



A STUDY ON APPLYING VALUE AND GROWTH INVESTING MECHANICS TO NIFTY 500 STOCKS IN VARYING MARKET CONDITIONS

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Abstract

This study investigates the efficiency of value and growth investment strategies in the NIFTY 500 index under different market circumstances. Objectives include distinguishing between value and growth companies based on basic qualities, analysing their previous performance, and creating portfolios tailored to different market conditions. Hypotheses are developed to assess the relative performance of growth and value equities in both bullish and negative markets. Methodologically, the study begins with the selection of stocks from the NIFTY 500 index and the accumulation of fundamental data across several years. Statistical tests, including as the Student's t-test and the Mann-Whitney U test, are used to analyse daily returns and compare the performance of value and growth companies under various market situations. Furthermore, corporations are assessed using valuation measures to identify top performers, and weighted portfolios are created for various market situations. This study aims to provide insights into the efficacy of value and growth investing strategies in navigating the complexities of the Indian equity market, with valuable implications for investors and portfolio managers looking to optimise their investment decisions in the face of market volatility.

Keywords: Value investing, Growth investing, NIFTY 500, Market conditions, Portfolio construction, Investing Strategy.

1. INTRODUCTION

Value investing, a method popularised by notable investors such as Benjamin Graham and Warren Buffett, focuses on spotting cheap stocks in the market. Practitioners of this method feel that there are numerous possibilities to identify equities whose prices do not adequately represent their true value. "It's kind of like looking for buried treasure," says Stephanie Roberts, a financial counsellor in Albany, New York.

In essence, value investing stems from the teachings of Benjamin Graham and David Dodd at Columbia Business School in the late 1920s and early 1930s. It emphasizes buying securities that appear undervalued based on fundamental analysis. Notable proponents of value investing, such as Warren Buffett, advocate for purchasing stocks at prices below their intrinsic value, a concept Graham referred to as the "margin of safety." Early opportunities identified by Graham and Dodd included stocks trading at discounts to book value, high dividend yielders, and those with low price-to-earnings and price-to-book ratios.

On the other hand, growth investing focuses on identifying stocks with the potential for significant returns by outpacing the market. Investors following this strategy seek companies experiencing rapid growth and offering the prospect of long-term capital appreciation. These companies often reinvest earnings into expansion rather than paying dividends, and they may operate in burgeoning industries or markets with innovative technologies and services (*You Need to Know This About Growth Investing Strategies*, n.d.)



Growth investing holds significant appeal for numerous investors due to its potential for remarkable returns, provided the companies involved achieve success. However, these companies are often untested, leading to relatively high levels of risk. Investors pursuing growth opportunities typically seek out firms operating in rapidly expanding sectors or markets, where novel technologies and services are emerging. They aim to generate profits primarily through capital appreciation upon selling their shares, rather than relying on dividends during ownership. Most growth-oriented companies reinvest their profits into further business development rather than distributing them to shareholders. Typically, these entities are small, fledgling firms with promising prospects, sometimes newly listed on the stock exchange. The underlying belief is that these companies will thrive and expand, leading to increased earnings or revenues and ultimately driving up stock prices. Consequently, growth stocks often command high price-to-earnings ratios, as they may currently lack earnings but are anticipated to generate them in the future. These firms are often characterized by their youthfulness and potential for growth, which may attract investors seeking substantial returns (*Growth Investing: Overview of the Investing Strategy*, n.d.)

It is a common belief among investors that value stocks tend to outperform growth stocks. This was also one of the findings of the notable Fama-French Model where the HML (High Minus Low) factor accounts for the difference in returns between the value stocks and the growth stocks. The model argues that companies with high Book-to-market ratios outperform those with a low Book-to-Market ratio. Now that people know that value stocks outperform growth stocks, the next step shifts to focusing on identifying the value stocks and growth stocks. One strategy for selecting good value stocks is the Piotroski F score. Financial Statements are used to identify fundamentally strong companies (*Value Investing with Piotroski. The Use of Historical Financial... | by Christian Bernecker | Medium*, n.d.). The composite F-score, derived from nine fundamental signals, can range from zero to nine (higher the better). A similar strategy to Piotroski's F-score is Mohanram's (2005) G-score strategy. Instead of focusing on value stocks (high book-to-market firms), Mohanram investigates if fundamental analysis of growth stocks (low book-to-market firms) could generate excess returns (Bülow, n.d.). The G-score is a way to separate the winners from the losers. This score, which ranges from 0 to 8, measures the eight attributes he found led to better future performance.

Financial Statement Analysis, i.e. Fundamental Analysis, is a crucial tool to assess and predict the performance of a company. Value stocks are often ones that are overlooked, thus causing an absence of coverage by analysts and stock recommendation channels. Therefore, financial statements are the most reliable and easily available source of information on these companies (Piotroski, 2000). A core source of value for an equity investor is correctly forecasting a company's earnings and performance, which can be quantified through analysis of fundamental factors. Financial statements can be used to construct a set of financial factors that can be used to assess current earnings, as well as anticipate future changes in financial performance (Mikiharu Noma, 2010). Fundamental variables (like Return on Capital Employed, Earnings per Share, etc.) tell an investor how efficient a company is in terms of its operations, as well as its financial position.

