCI being even more reliant on steel inputs than Simpson. Lastly, L.S. Starrett Co. (SCX) is the smallest of the three competitors, but resembles SSD in the form of their operations outside of the United States. Also, SCX is similar to SSD in that the company has similar steel inputs for manufacturing its products and they target very similar markets, such as the do-it-yourself (DIY) segment.

By using the three aforementioned companies as competitors for SSD, we calculated a weighted average (by current market capitalization) of the three competitors to compute Industry ratios and industry returns for

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[1] Pulled from SSD 10K 2015

comparison. However, since ITW competes with SSD in only 2 of its 7 business segments and since it is the largest competitor by a factor of almost 36:1, we decided to reduce ITW's market cap weight to 35% of its actual value, which closely mirrors the percentage of revenue that results from the 2 business segments. This weighting structure allows for ITW to have the most pull on industry averages, as it's the largest company of the three by far, but this also keeps the industry averages from being virtually identical to ITW's metrics.

Many key insights are found when comparing Simpson Manufacturing's ratios to the 3-competitor industry. Perhaps the more notable of these ratios are the financial leverage ratios. SSD has little to no long term debt throughout their history as a public company, and as of year-end 2015, they had no long term debt outstanding. This is in stark contrast to the industry average, which has a debt/BV of Equity ratio of 1.8 vs. SSD's ratio of .13. Another telling ratio is SSD's gross profit margin vs. that of the industry. SSD focuses on utilizing high levels of state of the art manufacturing automation and flexibility, allowing it to control manufacturing costs, even while developing customized products for its customers.

In projecting Simpson Manufacturing's future sales via a sales growth regression, we used two different models to gain a better understanding of the dynamics driving SSD's sales. Since the construction industry overall is highly seasonal due to weather patterns, we decided to run a quarterly sales growth regression with dummy variables for different seasons to see if seasonality is reflected in Simpson's sales growth patterns. After many iterations of the quarterly regressions, we found that seasonality explained a large portion of the variability in sales growth. Another telling metric from the quarterly sales growth models is the degree to which housing starts explain the variability in sales growth. By itself, growth in new housing starts in the United States explained 50.75% of the variability in sales growth for SSD with a p-value of 0.0000. These findings are reflected in their 10K reports, where SSD consistently states that their sales are heavily dependent upon the U.S. residential construction.[4] Although we developed a quarterly sales growth model to explain and understand the seasonal aspects of SSD's sales growth, we used an annual sales growth model for projecting the next 5 years of sales growth for practical forecasting purposes. After many iterations of the annual sales growth model, we determined that growth of U.S. housing starts and real GDP growth are the two variables that explain SSD's annual sales growth best. The logic behind these variables being drivers are: an increase in housing starts along with real GDP should lead to an increase in construction, which then results in an increase in demand for SSD's construction products.

Simpson Manufacturing's depreciation schedule was constructed using three separate "buckets" of assets: software, property plant and equipment (PPE), and buildings and leasehold improvements. PPE is the most significant of the three asset classes, which is expected of a manufacturing company. However, as technology becomes increasingly ubiquitous and important to Simpson Manufacturing's future, we project that software will become a much more significant capital expenditure for the firm. The company owns the vast majority of its properties and leases only smaller sales offices and manufacturing facilities.[4]

With the aforementioned information as a backdrop, we analyzed return data from SSD, it's competitors and the industry as a whole to determine risk measures and ultimately SSD's cost of capital for our valuation. The two models used in these computations are the CAPM and the Fama-French 3 Factor model (FF3). By using Ken French's data for the risk-free rate and the excess returns of the market, we constructed market model

regressions with excess returns from SSD and the industry and found some key insights regarding estimates of beta and how it affects the expected return of the industry and Simpson. Using the CAPM and FF3, we estimated beta to be 1.32 and 1.04 respectively (*TD Ameritrade* estimates SSD's beta to be 1.4). With the FF3 model, we found the E[r] of SSD is 12.18 percent vs. the industry E[r] of .0892. The higher cost of capital comes from the large amount of systematic risk associated with the returns of SSD. Another key finding from the return data was the volatility of SSD's returns over the last 60 months, which had an annualized volatility of 27.71% vs. the annualized market volatility of 12.49%. These findings are consistent with our beta hats in that the returns for SSD primarily move in the same direction, but to a greater degree than the returns of the overall market.

After computing the cost of capital, we constructed pro forma financial statements in order to find the fair value of SSD's stock using a 3 statement Discounted Cash Flow model (DCF). When selecting drivers for the pro forma financial statements, a variety of methods were employed. The methods used include macroeconomic growth forecasts for sales, analyzing forward looking statements in the 10k, and by using historical ratios and trends. Most of our drivers are based off of a percentage of sales where we used historical trends and averages along with other information to predict drivers out until year 2020.

Utilizing all of the aforementioned information, we proceeded to compute the fair price of Simpson Manufacturing's stock using the 3 statement DCF model and by using a WACC of 10.89% as the fair expected return on the assets. The WACC uses the FF3 model to calculate SSD's E[r] on equity. We also assume a 5.9% terminal growth rate for SSD beyond 2020. In an assumed 2% inflation environment, the real growth terminal growth rate is 3.82%. This estimate is based off of the trend from the sales growth projections and from assessing SSD's growth prospects as a relatively new and small company. This model computes the fair stock price of SSD as $32.77 per share.

The second model used in finding the fair value of SSD was a comparables model to find the relative value of SSD to its peers. Our model uses 5 key ratios: P/E, PEG, P/CF, (P/CF)/G and P/BV of Equity. The weights are split fairly equally with larger weights on the P/BV, PEG and (P/CF)/G. This model computed the fair value of SSD stock as $21.03 per share.

In using the dividend discount model (DDM) to compute the fair value of SSD, we ran significant difficulties in projecting ROE since SSD is still growing and is still far from being a mature, stable firm in the building materials industry. For this reason, we decided to not use the DDM, as we feel it's not an accurate representation of the fair value of SSD's stock.

In weighting the two valuation models, we put the vast majority of the weighting on our 3-Statement DCF model with a 97% weight. Since comps analysis is a relative and oftentimes fuzzy valuation method, we feel that the more detailed DCF model is a much better reflection of the fair value of Simpson Manufacturing.

In conclusion, our 2-part model computes the fair value of Simpson Manufacturing's stock to be 33.06/share vs. the current stock price of 39.57/share.

# Hardware Manufacturing Industry Overview

Industry Description:

While the hardware manufacturing industry is a broad one to say the least, this overview accumulates information from industries directly related to SSD, industries including but not limited to: construction material merchant wholesalers, lumber and other building materials, construction, hardware & fastener manufacturing and structural fasteners.   Primarily serving the markets of residential and commercial construction, the hardware manufacturing industry also targets light industrial, remodeling and do-it-yourself (DIY) markets.   No single industry is enough to fully describe SSD and its competitors and as a result, for the sake of clarity, we will mostly use the term building materials industry in this analysis when referring to the industry that describes Simpson and its competitors.

Industry Growth, Demand & Drivers:

For an industry that is highly dependent on building and working conditions, it is essential to understand its cyclical nature and the factors that attribute to this.   Construction suffers a downturn in the fall and winter seasons, while thriving in spring and summer when weather conditions are more favorable.   This trend is especially true on the east coast and other volatile climates, while less significant in places like California with more favorable and consistent weather conditions year-round.   Consequently, this trend inspires high demand for building materials in the warm seasons, while leaving manufacturing firms with idle inventories during the off season.

With said perceived environmental risk, some macroeconomic factors supporting the industry are persistently low interest rates, rising employment and increased pent-up demand (valueline).   Low interest rates encourage borrowing and home buying as well as increase in affordability of new homes.   "An increased share of first time home buyers to 32% in December from 29% a year earlier," is a positive sign of the growing demand for new houses (valueline).   While rising prices for entry-level homes is hurting affordability, mixed affordable housing is a popular demand and requirement in local city ordinances and general and specific plans as more millennials join the home buying market.   However, land inflation, permit delays and labor shortages attributing to legislative risk are choking new construction in some markets.   [2]

Real estate, whether it be commercial, residential or industrial is arguably the most important market driver in the building materials industry.   Simpson estimated 55% to 65% of their total sales being dependent on housing starts.   As seen in figure 1, the steady increase in housing starts since the great recession is a positive sign for SSD and the industry.   Real

Housing Starts
Total: New Privately Owned
Housing Units Started

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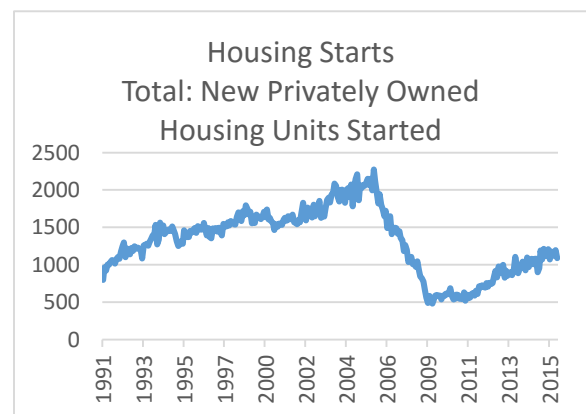
[2] Based on the following graph of new housing starts, supplied by the US. Bureau of the Census, new residential construction has been steadily rising since 2011, just a few years after the great recession. The graph represents seasonally adjusted data, in thousands of units.

estate is a cyclical market to say the least and it is this very characteristic that can provide investors with high rewards but also presumably high risk.   How does this affect building material manufacturing firms like SSD? Consider the financial crisis in 2007-08 caused by highly inflated housing prices; prior to the burst of the housing bubble, construction manufacturing firms where riding the sales wave as new houses were being built and sold quicker than ever, providing them continued increases in sales each year.   However, once the crash hit, building material inventories were left high and sales were left dry as many housing development projects seized up stopping dead in their tracks.

Competitor Analysis

While SSD is a relatively small company with a market cap of $1.8 billion, it is quite large when compared to companies that specifically make steel connectors for wood construction.   In addition to this difference in size, most companies that build similar products to SSD are private, like USP, a subsidiary of MiTek Co.   that primarily manufactures steel connectors for wood construction.   However, SSD sells a wide array of building materials not limited to steel connectors, including: tools, fasteners, anchoring systems and fastening systems.   Each of the following competitors manufacture many of these products, use the same raw material inputs (steel) and target similar markets.   After thorough analysis the three most applicable companies include, L.S.   Starrett Co.   (SCX), NCI Building Systems (NCS) and Illinois Tool Works Inc.   (ITW).   [3]

L.S.   Starrett Co.   (SCX)

With the smallest market cap between the competitors, of just $64mm, Starrett Co. provides an array of precision and hand measuring tools to more than 100 countries (Hoovers).   More notably, Starrett targets DIY markets in the construction industry, as well as automotive, aviation, marine and farm equipment industries. This is directly in line with SSD's target market, which includes the DIY construction industry as well as providing product to certified contractors participating in commercial and residential construction and remodels.

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[3] Each company will be referred to by their ticker as well as a shortened name for the sake of simplicity; L.S.   Starrett Co. will be referred to as SCX or Starrett, NCI Building Systems & Illinois Tool Works will mostly be referred to by their tickers'.

Report Date	06/30/2015
Currency	USD
Scale	Thousands
United States	147,589
Brazil	70,629
United Kingdom	29,789
China	22,385
North America (other than U.S.)	11,555

2015

Legend:
- United States
- Brazil
- United Kingdom
- China
- North America (other than U.S.)
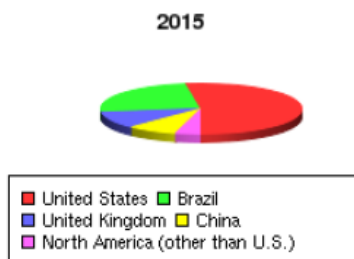
Mergent Online

Starrett operates in many countries outside the US, with the most foreign revenue coming from Brazil, the United Kingdom and China respectively (Mergent). Starrett is well established in foreign markets where they have a strong and credible brand name. For this reason, Starrett's international operating strategies should be compared to SSD's who is still scratching the surface in overseas markets. In recent years SSD has substantially expanded their manufacturing capabilities in China, where nearly all output is intended for export to other parts of the world. The great distances between the manufacturing plant and their consumers puts SSD at a competitive disadvantage as they are unable to provide their customers with prompt delivery and support, which is a proud service that they have mastered at home in the US. Rather than focus on direct delivery to the end user of their products, Starrett primarily sells their products through distribution retailers, which greatly reduces operating and shipment costs. Out of Starrett's nine manufacturing plants, three are located outside the US specifically in Brazil, Scotland and China, each of which is strategically located to serve the international markets they have successfully penetrated.

Unfortunately SSD's business model, that has provided it with an immense competitive advantage in the US, is one that might just be too costly to function abroad. In addition to this foreign operating risk, SSD faces international challenges with local acceptance of their products, political instability, changes in tariff rates, changes in import and export regulations and fluctuations in foreign exchange rates. These factors, along with a multitude of others, call for concern as SSD fears failure in penetrating new markets; any market penetration that occurs might not be timely or profitable. As stated in Simpson's 2015 annual 10-K report, "If we do not penetrate these markets within a reasonable time, we will be unable to recoup part or all of the significant investments we will have made in attempting to do so." SSD fears that if they wish to grow and expand internationally they may have to sacrifice a portion of future profits in order to do so. Like my grandpa bluntly likes to say, "Shit or get off the pot," SSD should focus on penetrating these new markets or cut their losses and focus on their success and profitability at home in the US.

Similar to Starrett's international strategy, SSD might consider perusing international expansion in a few foreign countries that offer the most potential with the least perceived risk. If they are unable to successfully penetrate these new markets, this could spell trouble for risk averse investors, who might not feel comfortable with the high level of perceived risk and minimal projected return that comes with this new market penetration.

SIMPSON Strong-Tie

NCI Building Systems (NCS)

In order to better understand the competitor relationship between NCS and Simpson, it is important to understand the competition for building projects that exists in the industry as a whole.   NCS is primarily a manufacturer of metal components and engineered building systems.   As a steel construction manufacturer, NCS competes with all other alternative methods of construction building, such as what SSD specializes in, which is concrete and mainly wood construction.   NCS and Simpson have a unique relationship in that they both fight for the same raw material inputs in steel.   While NCS uses the steel to manufacture engineered building systems (i.e. for steel construction), Simpson uses its steel to make connectors to assist wood construction.   Here lies the competitor relationship between NCS and Simpson; that is, while each firm attempts to combat fluctuating steel prices, they also do battle as competing building methods in the industry, each with its own advantages and disadvantages.

NCS is the second largest company in our list of competitors, with a market cap of $1.1 Billion.   Alluded to above, NCS manufactures metal products for the nonresidential construction industry used for repair, retrofit and construction activities (Mergent).   NCS primarily serves the low-rise nonresidential construction market (five stories or less), which is right down Simpson's alley.   As of November 1st 2015, NCS operates a multitude of distribution centers along with 42 manufacturing plants spanning across North America, Mexico and China.   With alike products and locations of operation, NCS supports a similar customer base to that of SSD, including general contractors, sub-contractors, developers and retailors.

