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Comparative Analysis of Value Investing with Momentum Investing and Mi Evergreen Smallcase Investing on Indian Index

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ABSTRACT

The paper highlights the returns provided by momentum investing techniques by comparing the NIFTY200 and NIFTY 200 momentum 30 index. Similarly, the returns provided by the value investing portfolios constructed using Piotroski and Graham formulas is compared with MiEvergreen smallcase. The comparison of the returns and CAGR suggested that while the yearly returns differ, the 5-year CAGR of the smallcase was higher than that of the traditionally constructed portfolios giving insights about the volatility and performance under momentum strategy.

Keywords-Momentum investing; value investing; Nifty200 momentum 30 index; Piotroski portfolio; Graham portfolio; MiEvergreen smallcase

INTRODUCTION

Momentum investing is a widely employed trading strategy capitalizing on the persistence of the trends of asset prices. It is based on earning returns by buying an asset, specifically stock when an upward trend is anticipated and selling it when the prospects are expected to go down. Traders rely on technical analysis tools like the moving averages, the relative strength index (RSI), etc. Momentum strategies can be devised for both short and long-term periods and it is applicable to both diversified portfolios and specific sectors. Apart from momentum investing, another technique used in the study is value investing which focuses on investing in undervalued assets of the market with a margin of safety. It involves buying securities priced less than their intrinsic value.

To evaluate the effectiveness of the momentum strategy, a comparative study has been conducted between Nifty200 and Nifty200 Momentum 30 index. This comparison encompasses the constituent stocks along with the allocation and the methodology of stock picking. Further, the performance of both stocks is also being compared for the past three years.

Furthermore, the study extends its analysis by comparing the 5-year returns and CAGR of a momentum-based smallcase with that of value investing which has been calculated using the Piotroski and Graham investing formula to quantify performance differences. The Nifty200 Momentum30 Index is a carefully curated portfolio of 30 high-momentum stocks from the Nifty 200 universe. The focus is on identifying stocks that have outperformed in the past 6 to

12 months, with the selection and weighting determined by momentum scores. The index is rebalanced semi-annually to reflect changes in stock momentum, and it maintains sector diversification to ensure balanced exposure across industries. By focusing on momentum, this index captures stocks with strong price trends, making it attractive to investors looking for momentum-driven growth opportunities.

Therefore, the study is mainly presented in two parts based on the same hypothesis. The first part will test the momentum strategy by comparing the NIFTY200 index with the NIFTY200 momentum 30 index. In the second part, a comparative study is done by constructing a value investing portfolio with the MiEvergreen portfolio.

LITERATURE REVIEW

Kumar and Tiwari (2023) talk about the efficacy of momentum investing techniques. The writers examine how momentum techniques have performed historically and how they have held up over time. They also look at the behavioral biases like overreaction and herding that can affect these tactics. (Chitender, 2015), talks about momentum techniques that might produce abnormal returns in the Indian stock market. However, as recent evaluation studies in the Indian context have shown, the efficacy of these tactics frequently varies with market cycles and is susceptible to market conditions, transaction costs, and volatility. Tobias Wiest (June 2022) talks about momentum strategies that have been shown to generate significant profits across various asset classes. However, the origins of momentum and the factors driving it remain debated. Future research should focus on refining momentum strategies and understanding their underlying drivers. Xu (2023) explains how recent breakthroughs in machine learning have significantly enhanced quantitative investment strategies, especially when taking into account China's capital markets. Compared to traditional models, he exhibits superior forecast performance and returns by fusing machine learning techniques with traditional fundamental analysis. According to behavioral theories, investors use the 52-week high as an anchor that influences their decisions in ways other than extreme previous returns (Barberis et al., 1998; Saurav et al., 2023). Furthermore, although both phenomena have long-term reversals, the 52-week high strategy has a less noticeable degradation, underscoring its distinct market response. Mohapatra and Misra (2019) look into momentum investing in the Indian stock market and identify important macroeconomic and portfolio-specific variables that lead to abnormal performance. By expanding on Jegadeesh and Titman's (1993) model, the writers pinpoint important variables for portfolio managers wishing to use momentum strategies, including price-earnings, price-book ratios, and net foreign institutional inflows. Asness, Moskowitz, and Pedersen (2013) offer strong proof of the constant return premia connected to momentum and value strategies across a variety of markets and asset classes. Their analysis challenges conventional behavioral and rational asset pricing theories, which mostly concentrate on U.S. equities, by highlighting the robust correlation structure between various methods. Damodaran (2012) examines the various value investing approaches—passive, contrarian, and activist—and assesses the success of value investors as a whole, pointing out that their returns frequently coincide with those of less systematic approaches. Acharya and Pedersen (2005), show how the expected liquidity and covariances with market returns of a security affect the necessary return on it. Their model shows that negative liquidity shocks can result in lower present returns but better future returns, underscoring the importance of liquidity risk in asset pricing. Piotroski (2000) examines how well a fundamental analysis technique works with high book-to-market (BM) companies and finds that choosing companies with good financial positions can increase annual returns by at least 7.5%. The research highlights the market's early underreaction to historical financial data by showing that this strategy, which entails purchasing projected winners and shorting losers, generates a considerable 23% annual return from 1976 to 1996. Lesmond, Schill, and Zhou (2004) conduct a thorough reevaluation of momentum trading methods and conclude that the high trading costs of the stocks that produce momentum returns are a major cause of the appearance of profitability. According to their research, these expenses frequently surpass the extraordinary returns that have been seen, raising doubts about the viability of momentum earnings.

