

VALUE INVESTING: EVIDENCE FROM LISTED CONSTRUCTION AND INFRASTRUCTURE SECTOR COMPANIES IN INDIA

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Abstract

Earning from the stock market investment is not an easy task for any investor. Due to high volatility, it is difficult to spot the correct time for entry and to make an exit from the stock market investment. Over a period of time, many investors and researchers have discovered few strategies to generate better return from the investment. One of the strategies is value investing. It refers to identify the potential stock for investment on the basis of price-to-equity (P/E) ratio. This paper is an attempt to verify appropriateness of value investing among the listed companies from construction and infrastructure sector in India. The data is collected for nine years from April 2011 to March 2020. The stocks are classified as value stock and growth stock on the basis of P/E ratio, P/B ratio. Total 648 monthly portfolios are created and monthly rebalancing is applied to compare the returns from value portfolios and growth portfolios. Risk adjusted returns are analyzed with the help of sharpe and trenyor ratio. The findings of the study are giving mixed results. The findings of the study are neither rejecting nor showing conclusive proof towards the presence of value investing in the sample data over a period of research. The probable reasons for failure of value investing are mentioned in the conclusion section of the paper. The paper is original work of the researcher and used new criteria of P/E ratio and PB ratio as weight to create the portfolio. The study will give deeper understanding about the investing pattern suitable in the stocks of construction and infrastructure sector companies in India.

Keywords: Value investing, Growth stock, Value stock, Construction, Infrastructure

JEL Classification: F65, G11, G14

1. Introduction

Over a period of time, investors have tried various strategies to earn higher and higher returns from the stock market investments. For this, numerous strategies such as active portfolio strategy, buy and hold portfolio strategy, Sharpe portfolio optimization, value investing, growth investing etc. are developed. Suitability and outcome of any investment strategy cannot be generalized but rather it depends on macroeconomic factors as well as few company specific variables. This paper is an attempt to verify the whether value investing works in Indian stock market or not, especially in construction and infrastructure sector? Value and growth investment strategies are tested by many researchers such as (Breen, 1968), (Flugel, 1968), (Basu, 1977, 1983), (Chan et. al, 1991), (Fama and French, 1992,

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1993 and 1998), (Lakonishok et. al, 1994), (Gregory et. al, 2001), (Cai, 1997), (Daniel and Titman, 1997), (La Porta, 1996), and (Jaffe et. al, 1989) across various stock markets in the world. Few studies such as (Breen, 1968), (Flugel, 1968), (Basu, 1977, 1983), (Jaffe et. al 1989), (Chan et. al, 1991) found that value stocks earn higher returns compared to growth stocks and thereby confirm the presence of value premium which makes it possible for the investor to conflict with the efficient market hypothesis.

Few studies like (Deb, 2012), (Tripathi and Aggarwal, 2018) have already tested value and growth investment approaches in Indian capital market but have produced mixed results. The present paper can be an extension to the earlier empirical evidences. To add value to the earlier researches, authors have used more comprehensive approach for data analysis. Unlike (Basu, 1977, Deb, 2012, Tripathi and Aggarwal, 2018) who used equal weighted portfolio in their studies, a new approach of P/E ratio and P/B ratio is used as weight to create the portfolios in the present study. Referring to the (Fama and French, 1992), (Deb, 2012) who used yearly rebalancing of portfolio. In the present study the author has tried for monthly rebalancing of the portfolio. This makes the research more robust in term of data analysis. The results of the research are in line with the some of international and Indian evidence which is discussed in analysis section. The findings of the paper do not support existence of value premium in the sample data during period of research. The limiting factor of the present study is that it is conducted for construction and infrastructure sector of Indian market. Therefore this sector specific study may not be generalized to the Indian capital market as a whole.