With respect to raw material inputs, NCS is the most consistent with SSD, in that they manufacture mainly steel products.   This similarity is imperative when analyzing the effects of increased input prices on the industry's sales, revenues, product pricing, inventory levels and production output.   Historically, neither NCS nor Simpson have attempted to protect themselves from changes in steel prices.   However, in the last few years, increased volatility of steel prices as well as their unpredictability has caused these firms to reconsider their raw material acquisition strategies.   How well these firms hedge this risk, by tactfully purchasing futures on steel, is dependent on each firms risk profile and precision of their forecasts of future steel prices.   If steel producers

sense a rising demand for their product or there is a sudden shortage in the supply of steel, manufacturing firms might consider purchasing futures in order to lock in the current price of steel as a way of protecting themselves from inflated raw material costs.   [4]

Producer Price Indices - Competitive Building Materials

What is more quantifiable and maybe a little easier to analyze, is each firms' current capacity and capability to employ said hedging strategies.   By capabilities, we are referring to current business structure involving things like inventory capacity that can withstand an influx of raw materials and finished products at any

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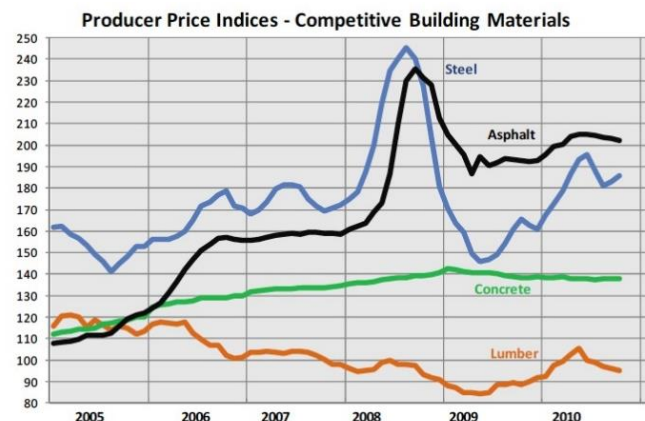
[4] The above graph, supplied from the *Think Concrete Blog*, shows the high volatility of steel prices compared to other building materials.

given point in time.   This idea will be elaborated upon shortly, but first a deeper look into Simpson's competitor in NCS.

For NCS in 2015, steel accounted for about 70% of their costs of sales.   Seeing as that NCS manufactures fully integrated systems out of steel, they are much more vulnerable to increases in steel prices than SSD. Because SSD manufactures steel connectors for wood construction, they in a way partially benefit from increased steel prices when compared to NCS.   Clearly stated, an increase in steel prices should influence builders and developers to pursue alternative methods of construction leaving NCS (specializing in steel construction) out in the cold while SSD still able to thrive in a high steel priced world.

Typically, SSD keeps larger inventories so that it can ship orders out as they receive them, in order to minimize backlog.   This is evident in the company's turnover ratio of 2.2 in 2015, which is well below the Robert Morris Associates (RMA) hardware manufacturing industry average of 4.3, and the industry average extracted from our list of competitors, of 5.9.[5] This difference is even more evident when comparing Simpsons inventory turnover ratio specifically to NCS' inventory turnover of 8.9.   This is very telling about the different operating strategies employed by these two firms.   NCS sold or turned over their entire inventory almost 9 times in 2015, while Simpson only did so 2.2 times.   Such a high inventory turnover ratio for NCS could speak to their very efficient inventory management.   This is not to say that SSD is inefficiently managing their inventory, but rather they are choosing to employ a different business strategy, one that they feel to be more effective and important to the long-term success of their firm.   Simpson chooses to keep larger inventories to support their commitment to customer service, allowing for the fastest possible delivery of their products upon customer order.

This operating model is not only essential to uphold their high level of customer service, but it also provides more capability to hedge against changes in steel prices.   That is, SSD can increase their anticipatory purchases of steel to mitigate the effects of rising steel prices, without having to increase their inventory capabilities. However, there is a concern that these fluctuating levels of inventory can adversely affect margins, operating cash flows and profits.   Overall, it is safe to say that SSD is more suited to withstand sudden rises in steel prices relative to their competitors and the industry as a whole.

Illinois Tool Works Inc.

As inferred by their name, ITW is based in Illinois and is one of the largest tool manufacturers in the US, operating in primarily seven segments.   ITW's polymers and fluids segment as well as their construction products segment are the most comparable to SSD.   Incorporated in 1912 and with a market cap of $37 billion, ITW is the oldest and largest company that we will compare to SSD.   This longevity and continual profitability are valuable attributes in that they provide a credible gold standard when comparing business strategies and things of that nature.

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[5] Both SSD's turnover ratio as well as our industry average ratio represent 2015 values and are calculated using average end of year inventory values.

By employing an 80/20 management process, ITW has created growth and value for themselves, their customers and investors.   As stated in their 2015 annual 10k report, "ITW focuses on its largest and best opportunities (the "80") and eliminates complexity associated with the less profitable opportunities (the "20")." By pursuing the "80", ITW has consistently executed efficient operational excellence with respect to product availability, quality and innovation.   While this 80/20 management process is a large part of ITW's extended success, another contributing factor is their commitment to evolving and updating their business model to maximize profitability and value creation.   A prime example of this adapting mentality is in 2013 when, "ITW began the process of transitioning the company onto a new strategic path aimed to fully leverage the performance potential of their business model, to deliver best-in-class margins and returns." [6] Specifically, ITW looked to shift the company's primary growth engine to organic, by simplifying business structure and pursuing strategic sourcing and divestiture opportunities.   With the implementation of this new and improved business model, ITW has narrowed their product breadth focusing on growing their largest customers and product lines and they have divorced smaller segments with higher overhead costs.   Because of this reevaluation and favorable economic conditions, ITW has experienced strong financial performance in the last three years.

SSD employs a business model very similar to ITW; both companies strive for operational excellence through strong customer service, top of the line quality and by consistently devoting a fair share of revenues to research and development (R&D).   For Simpson and ITW, R&D is an integral part of how each firm creates value for their customers and investors.   By investing heavily in R&D Simpson can increase operating efficiency in the future through product development.   For example SSD may develop a more efficient way to run its manufacturing plants or they might develop stronger and more economical connectors that are easier to manufacture and easier to ship to their customers.   The table below shows the amount of R&D spending by each firm relative to their revenues and direct costs; Simpson invests significantly more in R&D than ITW relative to revenues and costs, which is a signal of the firm's dedication to long-term success and value creation.

(millions)	Average	2015	2014	2013
ITW				
Revenue	14008	13405	14484	14135
Direct Costs	8372	7888	8673	8554
R&D	228	218	227	240
R&D/Rev	0.0156	0.0163	0.0151	0.0154
R&D/Cost	0.0261	0.0276	0.0251	0.0255
SSD				
Revenue	751	794	752	706
Direct Costs	412	435	410	391
R&D	40	46	39	36
R&D/Rev	0.0614	0.0579	0.0612	0.0652
R&D/Cost	0.1119	0.1057	0.1122	0.1176

As Simpson continues to grow and increase their product breadth, they may want to consider undertaking a full reevaluation of their business operations, similar to what ITW has enacted in the last three years.   ITW's adaptive business structure is a proven example of the types of changes a company should make as they continue to grow.   SSD has added many new products to their repertoire and it will be interesting and very

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[6] Also pulled from ITW's 2015 annual 10k report along with the prior quote

telling to see if, and when, SSD decides to reevaluate their business model in order to sustain its growth. With this said, Simpson seems to be well prepared for growth as they invest more in R&D, relative to sales, than ITW and focus on improving and innovating their construction products rather than diversify into different segments.

Ratio Analysis

Each of our three competitors vary substantially in size; by comparing their financial ratios we are able to account for this difference and accurately compare and investigate each firm's financial information. When calculating industry average ratios, we used a weighted average of our three competitors based on their size and their comparability to SSD. In addition to this calculated industry average, we found the Robert Morris Associates hardware manufacturing industry ratios for a few specific ratios.

Debt to Equity Ratio
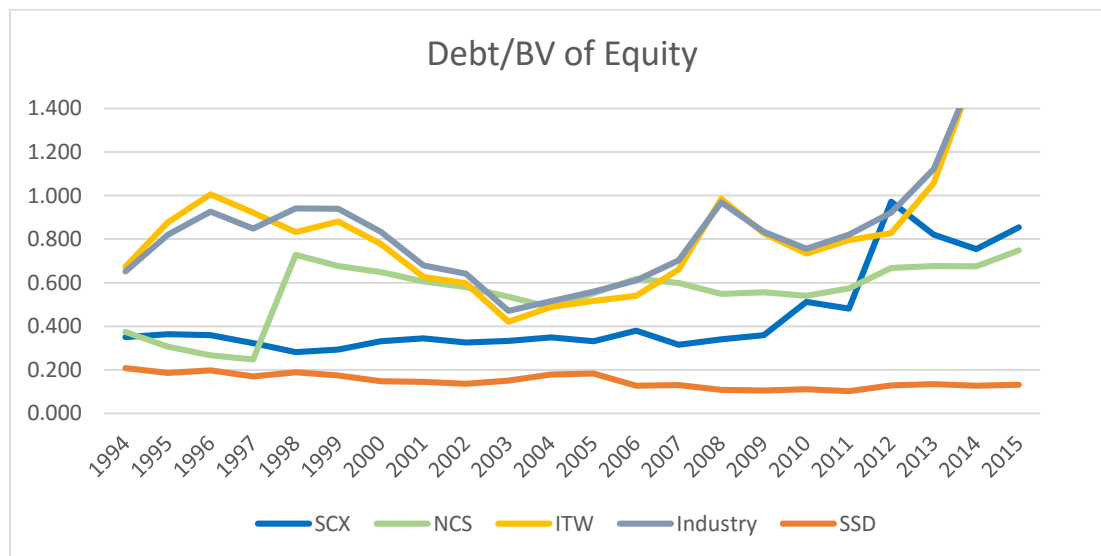
Arguably, one of SSD's most remarkable attributes is their persistence ability to avoid long-term debt.   Alluded to in the executive summary, as of 2015 SSD has no long-term debt. Therefore, the 13% debt to equity ratio seen above in 2015 is comprised of only short-term debt. SSD is well below our calculated industry average as well as the RMA average of 1.8 and 1.6 respectively. [7]

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[7] In house ratios are calculated using average book value of equity. The ratios shown by our industry and RMA however represent and average of the 2014 and 2015 ratios.

Simpson might be following this strategy as a way of hedging against risk associated with the industry. SSD's sales are primarily dependent on the state of the housing market and therefore the success of the firm will fluctuate with the highly volatile housing market. Now, by holding little to no debt SSD reduces some of this risk associated with a fluctuating housing market. That is, SSD is more equipped to withstand a sudden shock to the housing sector because they have far fewer debt obligations than anyone else in the industry. This is why SSD did not need to make any drastic changes to their business operations after the great recession in 2008. In the heat of the recession, Simpson continued to invest heavily in R&D, did not need to sell off any assets and was able to continue their long-term growth strategy.

Gross Profit Margin
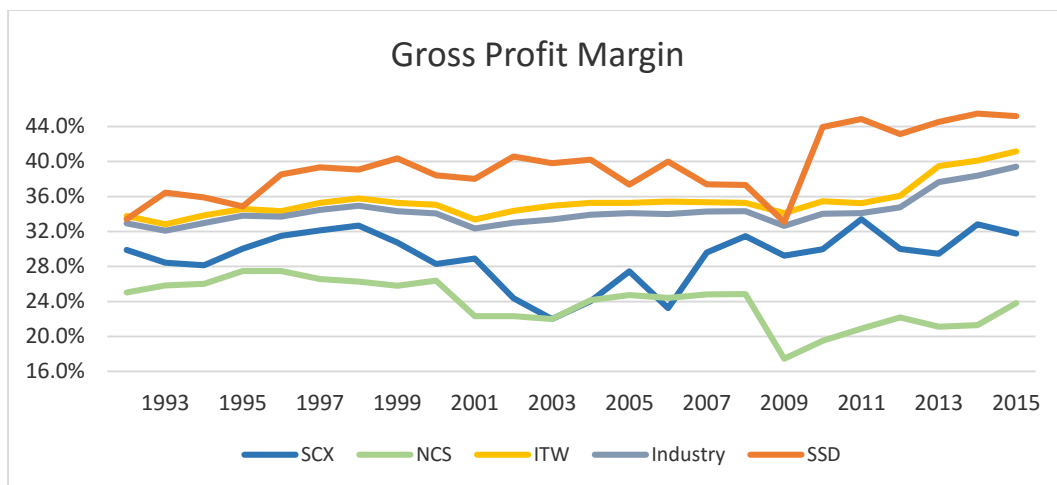
Gross profit margin is a profitability measure and is calculated as gross profit over sales; this is very telling as to how well a firm manages their direct costs. A high gross profit margin means lower direct costs, which is obviously desired all else constant. As shown above, over the last five to seven years Simpson has perfected an above average gross profit margin, earning about $0.44 in gross profit for every $1 in sales. The next closest gross margin is held by ITW at about $0.40 in gross profit for every $1 in sales over the last three years. SSD prides themselves on their ability to eliminate unnecessary direct costs thanks to a high level of automation in their manufacturing line, as well as their limited range of products relative to its competitors.

For each firm, it is easy to notice the large dip in this ratio in 2007-08, when the financial crisis hit. Once the crisis hit, seizing up an immense amount of new construction in the US, construction product manufacturing firms suffered as a result. Notice that NCS, Simpson and SCX were adversely affected a little more than ITW; this is due to the fact that these three firms primarily produce construction products, while ITW is more diversified operating in seven other segments beyond construction building materials.

Operating Margin
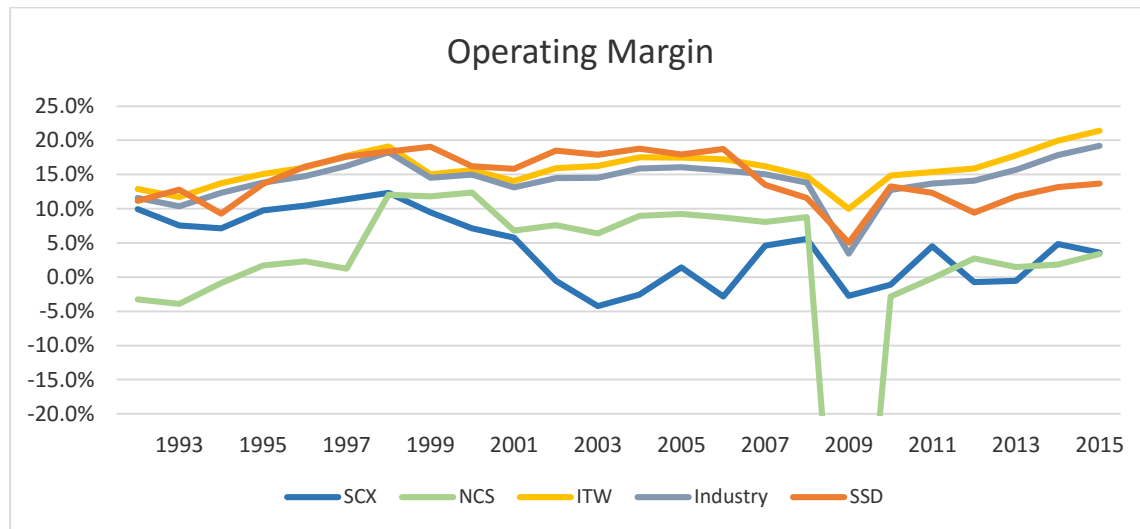
Operating Margin

While SSD had a noticeable advantage in their ability to reduce direct costs, the story is a little different when looking at their operating margin.   Over the last four years, SSD has extracted a little above $0.11 in EBIT for every $1 in sales.   While this 11% margin is well above that of NCS and SCX, who consistently flirt with nearly a negative operating margin, it is below the industry average, seeing as how it is highly influenced by ITW.   There are a few reasons behind this, the first we covered earlier in the amount of R&D spending by SSD compared to its competitors. Simpson spends significantly more on R&D as a percentage of sales than its competitors, and while this dilutes their operating margin SSD feels it is necessary to sustain growth and create value.