Hong, Lim, and Stein (2007) investigate the gradual-information-diffusion model to explain the profitability of momentum strategies. They discover that these techniques outperform stocks with minimal analyst coverage, especially for losers in the past, and become less effective as firm size increases. Their findings lend credence to the idea that unfavorable information about a company moves slowly through the market. Pástor and Stambaugh (2003) investigate how market-wide liquidity functions as a critical state variable in asset pricing, showing that the sensitivity of returns to changes in aggregate liquidity is positively correlated with predicted stock returns. Their results show that stocks with high liquidity sensitivity beat equities with low sensitivity by an average of 7.5% per year. Hong, Lim, and Stein (2007) investigate the gradual-information-diffusion model to explain the profitability of momentum strategies. They discover

that these techniques outperform stocks with minimal analyst coverage, especially for losers in the past, and become less effective as firm size increases. The paper "Fact, Fiction, and Value Investing" by Asness, Frazzini, Israel, and Moskowitz (2015) examines the systematic "value factor" in investing, which focuses on buying undervalued stocks. The authors aim to clarify common misconceptions surrounding value investing by drawing on extensive academic literature and testing with public data. Liu, Strong, and Xu (1999) examine the profitability of momentum investing in the UK stock market from 1977 to 1998. They analyze strategies where investors buy past winners and sell past losers, focusing on medium-term returns (3 to 12 months). Their findings confirm significant momentum profits, with the most profitable strategy yielding annualized returns of 19.5%. Glenn N. Pettengilla, Susan M. Edwardsa , Dennis E. Schmitt (2006), examine whether momentum investing—a strategy of investing in recently outperforming securities—is effective for individual investors. While both groups favor momentum stocks, analysts achieve success with this strategy, but individual investors do not. Market participants frequently overestimate future growth for glamor stocks, according to Lakonishok, Shleifer, and Vishny (1994), who contend that investor biases rather than intrinsic risk are the reason value strategies beat glamour strategies. According to their findings, value stocks' superior returns are caused by their undervaluation in comparison to their true risk and return characteristics. (Thomas & Dileep Kumar, 2014) tested the momentum strategy of creating a portfolio of top stocks using mean returns tested by t-test for a month formation period and different holding periods. The study concluded that the momentum strategy for various holding periods does not lead to any gains for the investors in the Indian capital market. (Freibauer & Grawert, 2022) have devised different strategies by allocating assets of different categories based on the risk category of the population.

The paper states how behavioral preferences, rebalancing, and volatility forecasting affect the weighted allocation of assets and hence the portfolio's long-term viability. (Teplova & Tomtosov, 2021) emphasized the importance of factors by conducting a study on the Russian markets. It highlighted how the high trading volume and a volatility switch can be accounted for in momentum trading for better results, unlike the other markets, the results provided by momentum investing were not as profitable as other markets. (Wu et al., 2017), findings of the paper highlighted that return predictability plays a major role in devising investment strategies and asset allocation in the portfolio. It examined the optimal dynamic portfolio choice which incorporated momentum in the asset framework for a continuous period. (Balakrishnan, 2015) tested the momentum strategy by taking three different periods and using the capital asset pricing model, the Fama-French model, and Carhart's four-factor model to determine maximum returns. It further concluded that Carhart explained the average returns for all the portfolios while the other two failed to explain the short-term profits. (Papathanasiou et al., 2022) tested different strategies during the time of the COVID-19 pandemic on how the market prompted investors to diversify their portfolios. It also focused on the interconnectedness of the different stock types- value, momentum, growth, etc. The paper examined the dynamics of value stocks and other stock types. (Chan et al., 2000) analyzed the momentum strategies to understand their usefulness in country selection. It further examined if the international momentum profits are interdependent and finally looked if trading volume also affected the profitability.

