The Implementation of Value Investment Based on Various Indicators for the Building Materials Industry

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Abstract. With the advent of post COVID-19 era, value investing strategy has popularized again in the global stock markets as the changing economic conditions, rising interest rates and different risk appetites. Therefore, it is reasonable to know how to distinguish between value stocks and growth stocks before investing. This paper aims to examine the application of value investment strategies based on the indicators' performance of five companies selected from the building materials industry. Besides, valuation metrics are derived from three primary dimensions, i.e., growth, profitability and value per unit of growth. This study first identifies the classification and recent performance of value stocks and then compares the financial indicators of companies with value stocks. According to the analysis, the suitable P/E range of value stocks is from 10 to 20, with returns beginning to rise in 2021. By means of this method (utilizes one indicator to identify value stocks), researchers engaged in the financial industry may discover more characteristics about them. Moreover, results also illustrate that value stocks with excellent indicators are more endurable in preventing outside shocks, whereas growth stocks can outperform in profitability as long as they possess ever-increasing revenue and EBITDA. Thus, value investing still remains profitable and practical in the real world.

Keywords: Value Investing Strategy; Financial Indicators; Case Study; Building Materials Industry.

1. Introduction

Value investing was first proposed by Graham and Dodd in 1934, who argued that investors can profit by investing in securities that will be sold far below their fair value [1]. Contemporarily, value investing has undoubtedly begun to dominate worldwide markets, as it can give an opportunity for investors who want to achieve their ultimate goals, which is to maximize gains from an undervalued single stock or portfolio's returns [2]. Value stocks, also known as low-valuation stocks, are frequently traded at lower prices relative to their fundamental metrics, e.g., book value and earnings per share [3]. The trade mechanism behind this phenomenon is that professional investors or institutional funds managers can capture and utilize the undervaluation of a certain stock caused by the overreaction of irrational investors to one company's bad news or unexpected losses they may encounter. Once the undervaluation is accomplished, the price of the undervalued stock will typically go up until it reaches its original intrinsic value [4].

A value investing strategy is a way to identify the most important factors and information in public financial statements using a quantitative method. For example, the easiest method to use a value investment strategy is to find stocks that may be wrongly priced by exploring ratios calculated from financial statements, such as price-to-earnings, price-to-book, as well as gross profit margin [5]. Investors also require more details towards the financial reporting of a firm to recognize its robust fiscal condition and financial performance further, allowing them to choose the best investment opportunity with a relatively high yield and the lowest risk [6]. According to U-Wen, Jason, and Richard, purchasing low-value equities in the United States market in terms of simple fundamental factors against price ratios yields excellent investment performance [7]. Other critics of this investment strategy point out that the application of value investing has emerged with lower performance than growth investing since 2007, resulting in a nearly 50% decline by 2020 [8]. However, several studies, building on the current empirical evidence, have shown that the value premium (the trend that value stocks outperform growth stocks) is indeed substantial in varying stock markets and sample periods [9].

During the COVID-19 pandemic, stock markets in different countries have lurched into recession and become more volatile; this, however, is far from being transitory. From the perspective of the building material industry, they must face cyclical market pressure due to the tight supply chain of raw materials. Therefore, their share prices are likely to fluctuate in response to market changes, which will also affect the intrinsic value of numerous firms in this industry [10]. With the advent of post COVID-19 era, historically, value stocks often perform significantly better after a recession than they do before one [11]. As a result, the application of value investing still remains profitable in the stock market.

The purpose of this study aims to explore how a value investing strategy is applied to thousands of listed companies in the U.S. market and to utilize the categories of P/E ratio as an underlying assumption to identify the suitable range of value stocks as well as growth stocks. Furthermore, the criteria for whether a stock should be invested in are based on various valuation metrics that are ratios calculated from financial statements, such as ratios of measuring value per unit of growth and profitability. In this paper, a specific firm from the building materials industry with four peer competitors will be deemed as an example to demonstrate. The findings following also indicate the comparison between the building materials industry and the overall performance of value stocks to testify to the feasibility of value investing.