Another factor diminishing SSD's operating margin includes their substantial selling general and administrative expense (SG&A).   While SSD's leading market position allows them to curb some of these expenses through economies of scale, they are not such a predominant market contender outside the US, particularly in Europe and Asia.   Simpson's strong customer service and prompt delivery is a strong competitive advantage in the US, however proves to far more costly abroad and this is resembled in the large difference between their gross operating margin and their operating margin.

Du Pont Analysis

Our analysis of probability ratios is not nearly complete without a thorough investigation of Return On Equity (ROE). Through the Du Pont analysis, we are able to deconstruct ROE in order to gain a deeper insight into Simpson's operating dynamics.
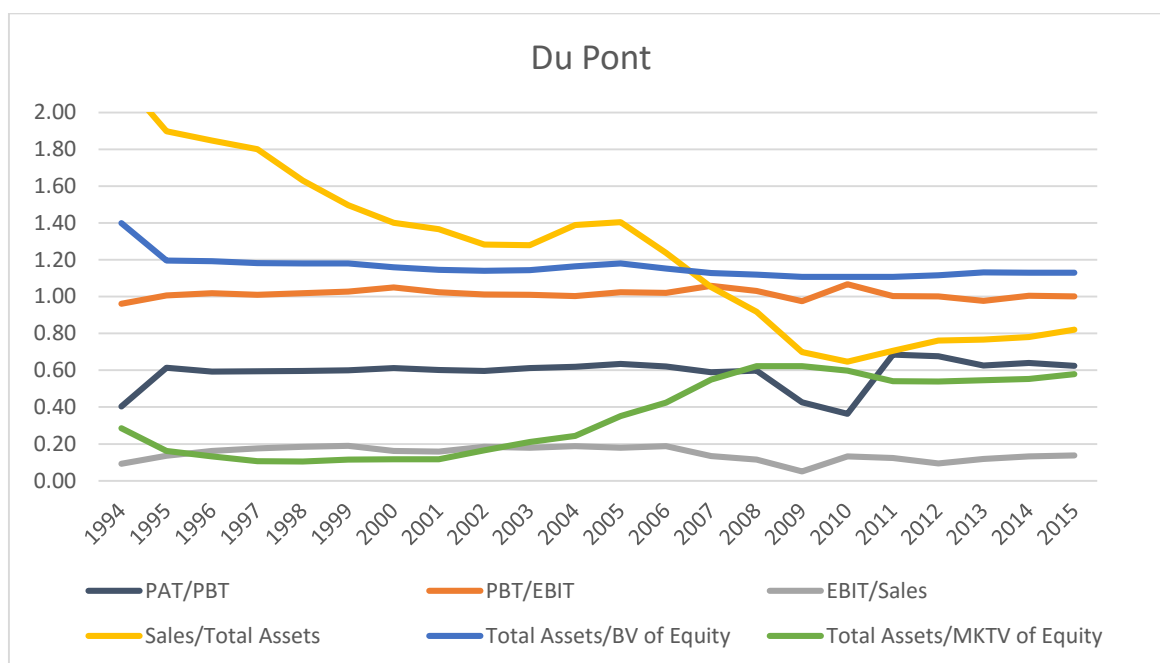
ROE is a significant measure of a company's performance, given that it is a measure of management's efficiency in utilizing the shareholders' collective investment.   Return on the book value of equity for Simpson since 2011 has been hovering around 6.5%.   For every $1 of their shareholders investment, SSD turned about $0.06 in profits since 2011. Relative to our competitors this is just above NCS and SCX, however well below ITW's ROE. With this foundation as a guide to how Simpson's ROE stands up against the industry, we can start to extrapolate this ratio to gain a better understanding of SSD's management and operations.

Simpson's ability to juggle tax expenses be it sales tax, foreign trade tariffs or depreciation expenses, can have a great impact on net income.   Since the company went public, Simpson's PAT/PBT ratio has consistently been around 0.6.   Obviously the higher this ratio the better, however it is also important for this ratio to stay as constant as possible; this speaks to management's ability to curb risk associated with policy change with regards to federal and states income taxes.

This next ratio highlights one of SSD's strongest attributes, their little to no long-term debt. Simpson's PBT/EBIT ratio is near 1 all throughout the life of the company. Simpson's ability to avoid taking out long-term debt they

have incurred miniscule interest payments, thus allowing them to enjoy nearly no loss of funds between these two financial measures.

EBIT over Sales is simply the operating profit margin explained earlier. To quickly reiterate, Simpson's EBIT is held down because of SSD's inability to minimize operating costs outside the US. However, another suppressor that possess great upside potential is SSD's commitment to R&D. While this may cause for lower operating margin it has the potential to increase overall profits in the future via more efficient production.

Total asset turnover has decreased over the life of the firm, to about half of that of the RMA industry average in of 1.6. SSD's total asset turnover has slowly climbed its way back to 0.8 as of resent and while this is a positive sign, it seems that Simpsons long term assets are weigh down this ratio more than is typical in the industry. [8] Remember this is partially due to SSD's lower inventory turnover ratio. Simpson chooses to keep larger inventories so that it can quickly ship orders out to customers. Simpson understands this tradeoff and chooses to suffer the costs of holding larger inventories in order to lead the industry in customer service.

The last two ratios in the Du Pont analysis measure total assets to both the book value of equity and the market value of equity. The book value of equity is simply the accountant's assessment of equity and the market value of equity is the price one would pay to own a part of the business; the higher the market value of equity the more valuable investors find the stock. SSD has a market value of equity to assets ratio that is lower than their book value of equity to assets ratio. This tells us that the market assigns a higher value to SSD because of the earnings power of the company's assets.

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[8] This is the Robert Morris Associates 2015, Sales/Total Assets ratio.

Altman Z
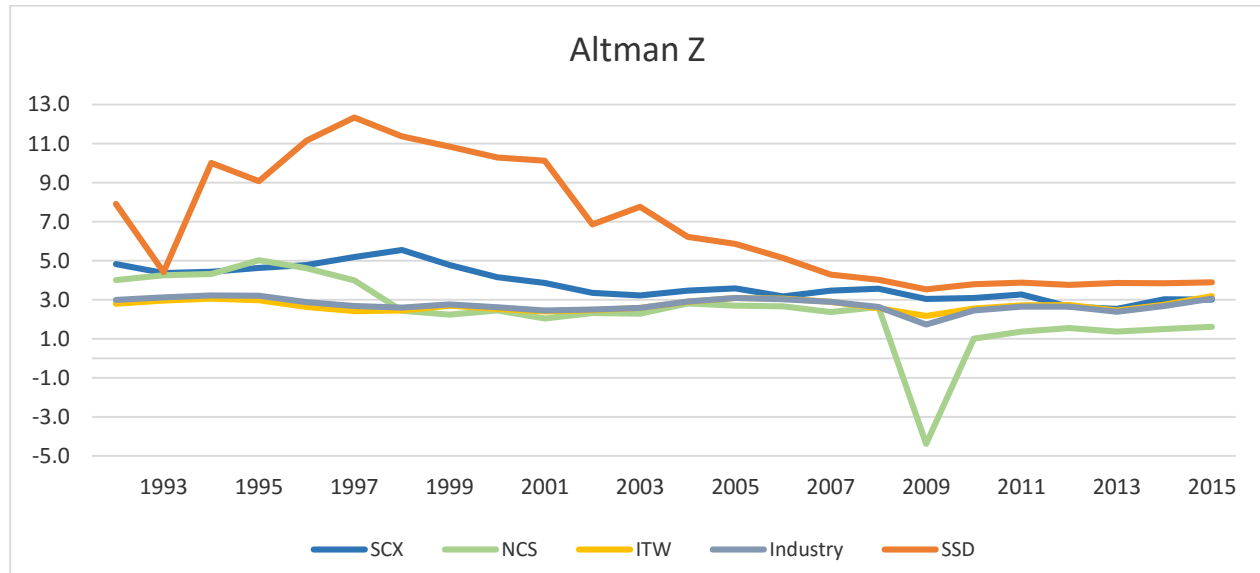
A good place to conclude our ratio analysis is to check the probability of bankruptcy for Simpson and its competitors. We can easily obtain a good estimate of probability, with the help of the Altman Z score. The Altman Z score is calculated by applying different weights to five ratios that ultimately once added together provide a value, and if that value falls below .75 there is a heightened probability of bankruptcy. The first ratio, EBIT/Total Assets, has a weight of 3.3 and helps explain how effectively a firm is using their assets to create revenue. In 2015, Simpson earned $0.11 of operating income for every $1 in assets, compared to an industry average, earning about $0.18 per $1 of assets. The next ratio, holding a weight of .999 is, again the very popular, total asset turnover ratio, which we found to be declining for SSD to just below the industry average.

Next, we examine the market value of equity to the book value of debt ratio, and remember Simpson has far less debt relative to the industry and it is for this reason that this ratio is 25% higher for SSD than the industry. [9] A lower book value of debt should decrease the probability of bankruptcy and with a weight of 0.6, this is notable reason SSD's Altman Z score is historically higher than its competitors.

With a weight of 1.4, retained earnings over total assets takes into account the longevity of a firm. The reasoning follows, that a firm that is older and more established is less likely to go out of business. Since SSD is a relatively young company, they are lacking in this area, with a RE/total assets ratio of 0.67 to the industry's 0.94, as of 2015.

Finally, working capital over total assets is a measure of how apt a firm is to meeting short-term debt obligations. A higher working capital proves current assets easily cover current liabilities. As of 2015, Simpson enjoys a higher working capital to assets ratio than its competitors; 0.52 to the industry's 0.27.

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[9] SSD's Mkt Equity/BV of Debt was 1.92 in 2015, while the industry average was 0.072.

After the weights are applied and the final calculation is made, SSD's most recent Altman Z score is 3.9 compared to the industry's 3.1. SSD has historically been above the industry average and this can partially be attributed to their imperceptible level of debt. In 2009 the industry as a whole suffered as a result of the financial crisis; NCS nearly went out of business during this time as indicated by the immense drop in their Altman Z score. Notice that Simpson was unaffected when compared to the industry for similar reasons we concluded in the debt to equity ratio section.

Depreciation waterfall

After thorough investigation through SSD's annual 10-K reports, we were able to isolate three buckets of assets including Building and site improvements, property plant and equipment, and lastly software. We ultimately summed each bucket to achieve an estimation of accumulated depreciation within 15% of the actual value of accumulated depreciation, as seen on the company's 10-K's. The most telling information extracted from Simpson's 10-K's include:

- Software is depreciated using an accelerated method over an estimated useful life of 3 to 5 years
- Machinery and equipment (PPE) is depreciated using an accelerated method over an estimated useful like of 3 to 10 years
- Building and site improvements are depreciated using the straight-line method over their estimated useful lives that range from 15 to 45 years.
- The amount of purchases per year for each of the above assets, accept for software

Leasehold improvements are amortized using the straight-line method over the expected life or remaining term of the lease (whichever is shorter). However, this was not included in our 3-bucket depreciation waterfall due to the fact that the company leases only smaller sales offices and manufacturing facilities. Specifically according to item 2 on SSD's 2015 10-K, leased property square footage accounted for just 19% of the total owned and leased property square footage. Because leased properties account for a minor depreciation expense relative to our 3-bucket model we have decided to omit them. As long as estimated accumulated depreciation was within 15% of actual, then we felt this assumption was justifiable.

After marrying said given information with our assumptions we are left with the foundation of our 3-bucket depreciation waterfall. Useful life, depreciation time of the assets along with years the asset was held and the proportion of new price obtained when the asset was sold was then inputted and adjusted to minimize the percent difference between forecasted accumulated depreciation and actual.

Building and site improvements

Simpson's properties are constructed primarily of steel, brick or concrete and, "in management's opinion, are maintained in good operating condition." [10] To be consistent with management's opinion, we decided to set the accounting salvage value for all new properties at 30% with a long depreciable life of 40 years. At this point nearly every new asset purchased was set to be held for 75 years. This is assumed under the spirit of SSD's forward looking business strategy, where due diligence was thoroughly executed to make sure a property met the standards and long run goals of the firm as a whole. The complete output of our 3-bucket depreciation waterfall is depicted below…

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[10] Item 2, SSD 2015 annual 10-K report.

Total Ave SE:	5.33%	1993	1994	1995	1996	1997	1998	1999
Accum Deprec:		17.81	21.46	26.13	33.16	39.39	37.14	49.54
Actual Accum Deprec:		19.782	22.344	25.610	30.419	35.916	41.986	49.499
Standard Error:		9.97%	3.94%	2.02%	9.01%	9.67%	11.55%	0.08%
		2000	2001	2002	2003	2004	2005	2006	2007
Accum Deprec:		61.96	73.23	83.19	93.48	109.61	123.67	138.89	166.27
Actual Accum Deprec:		58.950	69.293	80.501	92.943	105.398	121.611	135.570	155.167
Standard Error:		5.11%	5.68%	3.34%	0.57%	4.00%	1.70%	2.45%	7.15%
		2008	2009	2010	2011	2012	2013	2014	2015
Accum Deprec:		191.84	193.90	193.37	197.99	225.27	221.04	250.91	239.42
Actual Accum Deprec:		175.893	193.639	216.157	189.751	201.540	217.868	235.535	245.383
Standard Error:		9.07%	0.13%	10.54%	4.34%	11.77%	1.45%	6.53%	2.43%

Property Plant and Equipment

While we refer to this segment as property plant and equipment (PPE), the assets we are specifically depreciating are limited to machinery and equipment consisting of: molding presses, robotic welders, lasers, turret punches and machinery of that nature.   Simpson primarily manufactures wood and concrete construction products. While there is a high level of automation associated with the manufacturing of wood construction products the same is less true for concrete. These specifications made it difficult to pin down a constant accounting salvage value, depreciable life, years to hold and proportion of new value obtained for each years PPE purchases. As a result, the depreciable life for PPE purchases varied from 3 to 10, however was between 7 to 9 years for the mass majority. Most of the low depreciable lives are present in the early years of Simpson's business, with the justification being as follows; as a younger smaller company without a fully developed advantage from economies of scale, Simpson would depreciate assets more heavily in order to take full advantage of the associated tax shields to minimize their costs.

Salvage value was far more constant in our waterfall following similar intuition used above in the building and site improvements bucket.   With highly automated manufacturing lines and extensive maintenance, the condition of the equipment will hold its value well, allowing us to assume a 10% to 12% salvage value as a proportion of the new price. The proportion of new price obtained when soled was consistent at 15% following this same logic.

Lastly, years PPE was held until sold varies from 7 to 10 years, with one exception in 1991, which was sold after 6 years. This is representative of the amount of maintenance and reinvestment SSD puts into its manufacturing process.

Software

Software was the bucket that required more of an art than a science to approximate. This was due to the limited availability of information on purchases of this asset. Software is a relatively new investment for Simpson, but has proved to be very profitable to the firm. It has helped with automation of manufacturing processes, testing of products and has more recently been sold to help contractors and developers quickly learn how to use and assemble Simpson's products.   We do see this as a very forward looking asset and this is mirrored in the amount of spending on software we estimated for each year. The table shows the first 7 years of software purchases and the last 4 with our projections highlighted in yellow.

		1991	1992	1993	1994	1995	1996	1997	
PPE Gross Purchases/year		0.50	0.50	0.00	1.50	2.00	0.50	0.70	
Depreciable Amt		0.50	0.50	0.00	1.50	2.00	0.50	0.70	
		2013	2014	2015	2016	2017	2018	2019	2020
PPE Gross Purchases/year		12.00	14.00	14.00	15.00	8.00	14.00	5.00	5.00
Depreciable Amt		12.00	14.00	14.00	15.00	8.00	14.00	5.00	5.00

Because these values were not explicitly lined out in Simpson's 10-Ks, we were left to estimate these purchases using the following logic.   Depreciable life was kept low since software can grow out of date quickly and at any time, compared to the machinery.   For a similar reason salvage amounts for each years' purchases were set to zero assuming out of date software has little additive value to the firm.   Finally, software was held up to 5 years and potentially sold for no more than 2.5% of its new price.