RESEARCH OBJECTIVES

1. The study's objective is to establish the viability of momentum investing over longer time horizons.
2. Another objective is to test the returns provided by momentum investing by comparing different indices.
3. Testing the returns provided by momentum investing vs value investing.

Hypothesis

H0: Momentum investing generates similar returns as value investing.

METHODOLOGY

To test the hypothesis provided above, the methodology adopted to conduct the test has been described as follows. The data for the financial statements of the companies and the stock prices has been collected from different sites including the BSE, NSE, Yahoo Finance, and screener for both the parts of the study.

1) Comparative analysis of the Nifty indices

The explanation and steps for the comparative study of the Nifty indices are provided below:

Step1: Selection Universe: NIFTY200 or CNX200

The stock selection starts with the Nifty 200 Index, which comprises the top 200 companies by free-float market capitalization on the National Stock Exchange (NSE). Stocks in this index are screened for liquidity, size, and trading frequency to ensure they are actively traded.

The Nifty200 Momentum 30 Index is based on momentum investing, where stocks are picked based on their performance relative to others over a specific period. Here's a detailed breakdown of how stocks are picked for the Nifty200 Momentum30 Index:

Step 2: Defining Momentum

- Momentum is measured by a combination of two factors
  1. 6-month price return: The stock's return over the last 6 months is calculated.
  2. 12-month price return: The stock's return over the last 12 months is also considered.
- The cumulative performance over these periods helps identify stocks with a strong price momentum.

Step 3: Stock Ranking by Momentum Score

- Each stock in the Nifty 200 universe is ranked based on its momentum score.
- The momentum score is calculated by weighing the stock's 6-month and 12-month price returns.
- Stocks that have performed better relative to others are assigned a higher score.

Step 4: Selecting Top 30 Stocks

- Based on the momentum scores, the top 30 stocks with the highest scores are chosen for inclusion in the Nifty200 Momentum30 Index.
- The aim is to include those stocks showing the strongest momentum based on historical price performance.

Step 5: Weighting of Stocks

- Stocks are weighted in the index based on their momentum scores.
- Higher momentum scores result in higher weights, while lower scores lead to smaller weights in the index.
- This ensures that stocks with stronger momentum have a larger influence on the index's performance.

Step 6: Rebalancing

- The Nifty200 Momentum 30 Index is rebalanced semi-annually in June and December.
- During rebalancing, the index re-assesses the momentum of all eligible stocks and updates the composition of the top 30 based on the latest momentum scores.
- Stocks that no longer exhibit strong momentum are removed, and new high-momentum stocks are added.

The eligibility criteria for the stocks is defined as below:

- Stocks must have been listed for at least a year to qualify for the momentum index.
- Stocks must have consistent liquidity to ensure they can be easily traded by investors.
- Market capitalization also plays a role, ensuring that only large-cap and mid-cap stocks with enough market presence are included.

The stocks also have limits being listed below:

- The Nifty200 Momentum30 Index applies sectoral diversification limits to avoid over-concentration in any one sector.
- This ensures that the index is not dominated by a particular industry, even if certain sectors exhibit strong momentum at times.

The momentum score is the key metric used to rank stocks in the Nifty200 Momentum30 Index, and it's designed to capture the strength of a stock's price movement over time. Here's a detailed breakdown of how the momentum score is calculated:

Step 1: Measurement Period

Momentum is measured by analyzing stock returns over two distinct time frames:

- 6-month price return (R6): The percentage change in the stock price over the last 6 months.
- 12-month price return (R12): The percentage change in the stock price over the last 12 months.

However, the 12-month price return typically excludes the last month to reduce the impact of short-term volatility. This gives a more stable measure of medium-term momentum.

Step 2: Price Return and Momentum Score Calculation
The price return is computed using the following formula:

$$\text{Price Return} = \frac{P_{\text{end}} - P_{\text{start}}}{P_{\text{start}}} \times 100$$

Fig. 1

where,

- P*end* is the price at the end of the period (6 months or 12 months) - P*start* is the price at the start of the period.

Once the price returns are calculated, the momentum score is derived by assigning weights to the 6-month and 12-month returns. The typical formula used is:

$$\text{Momentum Score} = \alpha \times R6 + \beta \times R12$$

Fig. 2

where,

- R6: The stock's return over the past 6 months.
- R12: The stock's return over the past 12 months (excluding the last month).
- Alpha and Beta are weighting factors used to balance the influence of each time frame. While the exact values of Alpha and Beta are proprietary to the index provider (NSE), it is common to see more weight given to the 12-month return to emphasize longer-term performance (e.g., Alpha = 0.3 and Beta = 0.7).