2. Data & Method

2.1 Data

In order to analyze the research issue, the chosen dataset is essential to affect the accuracy of results. This dataset includes thousands of companies listed in the U.S. market with detailed financial information over the sample time period of 2015–2021 that were collected from Compustat Distributed, which is a proprietary dataset marketed by Standard & Poors. Owing to the mergers and acquisitions, it is notable that a few companies may not exist in the dataset in the following years, implying that the number of companies each year is not identical. Moreover, some specific information derives from Form 10-K, which is one type of public annual report posted in EDGAR (a data system created by the U.S. Securities and Exchange Commission).

In this study, one company from the building materials industry along with four peer competitors has been chosen to better illustrate the application of value investing. The major company is called Builders first Source, which has the ticker symbol "BLDR." The remaining four competitors are constituted by Owens Corning (ticker: OC), Trex Co Inc (ticker: Trex), Masco Corp (ticker: MAS; referred to as “Masco”), and Beacon Roofing Supply Inc (ticker: BECN; referred to as “Beacon Roofing”). Using the percentiles of P/E ratios as a screen guide, Builders FirstSource and Beacon Roofing can be categorized as value stocks, while other stocks are not as they do not fall into the proper P/E range. The criterion for selecting competitors is based on these companies being within the same industry and outlining the excellent performance of the financial indicators of Builders First Source.

2.2 Analysis Method

The quantitative method that will be primarily adopted in this paper is analogous to the fundamental analysis, which could signal a company’s profitability, cash flow performance, liquidity and efficiency of operations [12]. Additionally, this method examines the current application of a value investment strategy by means of the basic financial indicators and statistics of returns (e.g., the average, median and standard deviation). For example, the first step is to seek the range of P/E ratios for value stocks by creating quintiles and dividing P/E ratios into six groups, respectively. The quintile starts from 0 to 100% with an interval of 20%. Similarly, the first group out of six is categorized as having P/E ratios that are below -20, and the last group measures P/E ratios above 50. After this step, the comprehensive performance of returns in terms of the quintiles and six groups between 2020 and

2021 will determine the P/E range of value stocks. The second step is to use the valuation metrics of each company that belong to value stocks to screen out which company outperforms best.

2.3 Indicators

In practice, investors can normally utilize numerous valuation metrics when they decide if a stock is underpriced. For instance, a stock that possesses a high B/M (book-to-market) ratio and low P/E ratio are regarded as value stocks [13]. Price-to-earnings (or P/E) ratio simply refers to the price that investors need to pay per unit of earnings. Other ratios of measuring one company's growth are the compound annual growth rate of EBITDA and revenue, respectively. The formulae are formed as follows:

$$\text{CAGR (compound annual growth rate) of } \alpha = \left(\frac{\alpha \text{ of the last year}}{\alpha \text{ of the first year}}\right)^{\left(\frac{1}{\text{last year}-\text{first year}}\right)} - 1 \quad (1)$$

Were

$$\alpha = \text{revenue or EBITDA} \quad (2)$$

Price-earnings to growth ratio, namely the PEG ratio, is one company's P/E ratio divided by the historical growth rate. In this paper, the CAGR of revenue will act as the role of normal growth rates. Typically, a stock with a lower PEG ratio can be considered a signal to buy released by markets [14]. As Peter Lynch mentioned in his masterpiece called One Up on Wall Street, stocks with a PEG ratio of one are fairly priced and lower than one is undervalued [15]. This ratio can be expressed in the following manner:

$$\text{Price} - \text{earnings to growth (PEG) ratio} = \frac{\text{P/E ratio}}{\text{Revenue CAGR in \%}} \quad (3)$$