2. Review of Literature

The concept of value investing was put forward by Ben Graham and David Dodd in 1928. It was then critically evaluated and translated into a book titled security analysis in 1934. They argued that investor can generate good return if investments are based on qualitative and quantitative analysis. (Graham and Dodd 1934) In another publication by the same authors, they insisted on belief and temperament of investor to come out as successful value investor (The intelligent investor 1949). However, these books contain the findings based on research conducted on American companies only, which became major drawback of their research outcome. Therefore academicians and researchers across the globe have shown their interest to generalize the concept of value investing by conducting many studies like (Breen, 1968), (Flugel, 1968), (Basu, 1977, 1983), (Chan et. al, 1991), (Fama and French, 1992, 1993 and 1998), (Lakonishok et. al, 1994), (Gregory et. al, 2003), (Cai, 1997), (Daniel and Titman, 1997), (La Porta, 1996), (Jaffe et. al, 1989) in different geographies during different time period.

Stock can be divided into two categories based on the ratio values. (Fama and French, 1992; Lakonishok et al., 1994; Chan et al., 1991; and Ding et al., 2005). The categorization is based on price to earning (P/E) ratio, price to book value (P/B) ratio. Lower ratio values are considered as value stock and growth stocks carry high ratio values. This definition has been used to conduct the performance of both growth and value stock in most of major stock market in the world including US, Japan and India.

Value premium is the difference between the expected returns from portfolio having value stock and growth stock (Fama & French, 1993). In other study (Eakins and

Stansell, 2003) which spreads over 40 years of time span, found that value stock outperformed growth stock.

(Basu, 1977) studied the connection between NYSE traded stock performance and their price-earning (P/E) multiple. Their study was based on the outcome of analysis of 5 equally weighted portfolios created on 14 years data. The portfolios were re-ranked and rebalance annually. The study shows that low P/E ratio portfolio deliver 6 percent more yield than high P/E ratio portfolio

The US market witnessed consistent superior performance of value stock over growth stock in the 1998 and 1999. This fact again strongly recommended by Warren Buffett who became world's top richest investor by applying the concept of value investment.

In another important study by (De Bondt and Thaler, 1985) found that price to book ratio is effective indicator for stock's future performance. The findings of this study were further supported by (Fama and French, 1992). Further studies like (Capaul et. al, 1993) confirmed presence of value premium in the capital markets of France, Japan, UK, Germany and Switzerland. Their finding supported that value stock (low price-to-book, P/B) generated better returns than growth stock (high price-to-book) ratio.

Studies from emerging market such as (Kargin, 2002) studied the emerging market like Argentina, Brazil, Pakistan, Philippines, Taiwan, Thailand, Chile, Colombia, Mexico, Peru, Venezuela, India, Turkey, Hungary, Poland, Czech Republic, Romania, Sri Lanka, Indonesia, Korea, Malaysia, China, Greece, Russia, Slovakia, Israel, Egypt, Morocco, South Africa and Zimbabwe. The findings of the study confirm the superiority of value investing to generate additional returns over other investment strategies.

Since 1991, Indian economy witnessed many reforms to strengthen the nerve of Indian capital market to make them competitive investment destination at par with worlds leading stock markets. Reforms like establishment of Securities and Exchange Board of India (SEBI), abolishing Controller of Capital Issues in 1992, formation of credit rating agencies like CRISIL and setting up National Stock Exchange makes Indian capital market an attractive investment hub for global players. Therefore it is interesting to find out which investment strategies suits the investor to generate maximum return. Though comprehensive study can be conducted on various companies from different sector, this paper specially focus on construction sector companies only due to personal interest of the author.

3. Research Methodology

3.1. Sample Data

The construction and infrastructure companies listed on National Stock Exchange of India forms the sample size for this research. The construction and infrastructure sector is selected due to personal interest of researcher. The condition of availability of data pertaining to research variable during the period of research is applied to select any company as part of sample. Therefore number of companies forming the sample size varies every year. Maximum 172 companies are included as sample size in the year 2013 and minimum 156 companies in the year 2017.