Step 3: Adjusting for Volatility (Optional)
To refine the momentum score and make it more robust, some methodologies incorporate volatility adjustments. This helps account for the risk associated with a stock's momentum:

$$\text{Risk} - \text{Adjusted Momentum Score} = \frac{\text{Momentum Score}}{\sigma}$$

Fig. 3

where:

- Sigma represents the volatility (typically the standard deviation of returns over a certain period).

This adjustment gives higher scores to stocks with smoother, less volatile price trends, rewarding consistency over raw performance.

Step 4: Ranking Based on Momentum Score
Once the momentum scores for all stocks in the Nifty 200 universe are calculated:

- The stocks are ranked in descending order, with the highest scores placed at the top. - The top 30 stocks with the highest momentum scores are selected for inclusion in the - Nifty200 Momentum30 Index.

Rebalancing and Momentum Score Update
Since the index is rebalanced semi-annually, the momentum score for each stock is updated during the rebalancing periods (June and December). Stocks that continue to show strong momentum will remain in the index, while those with declining momentum may be replaced by new high-momentum stocks.

The components of the index are as follows:

S.no	Company Name	Industry
1	ABB India Ltd.	Capital Goods
2	Adani Ports and Special Economic Zone Ltd.	Services
3	Bajaj Auto Ltd.	Automobile and Auto Components
4	Bharat Electronics Ltd.	Capital Goods
5	Bharat Forge Ltd.	Automobile and Auto Components
6	Bharat Heavy Electricals Ltd.	Capital Goods
7	Bharti Airtel Ltd.	Telecommunication
8	Bosch Ltd.	Automobile and Auto Components
9	Coal India Ltd.	Oil Gas & Consumable Fuels
10	Cummins India Ltd.	Capital Goods
11	Dixon Technologies (India) Ltd.	Consumer Durables
12	Hero MotoCorp Ltd.	Automobile and Auto Components
13	Hindustan Aeronautics Ltd.	Capital Goods
14	Indus Towers Ltd.	Telecommunication
15	Lupin Ltd.	Healthcare
16	Mahindra & Mahindra Ltd.	Automobile and Auto Components
17	NMDC Ltd.	Metals & Mining
18	NTPC Ltd.	Power
19	Oberoi Realty Ltd.	Realty
20	Oracle Financial Services Software Ltd.	Information Technology
21	Power Finance Corporation Ltd.	Financial Services
22	Punjab National Bank	Financial Services
23	REC Ltd.	Financial Services
24	Samvardhana Motherson International Ltd.	Automobile and Auto Components
25	Siemens Ltd.	Capital Goods
26	Tata Motors Ltd.	Automobile and Auto Components
27	Tata Power Co. Ltd.	Power
28	Trent Ltd.	Consumer Services
29	Vedanta Ltd.	Metals & Mining
30	Zydus Lifesciences Ltd.	Healthcare

Table 1: Components of NIFTY 30 Momentum Index

Summary

- Momentum score is a blend of a stock's 6-month and 12-month price performance, typically weighted more heavily towards the longer time frame.
- The score aims to identify stocks with strong upward trends over medium-term periods, excluding short-term volatility.
- The highest-ranking stocks based on the momentum score are selected for the Nifty200 Momentum30 Index, and the scores are recalculated every six months during rebalancing.

Nifty200 is an index that includes large and mid-capitalization companies and is used to reflect the market movement and give investors a sense of idea of how capital markets are moving.

Stock Constituent

Nifty200 consists of companies from Nifty 100 (large-cap stocks) and Nifty midcap 100 (mid-cap stocks).

- Any change in these 2 indexes is reflected in the NIFTY200 Index.
- The index is reviewed semi-annually.
- Large Cap companies are the top 100 companies according to their free-float market capitalization and usually have 20,000cr+ market cap.
- Mid-cap companies are the next 101 to 250 companies in the market.

Index Rebalancing

- Nifty 200 index is rebalanced every 6 months and it is rebalanced on the cut-off dates of 31 January and 31 July of each year.
- The market is informed 4 days in advance before the change in the index.
- For the change the 6-month average data ending the cut-off date is considered by the exchange.

Company's Name	Weight(%)
HDFC Bank Ltd.	7.39
Reliance Industries Ltd.	6.13
ICICI Bank Ltd.	5.19
Infosys Ltd.	4.21
ITC Ltd.	2.78
Tata Consultancy Services Ltd.	2.77
Larsen & Toubro Ltd.	2.60
Bharti Airtel Ltd.	2.55
Axis Bank Ltd.	2.00
State Bank of India	1.88

Table 2 Top Companies having highest weightage in NIFTY 200 Index

2) Comparative analysis of a momentum-based mutual fund with two value investing portfolios.