Gross profit margin (GPM) is one type of indicator of profitability that determines the percentage of sales a company can retain after deducting expenses. A company with a higher gross profit margin is better as the costs of selling goods are lower [16]. Compared to GPM, total asset turnover (GP/A) is known as how efficiently a company is able to transform the remaining inventories into sales. The higher asset turnover ratio means a company is prone to generate profits easily by using its assets [17]. Moreover, Novy-Marx also argues the asset turnover ratio, a simple measure of quality, presents as potent in predicting returns as the conventional valuation metrics [18]. The formulae for 2 ratios mentioned above are:

$$\text{Gross profit margin} = \frac{\text{Revenue}-\text{COGs}}{\text{Revenue}} \times 100\% \quad (4)$$

$$\text{Asset turnover} = \frac{\text{Gross Profit}}{\text{Assets}} \times 100\% \quad (5)$$

3. Results & Discussion

3.1 Determination of P/E range for Value Stocks

Before conducting an elaborate analysis of specific companies, it is necessary to ensure a suitable range of P/E ratios for value stocks. The returns calculated from the dataset that contains nearly five thousand companies are split into quintiles. The sort order of P/E ratios ensures positive ratios in an ascending order followed by negative ascending ratios, e.g., 0.25 ranks first, while -0.04 ranks at the bottom. In light of this rule, the first quintile, which starts from 0 to 20%, corresponds to the value stocks. Accordingly, the fifth quintile that represents the highest P/E ratios is growth stocks, as they normally possess excellent growth prospects. As shown in Table 1, the average return on value stocks was 5.74% between 2019 and 2020, which was significantly lower than the average return on growth stocks of 211.84%. Conversely, when compared to the standard deviation of these two different types of stocks, value stocks had a lower standard deviation of 92.09%, whereas growth stocks were the riskiest with a 648.69% standard deviation. This means that value stocks dramatically underperformed before 2020, highly conforming with the findings mentioned by Arnott et al., in which the decline of value stocks in June 2020 was the largest since it was observed in 1963 [8]. However, regarding growth stocks, it is reasonable that they have the highest average returns based on the premise that investors should bear the corresponding risk.

Table. 1 Returns of the P/E quintiles between 2019 & 2020

	Q1 [0, 20%]	Q2 [20, 40%]	Q3 [40, 60%]	Q4 [60, 80%]	Q5 [80, 100%]
	Value Stocks				Growth Stocks
Average	5.74%	8.04%	21.77%	46.83%	211.84%
Median	-11.07%	-3.66%	5.02%	14.07%	28.7%
STD	92.09%	64.95%	100.17%	130.3%	648.69%
Count	896	895	896	895	896

Similarly, in comparison to the above-mentioned results, the nuance that existed in Table 2 is that the returns of value stocks began to bounce back and experience a sudden increase in 2021, amounting to 33.24%. Even though this figure is lower than the average return of growth stocks, which is almost 37%, it illustrates that value stocks are still able to outperform in the long term. Therefore, growth stocks become less appealing for risk-averse investors due to the highest risk with a standard deviation of 153.64%. Nevertheless, as for irrational investors, namely the representatives of high-risk tolerance, are more likely to be driven by overreaction and the herding effect, pushing up the prices of growth stocks as well as returns [19].

Table 2. Returns of the P/E quintiles between 2020 & 2021

	Q1 [0, 20%]	Q2 [20, 40%]	Q3 [40, 60%]	Q4 [60, 80%]	Q5 [80, 100%]
	Value Stocks				Growth Stocks
Average	33.24%	22.41%	10.61%	11.69%	37.00%
Median	25.46%	18.85%	8.01%	-9.59%	0.81%
STD	67.52%	49.13%	49.90%	142.15%	153.64%
Count	893	893	893	893	893

Table 3. Returns between 2020 & 2021 based on different categories of P/E

	Below -20	[-20, -5]	[-5, 0]	[0, 15]	[15, 25]	[25, 50]	Above 50
Average	21.35%	10.74%	-23.16%	44.62%	26.58%	28.15%	37.46%
Median	-0.1%	-12.42%	-44.27%	28.30%	18.41%	22.61%	19.34%
STD	99.47%	142.17%	98.78%	108.33%	49.64%	61.31%	111.69%
Count	484	561	668	1249	554	567	418

Table 4. Comparison of returns between 2019 & 2021 based on different categories of P/E