Summary and Specifics

While no one section in our 3-bucket depreciation waterfall is extremely precise, all three combined produce an average standard error of 5.33%.   No single year produces a standard error greater than 12% and thus it is fair to conclude our depreciation waterfall is an accurate depiction of Simpson Manufacturing's true depreciation schedule.   Despite the many assumptions we imposed on our waterfall, we are comfortable with the output due to our reasoning for said assumptions and minimal standard error.

Sales Growth Regression

In an attempt to gain an understanding behind the variables that drive SSD's sales growth, we ran a series of multivariate regressions with SSD's sales growth as the Y variable. After finding the optimal mix of variables, we used that model to predict annual sales growth out to year 2020.

Quarterly Sales Growth Regressions

Since SSD is a part of the construction industry, it comes as no surprise that SSD's sales are highly seasonal because of weather patterns. Due to this trend, we built a quarterly sales growth model with dummy variables for different quarters of the year to see if seasonality can explain the variability in SSD's sales growth. We projected that Q2 and Q3 would have positive beta hats because Q2 and Q3 have more favorable weather conditions for construction. Also included in our initial quarterly sales growth regression is growth of U.S. Housing starts, which we expected to have a strong positive value since SSD's sales are heavily dependent upon residential construction. Additional variables we expected to have negative beta hats were the growth rates for the real price of steel and timber considering these are significant input costs to SSD.

Regression Statistics				
Multiple R	0.9291			
R Square	0.8631			
Adjusted R Square	0.8447			
Standard Error	0.0692			
Observations	43			
	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.0764	0.0159	-4.8171	0.0000
Growth in HS	0.1635	0.0871	1.8769	0.0684
Growth in Wood Prices	0.2160	0.1527	1.4148	0.1655
Growth in Steel Prices	0.2255	0.0973	2.3172	0.0261
Q2	0.2660	0.0332	8.0020	0.0000
Q3	0.0821	0.0263	3.1162	0.0035

After running the regression, we found that the growth in the price of steel and the price of timber both had signs opposite to what we had predicted, and the P-Value for timber is too large to be statistically significant. Despite the model having an R-Square of **.8631**, we threw growth in wood and steel prices out and reran the regression without those variables.

Regression Statistics				
Multiple R	0.9120			
R Square	0.8317			
Adjusted R Square	0.8188			
Standard Error	0.0748			
Observations	43			
	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.0731	0.0164	-4.4641	0.0001
Growth in HS	0.3596	0.0508	7.0828	0.0000
Q2	0.2534	0.0297	8.5348	0.0000
Q3	0.0697	0.0279	2.4943	0.0170

Running the regression with Q2, Q3 and growth in U.S. housing starts we found that all of our variables had the appropriate signs, and we found that all of the variables are statistically significant. Our R-square decreases slightly, but is still able to explain a huge portion **(81.88%)** of the variability in SSD's sales growth. As such, this iteration is our preferred quarterly sales growth model.

In order to gain a better understanding of how housing starts affect our sales growth, we decided to run a quarterly sales regression with growth in housing starts as the only variable.

Regression Statistics				
Multiple R	0.7204			
R Square	0.5190			
Adjusted R Square	0.5075			
Standard Error	0.1220			
Observations	44			
	Coefficients	Standard Error	t Stat	P-value
Intercept	0.0073	0.0184	0.3939	0.6957
Growth in HS	0.5101	0.0758	6.7319	0.0000

After running this regression, it becomes clear that Simpson Manufacturing's sales are **very** dependent upon U.S. housing starts. This model estimates that over 50% of SSD's growth in sales is attributable to growth in U.S. residential construction, and we are **99.999%** sure that U.S. residential construction affects SSD's sales growth. This dynamic sheds light on one of the most significant risks that SSD faces, which is a heavy reliance on the U.S. housing market for growth of their sales. In fact, during the Q4 2015 SSD earnings call, Simpson CEO Karen Colonias touched on this very point saying that their overall business plan is to "grow and diversify our business and product offerings to reduce our dependence on North American Residential construct."

Annual Sales Growth Regressions

These quarterly sales growth models provide significant insight into the drivers behind SSD's sales growth. However, for practical forecasting purposes, we developed an annual sales growth model for use in our pro forma financial statements. In developing the annual sales growth models, we looked to similar variables that were used to explain quarterly sales growth.

For our first annual sales growth regression, we used growth in U.S. housing starts (assumed to have a positive beta hat), along with growth in real steel prices (assumed to have a negative beta hat) and real growth in GDP (assumed to have a positive beta hat).

Regression Statistics				
Multiple R	0.8337			
R Square	0.6950			
Adjusted R Square	0.6493			
Standard Error	0.0723			
Observations	24			
	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.0348	0.0281	-1.2382	0.2300
Growth in HS	0.1274	0.0813	1.5657	0.1331
Real gr in GDP	0.0539	0.0096	5.6378	0.0000
Growth in Steel Prices	0.0954	0.1126	0.8468	0.4071

The result from this model is a problem with growth in steel prices. Not only does the growth in steel prices have the wrong sign for its estimate of beta, but it also seems to be statistically insignificant with a large P-Value of **.4071**. As such, we dropped growth in steel prices as a variable and ran the regression again.

Regression Statistics				
Multiple R	0.8271			
R Square	0.6841			
Adjusted R Square	0.6540			
Standard Error	0.0718			
Observations	24			
	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.0400	0.0273	-1.4672	0.1572
Growth in HS	0.1339	0.0804	1.6645	0.1109
Real gr in GDP	0.0563	0.0091	6.2018	0.0000

After dropping growth in steel prices as a sales growth variable, we found that growth in housing starts and real growth in GDP have the correct signs for their beta hats, however, this model seems to suggest we are only 89% sure that growth in housing starts has an effect on SSD's sales growth. Despite the relatively high p-value, the variable's sign came out as predicted meaning we can divide the p-value by 2 to get a one-tailed test and a p-value of **.0555**, which makes the variable on the edge of being statistically significant. This adjustment, along with the key findings from the quarterly sales growth regressions, cement growth in housing starts as a variable in our sales forecast. Ultimately, housing starts along with real growth in GDP are able to explain 65% of sales growth, leading us to use this model in determining our sales growth forecasts.

Sales Forecast

Reg Forecast Coefficients:			
	Intercept	Growth in Housing Starts	Growth in Real GDP
	-0.0400	0.1339	5.6303

Once we determined the best annual model for forecasting SSD's sales growth, we used data from both **Statistica.com**[11] and **Housingeconomics.com**[12] to get forecasts for our variables from years 2016 to 2020. For future real GDP growth, we used Statistica.com to obtain future projections of the real growth rate of GDP for years 2016-2020. Similarly, we found projections on housingeconomics.com that gave us the forecasted growth rate for housing starts in years 2016, 2017 and 2020. With a forecast gap in years 2018 and 2019, we simply "filled the gaps" using housing start growth estimates we saw as reasonable to bridge the gap between 2017 and 2020.

Our sales growth equation for each year was as follows:

Sales Growth Forecast = Intercept + Beta Hat*(G in Housing Starts forecast) + Beta Hat*(G in Real GDP forecast)

Below are the sales growth projections for the years spanning 2016 to 2020.

Forecasts of Sales Growth				
2016	2017	2018	2019	2020
10.34%	12.10%	10.30%	6.66%	6.14%

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[11] http://www.statista.com
[12] http://www.nahbclassic.org

Market Model Regressions

Before discussing outputs from the market model regressions (MMR), it's important to distinguish exactly what data is being used to compute these regression models.

Risk Free Rate (Last 60 months) – The risk free rate used in computing the various MMR was obtained from Ken French's website[13] and is composed of the 1-month treasury bill rate.

Excess Returns of the Market (Last 60 months) – The monthly excess returns of the market were also obtained from Ken French's data library and are composed of a value weighted return of all CRSP firms incorporated in the U.S. and listed on the NYSE, AMEX, or NASDAQ. These returns are then subtracted by the risk free rate (1-month T-Bill), which then gives the Excess returns of the market.

Excess Returns of SSD (Last 60 months) – Monthly stock data (adjusted for splits and dividends) for SSD was pulled from Yahoo! Finance, which allowed us to compute 60 monthly IRR's for SSD. These returns were then subtracted by the risk free rate stated above, which gives us the excess returns of SSD for the last 60 months.

Excess Returns of 3 Competitor Industry Average (Last 60 months) – Monthly stock data for the 3 competitors (ITW, NCI, SCX) was pulled from Yahoo! Finance. We then computed 60 monthly IRR's for the 3 different competitors and combined them in a weighted average based on current market caps for the 3 companies with Illinois Tool Works' weight reduced to 35% of its original value. These averaged returns are then subtracted by the risk free rate stated above to give excess returns for the Industry average.

SSD Market Model Equation:

SSD Returns – Risk Free Rate = Alpha Hat + Beta Hat*(Market Returns – Risk Free Rate) + Error

Regression Output:

Regression Statistics	
Multiple R	0.5960
R Square	0.3552
Adjusted R Square	0.3441
Standard Error	0.0648
Observations	60.0000

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.0056	0.0086	-0.6489	0.5189
Beta-Hat	1.3220	0.2339	1.3769	0.1738

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[13] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library

3 Competitor Industry Average Market Model Equation:

Industry Average Returns - Risk Free Rate = Alpha Hat + Beta Hat*(Market Returns – Risk Free Rate) + Error

Regression Output:

Regression Statistics	
Multiple R	0.8137
R Square	0.6621
Adjusted R Square	0.6563
Standard Error	0.0307
Observations	60.0000

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.0006	0.0041	0.1396	0.8895
Beta-Hat	1.1809	0.1108	1.6330	0.1079

Market Model Regression Hypothesis Testing

Simpson Manufacturing:

Hypothesis:

Ho: Alpha = 0

Ha: Alpha ≠ 0

Conclusion:

The annualized alpha hat for SSD is -6.71%. However, we are only 48.11% sure that alpha hat is statistically different from 0. Using a significance level of .05, we fail to reject the null hypothesis and conclude that investors in Simpson Manufacturing should not expect to be rewarded for idiosyncratic risk. However, with an annual alpha hat of -6.71%, there was a series of negative firm specific news, which pulled the stock down 6.71% on average per year. Thus, investors who've owned the stock for 60 months have been earning -6.71% per year on average for holding idiosyncratic risk.

Hypothesis:

Ho: Beta = 1

Ha: Beta ≠ 1

Conclusion:

The beta hat for SSD was calculated to be 1.322 with a corresponding p-value of .1738. From this, we are 82.62% sure that beta hat is statistically different from 1. At a significance of .05, we fail to reject Ho and conclude that the beta hat for Simpson Manufacturing is not statistically different from 1. Thus, the returns of SSD do not move in a statistically significant exaggerated manner when compared to the returns of the market.

3 Competitor Industry Average:

Hypothesis:

Ho: Alpha = 0

Ha: Alpha ≠ 0

Conclusion:

The annualized alpha for the industry is .6834%. Thus, investors were rewarded for holding idiosyncratic risk over this 60-month period. More specifically investors were rewarded with .6834% per year, on average for holding idiosyncratic risk. Despite this, we are only 11.05% sure that alpha hat is statistically different from 0. With a significance level of .05, we fail to reject Ho, and conclude that investors in the 3 comp. industry should not expect to be rewarded for holding idiosyncratic risk.

Hypothesis:

Ho: Beta = 1

Ha: Beta ≠ 1

Conclusion:

Beta hat for the 3 competitor industry average is calculated as 1.1809 with a p-value of .1079. Thus, we are 89.21% sure that beta hat is statistically different from 1. However, using a significance level of .05, we fail to reject Ho and conclude that beta hat for the industry average is not statistically different from 1. Thus, investors should expect that the returns for the industry average are not significantly different from the returns of the market.

Risk Calculations CAPM

Simpson Manufacturing:

Total Risk (variance of SSD returns last 60 months) = 7.68%

Total Volatility = 27.74%

Systematic Risk (Total Risk*R-square) = 2.72%

Systematic Volatility = 16.52%

Idiosyncratic Risk (Total Risk – Systematic Risk) = 4.95%

Idiosyncratic Volatility = 22.25%

% of Systematic Risk = 35.5%

% of Idiosyncratic Risk = 64.48%

 3 Competitor Industry Average:

Total Risk = 3.28%

Total Volatility = 18.13%

Systematic Risk = 2.17%

Systematic Volatility = 14.753%

Idiosyncratic Risk = 1.11%

Idiosyncratic Volatility = 10.54%

% of Systematic Risk = 66.21%

% of Idiosyncratic Risk = 33.79%

Conclusion:

Simpson Manufacturing has a typical annual volatility for an individual stock at 27.74%. In contrast, the 3 competitor industry average total volatility is less than that of SSD due to the effect of diversification. This diversification effect is also present in the fact that the Industry average has a much lower proportion of idiosyncratic risk per total risk than SSD on its own.

Capital Asset Pricing Model (CAPM)

Components of the CAPM:

1. **Risk Free Rate:** 1-month T-Bill return
2. **E[r] of the Market:** Going forward, we feel that the surplus of major technological advances not continue as they have throughout the past century. As such, instead of earning on average 10.3% per year, we believe going forward that the E[r] on the market is going to be 7%. We project 7% because we have a better handle on inflation and following up the technological advances from the past century is highly unlikely.
3. **Beta Hat:** Beta Hat was estimated using 60 months of return data and a univariate regression.

SSD CAPM Equation:

E[r] SSD = risk free rate + Beta-hat*(E[r] Market – risk free rate)

Beta Hat = 1.322

E[r] = 7%

Risk Free Rate = .01%

E[r] SSD = 9.25%

3 Competitor Industry Average CAPM Equation:

E[r] Ind. Avg. = risk free rate + Beta-hat*(E[r] Market – risk free rate)

Beta hat = 1.1809

E[r] = 7%

Risk Free Rate = .01%

E[r] Industry Average = 8.26%

Conclusion:

Based off of the CAPM, Simpson manufacturing has a higher expected return on its equity when compared to the industry average. This difference is due to the fact that SSD has more systematic risk than the Industry Average. This is consistent when looking at the values for systematic risk for SSD and the Industry Average. This difference in systematic risk is expressed in the beta hat values from the 2 MMR's.

Fama-French 3 Factor Model (FF3)

Components of the FF3

1. **Risk Free Rate:** 1-month T-Bill return
2. **E[r] of the Market:** projected at 7% for reasons stated above
3. **E[r] of Small minus Big:** Estimated using an average of 89 years of small minus big stock return data (Ken French Data Library)
4. **E[r] of High minus low:** Estimated using an average of 89 years of value minus growth stock return data (Ken French Data Library)

5. **Beta Hat (Market)**: Estimated by regressing the last 60 monthly excess returns of SSD (or industry average) on the excess returns of the market
6. **Beta Hat (Small minus Big)**: Estimated by regressing the last 60 monthly excess returns of SSD (or industry average) on the returns of small market cap stocks minus the returns of big market cap stocks
7. **Beta Hat (High minus Low)**: Estimated by regressing the last 60 monthly excess returns of SSD (or industry average) on the returns of High Book to Market ratio stocks (value stocks) minus the returns of low Book to Market ratio stocks (growth stocks).