Factors based on which fundamental analysis is carried out have certain benchmark values, above or below which values are considered efficient or inefficient. A value investor looks for good fundamental factors, at reasonable valuation multiples. A fundamental variable combined with a market variable provides a valuation multiple. Valuation multiples indicate what is the intrinsic value of the company, versus what the market is ready to pay. Valuation multiples, like price-to-book ratio, price-to-earnings ratio, dividend yield, price-to-cash flow, etc. can also act



as a source to assess the relative value (Piotroski & So, 2012). Valuation multiples help an investor compare a company with its group of peers across the industry. Valuation multiples, thus acting as a measure of market versus intrinsic value and relative value, become important to predict future stock returns.

Value investing is characterized by investing in low-price/Book or Price/Earning multiple firms. Piotroski investigates value stocks and learns that the use of historical data and straightforward accounting-based fundamental analysis techniques can significantly improve profits on investments in low-price-to-book firms (Wayne Guay, 2000). On the other hand, a growth stock sells at a high price-earnings ratio. This is because investors are ready to pay a price determined by future earnings growth that the company has rather than by past or current earnings (Jenks, 1947). Recognition of growth stocks has no simple method or formula. Factors like 1) A strong management team that prioritizes depth and breadth across all key functional areas; 2) A product or service with above-average growth potential, ultimately assessed in terms of profitability; 3) A well-crafted business plan with specific goals for the near and intermediate terms; 4) Sound accounting and sufficient financial resources to carry out the plan are strong signals for growth stocks (John R. Andrews, 1970).

Historically it has been observed that High B/M, E/P, or C/P stocks have higher average returns than low B/M, E/P, or C/P stock (Eugene F. Fama and Kenneth R. French, 1999). Value investing, the art of finding undervalued gems, has constantly evolved since its inception. Initially focused on tangible assets like net current asset value, it incorporated qualitative factors like growth potential and management quality. The growth of "deep value" and contrarian bets signalled another transition. Despite being challenged by the IT boom, value investment has evolved with quantitative screening and a concentration on intangible assets. Today, it acknowledges ESG considerations and the impact of technology, guaranteeing its relevance in a changing market. Growth investing, long focused on "glamour stocks" with high P/E ratios, has shifted substantially. It began by focusing on high-growth industries, but then switched to long-term competitive advantages and responsible management. The technology boom and crash underscored the importance of rigorous risk management. Today, growth investors look for firms with disruptive potential in themes such as renewable energy and artificial intelligence, as well as ESG aspects for long-term sustainability. As markets shift, the emphasis is on finding creative organisations with great leadership and agility. Quantitative analysis is useful in identifying attractive development possibilities. Value investing, formerly the king of Indian markets, is known for finding out discounted jewels, but it has declined since 2007. Studies such as "The India Value Investor" demonstrated its previous supremacy, with an 18% annualised return compared to growth's 15%. However, the rising economy has spurred the emergence of technology and growth industries, tempting investors with the promise of large future revenues. Between 2007 and 2022, the Nifty 50 Growth index outperformed the Value index by more than 200%.

Low interest rates favoured tech-heavy growth, but several value businesses underperformed owing to poor growth and governance difficulties. However, with increasing interest rates and fears of a tech bubble, some experts anticipate a value renaissance. Undervalued jewels in financials and industrials may entice investors seeking relief from strained prices in growth sectors. In contrast, growth investment has been a rollercoaster ride in India. It had a spike after 2007, owing to high economic development, cheap loan rates, and technology improvements. Investors flocked to firms with great growth potential, scalable business strategies, and good leadership, resulting in a huge outperformance by the Nifty 50 Growth index over the Value index.



Key drivers of successful growth investments included consistent high earnings growth, scalable business models, and visionary leadership. However, concerns exist about stretched valuations in some sectors, potential volatility, and overdependence on specific sectors like technology (*Growth Investing In India: A Quantitative Approach* » *Capitalmind - Better Investing*, n.d.)_Prominent investors including Peter Lynch, Kenneth Fisher, Warren Buffett, Bill Miller, and others have outlined the fundamentals of value investing. They search for cheap stocks and try to profit from a potential return to the mean by going through financial statements. The well-known value investor's core tenets include “Buy Businesses Not Stocks, Love the Business You Buy Into, Find Well managed Companies, Don’t stress over-diversification, etc.” Value investing is a strange mix of common sense and contrarian thinking. While most investors can agree that a detailed examination of a company is important, the idea of sitting out a bull market goes against the grain (*Value Investing Definition, How It Works, Strategies, Risks*, n.d.)

2. LITERATURE REVIEW

Identifying the superior investment strategy between value and growth stocks has been much of a debate for a long time, with research originating from the 1960s and still providing multiple new inputs with each passing year. Investors must understand that rather than identifying one strategy to use throughout their horizon, they should be open to using both strategies depending on the market scenario. Elaborating on this notion, it was found that Value stocks were less sensitive to major stock market declines than growth stocks and that they outperformed the market as well as growth portfolios during the market declines (Folkinshteyn et al., 2016). However, there were some contradictory studies about the subprime crisis. One paper suggested that there was no statistically significant difference in the performance of value and growth stocks during the financial crisis of 2007-2010 (Hoekjan, 2011). Contradicting this finding, broader research of more countries and markets revealed that Value stocks outperformed growth stocks before and during the subprime crisis where 7 countries were studied. The paper also suggested that investor sentiment is more significant when value stocks outperform (Neves et al., 2021).