	2019 & 2020			2020 & 2021		
	[0, 10]	[10, 20]	[20, 30]	[0, 10]	[10, 20]	[20, 30]
Average	15.17%	2.36%	16.98%	50.74%	33.01%	26.06%
Median	-5.61%	-11.39%	1.64%	29.54%	24.25%	17.71%
STD	122.81%	63.93%	102.89%	131.6%	59.29%	64.66%

Table 3 summarizes the return performance of value stocks relative to six different groups of P/E ratios between 2020 and 2021. Through the comparisons between each group, P/E ratios ranging from 15 to 25 act the best with a standard deviation of 49.64% in terms of the corresponding lowest risk. From the perspective of average and median returns, the group varying from 0 to 15 surpasses all the remaining groups with a mean of 44.62% and a median of 28.3%, respectively. Moreover, the number of stocks within this group is also presented as constituting the largest proportion. Looking at the standard deviation of the six groups in this table, it indicates that stocks with P/E ratios below 10 are risker, whereby investing stocks with P/E ratios above 10 is relatively more conservative. In addition, the quantitative results in Table 4 exhibit the comparison of returns of three specific P/E groups during the periods of 2019 and 2021. These figures demonstrate that stocks with a P/E ratio between 10 and 20 can be potentially considered value stocks since many experts widely believe that value stocks have low P/E ratios [2]. Specifically, they were undervalued by the market at first due to the COVID-19 effect, but the stock returns soared in 2021. More importantly, stocks within this range are in line with the first quintile of value stocks mentioned above and obviously less risky than high P/E stocks. Thus, given that the most suitable P/E range of value stocks is between 10 and 20, the best choice to obtain higher returns with the least amount of risk for investors is to pursue value investing.

3.2 Growth, Profitability ratios & Value per Unit of Growth

Based on the key criterion for identifying value stocks, Builders FirstSource, a building materials company in U.S., outperforms better than the other value stocks in this sample. As shown in Table 5, the P/E ratio of Builders FirstSource is 10.11 in 2021, which is below the average (14.14) and median (10.11) but close to the boundary of value stocks (10). This implies that this company is possibly undervalued by the market, attracting investors to purchase it. Moreover, Builders FirstSource has excellent ratios in 2021 regarding its growth. Especially when compared to its four competitors in the same industry, the revenue and EBITDA CAGRs are 27.84% and 50.97%, respectively, which are the highest in this table regardless of sample and peer competitors.

Table 5. Indicators and comparisons between the building materials industry and value stocks

	P/E	Revenue CAGR (2015 ~2021)	EBITDA CAGR (2015 ~2021)	P/E / Revenue CAGR (PEG)	Gross Profit Margin in 2021	Gross profit / Assets
Builders FirstSource	10.11	27.84%	50.97%	0.36	32.16%	59.72%
Beacon Roofing	17.37	14.88%	21.8%	1.17	26.46%	31.64%
Masco	43.35	2.30%	6.26%	18.84	36.04%	54.13%
Trex	75.02	15.34%	21.41%	4.89	41.48%	53.94%
Owens Corning	9.49	6.83%	11.48%	1.39	31.74%	26.93%
Ratios from Value Stocks (P/E: 10 ~ 20)						
Average	14.14	5.92%	-3.35%	-1.74	51.75%	22.68%
Median	13.83	4.86%	6.34%	1.87	43.75%	17.31%

As for the profitability ratios, it is clear to observe that the gross profit margin (GPM) of Builders FirstSource is not the maximum value, whereas the asset turnover ratio (GP/A) ranks first, meaning that it can realize each dollar of assets to generate 59.72% of sales. Therefore, according to Fig. 1, it is worth noting that the revenue and EBITDA of Builders FirstSource in 2021 more than doubled compared to the previous year due to its strong profitability indicator. Additionally, the PEG ratio used to measure value per growth unit is 0.36, which is the lowest and far below the sample average and median. In this regard, it does not mean the figure is bad, as it is known that a company is undervalued with a PEG ratio lower than 1. Thus, Builders FirstSource gains the superiority of most of the valuation metrics compared to the competitors within the same industry and other value stocks, proving that implementing value investment by investing in this company is practical. The financial indicators of peer competitors shown in Table 5 reveal Masco, Trex, and Owens Corning are not value stocks simply in terms of their P/E ratios. However, most of them are not inferior in growth rates and asset turnover ratios, which are higher than the sample average and median.