SSD FF3 Regression Equation:

SSD Returns – Risk Free Rate = Alpha Hat + Beta Hat*(Market Returns – Risk Free Rate) + Beta Hat*(Small minus Big) + Beta Hat*(High minus Low) + Error

Regression Output:

Regression Statistics	
Multiple R	0.6696
R Square	0.4484
Adjusted R Square	0.4188
Standard Error	0.0610
Observations	60.0000

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.0007	0.0083	-0.0892	0.9292
Mkt-rf	1.0419	0.2391	0.1754	0.8614
SmB	1.1986	0.3915	3.0615	0.0034
HmL	0.1889	0.4452	0.4242	0.6730

3 Competitor Ind. Average FF3 Regression Equation:

Industry Average Returns - Risk Free Rate = Alpha Hat + Beta Hat*(Market Returns – Risk Free Rate) + Beta Hat*(Small minus Big) + Beta Hat*(High minus Low) + Error

Regression Output:

Regression Statistics	
Multiple R	0.8222
R Square	0.6760
Adjusted R Square	0.6586
Standard Error	0.0306
Observations	60.0000

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.0018	0.0042	0.4263	0.6715
Mkt-rf	1.1094	0.1199	0.9126	0.3652
SmB	0.3040	0.1963	1.5484	0.1272
HmL	0.0308	0.2233	0.1378	0.8909

Fama-French Hypothesis Testing

Simpson Manufacturing:

Ho: alpha = 0

Ha: alpha ≠ 0

Conclusion:

For SSD, the annualized alpha hat is computed to be -.89% per year. However, we are only 7.08% sure that alpha hat is statistically different from 0. Using a .05 significance level, we fail to reject the null hypothesis. Thus, investors should not expect to be rewarded for holding idiosyncratic risk. With an alpha hat of -.89%, investors who were holding idiosyncratic risk over the measured period earned an average of -.89% per year for holding idiosyncratic risk.

Ho: Mkt-rf =1

Ha: Mkt-rf ≠ 1

Conclusion:

The beta hat for the excess market return variable was 1.042, and we are 13.86% sure that this beta is significantly different from 1. Using a .05 significance level, we fail to reject the null hypothesis. As such, investors should expect the returns for SSD to not be significantly different from the returns of the market.

Ho: SmB = 0

Ha: SmB ≠ 0

Conclusion:

The beta hat for the Small minus Big variable is computed to be 1.196, and we are 99.6% sure that the beta hat for size is significantly different from 0. Using a .05 significance level, we reject Ho and conclude that the beta hat for size is different than 0. Since the value is positive, SSD behaves like a small market cap stock to a statistically significant degree.

Ho: HmL = 0

Ha: HmL ≠ 0

Conclusion:

The beta hat for the high minus low variable is computed to be .1899, and we are 32.7% sure that the beta hat for high minus low is significantly different from 0. Using a .05 significance level, we fail to reject the null hypothesis. However, since the coefficient has a positive sign, SSD tends to act more like a value stock (low P/E) than a growth stock (high P/E)

3 Competitor Industry Average:

Ho: Alpha = 0

Ha: Alpha ≠ 0

Conclusion: For the Industry Average, the annualized alpha hat is computed to be 2.12%. We are 32.8% confident that alpha hat is significantly different than 0. Using a .05 significance level, we fail to reject the null hypothesis. Thus, investors should not expect to be rewarded for holding idiosyncratic risk. With an alpha hat of 2.12%, investors who were holding idiosyncratic risk over the measured period earned an average of 2.12% per year for holding idiosyncratic risk.

Ho: Mkt-rf = 1

Ha: Mkt-rf ≠ 1

Conclusion: For the Industry Average, the beta hat for the excess market return variable was 1.1094, and we are 63.4% sure that this beta is significantly different from 1. Using a .05 significance level, we fail to reject the null hypothesis. As such, investors should expect the returns for the Industry Average to not be significantly different from the returns of the market.

Ho: SmB = 0

Ha: SmB ≠ 0

Conclusion: The beta hat for the Small minus Big variable is computed to be .3040, and we are 87.2% sure that the beta hat for Small minus Big is significantly different than 0. Using a .05 significance level, we fail to reject Ho and conclude that the coefficient is not statistically different than 0. However, because of the positive sign on the coefficient, it's reasonable to assume that the industry average acts more like a small cap stock than a large cap stock.

Ho: HmL = 0

Ha: HmL ≠ 0

Conclusion:

The beta hat for the high minus low variable is computed to be .0308, and we are 10.9% sure that the beta hat for high minus low is significantly different from 0. Using a .05 significance level, we fail to reject the null hypothesis. However, since the coefficient has a positive sign, the industry average tends to act more like a value stock (low P/E) than a growth stock (high P/E)

Risk Calculations FF3

Simpson Manufacturing:

Total Risk (variance of SSD returns last 60 months) = 7.68%

Total Volatility = 27.71

Systematic Risk (Total Risk – Idios. Risk) = 3.44%

Systematic Volatility = 18.56%

Idiosyncratic Risk (Variance of residuals) = 4.24%

Idiosyncratic Volatility = 20.58%

% of Systematic Risk = 44.84%

% of Idiosyncratic Risk = 55.16%

3 Competitor Industry Average:

Total Risk = 3.28%

Total Volatility = 18.13%

Systematic Risk = 2.22%

Systematic Volatility = 14.91%

Idiosyncratic Risk = 1.07%

Idiosyncratic Volatility = 10.32%

% of Systematic Risk = 67.59%

% of Idiosyncratic Risk = 32.40%

Conclusion:

When comparing FF3 risk measure to CAPM risk measures, we find little difference between the two models. One of the more significant changes is the increase in Systematic risk under the FF3 model. For SSD, we found the % of systematic risk increase by 20% when utilizing the FF3 model. This makes sense considering that in the CAPM model, there was a portion of systematic risk that wasn't accounted for by the simpler model. Similarly, the systematic risk for the 3 industry average also increased.

FF3 E[r] Calculations

SSD FF3 E[r] equation

E[r] SSD = risk free rate + Beta-hat*(E[r] Market – risk free rate) + Beta-hat*(Small minus Big) + Beta-hat*(High minus Low)

Risk Free Rate: .01%

E[r] Mkt: 7%

E[r] SmB: 3.32%

E[r] Hml: 4.83%

Beta-hat (MKT – rf): 1.0419

Beta-hat (SmB): 1.199

Beta-hat (HmL): .1889

SSD FF3 E[r] = 12.18%

Industry Average FF3 E[r] equation

E[r] Industry Average = risk free rate + Beta-hat*(E[r] Market – risk free rate) + Beta-hat*(Small minus Big) + Beta-hat*(High minus Low)

Risk Free Rate: .01%

E[r] Mkt: 7%

E[r] SmB: 3.32%

E[r] Hml: 4.83%

Beta-hat (MKT – rf): 1.1094

Beta-hat (SmB): .3040

Beta-hat (HmL): .0308

Industry Average FF3 E[r] = 8.92%

Conclusion:

Overall, the use of the Fama-French 3 factor model increased the expected return for both SSD and the industry average, which comes as no surprise since the model takes into account more variables for systematic risk. With a higher portion of SSD's risk resulting from systematic risk, SSD 's E[r] increased significantly. With 44.84% of Simpson's risk resulting from systematic risk, the E[r] for Simpson is relatively high to the industry average, as the FF3 and CAPM model only account for systematic risk. Simply put, Simpson Manufacturing has a large amount of systematic risk when compared to other individual companies.

| FF3 | E[r] SSD | 0.1218 | CAPM | E[r] SSD | 0.0925 |
| FF3 | E[r] Ind. | 0.0892 | CAPM | E[r] Ind. | 0.0826 |

Pro Forma Statement Analysis

When analyzing the drivers and their values for the Pro forma financial statements, it's important to note that the choice of drivers comes from a variety of different sources. However, most of our drivers are based off of Sales ratios, which derives its values from our sales growth model. Picking drivers as a proportion of sales was done because we believe that the rest of SSD's operations are heavily dependent upon their sales for that given year. This is seen in the historical portion of the income statement and balance sheet, where all of the primary line items seem to follow the trend of increasing along with the increases in sales. With this reasoning as an overall backdrop, we will now look at the individual line items more closely.

Income Statement Drivers

Sales

As previously mentioned, we estimated sales growth by using a multivariate sales growth regression model. This model is essentially the basis by which almost all other drivers are calculated. This was done in order to closely match other line items with our forecasts of future sales to make for a more coherent story for SSD going forward.

COGS

COGS is perhaps the most important, and significant expense for manufacturing businesses and SSD is no exception. When deciding on a driver for COGS, it seems obvious that the level of COGS is primarily dependent upon sales, and therefore the driver we selected was **COGS/Sales**. COGS expenses are usually variable expenses, which naturally leads COGS to fluctuate with Sales. Using these insights and by looking for trends in the Common Size Income Statement we found that COGS was trending down as a proportion of sales, which

leads us to thinking this trend will continue as SSD achieves economies of scale from their continued growth, as well as finding operational efficiencies the longer they operate.

SG&A

By looking at historical trends in the common size income statement, we found that SSD has SG&A costs ranging from 24-28% as a percent of total sales, and we see it continually rising along with the continuous increase in sales, which is the reasoning behind using **SG&A/Sales** as a driver. By using these historical values, we project that SG&A expenses will see in increase in years of high growth such as years 2016 and 2017, as managing growth is a difficult task and could result in increased expenses. However, we also project that in later years, SSD will find operating efficiencies for SG&A. This is the reasoning behind the ratio of falling during the later years

R&D

In analyzing SSD's R&D expenses, it's important to note that since year 2006, **R&D/Sales** has been steadily increasing. This trend is likely to continue as R&D is considered vital to the company's competitive positioning and future success. However, we also project SSD to be able to better maintain these costs as they become more efficient in their R&D operations. This leads us to project a practically constant R&D/Sales expense out until later years where they will likely increase their R&D budget per sales as the scale of the business continues to increase.

RR&I

Coming up with forecasts for the Restructuring, Remediation, and Impairment line was difficult due to the sporadic nature of these expenses. In projecting out to 2020, we felt that a majority of these years would have no RR&I expense, however, in developing a prudent model, in year 2018, we project that RR&I expenses will be 1% of the sales.

Short Term Interest

Our forecasts for interest payments rely on the amount of debt the company currently owes. As such, Simpson Manufacturing rarely takes on long-term debt, meaning nearly all debt on SSD's books is in the form of short term debt. This short term debt takes the form of a $600 million revolving line of credit[14]. By looking up current interest rates for lines of credit, we determined typical interest rates for lines of credit to businesses and used those findings for our short term interest rate. We are also increasing the interest rate as time progresses since we are in a historically low interest rate environment, and it's almost inevitable that the Federal Reserve will raise interest rates within the next 5 years.

Tax Rate

When forecasting tax rates, we must see what sort of tax rate SSD was paying historically in order to accurately predict their future tax rates. When analyzing SSD's tax rate we found that historically the tax rate is between

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[14] SSD 2015 10K

32 and 40 percent with no general trend one way or the other. Since, tax law is constantly changing, we found the most prudent way to forecast the tax rate for our business is to shoot for a midpoint, and decided on 35% for each of the 5 forecast years.

P/E Ratio

Currently, the market is highly price in that the P/E ratio of the market is high at 24.16 when compared to its historical average of about 15. This leads us to believe that the market as a whole is currently overpriced. This reasoning is why we are projecting a steadily decreasing P/E ratio for next 5 years, as there will likely be a correction for the overall market that will bring down the entire market's P/E and SSD's along with it.

Payout Ratio

The payout ratio for year ending 2015 is .43, which we found to be pretty consistent for nearly all years that SSD pays a dividend. As such, we reasoned that Simpson isn't likely to change their dividend policy too drastically, since their dividend policy for the past 5 years has been constant around .40. In our pro forma we picked values around .40, however we deviate slightly from some years to the next in order to paint a more realistic picture of the dividend policy.

Balance Sheet Drivers

Similar to our forecast of the income statement, we believe sales to have a strong impact on the balance sheets line items. We project SSD's line items change consistently as a proportion of sales. This is due to the fact that historically, SSD has substantially increased the level of assets on their books to sustain their increased sales. Simpson has experienced an ROA ratio of 6% over the last three years, this is a drastic decrease from nearly 16% in 2005. This can be attributed to the large accumulation of assets in an attempt, not only keep up with increased sales, but also to sustain the level of customer service that Simpson Manufacturing Co. is so well known for.

Cash and Equivalents

The average cash as proportion of sales has over the past five years has been 33%, with a standard deviation of just 3.5%. We project a similar result going forward, with cash being the highest percentage of sales next year, 2016 at 34%. Simpson is able to operate more efficiently with lower levels of cash, however as sales growth tapers off we project SSD to return to previous levels of cash per sales.

Accounts Receivable

Accounts receivables is one of the least volatile line items on SSD's balance sheet. This can partially be attributed to the types of customers they sell to. Contractors and developers operate mainly off balloon loans allowing them to complete their entire project before needing to pay their loan back to the bank. This, for the most part means SSD should be paid consistently and shortly after they deliver products to their customers.

This ratio's low volatility and high predictability makes it relatively easier to pin down to a constant proportion of sales that we project to be just over 13% for the next 5 years.

Inventory

When analyzing Inventory for our pro forma, we found that there were clear trends in relation to sales, which is why we picked the driver of **Inventory/Sales** to use as one of our pro forma drivers. As time progressed for SSD, the level of inventory per level of sales decreases continuously. This is likely due to an increase in operating efficiency and an increase in understanding their customer's wants and needs. Therefore, we project a continuing decrease in the inventory/sales ratio.

Current Tax Assets

In forecasting current tax assets per sales, we find that current tax assets as a proportion of sales remains relatively constant around 2% for most years. However, we see this ratio declining slightly as SSD's operations continue to scale significantly in the pro forma years, which will cause the Ratio of **Curr. Tax Assets/Sales** to decrease.

Other Current Assets

In determining the drivers for Other Current Assets, we looked at **other current assets/sales** in order to shed some light on how this category of assets changes with our sales. We found Other Current Assets as 1.57% of sales in 2015, but as the firm increases in size and complexity, we feel as if the other current assets category could increase slightly as a proportion of total Sales.

Intangible Assets

For intangible assets, we found that the ratio of **Int. Assets/Sales** to be a relatively stable metric, but growing. For year ending 2015, Int. Assets were 19.09% of total sales with this percentage increasing nearly every year. As the firm matures and is granted more patents and receives greater brand recognition, we see Int. Assets/Sales growing at a consistent but slow rate.

Other Assets

In forecasting the category of other assets, we used a ratio of **Other Assets/Sales** in order to see how the category changes with changes in sales. As SSD has continued to grow, Other Assets/Sales has continued to become a small portion of sales with the ratio in 2015 equaling .84%. We have forecasted that this ratio will get even small as SSD's sales continue to grow.

Accounts Payable

For accounts payable, we had trouble finding any sort of pattern in the historical values, however, when looking at our liabilities it is perhaps more relevant to develop a ratio that involves our costs rather than our sales. This reasoning led us to use Accounts Payable/COGS as a ratio with a year end 2015 value of 4.9%. Using this

framework, we decided to use values that are close to 4.9% and increasing slightly since the projected sales growth could cause a need for SSD to utilize the account to a greater extent.

Accrued Expenses

In forecasting accrued expenses, we saw an overall increasing trend in these values. Also, along with A/P this driver is a ratio of Accrued Expenses/COGS in an attempt to focus more on our costs than what we are selling. Due to the strong upward trend, we project that Accrued expenses will continue to increase, as the company continues to grow.

Other Liabilities

When analyzing the past 5 years of historical balance sheet information, there seems to be no clear pattern in the trend for other liabilities, but when compared to the COGS, the ratio of Other liabilities/COGS seems to stay relatively constant near 3.5% with a slight downward trend.

Dividend Discount Model

Of the three valuation methods, we ultimately concluded that the dividend discount model did not accurately reflect the true fair value of Simpson Manufacturing's stock price. We have decided to scrap the DDM by assigning a weight of zero when calculating the weighted fair stock price for Simpson. After a complete analyzation of SSD we did not feel that they met the requirements of being a "mature" firm. Simpson is still a relatively young firm compared to its competitors. We also believe that Simpson has not reached a steady equilibrium. Because of this we are not comfortable choosing a value for ROE as well as payout ratio that will satisfy the DDM.