Various works have been brought to light that have established ways in which value and growth stocks can be identified. One of the seminal works in the field, a paper from 1968 discussed that a company with high projected earnings is to be held for a long time if it is enjoying the benefit of its innovation (Molodovsky, 1968). The stock was trading at a high premium due to its forecasted earnings and hence was identified as a growth stock. Similar principles apply in current times as well. Studies of stock returns from 1983 to 1987 showed that growth stocks only lagged behind value stocks only after a period of 5 years and that they had outperformed value stocks over a 14-year plus period (Beneda, n.d.).

Value stocks became increasingly attractive after the work done by Fama & French and since then have set up the entire field for further research and scrutiny (Fama et al., 1992). Arguments were made that cognitive biases influenced investor behavior at the core of the returns to value investing (Lakonishok et al., 1994). A year later, an in-depth study suggested that such a bias could not explain the varying returns of value and growth stocks (Chan et al., 1995).

Value stocks on the other hand are much easier to identify due to the availability of fundamentals of each company for all the investors. A host of factors from the financial statements can help investors generate superior gains as the markets initially underreact to historical information (Piotroski, 2000).



The validity of the Piotroski F-Score has been tested in various conditions and back-tested by researchers across the globe. Researchers find that adding the F-score as an explanatory variable in the regression analysis along with Price-to-Book, momentum, equity offerings, and size only improved the model, this model was used to construct a market-neutral portfolio by buying high F-Score and shorting low F-Score growth stocks (Mohr, 2012). A timeframe of 2000-2018 in some developing countries and developed European countries showed that high F-score firms outperform low F-score firms by at least 10% per year and that its predictive power is preserved in all size segments (Walkshäusl, 2020).

Research conducted by Scott Bauman and Robert Miller in 1997 used cash flow per share as a measure of value and created portfolios based on market prices and specific criteria for the division into value and growth stocks. They concluded that high-priced stocks with high past EPS growth rates had negative earnings surprises and that value stocks perform favorably compared to growth stocks (Scott Bauman & Miller, 1997). The researchers then continued their research and explored the field further with a work published in the subsequent year, where they studied the performance of the stocks in various markets across different investment strategies. There was a use of the Price to Book criterion to assign stocks to quartiles in each country and used 12-month holding-period returns instead of cumulating monthly returns (Bauman et al., 1998).

After another year of research, they arrived at the same conclusions where value stocks outperformed growth stocks in various international stock markets. This conclusion was supported by Salim (2008) where empirical tests show undervalued value stocks outperform both value and growth strategies and that earnings-per-share momentum has a positive effect on undervalued value stocks (Chahine, 2008). The norm in research that value stocks have performed better than growth stocks was supported by stochastic dominance tests on a small sample which found no evidence against value stocks dominating growth stocks over the full sample periods (Abhyankar et al., 2008).

Research in emerging markets of 2008 also suggests that portfolios classified by price-to-book yield higher returns than other multiples making a case for value stocks over growth stocks using a CAPM regression model (Ngcongo, 2008). A recent finding indicates that there is no significant difference between growth portfolios and market portfolios which indicates the existence of a value premium (Araştırmalar et al., 2022).

A study on time-varying risk patterns of value and growth stocks identified that conditional market betas of value stocks covary positively with expected market risk premium, hence making Value stocks riskier than growth stocks in bad times and growth stocks riskier than value stocks in good times (Petkova & Zhang, 2005). Further research on the risks of the two types, a concept known as value trap was identified where buying 'value' companies with low multiples may be risky, and assessing the risk in buying Earnings-to-Price and Book-to-Price helps avoid this value trap (Penman & Reggiani, 2018).

The review provides an interesting insight into the different methods and models created by researchers while examining value and growth stocks. Multivariate and time series regression analysis is the most common practice for testing the data once they have been sorted into value and growth. A new component called substantial growth (sg) was found to be highly significant, both statistically and economically, and suggests that growth stock returns are even lower when 'sg' is exploding (Taussig, 2022). The regressions may be run on all kinds of data and may even have separate regressions for each month or conduct a holding period return regression.



Similarly, a multi-national study from 1981 to 1992 using a covariance analysis suggested that a 100% value tilt would be desirable for maximum before-tax expected excess return per unit of risk, and a strategy without growth stocks could substantially improve overall performance (Capaul et al., 2016).

A non-linear PSTR (Panel Smooth Transition Regression Model) was found to be more effective than other models from 1999 to 2008 in analyzing the transitional behavior of value and growth stocks (Chiang, 2016). An Arellano and Generalized Methods of Moment (GMM) model used on the Nigerian Stock Market data suggested that all rational investors would prefer low-priced Value Stocks for higher returns (Akinde et al., 2019).

A critical analysis of the field of research has posed several limitations in the studies previously conducted. It is one of the objectives of this paper to address these limitations and provide valuable input to the field. There have not been studies focused on the Indian markets across different market scenarios. Studies have been conducted for the US, Japan, and Malaysia markets where value stocks have high financial leverage (Chen & Zhang, 1998). Studies also are conducted for Hong Kong markets where value stocks have outperformed growth stocks before and after the Asian financial crisis and the return spread was larger in the small firm size group (Bo & Krige, 2008). Research in Euro-Markets between 1988 to 2003 also suggested a strategy of selling overvalued growth stocks and buying undervalued value stocks for superior returns (Chahine, 2008). The studies encourage further research to be done to help decide between a growth or value strategy in different market conditions in the Indian markets over the last few years. The Indian market has seen various ups and downs in the recent past, and determining which stock to pick has become increasingly important for investors.