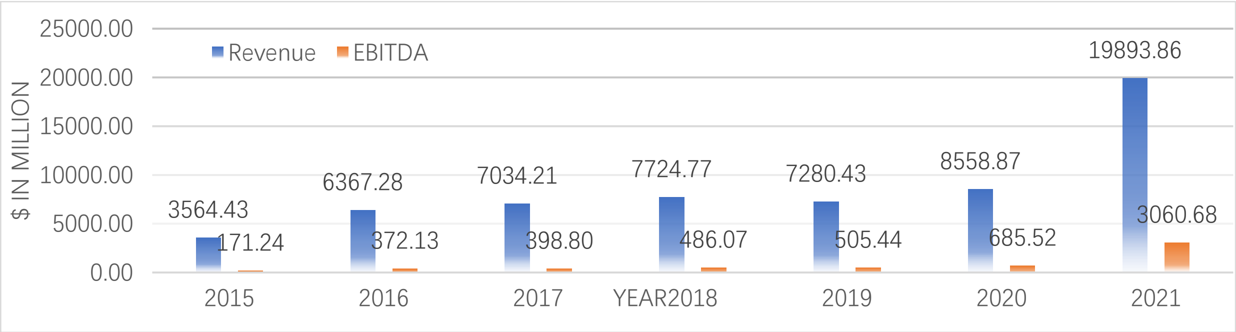

Figure 1. Builders FirstSource's Revenue and EBITDA between 2015 and 2021.

Specifically, the profitability of Trex is as excellent as Builders FirstSource, simply because it has a larger GPM of 41.48% and the GP/A ratio is close to Builders FirstSource, amounting to 53.94%. This can be explained that its profitability is attributed to the ever-increasing revenue and EBITDA curves from 2015 to 2021 (seen from Fig. 2 and Fig. 3). However, the highest P/E ratio of 75.02 reflects that Trex is possibly a growth stock, which does not conform with the goal of value investing. Looking at other peer competitors' revenue and EBITDA CAGRs, exclusive of Builders FirstSource and Trex, these indicators are not remarkable as their revenue and EBITDA curves experience a decline from 2018 to 2020 (refer to Fig. 2 and Fig. 3). Even though they rebounded and became profitable after 2020, the PEG ratios above 1 suggest that they were still overvalued by the market. Thus, similar to Trex, they do not meet the requirements of value investment as well. However, Beacon Roofing, one of the value stocks with a PEG ratio close to 1 and has the normal performance of valuation metrics, can be deemed as a competitive alternative to implement value investing.

Figure 2. Four Competitors' Revenue Curve between 2015 and 2021.

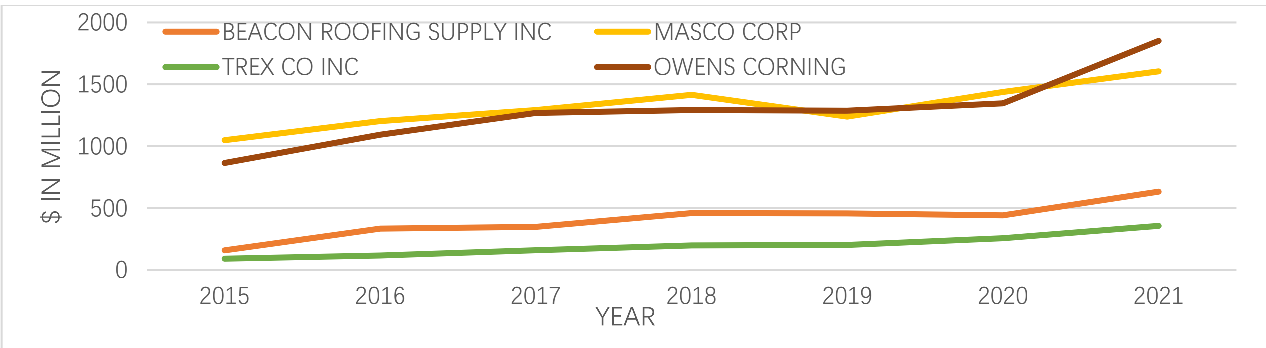

Figure 3. Four Competitors' EBITDA Curve between 2015 and 2021.