Comparables

The typical ratios employed in a five part comparables model include; price to earnings, price to earnings over growth, price to sales, price to sales over growth and finally price to book value of equity ratio. [15]

The comparables model valuation is ideally calculated using forecasts of for each ratio specific to each company. While we have completed an in house sales growth and Pro Forma forecast for SSD, we have not done so for the firm's competitors. As a result when calculating the ratios for our comparables analysis, we proceeded in using an average of the last 3 to 5 years. The amount of years averaged varied based on how telling we felt the past years had been, specific to each firms' long-term growth patterns. We decided against using sales ratios because we felt they were too far removed from actual cash flow measures, which leads to out next point. We decided to replace sales in the comparables model with operating income, deriving that it is a better indicator of the cash flows investors would receive from investing in SSD, and thus a better indicator of the true value of Simpson's fair stock price.

With this adjustment settled we can explain the logic used in determining which ratio measures should have higher weights than others. PEG and our new PCFG ratios have the highest two weights since growth is more attractive and informative to investors. The next largest weight is assigned to the price per share over the operating cash flows per share. Like earnings operating margin is an indication of profits which is desired by investors. We end with the lowest weight on the P/E ratio and just above that the price to book value of equity. [16]

The fair value of Simpson Manufacturing as determined by the comparables model is $21.03. Relative to construction manufacturing competitors like the ones we have picked to compare, SSD is over priced by $18.

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[15] The comparables gridiron is located in the appendix.
[16] Specific rates and averages located in the table below.

Firm:	P		E	P/E	g	PEG		CF	P/CF	g	PCFG		B	P/B	
SSD	$	34.39	1.130	30.434	22.877	1.330		1.613	21.325	26.242	0.812635		820.500	0.042	
ITW	$	106.03	5.314	19.953	22.009	0.907		5.750	18.440	11.889	1.551014		8464.958	0.013	
NCS	$	16.10	0.57	28.246	-44.265	-0.638		0.788	20.431	53.700	0.380474		251.943	0.064	
SCX	$	12.15	-1.258	-9.658	-22.680	0.426		1.330	9.135	90.230	0.101245		131.732	0.092	
Average ~SSD				12.847		0.231			16.002		0.678			0.056	
Weights				0.05		0.45			0.075		0.225			0.2	
Fair Value		21.03		14.52		5.98			25.81		28.67			46.13	

Column headers (rotated): Price/Share, EPS, Price/Earnings, Growth rate of Earnings, PEG Ratio, Operating CFs/Share, Price to OP CFs, growth rate of Operating CF, BV of Equity, Price to Book Ratio

Discounted Cash Flow Model

Cash Flow from Operations

EBIT*(1 – tax rate) + Depreciation

We project Simpson's continued growth in operating Cash Flow as the company maintains a strong balance sheet, solid fundamentals and strong growth prospects with ever expanding product lines. However, due to projected macroeconomic headwinds in 2017, Simpson's operating performance will likely suffer as a result. Despite the potential of a future economic downturn, Simpson still maintains a projected positive growth rate in their Cash Flows from operation.

Cash Flow from Capital Spending

Purchase of PPE + Sale of PPE before Taxes + Taxes on Sale of PPE

Throughout the entire projected pro forma, we assume that SSD will continue to sell and buy different capital expenditures through our deprecation waterfall schedule, with a large amount of Cap Ex being bought in 2017. The three main types of capital expenditures come in the form of manufacturing equipment, buildings, and more recently software and other technology. Many of these large capital expenditure items are for manufacturing equipment, but Simpson chooses to own most of its major properties, which means that in some years, cap ex for buildings can make a huge impact on the cash flows from capital spending.

Cash Flow from Changes in Working Capital

Decrease in A/R + Decrease in Inventory + Increase in A/P

The most significant changes in working capital are as a result of changes in A/R and the changes in inventory, especially in year 2016. Inventory is especially important as a manufacturer, and the increases in Inventory must be managed carefully in order to keep a good operating cash flow.

WACC

Weight of Debt*(YTM SSD Debt) + Weight of Equity*(E[r] of SSD)

Yield of Debt:

Because SSD has no long term debt, assumptions have to be made about the cost of debt for the company. The only debt that would gain any sort of yield would be the debt issued through their revolving line of credit. Since this information is not public, we simply found interest rate estimates for revolving lines of credit to businesses.

E[r] of Simpson Manufacturing

The expected return of SSD was computed using the Fama-French 3 factor model

Terminal Growth Rate

In computing the fair value of the stock, we need to determine a growth rate for the Free Cash Flows spanning from 2020 to infinity. The growth rate selected was 5.9%. This is a nominal growth rate in an environment with assumed 2% inflation. This terminal growth rate reflects the fact that we are still a relatively young and small company with plenty of room to grow. This growth rate is accompanied by a sensitivity analysis that shows different fair values when the WACC and the terminal growth rates are changed.

Fair Value

The fair value from the DCF model is computed to be $34.34

			Sensitivity of Fair Stock Price to different WACC & g			
				WACC		
	$34.34	8.89%	9.89%	10.89%	11.89%	12.89%
	4.00%	$ 36.35	$ 29.42	$ 24.51	$ 20.86	$ 18.03
	5.00%	$ 45.55	$ 35.33	$ 28.59	$ 23.82	$ 20.27
	6.00%	$ 61.11	$ 44.28	$ 34.34	$ 27.80	$ 23.16
Growth	7.00%	$ 93.13	$ 59.42	$ 43.05	$ 33.39	$ 27.03
CFs >2020	8.00%	$ 197.08	$ 90.57	$ 57.79	$ 41.87	$ 32.48

Final Valuation

Model		3 Stmt		DDM		Comps
Weights		0.97		0.00		0.03
Fair Value of Stock Per Share	$	34.34	$	13.29	$	21.03
Actual Price of Stock	$	39.41	$	39.57	$	39.57
Pct Stock Over Valuation		14.75%		197.81%		88.15%
Weighted Fair Stock Price	$	33.94				
Pct Stock Over Valuation	$	0.16				

Appendix

Pro Forma Income Statement

Pro Forma Balance Sheet

Pro Forma Statement of Cash Flows

Pro Forma Retained Earnings

Pro Forma Ratios

3 Stmt DCF output

Comps output

DDM output

WACC

FF3 Output

Pro Forma Common Size

Sales forecast

Regression Output

Citations

Drivers:

	2015	2016	2017	2018	2019	2020
Capacity Utilization	80%	82.00%	84.00%	85.00%	85.00%	86.00%
Max Sales Possible at full production Cap	992.57	1068.45	1169.26	1274.54	1359.39	1426.08
Fixed asset Turnover (avg. Net PPE)	3.77					
Max PPE Turnover	4.72					
Average Net PPE needed at max Sales	210.37					
Net PPE Required at EOY at max Sales						
Sales Growth (expected)		5.00	5.20	5.20	5.30	5.30
COGS/Sales	54.80%	55.00%	55.00%	54.00%	54.00%	53.00%
SG&A/Sales	25.70%	27.50%	27.00%	27.00%	26.00%	25.00%
R&D/Sales	5.82%	5.00%	5.00%	5.50%	6.00%	6.14%
RR&I/Sales	0.00%	0.00%	0.00%	1.00%	0.00%	1.50%
Indirect Op Costs/Sales	31.52%	33.00%	33.50%	32.00%	31.00%	30.00%
Short Term Interest Rates		1.65%	1.75%	1.75%	1.95%	1.95%
Tax Rate	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%
P/E Ratio assumed	24.24	23.00	22.00	21.50	19.00	18.00
Payout Ratio	0.43	40.00%	39.00%	40.00%	42.00%	44.00%

Standardized Annual Income Statement

Report Date	12/31/2011	12/31/2012	12/31/2013	12/31/2014	12/31/2015	Estimated 12/31/2016	Estimated 12/31/2017	Estimated 12/31/2018	Estimated 12/31/2019	Estimated 12/31/2020
Currency	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
Scale	Millions	Millions	Millions	Millions	Millions	Millions	Millions	Millions	Millions	Millions
Sales Revenue	603.446	657.236	706.329	752.148	794.059	876.130	982.180	1083.355	1155.486	1226.433
Direct Costs (COGS)	332.642	373.759	391.791	410.118	435.14	481.872	540.199	585.012	623.962	650.009
Gross Profit	270.804	283.477	314.538	342.03	358.919	394.259	441.981	498.343	531.523	576.423
Selling General & Admin	169.388	183.337	194.179	203.531	204.091	240.936	265.189	292.506	300.426	306.608
Research & Development	25.886	35.919	36.843	39.018	46.196	43.807	49.109	59.585	69.329	73.586
Restruct Remediation & Impair	1.282	2.346	-	0.53	-	0.000	0.000	0.000	0.000	18.396
Total Indirect Operating Costs	196.556	221.602	231.022	243.079	250.287	284.742	314.298	362.924	369.755	398.591
Operating Income (EBIT)	74.248	61.875	83.516	98.951	108.632	109.516	127.683	135.419	161.768	177.833
Interest Income	0.34	0.212	0.086	0.046	-0.342	0.155	0.501	0.587	0.713	1.028
Gains on Sale of Assets	-0.191	-0.166	-2.038	0.325	0.389	10.598	4.991	1.505	3.281	0.695
Total Non-Operating Income	0.149	0.046	-1.952	0.371	0.047	10.753	5.492	2.092	3.994	1.723
Earnings Before Tax	74.397	61.921	81.564	99.322	108.679	120.270	133.175	137.511	165.762	179.556
Taxation	27.886	20.003	30.593	35.791	40.791	42.094	46.611	48.129	58.017	62.844
Net Income	50.9	41.918	50.971	63.531	67.888	78.175	86.564	89.382	107.745	116.711
EPS Net Basic	1.04	0.87	1.05	1.3	1.39	1.622	1.797	1.855	2.236	2.422
Shares Outstanding	48.163	48.422	48.712	48.966	48.184	48.184	48.184	48.184	48.184	48.184
Stock Price (EOY)	33.66	32.79	36.73	34.60	34.15	37.316	39.524	39.883	42.486	43.600
Market Cap (EOY)	1621.167	1587.757	1789.192	1694.224	1645.484	1798.030	1904.409	1921.717	2047.160	2100.800
Payment of Dividends	23.329	30.193	18.13	25.918	29.352	31.270	33.760	35.753	45.253	51.353
Addition to Retained Earnings	27.571	11.725	32.841	37.613	38.536	46.905	52.804	53.629	62.492	65.358

Drivers:

	2015	2016	2017	2018	2019	2020
Cash / Sales	32.60%	*34.00%*	*31.34%*	*28.45%*	*29.00%*	*32.00%*
A/R / Sales	13.35%	*13.37%*	*13.40%*	*13.42%*	*13.44%*	*13.46%*
Inventory / Sales	24.65%	*26.00%*	*23.39%*	*22.79%*	*22.20%*	*21.63%*
Current Tax Assets / Sales	2.04%	*2.00%*	*1.96%*	*1.92%*	*1.87%*	*1.84%*
Other Current Assets / Sales	1.57%	*2.00%*	*1.92%*	*2.12%*	*2.35%*	*2.59%*
Intangible Assets / Sales	19.09%	*19.13%*	*19.17%*	*19.20%*	*19.24%*	*19.27%*
Other Assets / Sales	0.84%	*0.88%*	*0.91%*	*0.87%*	*0.82%*	*0.78%*
A/P / COGS	4.90%	*4.67%*	*4.45%*	*5.00%*	*5.60%*	*6.60%*
Accrued Expenses / COGS	16.93%	*16.08%*	*15.28%*	*15.60%*	*16.50%*	*17.60%*
Other Liabilities / COGS	3.80%	*3.61%*	*3.43%*	*3.26%*	*3.09%*	*2.94%*

Standardized Annual Balance Sheet					
Report Date	**12/31/2011**	**12/31/2012**	**12/31/2013**	**12/31/2014**	**12/31/2015**
Currency	**USD**	**USD**	**USD**	**USD**	**USD**
Scale	**Millions**	**Millions**	**Millions**	**Millions**	**Millions**
ASSETS:					
Cash & Equivs	213.817	175.553	251.208	260.307	258.825
Receivables (ST)	76.42	82.812	90.017	92.015	106.011
Inventories	180.129	204.124	197.728	216.545	195.757
Current Tax Assets	11.774	11.473	12.699	14.662	16.203
Other Current Assets	30.292	24.092	16.454	20.789	12.476
Total Current Assets	502.064	498.054	568.106	604.318	589.272
LONG TERM ASSETS:					
Gross Property Plant & Equip	397.256	431.32	445.068	452.41	470.831
Accumulated Depreciation	201.54	217.868	235.535	245.383	257.115
Net Property Plant & Equip	195.716	213.452	209.533	207.027	213.716
Long Term Investments	-	-	-	-	-
Intangible Assets	127.705	172.579	170.991	156.468	151.625
Deferred LT Assets	2.851	-	-	-	-
Total Long Term Assets	326.272	386.031	380.524	363.495	365.341
Other Assets	7.751	6.237	4.983	5.252	6.696
Total Assets	836.087	890.322	953.613	973.065	961.309
LIABILITIES:					
Current Liab:					
Accounts Payable	22.034	37.117	34.933	22.86	21.309
Accrued Expenses	49.553	58.22	68.169	71.602	73.655
Current Debt	-	0.178	0.103	0.018	0
Other Current Liabilities	0	0	0	0	0
Total Current Liabilities	71.587	95.515	103.205	94.48	94.964
Long Term Liab:					
LT Debt & Leases	-	-	-	-	0
Deferred LT Liabilities	-	-	-	-	0
Minority Interests	-	-	-	-	0
Other Liabilities	6.137	5.239	9.129	15.12	16.521
Total Liabilities	77.724	100.754	112.334	109.6	111.485
Equity:					
Common Share Capital	0.481	0.483	0.486	0.489	0.481
Additional Paid-In Capital	170.483	184.677	207.418	220.982	238.212
Retained Earnings	580.616	592.309	615.289	649.174	639.707
Total Equity	758.363	789.568	841.279	863.465	849.824
Total Liabilities & Equity	836.087	890.322	953.613	973.065	961.309
Balance Sheet Check	0.00	0.00	0.00	0.00	0.00

Standardized Annual Balance Sheet	Estimated	Estimated	Estimated	Estimated	Estimated
Report Date	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020
Currency	USD	USD	USD	USD	USD
Scale	Millions	Millions	Millions	Millions	Millions
ASSETS:					
Cash & Equivs	297.884	307.815	308.180	335.091	392.458
Receivables (ST)	117.167	131.573	145.373	155.316	165.133
Inventories	227.794	229.777	246.895	256.527	265.239
Current Tax Assets	17.503	19.211	20.747	21.665	22.514
Other Current Assets	17.523	18.853	22.985	27.097	31.790
Total Current Assets	677.871	707.230	744.181	795.696	877.134
LONG TERM ASSETS:					
Gross Property Plant & Equip	429.932	441.661	435.991	415.348	409.933
Accumulated Depreciation	239.991	224.251	221.434	211.706	208.477
Net Property Plant & Equip	189.942	217.410	214.558	203.643	201.457
Long Term Investments					
Intangible Assets	167.608	188.246	208.024	222.288	236.376
Deferred LT Assets					
Total Long Term Assets	357.550	405.656	422.582	425.931	437.833
Other Assets	7.684	8.958	9.425	9.475	9.566
Total Assets	1043.104	1121.844	1176.188	1231.102	1324.533
LIABILITIES:					
Current Liab:					
Accounts Payable	22.486	24.021	29.251	34.942	42.901
Accrued Expenses	77.487	82.523	91.262	102.954	114.402
Current Debt	0.505	17.429	4.734	18.213	32.274
Other Current Liabilities	0.000	0.000	0.000	0.000	0.000
Total Current Liabilities	100.478	123.972	125.247	156.109	189.577
Long Term Liab:					
LT Debt & Leases	0.000	0.000	0.000	0.000	0.000
Deferred LT Liabilities	0.000	0.000	0.000	0.000	0.000
Minority Interests	0.000	0.000	0.000	0.000	0.000
Other Liabilities	17.380	18.510	19.043	19.296	19.096
Total Liabilities	117.858	142.482	144.290	175.404	208.673
Equity:					
Common Share Capital	0.481	0.481	0.481	0.481	0.481
Additional Paid-In Capital	238.212	239.66	238.72	200.212	195.212
Retained Earnings	686.553	739.221	792.697	855.004	920.168
Total Equity	925.246	979.362	1031.898	1055.697	1115.861
Total Liabilities & Equity	1043.104	1121.844	1176.188	1231.102	1324.533
Balance Sheet Check	0.000	0.000	0.000	0.000	0.000