3.2. Time Period

After financial crisis of 2008, the Indian economy witnessed stability in market by 2010. Thereafter slowly, the Indian economy experienced supportive political and

economic environment from the year 2011 onwards. Therefore period of study is selected from April 2011 to March 2020. This will make this research as recent research in this area. This time period is enough to come out with meaningful results to contribute new perceptions on ideas of value and growth stock.

3.3. Data Collection

This research is empirical in nature and based on the secondary data. The historical data in terms of financial variables like P/E ratio, P/B, beta of the stock, monthly return of stock forming part of sample is collected from Prowess data base maintained by Center for Monitoring Indian Economy (CMIE). Adjusted prices are taken so as to absorb the effect of dividend and other corporate announcement. Initially monthly data is obtained and converted into excel data sheet for further analysis. NIFTY index is used as proxy for market return. The required values of market return are also extracted for the CMIE database. T-bill returns are used as proxy for risk free returns. The yearly T-bill returns are obtained from tradingeconomics.com.

3.4. Research Methodology

The purpose of this research is to examine if value portfolio outperform growth portfolio in Indian Capital market in construction and infrastructure sector. The deductive approach is considered along with hypothesis testing to answer the research question. The collected sample data is divided into value, growth and neutral stock based on the value of P/E ratio and P/B ratio. Then the stocks are arranged in increasing order based on the value P/E ratio and P/B ratio separately. For every month of the every year six different portfolios are formed; three value portfolio and three growth portfolios. The three value portfolios differ with each other in terms of weight used. Portfolio one is based on equal weighted, portfolio two is based on P/E as weighted and portfolio three is based on P/B as weighted. Similarly three growth portfolios are formed using three weights as mentioned above. Table 1 indicates the details of six portfolios created for every month of the every year.

Table 1: Types of portfolio

For every month of the every year	Value Portfolio	Portfolio 1	Equal Weighted
		Portfolio 2	P/E as Weighted
		Portfolio 3	P/B as Weighted
	Growth Portfolio	Portfolio 4	Equal Weighted
		Portfolio 5	P/E as Weighted
		Portfolio 6	P/B as Weighted

Most of the earlier research on same topic used equal weighted portfolio. In this research paper researcher proposed to use new concept of P/E ratio and P/B ratio values as weighted. Thus total 648 monthly portfolios (9 years * 12 months * 6 portfolio for each month) are formed for the period of research out of which 324 are value portfolios and 324 are growth portfolios. Out of 324 value portfolios, 108 are equally weighted monthly value portfolios, 108 are P/E based monthly value portfolios and 108 are P/B based monthly value portfolios. Similarly, out of 324 growth portfolios, 108 are equally

weighted monthly growth portfolios, 108 are P/E based monthly growth portfolios and 108 are P/B based monthly growth portfolios.

For value portfolio based on P/E, stocks are arranged in the increasing order of P/E ratio. Out of sample size, the first 25% (Q_1) of the stock are considered as value stock. The last 25% (Q_4) of the stock having highest value of P/E ratio are considered as growth stock. Remaining 50% of the sample are considered as neutral and excluded from the study.

For value portfolio based on P/B, stocks are arranged in the increasing order of P/B ratio. Out of sample size for each month, the first 25% (Q_1) of the stock are considered as value stock. The last 25% (Q_4) of the stock having highest value of P/B ratio are considered as growth stock. Remaining 50% of the sample are considered as neutral and excluded from the study. This bifurcation of stock and portfolio creation is in line with method used in earlier research such as (Fama and French, 1998). In each of the monthly portfolio, value or growth three parameters are used to decide the weight of each stock in the portfolio. First all stock are equally weighted in the portfolio, in the second portfolio, their weightage in the portfolio is considered on basis of P/E ratio and in the third portfolio, their weighted is considered on the basis of P/B ratio.