3.3 Suggestions

There are some suggestions that are applicable to different groups in the financial industry according to the results discussed above. For financial practitioners, it is advisable that they can add more indicators to analyze more accurately, such as Returns on Assets (ROA) and Returns on Equity (ROE). These are also termed as the profitability ratios that measure how attractive the investment is, and companies that keep a better profitability ratio will spur potential investors to make decisions [20]. Moreover, the application of the Price-to-Book ratio, which is the basic multiple for value investing like the P/E ratio, also has more explanatory power in predicting a company's future performance [21]. For investors who want to capture substantial returns in the stock market, they need focus on forming a portfolio before investing in value stocks, as it aims to diversify unsystematic risk and limit the losses that will occur in the future. Thus, investing directly in a certain value stock is unwise, even if it performs extremely well. In addition, for academics, further studies can be focused on utilizing other financial indicators to replace P/E ratio to screen out value stocks in different stock markets, so as to provide a convenient use for the real-world implementation of a value investment strategy.

4. Limitations & Prospects

The research method in this paper actually has deficiencies regarding the frequent use of the data that have not been noted. For example, the determination of the P/E range of value stocks has experienced rounds of selection as the information about a stock is incomplete. This implies that the small number of stocks excluded during this process may still affect the final quantitative results. Besides, as previously stated, due to the existence of mergers and acquisitions, some of the targets in this dataset that had excellent performance were acquired by other companies, causing them to disappear from the most recent data and reducing the number of companies that can be used to analyze value investing. Moreover, stock markets in different countries have their own criteria for identifying value stocks rather than employing a single financial indicator's performance, given that the analysis of the dataset is based on the companies listed in the U.S. The last limitation is that this method may fit the data well, but investors cannot just rely on this study of past stock data to make sound investment decisions, which will not ensure any future returns.

As growth stocks have outpaced their counterparts (i.e., value stocks), since 2016 [22], it is reasonable to reconsider the future of value investing, especially when the post-COVID-19 era is approaching. Some researchers believe that value investing will come back soon because investors need to assess valuation and scrutinize more about the business activities of desired firms due to ever-increasing interest rates and varying economic conditions [23]. However, despite the fact that value investment strategies are considered as appealing as they used to be (i.e., there is a strong possibility of outperforming in the market), an increase in the expected return of value stocks cannot guarantee that they will beat growth stocks in the following years [8].

5. Conclusion

In summary, this paper examines the current implementation of a value investing strategy based on different valuation indicators of the building materials industry in the context of the upcoming post-COVID-19 era. Specifically, for the purpose of analysis, Builders first Source together with its four peer competitors is selected as target companies, which are measured by the indicators chosen from growth, profitability and value per unit of growth, respectively. According to the results, the suitable P/E range of value stocks is from 10 to 20, and the corresponding first quintile explains that returns on value stocks underperformed before 2020 but have bounced back since 2021. Besides, in terms of this key criterion of distinguishing value stocks, companies within this range, which are characterized by consistent growth prospects, high profitability and a PEG ratio of 1, can normally outperform in the market irrespective of changing economic trends. On the other hand, growth stocks with high P/E ratios also have impressive achievements regarding profitability ratios. In addition, this study's findings provide a new idea that the classification of value stocks can be linked to one single valuation metric (i.e., the P/E ratio), which will help financial practitioners avoid complicated processes of identification. Nevertheless, this method needs researchers to add other indicators to ensure accuracy. In the future, it is advisable that further studies can be conducted on how to single out value stocks by using various indicators. Overall, these results offer a guideline for applying value investing strategy in thousands of companies listed in the U.S., but it should be noted that investments based on the analysis of outdated stock data will not generate any returns.

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