Standardized Annual Cash					Estimated	Estimated	Estimated	Estimated	Estimated
Report Date	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020
Currency	USD	USD	USD	USD	USD	USD	USD	USD	USD
Scale	Millions	Millions	Millions	Millions	Millions	Millions	Millions	Millions	Millions
Net Income	41.918	50.971	63.531	67.888	78.077	86.340	89.127	107.427	116.363
Adjustments from Inc to Cash	41.273	46.82	43.021	44.184	28.104	33.030	32.144	24.069	20.261
Change in Working Capital	-15.139	8.715	-39.331	2.135	33.772	12.933	33.749	21.985	25.793
Cash Flow from Operations	68.052	106.506	67.221	114.207	139.953	132.303	155.019	153.481	162.417
Purchase of Pty Plant & Equip	-21.961	-16.804	-23.715	-34.186	-18.515	-65.008	-32.014	-16.005	-21.005
Purchase of Investments	-	-	-	-	0.000	0.000	0.000	0.000	0.000
Proceeds from Pty Plant & Equip	7.642	-	-	-	10.144	8.291	5.699	5.845	4.335
Other Investing Cash Flows	-63.427	-0.531	0.43	0.537	0.000	0.000	0.000	0.000	0.000
Cash Flow from Investing	-77.746	-17.335	-23.505	-37.828	-8.371	-56.717	-26.315	-10.160	-16.670
Change in ST Debt	-3.564	-	-	-	-0.505	-16.924	12.694	-13.479	-14.061
Change in LT Debt	-	-0.081	-0.077	-0.017	0.000	0.000	0.000	0.000	0.000
Change in Equity	5.035	5.312	1.68	-37.346	0.000	1.448	-0.940	-38.508	-5.000
Payment of Dividends	-30.193	-18.13	-25.918	-29.352	-31.231	-33.673	-35.651	-45.119	-51.200
Cash Flow from Financing	-30.491	-13.419	-25.608	-67.892	-31.736	-49.149	-23.896	-97.106	-70.261
Effect of Exchange Rate	1.921	-0.097	-9.009	-9.969	0.000	0.000	0.000	0.000	0.000
Opening Cash	213.817	175.553	251.208	260.307	258.825	297.884	307.815	308.180	335.091
Closing Cash	175.553	251.208	260.307	258.825	297.884	307.815	308.180	335.091	392.458
Change in Cash	-38.264	75.655	9.099	-1.482	39.059	9.931	0.365	26.911	57.368
Check	YES/OK	YES/OK	YES/OK	YES/OK	YES/OK	YES/OK	YES/OK	YES/OK	YES/OK

Standardized Annual Retained Earnings					Estimated	Estimated	Estimated	Estimated	Estimated
Report Date	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020
Currency	USD	USD	USD	USD	USD	USD	USD	USD	USD
Scale	Millions	Millions	Millions	Millions	Millions	Millions	Millions	Millions	Millions
Retained Earnings at Start	580.616	592.309	615.289	649.174	639.707	686.553	739.221	792.697	855.004
Retained Earnings at End	592.309	615.289	649.174	639.707	686.553	739.221	792.697	855.004	920.168

Current Year is:		2015			Estimated	Estimated	Estimated		
					2016	**2017**	**2018**	**2019**	**2020**
CF From Operations									
EBIT*(1 - tax rate) + Deprec					99.29	116.02	120.17	129.22	135.85
CF From Capital Spending									
Purchase of PPE (negative)					-18.52	-65.01	-32.01	-16.01	-21.01
Sale of PPE before Tax effects (typically positive)					10.14	8.29	5.70	5.85	4.34
Taxes on sale of PPE (negative implies tax is paid)					3.71	1.75	0.84	1.15	0.24
SUM of CF from Cap. Spending					-4.66	-54.97	-25.48	-9.01	-16.43
CF from Changes in "Working Capital"									
Decrease (increase) in A/R					-11.16	-14.41	-13.80	-9.94	-9.82
Decrease (increase) in Inventory					-32.04	-1.98	-17.12	-9.63	-8.71
Increase decrease) in A/P					1.18	1.53	5.23	5.69	7.96
Sum of CF from Changes in "Working Cap"					-42.02	-14.85	-25.69	-13.88	-10.57
Overall CF to an unlevered (zero debt) firm:					52.61	46.20	69.00	106.32	108.85
Two More Drivers:									
WACC			10.89%						
Growth in Overall CF beyond 2020			6.00%						
PV of CF's in:	2016		47.44						
PV of CF's in:	2017		37.57						
PV of CF's in:	2018		50.60						
PV of CF's in:	2019		70.32						
PV of CFs Generated 2020 to infinity:			1560.38						
PV of Assets:			1766.31						
Less Total Debt:			-111.49						
PV of Equity			1654.83						
Shares Outstanding:			48.18						
Fair Value of Stock Per Share:			**$34.34**						
Actual Price of Stock:			$39.57						
Pct Stock Over (Under) Valuation:			15.22%						
NPV of the stock per share:			$5.23						

SIMPSON Strong-Tie

Dividend Discount Model

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Discount Rate (FF3) =	12.18%											
Time:		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ROE		7.92%	8.80%	9.07%	8.86%	10.29%	10.72%	12.00%	12.00%	12.00%	12.00%	12.00%
Payout Ratio			40.00%	39.00%	40.00%	42.00%	44.00%	39.00%	39.00%	39.00%	39.00%	39.00%
Plowback Ratio			60.00%	61.00%	60.00%	58.00%	56.00%	61.00%	61.00%	61.00%	61.00%	61.00%
BV of Equity		17.64	19.20	20.33	21.42	21.91	23.16	24.74	26.44	28.26	30.21	32.31
PAT			1.62	1.79	1.85	2.23	2.41	2.59	2.78	2.99	3.20	3.44
Retained Earnings			0.97	1.09	1.11	1.29	1.35	1.58	1.70	1.82	1.95	2.10
Dividend Stream			0.65	0.70	0.74	0.94	1.06	1.01	1.08	1.16	1.25	1.34
Price (Fair)		$13.29										

Model	3 Stmt	DDM	Comps
Weights	0.97	0.00	0.03
Fair Value of Stock Per Share	$ 34.34	$ 13.29	$ 21.03
Actual Price of Stock	$ 39.57	$ 39.57	$ 39.57
Pct Stock Over Valuation	15.22%	197.81%	88.15%
Weighted Fair Stock Price	$ 33.94		
Pct Stock Over Valuation	$ 0.17		

Firm:	Price/Share		EPS	Price/Earnings	Growth rate of Earnings	PEG Ratio		Operating CFs/Share	Price to OP CFs	growth rate of Operating CF		BV of Equity	Price to Book Ratio
	P		E	P/E	g	PEG		CF	P/CF	g	PCFG	B	P/B
SSD	$ 34.39		1.130	30.434	22.877	1.330		1.613	21.325	26.242	0.812635	820.500	0.042
ITW	$ 106.03		5.314	19.953	22.009	0.907		5.750	18.440	11.889	1.551014	8464.958	0.013
NCS	$ 16.10		0.57	28.246	-44.265	-0.638		0.788	20.431	53.700	0.380474	251.943	0.064
SCX	$ 12.15		-1.258	-9.658	-22.680	0.426		1.330	9.135	90.230	0.101245	131.732	0.092
Average ~SSD				12.847		0.231			16.002		0.678		0.056
Weights				0.05		0.45			0.075		0.225		0.2
Fair Value	21.03			14.52		5.98			25.81		28.67		46.13

	Weight	E[r]	1-t
Equity	88.403%	12.178%	
Debt	11.597%	1.650%	65.000%
	100.000%		
WACC	**10.890%**		

Fama French 3

	Regression Statistics
Multiple R	0.6696
R Square	0.4484
Adjusted R Square	0.4188
Standard Error	0.0610
Observations	60.0000

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.0007	0.0083	-0.0892	0.9292
Mkt-rf	1.0419	0.2391	4.3581	0.0001
SmB	1.1986	0.3915	3.0615	0.0034
HmL	0.1889	0.4452	0.4242	0.6730

E[r] SSD		0.1218

E[r] Mkt	E[r] Smb	E[r] Hml	rf
0.0700	0.0332	0.0483	0.0001

RESIDUAL OUTPUT

Risk calculations

Observation	Predicted Y	Residuals		
				0.0035
1	-0.0988	0.0588		0.0029
2	-0.0631	-0.0173		
3	0.0453	-0.0677		
4	0.0571	0.0770		
5	-0.0638	0.0277		
6	-0.0531	0.0277		
7	-0.0432	0.0967		
8	0.0154	-0.0083		
9	0.0212	0.0135		
10	-0.0269	-0.0959		
11	0.0238	0.0123		
12	0.0647	0.0444		
13	-0.0464	-0.0064		
14	0.0327	0.0094		
15	-0.0055	0.0091		
16	0.0734	0.0614		
17	-0.0700	-0.0239		
18	0.0479	0.0149		
19	-0.0729	-0.0876		
20	0.0606	0.0326		
21	-0.0020	0.0164		
22	-0.0496	-0.0190		

Ratio Analysis: (Historical Values)

	2012	2013	2014	2015	Estimated 2016	Estimated 2017	Estimated 2018	Estimated 2019	Estimated 2020
EOY = End of year									
BOY = Beginning of year									
Liquidity Focus:									
Current (EOY values)	5.214	5.505	6.396	6.205	6.746	5.705	5.942	5.097	4.627
Quick (EOY Values)	3.077	3.589	4.104	4.144	4.479	3.851	3.970	3.454	3.228
Cash Ratio	1.838	2.434	2.755	2.726	2.965	2.483	2.461	2.147	2.070
Activity (Utilization) Focus:									
(using ave B/S values unless indicated otherwise)									
A/R Turnover (assume 100% Credit sales)	8.255	8.174	8.264	8.020	7.851	7.897	7.824	7.686	7.654
Average Collection Period (AKA Days Sales	44.215	44.655	44.168	45.513	46.489	46.219	46.654	47.492	47.685
Inventory Turnover (using end of Yr Inv.)	1.831	1.981	1.894	2.223	2.115	2.351	2.369	2.432	2.451
Days Inventory	199.340	184.207	192.722	164.203	172.545	155.255	154.043	150.061	148.940
Inventory Turnover (using average Inv.)	1.945	1.950	1.980	2.111	2.275	2.361	2.455	2.479	2.492
Days Inventory	187.624	187.187	184.349	172.922	160.412	154.585	148.703	147.244	146.494
Fixed Asset Turnover	3.213	3.340	3.611	3.775	4.341	4.822	5.016	5.526	6.055
Total Asset Turnover	0.761	0.766	0.781	0.821	0.874	0.907	0.943	0.960	0.960
A/P to Assets:	0.034	0.039	0.030	0.023	0.022	0.021	0.023	0.027	0.030
Financial Leverage Focus:									
Debt / Assets (EOY values)	0.113	0.118	0.113	0.116	0.113	0.127	0.123	0.142	0.158
Debt / BV Equity (EOY Values)	0.128	0.134	0.127	0.131	0.127	0.145	0.140	0.166	0.187
Equity Multiplier	1.128	1.134	1.127	1.131	1.127	1.145	1.140	1.166	1.187
Profitability Focus:									
(using average B/S values):									
Gross Profit Margin	43.13%	44.53%	45.47%	45.20%	45.00%	45.00%	46.00%	46.00%	47.00%
Operating Margin	9.41%	11.82%	13.16%	13.68%	12.50%	13.00%	12.50%	14.00%	14.50%
Net Profit Margin	6.38%	7.22%	8.45%	8.55%	8.91%	8.79%	8.23%	9.30%	9.49%
ROA	4.86%	5.53%	6.59%	7.02%	7.79%	7.98%	7.76%	8.93%	9.11%
ROE (Book Value of Equity)	5.42%	6.25%	7.45%	7.92%	8.80%	9.07%	8.86%	10.29%	10.72%
ROE (Mkt Value of Equity_aka Mkt Cap)	2.61%	3.02%	3.65%	4.07%	4.54%	4.67%	4.67%	5.43%	5.63%
Market Focus:									
Price to Earnings (P/E)	37.690	34.981	26.615	24.568	23.000	22.000	21.500	19.000	18.000
Earnings Yield	2.65%	2.86%	3.76%	4.07%	4.35%	4.55%	4.65%	5.26%	5.56%
P/E of S&P 500 (end of year)									
Relative P/E									
Market to Book (EOY)	2.011	2.127	1.962	1.936	1.941	1.940	1.857	1.933	1.877
Dividend Yield	92.08%	49.36%	74.91%	85.95%	83.80%	85.42%	89.64%	106.51%	117.78%
Capital Gain on Stock	-2.06%	12.69%	-5.31%	-2.88%	9.13%	5.78%	0.88%	6.52%	2.62%
ROE Decomposition (DuPont Analysis)									
(using average B/S values):									
PAT / PBT	0.677	0.625	0.640	0.625	0.650	0.650	0.650	0.650	0.650
PBT / EBIT (remember theres no debt, reasor	1.001	0.977	1.004	1.000	1.097	1.040	1.013	1.022	1.007
EBIT / Sales	0.094	0.118	0.132	0.137	0.125	0.130	0.125	0.140	0.145
Sales / Total Assets	0.761	0.766	0.781	0.821	0.874	0.907	0.943	0.960	0.960
Total Assets / BV of Equity	1.115	1.131	1.130	1.129	1.129	1.137	1.143	1.153	1.177
Total Assets / Mkt Value of Equity	0.538	0.546	0.553	0.579	0.582	0.586	0.602	0.608	0.618
Potential for Bankruptcy Indication:									
Altman's Z Score Inputs:									
(using average B/S values):									
EBIT / Total Assets	0.072	0.091	0.103	0.112	0.109	0.118	0.118	0.134	0.139
Sales / Total Assets	0.761	0.766	0.781	0.821	0.874	0.907	0.943	0.960	0.960
Mkt Value of Equity / Book Value of Debt.	2.051	2.194	1.988	1.921	2.023	1.995	1.905	1.955	1.929
Ret Earns / Total Assets	0.679	0.655	0.656	0.666	0.662	0.659	0.667	0.684	0.695
Working Cap / Total Assets	0.483	0.470	0.506	0.519	0.535	0.536	0.523	0.523	0.519
Z Score: (Z < .75 => trouble ahead)	3.758	3.862	3.837	3.899	4.016	4.058	4.035	4.161	4.171