According to (Fama and French, 1998; Lakonishok et. al., 1994) the portfolios are rebalanced every year at the beginning of year due to change in values of financial ratio. However, in this research, author wants to test the effect of frequent rebalancing in portfolio management used by the investor. In practice it is difficult to hold on one portfolio for a year without rebalancing. Due to availability of monthly data for all research variables from reliable secondary sources, and use of MS Excel, author proposed to go for monthly rebalancing of portfolio. This makes the research paper more vibrant and robust in terms of analysis of data.

The portfolio returns are adjusted for risks in order make outcome of the research more meaningful (Bodie et. al., 2011). The risk adjusted returns are calculated using sharpe ratio (Sharpe, 1966, Patari & Leivo 2009, Gregory et al 2003). Positive sharpe ratio represents portfolio outperforms the market index. The negative value of sharpe ratio represents risk free investments are better than stock portfolio. NIFTY index is considered as benchmark to calculate the market return. Yearly returns of Treasury bill or money market is considered as risk free rate of return.

Hypotheses are developed to test whether value stock portfolio outperforms growth portfolios during research period. Each hypothesis contains null hypothesis and alternate hypothesis. Based on the skewness and kurtosis value it is decided to apply non-parametric test to test the hypothesis with Mann-Whitney U test using SPSS. The hypotheses developed are as under:-

*Ho - The returns from value portfolio based on equal weighted are **not** higher than the returns of growth portfolio during 2011-12 to 2019-20*

H1 - The returns from value portfolio based on equal weighted are higher than the returns of growth portfolio during 2011-12 to 2019-20

*Ho - The returns from value portfolio based on P/E ratio are **not** higher than the returns of growth portfolio during 2011-12 to 2019-20*

H1 - The returns from value portfolio based on P/E ratio are higher than the returns of growth portfolio during 2011-12 to 2019-20

*Ho - The returns from value portfolio based on P/B ratio are **not** higher than the returns of growth portfolio during 2011-12 to 2019-20*

H1 - The returns from value portfolio based on P/B ratio are higher than the returns of growth portfolio during 2011-12 to 2019-20

4. Empirical Findings

4.1. Descriptive Statistics

The descriptive statistics about the monthly return of the value and growth portfolio is given in table 2. The portfolio returns are calculated as product of stock return and their weight in the portfolio. During the research period of April 2011 to March 2020, value portfolios based on equal weight generated positive return for 63 months and negative returns for 45 months. Similarly value portfolios based on P/E ratio as weight generated positive return for 59 months and negative returns for 49 months and value portfolios based on P/B ratio as weight generated positive return for 55 months and negative returns for 53 months. Growth portfolios based on equal weight generated positive return for 73 months and negative returns for 35 months. Similarly growth portfolios based on P/E ratio as weight generated positive return for 69 months and negative returns for 39 months and growth portfolios based on P/B ratio as weight generated positive return for 66 months and negative returns for 42 months. In case of value portfolio, equal weighted portfolio generated maximum positive returns followed by P/E as weight and then P/B as weight. Growth portfolio also follows the same trend showing ability of equal weighted portfolio to beat other parameters used in portfolio construction.

4.2. Value premium

Value premium is the difference between the expected returns from portfolio having value stock and growth stock (Fama & French 1993). Table 3 shows the value premium generated by the monthly portfolios during the period of research. The number of months indicates value premium generated out of 12 months in a year. Only positive values are reported in the table. Blank cell represents growth stock outperformed the value stock.