3. RESEARCH GAP

The paper has a wide range of significant research gaps. First, there is a sizable vacuum in the existing literature due to the paucity of earlier studies conducted in the Indian context, which may limit our understanding of market dynamics and Indian-specific behaviors. Moreover, the paucity of research conducted in the post-COVID period ignores the pandemic's possible effects on value and growth stock dynamics, which is significant considering the extraordinary shifts witnessed in international markets. Furthermore, the research's broad scope—which includes the whole NIFTY 500 index—highlights the need for a thorough examination that considers the market's depth and breadth. It may be possible to gain important insights into the differences between value and growth stocks in the Indian market by carefully examining and analyzing these gaps.

4. RESEARCH OBJECTIVE AND HYPOTHESIS

Objectives:

1. To categorize the Nifty 500 Index into Value and Growth Stocks by analyzing their company's fundamentals like earnings, sales, book value etc.
2. To evaluate the differences in the performance of Value and Growth stocks over the last 10 years in different business cycles.
3. To develop portfolios for different business cycles as per the division of value and growth, and identify the risk, returns and weights for Minimum risk and Maximum Sharpe Ratio.

Hypothesis:

- H1:** The Indian Stock market represented by NIFTY 500, the hypothesis is that growth stocks, recognized by higher price-to-book ratios and higher valuation multiples, should outperform value stocks in a bearish market in terms of returns among various market conditions as demonstrated by the analysis of fundamental characteristics.
- H2:** The Indian market represented by NIFTY 500, the hypothesis is that value stocks, recognized by lower price-to-book ratios and lower valuation multiples, should outperform growth stocks in a bullish market in terms of returns across various market conditions as evidenced by the analysis of fundamental characteristics.

5. RESEARCH METHODOLOGY

The research into the field of growth and value stocks begins with identifying the stocks to run the analysis on. NIFTY 500 was a diverse index with a mix of value and growth stocks due to different market capitalizations. Next, the data for each company and sector was collated which consisted of the market prices, market capitalizations, P/E, P/BV, P/S, EV/EBITDA (2013-23) of each company and industry for 3 time periods- 2013, 2018, and 2023.

It was imperative to decide the relevant metric to divide the companies between value and growth. Upon dividing the companies into their sectors, previous research and financial articles helped in deciding the relevant valuation ratio for each sector (Choice between – P/E, P/BV, P/S, EV/EBITDA).

Once the companies were divided into value and growth for the 3-time points (2013, 2018, and 2023), the companies that were not listed for all 10 years were removed from the study to offer superior results and a comprehensive understanding.

The final list of companies was then used to compare returns of Value vs. Growth stocks historically in different market conditions. After segregating the companies into value and growth companies, Daily Closing Prices for each company were calculated for the period 2013 to 2023. The Closing prices were then used to calculate the Daily returns for each stock which was used to calculate the average daily returns.

These daily returns were further annualised to run an Independent Samples test, namely, Students t test and Mann Whitney test under different market conditions to determine which category of stocks (value or growth) provide superior returns in such different market conditions.

The companies were later ranked on the basis of their scores of the Valuation ratios (P/E, P/BV, P/S and EV/EBITDA) to determine the top ranked growth and value stocks. Once the study identified the superior stocks, it was then used to create weighted portfolios for the current market and create different scenarios for each market condition.

6. DATA ANALYSIS AND RESULTS**6.1 Sectoral Division- Metrics Used**

The study divides all the NIFTY 500 Companies into a total of 21 sectors. Using various sources and references of valuation reports, each sector has been divided into growth and value stocks based on the relevant valuation ratio metric. The study uses the ratios of P/E, P/BV, P/S, and EV/EBITDA. Table 1 summarizes the list of sectors and the metrics used for their division.