Common Size I/S

Common Size I/S					Estimated	Estimated	Estimated	Estimated	Estimated
Reported Date	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020
Sales Revenue	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Direct Costs (COGS)	56.87%	55.47%	54.53%	54.80%	55.00%	55.00%	54.00%	54.00%	53.00%
Gross Profit	43.13%	44.53%	45.47%	45.20%	45.00%	45.00%	46.00%	46.00%	47.00%
Selling General & Admin	27.90%	27.49%	27.06%	25.70%	27.50%	27.00%	27.00%	26.00%	25.00%
Research & Development	5.47%	5.22%	5.19%	5.82%	5.00%	5.00%	5.50%	6.00%	6.00%
Restruct Remediation & Impair	0.36%	0.00%	0.07%	0.00%	0.00%	0.00%	1.00%	0.00%	1.50%
Total Indirect Operating Costs	33.72%	32.71%	32.32%	31.52%	32.50%	32.00%	33.50%	32.00%	32.50%
Operating Income (EBIT)	9.41%	11.82%	13.16%	13.68%	12.50%	13.00%	12.50%	14.00%	14.50%
Interest Income	0.03%	0.01%	0.01%	-0.04%	0.00%	0.02%	0.02%	0.02%	0.04%
Gains on Sale of Assets	-0.03%	-0.29%	0.04%	0.05%	1.21%	0.51%	0.14%	0.28%	0.06%
Total Non-Operating Income	0.01%	-0.28%	0.05%	0.01%	1.21%	0.52%	0.16%	0.30%	0.10%
Earnings Before Tax	9.42%	11.55%	13.21%	13.69%	13.71%	13.52%	12.66%	14.30%	14.60%
Taxation	3.04%	4.33%	4.76%	5.14%	4.80%	4.73%	4.43%	5.01%	5.11%
Earnings After Tax	6.38%	7.22%	8.45%	8.55%	8.91%	8.79%	8.23%	9.30%	9.49%

Sales Growth Forecast

Expected Inflation

	2015	2016	2017	2018	2019	2020
	0.12%	0.82%	1.54%	2.37%	2.49%	2.34%

Forecast of Housing Starts

	2015	2016	2017	2018	2019	2020
Housing Starts	1107	1175	1353	1444	1300	1213
Growth in HS		0.0614	0.1515	0.0673	-0.0997	-0.0669

Forecast of GDP

	2015	2016	2017	2018	2019	2020
		0.024	0.025	0.0238	0.0213	0.0196

Reg Forecast Coefficients:

	Intercept	HS	GDP
	-0.0400	0.1339	5.6303

Forecasts of Sales Growth

2016	2017	2018	2019	2020
0.1033563	0.1210436	0.1030108	0.0665807	0.0614002

	SSD Sales	HS	R P of Steel	P of Steel	SSD g in Sales	g in HS	GDP R g	g in Steel	PPI on Steel	Nom to Real
1991	80.939	1079	4701	4701			-0.1		118.7	1
1992	98.106	1227	4232.130802	4225	0.212098	0.13716404	3.6	-0.09973818	118.5	-0.001685	0.99831508
1993	113.923	1533	5046.231281	5110	0.161223575	0.24938875	2.7	0.19236184	120.2	0.014346	1.0126369
1994	151.29	1455	5907.733538	6500	0.32802247	-0.05088063	4	0.17072191	130.6	0.0865225	1.10025274
1995	167.958	1431	5348.618441	6011	0.110172516	-0.01649485	2.7	-0.09464122	133.4	0.0214395	1.12384162
1996	202.409	1370	5698.331024	6236	0.205116755	-0.04262753	3.8	0.06538372	129.9	-0.026237	1.09435552
1997	246.074	1566	6054.063553	6661	0.215726573	0.14306569	4.5	0.06242749	130.6	0.0053888	1.10025274
1998	279.081	1792	5389.362903	5630	0.134134447	0.14431673	4.5	-0.10979413	124	-0.050536	1.04465038
1999	328.44	1708	5877.188531	6303	0.17686263	-0.046875	4.7	0.09051638	127.3	0.0266129	1.07245156
2000	369.088	1532	4978.104019	5322	0.123760809	-0.1030445	4.1	-0.15297867	126.9	-0.003142	1.06908172
2001	415.863	1568	4584.739482	4774	0.126731294	0.02349869	1	-0.07901895	123.6	-0.026005	1.04128054
2002	465.474	1788	4975.694969	5332	0.119296499	0.14030612	1.8	0.08527322	127.2	0.0291262	1.0716091
2003	548.182	2057	5159.124718	5785	0.177685542	0.15044743	2.8	0.03686515	133.1	0.0463836	1.12131424
2004	698.053	2042	6895.798113	9237	0.273396427	-0.00729217	3.8	0.33662171	159	0.1945905	1.33951137
2005	846.256	1994	6456.938212	9068	0.212309094	-0.02350637	3.3	-0.06364164	166.7	0.0484277	1.40438079
2006	863.18	1649	6177.491689	9706	0.019986677	-0.17301906	2.7	-0.04327849	186.5	0.1187762	1.57118787
2007	816.988	1037	7036.995878	11507	-0.053513751	-0.37113402	1.8	0.13913482	194.1	0.0407507	1.63521483
2008	756.499	560	5385.6136	8607	-0.074039031	-0.45998071	-0.3	-0.23467149	189.7	-0.022669	1.59814659
2009	585.07	581	4705.001531	7769	-0.226608363	0.0375	-2.8	-0.12637596	196	0.0332103	1.65122157
2010	555.487	539	5662.564711	10247	-0.05056318	-0.07228916	2.5	0.20352027	214.8	0.0959184	1.80960404
2011	603.446	694	6462.021592	12102	0.086369854	0.28756957	1.6	0.14118282	222.3	0.0349162	1.87278854
2012	657.236	976	6068.223551	11114	0.08913805	0.40634006	2.2	-0.06094038	217.4	-0.022042	1.831508
2013	706.329	1010	6110.687119	10991	0.074696152	0.03483607	1.5	0.0069979769	213.5	-0.017939	1.79865206
2014	752.148	1081	6045.496474	10833	0.064869204	0.07029703	2.4	-0.0106683	212.7	-0.003747	1.79191238
2015	794.059	1160	4897.003708	7789	0.05572174 6	0.07308048	2.4	-0.18997493	188.8	-0.112365	1.59056445

SIMPSON

Strong-Tie

SSD Sales G	Growth in HS	Growth in Wo	Growth in Ste	Q2	Q3
0.218	0.234315	0.097235	-0.120567	1	0
0.042	-0.025415	-0.01095	-0.015879	0	1
-0.128	-0.276211	-0.102768	-0.055464	0	0
0.058	0.219853	0.116787	0.200514	0	0
0.119	0.025919	0.007768	0.016988	1	0
-0.06	-0.118096	-0.101779	-0.039589	0	1
-0.208	-0.251166	-0.098163	-0.13377	0	0
0.076	0.101423	-0.022826	0.252462	0	0
0.197	0.113086	0.128687	-0.010929	1	0
-0.061	-0.263425	-0.073608	-0.04635	0	1
-0.193	-0.321182	-0.191189	-0.040638	0	0
-0.044	0.193033	0.01071	0.242616	0	0
0.308	0.246959	0.122512	0.19147	1	0
0.003	-0.279024	-0.127535	-0.080711	0	1
-0.319	-0.489851	-0.262228	-0.435519	0	0
-0.203	0.132626	-0.007957	-0.166345	0	0
0.391	0.384075	0.103024	-0.093554	1	0
0.008	-0.109983	-0.025968	0.205005	0	1
-0.207	-0.304182	-0.181306	-0.036576	0	0
0.01	0.494536	0.210592	0.432608	0	0
0.237	-0.016453	0.110562	0.062919	1	0
-0.116	-0.01487	-0.098931	-0.047461	0	1
-0.183	-0.362264	-0.116241	-0.097917	0	0
0.108	0.476331	0.091454	0.378997	0	0
0.342	0.212425	0.092179	-0.024822	1	0
-0.087	-0.028099	-0.039273	-0.087582	0	1
-0.195	-0.27381	-0.141585	-0.059588	0	0
0.214	0.358314	0.17989	0.16778	0	0
0.145	0.287931	0.12351	-0.086371	1	0
-0.053	0.014726	-0.061579	-0.098985	0	1
-0.159	-0.166227	-0.13001	-0.057311	0	0
0.068	0.318038	0.236045	0.119039	0	0
0.266	-0.031212	0.079674	-0.039231	1	0
0.001	-0.028501	-0.02378	-0.009125	0	1
-0.178	-0.137755	-0.182336	-0.064098	0	0
0.045	0.186391	0.176113	0.109173	0	0
0.235	0.088529	0.226678	-0.015384	1	0
0.007	0.079038	-0.091413	0.018657	0	1
-0.204	-0.220807	-0.160346	-0.100422	0	0
0.059	0.085831	0.092108	-0.042217	0	0
0.228	0.409034	0.385796	-0.046841	1	0
-0.002	-0.006233	-0.228616	-0.071959	0	1
-0.145	-0.300179	-0.149963	-0.161973	0	0
0.08	0.147247	8204			

	SSD Sales	HS	R P of Steel	P of Steel
1991	80.939	1079	4701	4701
1992	98.106	1227	4232.130802	4225
1993	113.923	1533	5046.231281	5110
1994	151.29	1455	5907.733538	6500
1995	167.958	1431	5348.618441	6011
1996	202.409	1370	5698.331024	6236
1997	246.074	1566	6054.063553	6661
1998	279.081	1792	5389.362903	5630
1999	328.44	1708	5877.188531	6303
2000	369.088	1532	4978.104019	5322
2001	415.863	1568	4584.739482	4774
2002	465.474	1788	4975.694969	5332
2003	548.182	2057	5159.124718	5785
2004	698.053	2042	6895.798113	9237
2005	846.256	1994	6456.938212	9068
2006	863.18	1649	6177.491689	9706
2007	816.988	1037	7036.995878	11507
2008	756.499	560	5385.6136	8607
2009	585.07	581	4705.001531	7769
2010	555.487	539	5662.564711	10247
2011	603.446	694	6462.021592	12102
2012	657.236	976	6068.223551	11114
2013	706.329	1010	6110.687119	10991
2014	752.148	1081	6045.496474	10833
2015	794.059	1160	4897.003708	7789

PPI on Steel	Nom to Real	
118.7		1
118.5	-0.001685	0.99831508
120.2	0.014346	1.0126369
130.6	0.0865225	1.10025274
133.4	0.0214395	1.12384162
129.9	-0.026237	1.09435552
130.6	0.0053888	1.10025274
124	-0.050536	1.04465038
127.3	0.0266129	1.07245156
126.9	-0.003142	1.06908172
123.6	-0.026005	1.04128054
127.2	0.0291262	1.0716091
133.1	0.0463836	1.12131424
159	0.1945905	1.33951137
166.7	0.0484277	1.40438079
186.5	0.1187762	1.57118787
194.1	0.0407507	1.63521483
189.7	-0.022669	1.59814659
196	0.0332103	1.65122157
214.8	0.0959184	1.80960404
222.3	0.0349162	1.87278854
217.4	-0.022042	1.831508
213.5	-0.017939	1.79865206
212.7	-0.003747	1.79191238
188.8	-0.112365	1.59056445

SSD g in Sales	Growth in HS	Real gr in GDP	Growth in Ste
0.212098	0.13716404	3.6	-0.09973818
0.161223575	0.24938875	2.7	0.19236184
0.328002247	-0.05088063	4	0.17072191
0.110172516	-0.01649485	2.7	-0.09464122
0.205116755	-0.04262753	3.8	0.06538372
0.215726573	0.14306569	4.5	0.06242749
0.134134447	0.14431673	4.5	-0.10979413
0.176862631	-0.046875	4.7	0.09051638
0.123760809	-0.1030445	4.1	-0.15297867
0.126731294	0.02349869	1	-0.07901895
0.119296499	0.14030612	1.8	0.08527322
0.177685542	0.15044743	2.8	0.03686515
0.273396427	-0.00729217	3.8	0.33662171
0.212309094	-0.02350637	3.3	-0.06364164
0.019998677	-0.17301906	2.7	-0.04327849
-0.053513751	-0.37113402	1.8	0.13913482
-0.074039031	-0.45998071	-0.3	-0.23467149
-0.226608363	0.0375	-2.8	-0.12637596
-0.05056318	-0.07228916	2.5	0.20352027
0.086336854	0.28756957	1.6	0.14118282
0.08913805	0.40634006	2.2	-0.06094038
0.074696152	0.03483607	1.5	0.00699769
0.064869204	0.07029703	2.4	-0.0106683
0.055721746	0.07308048	2.4	-0.18997493

Enter Depreciation Schedule Drivers in this shaded box (Blue/Bold/Italics)

Deprec Life PPE:

Year:	1	2	3	4	5	6	7	8	9	10	Sum
1	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
2	70%	30%	0%	0%	0%	0%	0%	0%	0%	0%	100%
3	60%	30%	10%	0%	0%	0%	0%	0%	0%	0%	100%
4	55%	30%	15%	0%	0%	0%	0%	0%	0%	0%	100%
5	48%	35%	10%	7%	0%	0%	0%	0%	0%	0%	100%
6	46%	36%	5%	5%	5%	3%	0%	0%	0%	0%	100%
7	45%	36%	7%	4%	4%	2%	2%	0%	0%	0%	100%
8	40%	30%	10%	5%	5%	3%	2%	0%	0%	0%	100%
9	43%	35%	8%	3%	3%	3%	3%	1%	1%	0%	100%
10	30%	20%	20%	10%	10%	5%	2%	1%	1%	1%	100%

Year:	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Deprec Life (yrs)	1	2	3	8	9	10	3	10	8	8	7	7	9	8	8
Acct-Salvage Value (proportion of new price)	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	8.00%	10.00%	10.00%	10.00%	10.00%
Years to Hold till sold:	6	10	7	7	7	7	7	7	7	7	7	7	7	10	7
Proportion of new price obtained when sold	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	60.00%	15.00%	15.00%	14.00%	15.00%
PPE Gross Purchases/year (Known via 10k)	15.55	6	3.653	9.896	10.027	7.307	16.483	20	15.042	14.233	24.652	27.816	21.45	45.336	38.534
Depreciable Amt	14.00	5.40	3.29	8.91	9.02	6.58	14.83	18.00	13.54	12.81	22.68	25.03	19.31	40.80	34.68

Gross PPE of assets still owned

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1991 Purchased Equip.	15.55	15.55	15.55	15.55	15.55	15.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1992 Purchased Equip.		6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	0.00	0.00	0.00	0.00
1993 Purchased Equip.			3.65	3.65	3.65	3.65	3.65	3.65	3.65	0.00	0.00	0.00	0.00	0.00	0.00
1994 Purchased Equip.				9.90	9.90	9.90	9.90	9.90	9.90	9.90	0.00	0.00	0.00	0.00	0.00
1995 Purchased Equip.					10.03	10.03	10.03	10.03	10.03	10.03	10.03	0.00	0.00	0.00	0.00
1996 Purchased Equip.						7.31	7.31	7.31	7.31	7.31	7.31	7.31	0.00	0.00	0.00
1997 Purchased Equip.							16.48	16.48	16.48	16.48	16.48	16.48	16.48	0.00	0.00
1998 Purchased Equip.								20.00	20.00	20.00	20.00	20.00	20.00	20.00	0.00
1999 Purchased Equip.									15.04	15.04	15.04	15.04	15.04	15.04	15.04
2000 Purchased Equip.										14.23	14.23	14.23	14.23	14.23	14.23
2001 Purchased Equip.											24.65	24.65	24.65	24.65	24.65
2002 Purchased Equip.												27.82	27.82	27.82	27.82
2003 Purchased Equip.													21.45	21.45	21.45
2004 Purchased Equip.														45.34	45.34
2005 Purchased Equip.															38.53
2006 Purchased Equip.															
2007 Purchased Equip.															
2008 Purchased Equip.															
2009 Purchased Equip.															
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2019 Purchased Equip.															
2020 Purchased Equip.															

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