Table 3: Value Premium under various categories

	Value Premium		
	Equal Weighted	PB Weighted	PB Weighted
	Number of months	Number of months	Number of months
2011-12	---	1	---
2012-13	5	4	4
2013-14	2	3	3
2014-15	3	4	2
2015-16	---	1	---
2016-17	---	---	---
2017-18	4	2	4
2018-19	4	3	3
2019-20	3	2	2
Total	21	20	18

(Source-Authors compilation from MS excel worksheet)

Year	Table 2. Monthly Portfolio Returns											
	Value Portfolio						Growth Portfolio					
	Equal Weighted		PB Weighted		Equal Weighted		PB Weighted		Equal Weighted		PB Weighted	
	Number of Months	Negative Returns	Number of Months	Positive Returns	Negative Returns	Number of Months	Positive Returns	Negative Returns	Number of Months	Positive Returns	Negative Returns	Number of Months
2011-12	8	4	7	5	6	6	7	6	11	11	1	10
2012-13	6	6	6	6	7	7	7	5	9	10	2	9
2013-14	6	6	4	8	4	4	4	8	9	3	4	8
2014-15	7	5	8	4	5	5	5	7	10	2	5	9
2015-16	8	4	7	5	8	8	7	4	9	3	6	7
2016-17	5	7	9	3	7	7	5	5	8	4	7	8
2017-18	6	6	4	8	6	6	6	6	7	5	7	4
2018-19	8	4	5	7	8	8	4	4	6	8	4	6
2019-20	9	3	9	3	4	4	4	8	4	7	5	5
Total	63	45	59	49	55	53	73	35	69	39	66	42

(Source-Authors compilation from MS excel worksheet)

Year	Table 4. Risk Adjusted Returns					
	Sharpe Ratio			Trenyor Ratio		
	Value Portfolio	Growth Portfolio	Value Portfolio	Growth Portfolio	Value Portfolio	Growth Portfolio
2011-12	+ (1.20)	+ (0.90)				
2012-13						
2013-14		+ (1.05)				
2014-15						
2015-16						
2016-17	+ (2.26)	+ (1.10)	+ (1.16)			
2017-18	+ (1.80)	+ (1.20)	+ (1.10)			+ (0.65)
2018-19	+ (2.10)	+ (1.11)	+ (1.00)			+ (0.75)
2019-20		+ (1.00)				+ (0.55)
Total	4*	6*	3*	3*		3*

(Source-Authors compilation from MS excel worksheet, +/- sign indicates nature of return and fig. in bracket is returns earned expressed in%)

*no. of times positive return generated by the respective portfolio out of total nine years

4.3. Risk Adjusted Return

The returns of both type of portfolio are risk adjusted to find out how well performed. The Sharpe ratio and Treynor ratio are used to evaluate the risk adjusted performance of the value and growth portfolios and results are reported in table no. 4 respectively. Monthly portfolio returns are converted into annual returns. The sharpe and treynor ratios are calculated for annual returns.

Higher and positive ratio indicates portfolio outperform the market index. For value portfolio, sharpe ratio is positive for 4 years out of total 9 years (from 2011 to 2020) with the highest value of 2.26% observed in the year 2016-17. Similarly, treynor ratio is positive for 3 years with highest value of 1.16% observed in the year 2016-17. For growth portfolio, sharpe ratio is positive is 6 years with the highest value of 1.2% in the year 2017-18. And treynor ratio is positive for 3 years with highest value of 0.75% in the year 2018-19. The difference between sharpe ratio of value and growth portfolio during the year indicate value portfolio is good investment option for that year. Only positive values are reported in the respective year.

4.4. Hypotheses Testing

The hypotheses as mentioned in the research methodology are tested for their significance. Testing of hypotheses require an appropriate test. The normality of data is tested using skewness and kurtosis. The values of skewness (0.867) and kurtosis (3.214) are not within acceptable range and thus conforming data is not-normal.

Therefore hypotheses are tested using non-parametric tests. The Mann-Whitney U test is used to test the significance of the hypothesis. The values of SPSS outputs are given the table no. 5, 6 and 7. For the results to be significant, the value of p- needs to be as low as possible (preferably less than 0.05). A look at the p-values in all the three tables gives higher values than the desired value of 0.05, which indicate that the difference between two portfolio are statistically not significant.