Table 1: Sectoral Metrics Used

Sr. No.	Sector Name	Valuation Ratio Used	Reasoning
1	Automobile and Auto Components	P/E	While P/E and P/BV are both used for the valuation of auto sector stocks, P/E is a better metric as they focus on the earnings potential and that asset-heaviness is not as crucial as other sectors like the financial sector (<i>Auto Stocks Analysis: Which Valuation Ratios Can Help Identify the Best Auto Stocks - The Economic Times</i> , n.d.).
2	Capital Goods	P/E	The capital sector is much like the auto sector in terms of functioning, with a focus on earnings potential, hence the PE ratio is used here as well.
3	Chemicals	P/E	Due to the revenue stream consistency for chemicals companies, the P/E is the best metric to value the current as well as the future earnings expectations of stocks.
4	Construction	EV/EBITDA	EV/EBITDA ratio is preferred over other metrics like P/E for valuing construction companies, as it better accounts for their capital-intensive nature and provides more meaningful comparisons across the industry (<i>The Power of EV/EBITDA Ratio: A Guide to Understanding and Using This Valuation Ratio - GETMONEYRICH</i> , n.d.).
5	Construction Materials	P/E	For the construction materials industry, the P/E ratio can reflect the impact of factors like raw material costs, energy prices, transportation costs, and pricing power on a company's profitability (<i>Price to Earnings (P/E) Ratios by Industry 2023 Ekvista</i> , n.d.).
6	Consumer Durables	P/E	A high P/E ratio in this sector might reflect investor confidence in a company's ability to develop new products and maintain a strong market position, leading to future earnings growth. Strong brands in the consumer durables space can command premium prices and consistent customer demand. P/E can help assess if the market price reflects the value of a company's brand loyalty and future earnings potential stemming from it (<i>U.S. Consumer Durables Industry Analysis</i> , n.d.).
7	Consumer Services	P/S	Consumer service companies often have lower profit margins compared to sectors like technology or manufacturing. This can make the Price-to-Earnings (P/E) ratio less reliable, as earnings can be volatile. The P/S ratio focuses on revenue, offering a more stable picture (<i>Price-to-Sales Ratio By Industry Ekvista</i> , n.d.).
8	Diversified	P/E	Diversified Companies must be studied as per their earnings as they operate in various sectors.
9	Fast Moving Consumer Goods	P/E	The reliability of the P/E ratio in valuing FMCG companies stems from the sector's resilience to economic downturns and market fluctuations. Regardless of economic conditions, consumer demand for FMCG products tends to remain relatively stable, underpinning consistent earnings performance. This stability makes the P/E ratio particularly useful in capturing the relationship between a company's stock price and its earnings per share (EPS), providing insight into the company's valuation relative to its earnings potential (<i>FMCG Sector: Pressures Mount on Earnings and Valuations - PrimeInvestor</i> , n.d.).
10	Financial Services	P/BV	In the banking sector, using the price-to-book (P/B) ratio as a relative valuation tool is particularly justified due to the



			unique regulatory framework governing these institutions. Unlike many other industries where balance sheets primarily reflect historical costs, banks are required by regulation to periodically mark their assets and liabilities to market, ensuring that their balance sheet values closely replicate present market values. Given the significant proportion of assets like loans and securities on the balance sheet of financial firms, the P/B ratio can offer a clearer picture of the company's financial health and asset quality. (<i>"ANALYSIS OF PB RATIO OF SELECTED INDUSTRIES"</i> ISME.)
11	Forest Materials	P/E	Only 2 companies out of 500 companies were a part of this sector, and hence, due to the lack of sample size to evaluate, the most common multiple, P/E ratio is used to value stocks of this sector.
12	Healthcare	P/E	The price/earnings (P/E) ratio is one of the most common valuation multiples used in the healthcare industry as it is a valuable tool for evaluating a healthcare company's profitability and growth potential (<i>Unlocking Value: Top 5 Healthcare Valuation Multiples You Need To Know</i> , n.d.).
13	Information Technology	EV/EBITDA	In the information technology sector, the EV/EBITDA ratio is useful for comparing companies within the same industry, as different industries have different typical valuation metrics due to variations in capital intensity, growth prospects, and risk (<i>Tech Company Valuations: How to Value a Technology Business and Win the M&A Game</i> , n.d.).
14	Media, Entertainment, and Publication	EV/EBITDA	One of the reasons this multiple is used is to take out the impact of various capital investments made by distributors such as cable companies and satellite TV providers (<i>Key Valuation Metrics of the Media Sector</i> , n.d.).
15	Metals and Mining	P/E	The mining and metal sector is known for its cyclical nature, where earnings can fluctuate significantly due to changes in commodity prices, the PE ratio helps in indicating the market expectations about the future earnings growth of the companies in the metals sector (<i>Mining Asset Valuation Techniques - Overview, Formula</i> , n.d.).
16	Oil Gas and Consumable Fuels	EV/EBITDA	EV/EBITDA provides a clearer picture of a company's worth by accounting for debt and is advantageous for cross-border comparisons due to its independence from capital structure (<i>5 Common Trading Multiples Used in Oil and Gas Valuation</i> , n.d.).
17	Power	EV/EBITDA	The Power Sector is another capital-intensive sector like the Oil and Gas sector. This trait of the sector makes EV/EBITDA a suitable metric as it is not affected by the capital structure of the company.
18	Realty	P/E	P/E and P/S are both relevant valuation metrics, but the P/E is a more reliable metric (<i>Realty Stocks: Which Financial, Valuation Ratios Should You Look at While Picking Realty Stocks - The Economic Times</i> , n.d.).
19	Services and Logistics	P/BV	As an asset-heavy sector, the reliable valuation ratios are the P/BV ratio and the P/E ratio, the P/BV also covers the cyclical nature of the sector (<i>Best Logistic Stocks in India Equitymaster</i> , n.d.).
20	Telecommunication	P/E	The P/E ratio is well suited for the telecommunication sector as it essentially indicates the market's assessment of a company's growth potential, and the telecom sector is historically considered a high-growth sector (<i>Average Price-to-Earnings Ratio in the Telecommunications Sector</i> , n.d.).

21	Textiles	P/E	The textile industry is divided based on the P/E ratio due to the recent pressure it has been facing as a sector, and it is the most widely used ratio for multiple valuation reports (<i>5 Undervalued Textile Stocks to Add to Your Watchlist</i> , n.d.) (<i>Financial Performance & Valuation of Key Textile Companies in India - Fibre2Fashion</i> , n.d.).
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6.2 Division of Value and Growth

Upon filtering the companies of NIFTY500, the study arrived at 345 companies that posted financials between 2013 and 2023. These companies were then divided into value and growth stocks as per 3 periods i.e. 2013, 2018, and 2023. Table 2 gives an overview of the number of companies that were value stocks and growth stocks in each sector.

Table 2: Sector Wise Value and Growth Division

Sr. No.	Sector Name	2013 Value	2013 Growth	2018 Value	2018 Growth	2023 Value	2023 Growth
1	Automobile and Auto Components	19	6	18	7	11	14
2	Capital Goods	33	11	22	22	10	34
3	Chemicals	27	2	21	8	24	5
4	Construction	4	2	4	2	4	2
5	Construction Materials	10	1	9	2	3	8
6	Consumer Durables	18	1	16	3	8	11
7	Consumer Services	8	1	6	3	9	0
8	Diversified	1	2	1	2	0	3
9	Fast Moving Consumer Goods	18	8	13	13	11	15
10	Financial Services	35	13	30	18	32	16
11	Forest Materials	1	1	2	0	1	1
12	Healthcare	24	3	21	6	11	16
13	Information Technology	15	2	8	9	9	8
14	Media, Entertainment, and Publication	3	2	3	2	0	5
15	Metals and Mining	8	4	6	6	1	11
16	Oil Gas and Consumable Fuels	11	3	9	5	12	2
17	Power	7	3	8	2	10	0
18	Realty	6	5	8	3	2	9
19	Services and Logistics	11	2	12	1	0	13
20	Telecommunication	1	5	2	4	1	5
21	Textiles	6	2	4	4	2	6
	TOTAL	266	79	223	122	161	184

Source: Researcher's Excel Model

The Capital Goods sector has shown a massive shift in its dynamic, from having 11 stocks out of 44 as growth in 2013 to 34 out of 44 in 2023. This shift in the dynamic is largely driven by the increased government spending in the manufacturing sector- leading to a massive boom in the valuation multiples (*What Is Driving the Massive Boom in the Capital Goods Sector? - BusinessToday - Issue Date: Dec 10, 2023*, n.d.). Such a shift is also observed in the healthcare sector due to the recent boom in healthcare services and pharmaceutical demand. This is not the case in the financial sector as it continues to hover around a similar ratio of value and growth stocks. This is largely caused by the dominance of key players in the market with massive market capitalization, these stocks continue to be value stocks and the new entrants become growth stocks. This applies to other capital-intensive sectors as well which require large gestation periods to provide significant returns- such as Power, Realty, and Construction.

With time, the amount of growth stocks has increased significantly in 2023 due to the recent recovery phase and growing investments in the equity markets. From just 79 growth stocks in 2013, the amount of growth stocks has significantly increased to 184. This would also be a much higher number if all NIFTY500 companies were a part of the study as the remaining companies have been listed recently, making many of them Growth stocks.

6.3 Historical Returns Comparison

In a time frame of 10 years, the Indian stock market has observed 4 distinct cycles. The NIFTY 500 returns have also been divided into these distinct cycles to identify which category i.e. Growth or Value has produced superior returns.

Table 3: Business Cycles

Period	Business Cycle
2013/2018	Recovery Phase
2018/2020	Sluggish Growth, Uncertainty, and Sharp Market Crash
2020/2022	Covid Market Crash and Recovery
2022/2023	Expansion

As value stocks require a longer period to provide returns as compared to growth stocks, a period of 5 years has been considered while dividing the companies, allowing a total of 3 time periods where the stocks are divided i.e. as of 2013, as of 2018, and as of 2023.

For each period all the stocks have been ranked based on their valuation ratios to identify the best value stocks and the best growth stocks. As returns cannot be predicted, it is biased to use historical returns as a basis for ranking. With this in consideration, the stocks have been ranked as per their ratios, as the ratios are available to all investors, making it a fair reason for the ranking. Based on the best-ranked value and growth socks, the returns for these have been compared for each business cycle as per Table 2 above. The results for these tests have been highlighted below:

1. Recovery Phase (2013 to 2018)

The stocks used for comparison were divided into value and growth, and the results of the T-test on their returns are mentioned in Table 4. The list of the stocks has been added to the annexure, in Table 12.

Table 4: 2013 to 2018 t-Test

Independent Samples T-Test

		Statistic	p
Returns	Mann-Whitney U	8110	0.002

Tests of Normality

		statistic	p
Returns	Shapiro-Wilk	0.986	0.002

Group Descriptives

	Group	N	Mean	Median	SD	SE
Returns	Growth	79	0.359	0.340	0.262	0.0295
	Value	261	0.471	0.430	0.299	0.0185

Source: Researcher's Jamovi Outputs

The test in the years of recovery after the 2008 financial crisis (period 2013-2018) showed that Value stocks have significantly outperformed growth stocks, by an excess return of around 11%. This may be due to the large correction after the market crash where undervalued stocks turned into fairly-valued stocks, hence increasing the returns of stocks that were initially classified as value stocks.