Table 5: p value and hypothesis testing of equal weight portfolio

	Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Portfolio Based on Equal Weight	Mann-Whitney U	84	84	94	80	77	65	66	88	90
	Wilconxon W	162	162	172	158	155	143	144	166	168
	p-value (2 tailed)	0.488	0.515	0.204	0.644	0.77	0.686	0.729	0.356	0.298

Table 6: p value and hypothesis testing of equal weight portfolio

	Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Portfolio Based on P/E Ratio	Mann-Whitney U	84	84	94	80	77	65	66	88	90
	Wilconxon W	162	162	172	158	155	143	144	166	168
	p-value (2 tailed)	0.468	0.525	0.204	0.614	0.767	0.616	0.769	0.326	0.218

Table 7: p value and hypothesis testing of equal weight portfolio

Portfolio Based on P/B Ratio Weight	Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
	Mann-Whitney U	84	84	94	80	77	65	66	88	90
	Wilconxon W	162	162	172	158	155	143	144	166	168
	p-value (2 tailed)	0.458	0.525	0.294	0.634	0.707	0.666	0.789	0.356	0.298

(Source-Table no. 5, 6 and 7 SPSS output, relevant values only)

The p-value for equal weight based portfolio in the year 2011-12 is 0.488 which means the difference between two portfolio returns appears 48.8% of the times by chance. The similar interpretation can be taken for the remaining years. The highest value is in the year 2015-16 and the lowest value is in the year 2019-20 for equal weight portfolio.

5. Discussion and Conclusion

The very famous (Fama, 1970) established Efficient Market Hypothesis (EMH) claiming stock prices are corresponded to their intrinsic values and therefore it is impossible to beat market return consistently. In the present study, the risk adjusted return for value or growth portfolio are less than market return. Therefore the claim of EMH is supported by the data during the period of research. One of the pioneer studies (Kahneman and Tversky, 1973) contended that irrational investor will put efforts to carry the mismatch of stock market price and its intrinsic value. If it is accepted then portfolios constructed using low P/E or Low P/B or any other measure will not produce any differential return during investment period. In the present study, the difference between the value and growth portfolio is marginal thereby making it difficult for the investor to the superiority of either value or growth portfolio strategy. The results of the paper are not in line with Basu (1977), Lakonishok et al (1994), Fama and French (1998) where the value stock outperformed the growth stock. Therefore, in the opinion of the author, bifurcation of stock on the basis of value or growth is not enough to generate the better return. Investors need to consider external factors influencing market return as well during the investment horizon. However the findings of the present study support the Zhang (2005) who claimed value stocks are most of the times come from distressed companies which carry more risk and uncertainty with regards to performance. Therefore investor required more return from value investment. As seen in Indian situation, most of the construction and infrastructure companies are under heavy burden of debt, their financial distress situation failed to meet the investors' expectation. The results we get from the hypothesis testing are insignificant as in most of cases the p-value is greater than 0.05. The findings of hypothesis testing mean that neither growth not value portfolios can be accorded the superior status. The mixed results are clear indication about presence few other factors influencing the stock performance and it will be interesting to find it out in further research. Relating the value investing to the financial crisis 2008, central banks in most of the countries used quantitative easing to keep interest rates low. However, low interest rates are not perpetual phenomenon, and in future the process will blow up to witness the rise in interest rate and inflation. In such scenario, the value investor may find themselves placed better than other investor. The market efficiency in terms of available

and access to information has also changed over last few decades. Ben Graham when applied the concept of value investing during 1960, the access to information was only hard copies of annual reports. The superior information was available with very few investors and thus finding value stock was game for very few investors. Today, when secondary reliable data is available with every investor and professional managed database are available, investors have to explore the new ways to identify the value stock. May be the investment world has become flatter and demanding innovative ideas for spotting eligible stocks. The balance sheet based approach to spot the value stock needs change. The investors have to consider use of technology by the companies in their operations as the key driver to assess the value as most of the companies are technology driven in today's environment.

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