2. Sluggish Growth, Uncertainty and Sharp Crash (2018 to 2020)

The stocks used for comparison were divided into value and growth, and the results of the T-test on their returns are mentioned in Table 5. The list of the stocks has been added to the annexure, in Table 12

Table 5: 2018 to 2020 t-Test

Independent Samples T-Test

		Statistic	df	p
Returns	Student's t	0.269	331	0.606

Tests of Normality

		statistic	p
Returns	Shapiro-Wilk	0.997	0.766
	Kolmogorov-Smirnov	0.0237	0.992
	Anderson-Darling	0.182	0.911

Group Descriptives

	Group	N	Mean	Median	SD	SE
Returns	Growth	122	-0.259	-0.250	0.412	0.0373
	Value	211	-0.272	-0.280	0.412	0.0284

Source: Researcher's Jamovi Outputs

The test in the years of uncertainty, sluggish growth, and the sharp market crash has provided negative returns in both, value as well as growth stocks. This negative return is largely due to the sharp crash in prices just before the end of the financial year 2019-20. Further, growth stocks have provided slightly lesser negative returns, but not significantly, hence the performance in this period cannot be determined as a piece of conclusive evidence.

3. Covid Market Crash and Recovery (2020 to 2022)

The stocks used for comparison were divided into value and growth, and the results of the T-test on their returns are mentioned in Table 6. The list of the stocks has been added to the annexure, in Table 12.

Table 6: 2020 to 2022 t-Test

Independent Samples T-Test						
		Statistic		p		
Returns	Mann-Whitney U	12366		0.725		

Tests of Normality						
		statistic		p		
Returns	Shapiro-Wilk	0.950		< .001		
	Kolmogorov-Smirnov	0.0898		0.009		
	Anderson-Darling	3.56		< .001		

Group Descriptives						
	Group	N	Mean	Median	SD	SE
Returns	Growth	122	0.908	0.805	0.577	0.0522
	Value	211	0.844	0.770	0.489	0.0336

Source: Researcher's Jamovi Outputs

In the Covid Market Crash and Recovery period of 2020 to 2022, the Growth stocks have outperformed the value stocks by nearly 6%, this is largely due to the sharp boom in certain industries and companies. The period of recovery from the COVID-19 crash has increased returns as the stocks were coming back to their original prices after the sharp decline of 2020. Although the mean returns are higher, the test is insignificant at a 5% significance level, thus it is improper to conclude that growth stocks were conclusively a better investment in that period.

4. Expansion (2022 to 2023)

The stocks used for comparison were divided into value and growth, and the results of the T-test on their returns are mentioned in Table 7. The list of the stocks has been added to the annexure, in Table 12.

Table 7: 2022 to 2023 t-Test

Independent Samples T-Test

		Statistic	p
Returns	Mann-Whitney U	12401	0.290

Tests of Normality

		statistic	p
Returns	Shapiro-Wilk	0.524	< .001
	Kolmogorov-Smirnov	0.168	< .001
	Anderson-Darling	23.1	< .001

Group Descriptives

	Group	N	Mean	Median	SD	SE
Returns	Growth	122	0.115	0.0500	0.613	0.0555
	Value	211	0.120	0.0700	0.964	0.0663

Source: Researcher's Jamovi Outputs

Lastly, from 2022 to 2023, where NIFTY had reached new highs, the test indicates that the value stocks have provided a marginal, yet insignificant excess return when compared to growth stocks. Largely contributed by the rapid growth in investments and the general growth of the entire market, both the value as well as growth stocks have provided almost equal average returns.

6.4 Portfolio Analysis

Apart from checking the historical returns of Value and Growth stocks, it was also necessary to find out the returns and risks of portfolios in the 4 periods. To analyze the portfolios, there are mainly 3 portfolios to focus on:

- Minimum Risk (Standard Deviation)
- Equally Weighted
- Maximum Sharpe Ratio

To create these portfolios, as all the value and growth stocks cannot be used, the process involved a ranking criterion to measure the best value and the best growth stocks of the period.

The stocks were given a score based on each of the 4 ratios (P/E, P/BV, P/S, EV/EBITDA). The lowest multiple in value stocks would be given the highest score and the highest multiple in growth stocks would be given the highest score. A similar process was carried out for the 3 periods- 2013, 2018, and 2023, giving an output of the best growth and value stocks based on a ranking system. Furthermore, in 2013, the top 30 above-average value and growth stocks were considered in building the portfolio. Similarly, 2018 had a size of 40 stocks and 2023 had 50 stocks.

- **2013 to 2018**

Table 8: 2013 to 2018 Portfolio Mix

	Risk	Return	Weight of Value	Weight of Growth
Min SD	24.83%	-16.60%	-93%	193%
Equal Weight	33.82%	51.71%	50%	50%
Max SR	39.71%	75.59%	1	0

Source: Researcher's Excel Model

As Table 8 suggests, in this phase, shorting value stocks would have created the least risk, though it would not have led to positive returns. To create the maximum return, the weight of value stocks would have to be 100% of the portfolio, as these stocks provided the greatest return over the 5 years of 2013 to 2018.

- **2018 to 2020**

Table 9: 2018 to 2020 Portfolio Mix

	Risk	Return	Weight of Value	Weight of Growth
Min SD	0.05%	4.75%	-236%	336%
Equal Weight	46.87%	-36.42%	50%	50%
Max SR	38.69%	-29.22%	0%	100%

Source: Researcher's Excel Model

As Table 9 suggests, shorting value stocks would lead to the lowest risk, but provide meagre returns of 4.75%. Surprisingly, an equal-weighted portfolio would provide negative returns due to the sharp Covid Crash.

- **2020 to 2022**

Table 10: 2020 to 2022 Portfolio Mix

	Risk	Return	Weight of Value	Weight of Growth
Min SD	0.05%	123.96%	416%	-316%
Equal Weight	47.67%	86.59%	50%	50%
Max SR	41.16%	91.70%	100%	0%

Source: Researcher's Excel Model

From 2020 to 2022, the maximum return would be provided if there were no restrictions on leverage, as the lowest risk also provides 123% returns. That is highly unlikely in a real-world scenario, hence keeping a restriction on the short selling, the maximum Sharpe ratio that can be achieved is 91.7% by having only value stocks in the portfolio.



• **Current Portfolio**

Table 11: Current Portfolio Mix

	Risk	Return	Weight of Value	Weight of Growth
Min SD	33.84%	38.50%	19%	81%
Equal Weight	35.17%	34.73%	50%	50%
Max SR	34.31%	40.75%	0%	100%

Source: Researcher’s Excel Model

Lastly, creating a portfolio based on the returns of value and growth stocks for the last 10 years, a possible equal-weighted portfolio would yield a return of 34.73%, while a minimum risk of 33.84% can be achieved by getting 38.5% returns. A weight of 19% in value stocks is the minimum risk for an investor. Although, if the investor is looking for the maximum Sharpe ratio, then the investor would have to go long on growth stocks, to generate a return of 40.75%.

7. FINDINGS AND DISCUSSIONS

7.1 Findings

The study has proposed various findings throughout the different periods of business cycles in the last 10 years. Value and Growth stocks have only generated significant returns greater than each other in the period of 2013 to 2018, where value stocks performed much better than growth stocks. Furthermore, the study finds that in the other periods, the returns are not significantly greater than each other, implying that the stock selection ability of the investor holds a key in this strategy. If selected only as value and growth for the average returns would not lead to a significantly successful strategy.

The study also identifies the various kinds of portfolios along with their risk, returns, and weights based on the objectives of minimum risk and maximum Sharpe Ratio. Discussing the objectives, based on the data provided by the T-tests, it cannot be significantly stated, but we will accept the Null hypothesis in both cases, where value stocks provide superior returns in bullish markets and growth stocks provide greater returns in bearish markets.

For the second objective, the recovery phase was dominated by Value stocks, while the period of 2018-2022 was superior for growth stocks. Lastly, from 2022 through 2023 where the market has seen a massive uptick, the value stocks have had a greater average return compared to growth stocks.

7.2 Discussions

This study poses a lot of avenues for discussion in the field of value and growth investing. The findings pose a question as to why multiple ratios and factors must be considered while dividing stocks into value and growth. It also suggests that researchers must focus on the current market more than the historical market as it is much easier to infer previous data than predict future data.

Hence, creating a robust strategy of value and growth weights in different market scenarios is extremely important. Furthermore, identifying the correct time horizon for comparing value and growth stocks is also essential as value stocks take much longer to provide returns than growth stocks. Lastly, discussing the future of value and growth investing is also imperative in understanding their dynamics and help more and more investors to invest their money wisely.



8. CONCLUSION

This study was undertaken to identify the various value and growth stocks in a comprehensive index like the NIFTY 500 which comprises numerous companies with a wide range of valuation multiples. The study divided the companies based on the relevant metrics and used them to compare the historical returns and design portfolios across different market conditions. With increasing investor involvement and financial literacy, value and growth become one of the easier-to-implement strategies, and this paper aids investors in doing the same. The paper identifies different market conditions and portrays which category of investments would provide better returns if historical returns were a metric to go by.

9. LIMITATIONS

The research posed numerous challenges, and rectifications and certain assumptions were made at every step of the research. Out of 500 companies, the research only covers 345 companies as they have been listed throughout the analysis (2013 to 2023). This may not give a complete view of the current market scenario. For the division between value and growth, each sector uses only one valuation metric, which may not be the case in the real markets. Further, the sample sizes in each period were unequal when running the t-test, hence a ranking system had to be created to recognize the best value and growth stocks. Also, the ranking system used scores the stocks on each of the 4 valuation ratios, P/E, P/BV, P/S, and EV/EBITDA, where one of the ratios might not apply to all sectors. Lastly, the analysis compares the returns of value and growth stocks historically in different market cycles. These market cycles are of unequal periods; hence it may portray varying results as compared to an analysis of equal periods.

10. RECOMMENDATIONS

This study provides a stepping-stone for further research in the field of Value and Growth investing. Taking inspiration from prior research, this study also attempted to fill the research gaps by analyzing a large scale in an Indian market. This study proposes various avenues for further research. Researchers may explore the possibilities of creating a model that uses multiple metrics for dividing each sector, such as multiple valuation ratios and other capital structure ratios. Researchers may also perform analysis for different markets in various countries to validate investment strategies. Further, creating portfolios for different conditions with specific lists and weights of stocks is also an avenue that can be pursued by researchers and financial analysts.

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Annexures

Table 12: Value and Growth Companies

<https://drive.google.com/file/d/1YnX1E83jISLtkQAtpD1oXfXgouCinmA7/view?usp=sharing>