While comparing the stocks to portfolio with value investing as its main theme we have used Piotroski F-score and Graham's intrinsic valuation that was done by :

The portfolio for the Piotroski F-score is built by taking the top companies. The companies were scored based on 9 factors based upon the three fundamentals of profitability, financial leverage, and operating efficiency. Companies having scores greater than 7 were selected as they indicated higher strength. The factors are listed below:

1. Positive Net income
2. Positive Return on the Assets
3. Positive cash flow from operations
4. Cash flow from operations greater than the return on assets
5. Lowered long-term debt levels from the prior year
6. The higher current ratio from the previous year
7. Dilution of share capital
8. Higher gross margin from the previous year
9. Higher asset turnover ratio

The first four variables were indicative of the performance, the next three factors indicated the leverage, liquidity and sources of the funds. Similarly, the last two factors indicated the operating efficiency.

For fulfilling each condition a score was added to the company's base strength, the final score was out of By the standards set any company with a 7 or better score is considered a fundamentally sound company so the portfolio was formed using said companies.

Once the scores were calculated, the portfolio was made and the returns were calculated by the capital asset to gain ratio, the formula for which is provided below:

CAGR= (Final value / Initial value) ^ (1/t) -1

For the calculation of **Graham's intrinsic value formula** the earning per share for the companies was derived from the financials for the past five years(from 2019) and the growth rate was calculated using the eps.

The formula used for the Graham calculation was:

V= (EPS *(23+2g)**8)/Y

Here, V= Intrinsic Value of stock.

EPS= trailing twelve months' earnings per share (2019, with respect to the study).

23 = median PE of NIFTY. g = Growth rate of the company for the
past 5 years.

8= 8 in the original formula was used as 4.4 and was the average yield of AAA corporate bonds. Historically the average rate in the US market has been lower thus it was adjusted to fit the Indian market and it was found to be 8%.

Y= Y is the current yield of the AAA corporate bond which in 2019(the year in which the portfolio was formed) turned out to be 9%

The Graham value derived is divided by the prevailing stock prices of 2019 in order to calculate the possible upside.

We then establish a Margin of Safety. Benjamin Graham was famous for establishing this school of thought and always had a margin of safety established. The goal of his valuation wasn't to find any upside in the stocks but rather cheap companies at good valuations with a margin of safety.

The margin of safety is calculated after the calculation of the difference, the formula for which is given as:

Margin of Safety = 1- (Intrinsic value/Current market price)

The acceptable level of margin of safety that we considered was set at 35% and the company stock with a margin of safety > 35% was selected for the portfolio. Furthermore, the yearly returns and the CAGR were calculated for the individual stocks and the portfolio which was compared with the returns of the MiEvergreen which is a smallcase portfolio managed by a research based firm called Weekend Investing.

ANALYSIS AND FINDINGS

Comparing NIFTY200 with NIFTY30 Momentum Index

In this approach, we are comparing the returns of the 2 stock indexes over the past 5 years to see the type of returns that are earned following 2 different strategies.

CAGR Returns of NIFTY30 Momentum Index

Metrics Comparison

Index Returns (%) #	QTD	YTD	1 Year	5 Years	Since Inception
Price Return	6.49	37.42	61.80	28.17	20.43
Total Return	6.90	38.72	63.63	29.43	21.77

Statistics ##	1 Year	5 Years	Since Inception
Std. Deviation *	20.79	21.59	22.62
Beta (NIFTY 50)	1.24	0.97	0.94
Correlation (NIFTY 50)	0.80	0.85	0.89

NIFTY200 Momentum30

Index Returns (%) #	QTD	YTD	1 Year	5 Years	Since Inception
Price Return	7.60	23.83	39.01	19.82	13.79
Total Return	7.88	24.88	40.41	21.11	15.31

Statistics ##	1 Year	5 Years	Since Inception
Std. Deviation *	14.23	18.67	21.35
Beta (NIFTY 50)	1.04	0.98	0.98
Correlation (NIFTY 50)	0.98	0.99	0.99

NIFTY200

Source: nseindia.com

Tables 3 and 4: Metric Comparison between NIFTY30 and NIFTY200

CAGR returns of the NIFTY200 Index

Here we can see that the CAGR returns of the NIFTY30 index are significantly higher than those of NIFTY200 returns. This shows that momentum investing is a proven technique and consistently earns higher returns than value investing which is employed by NIFTY200.

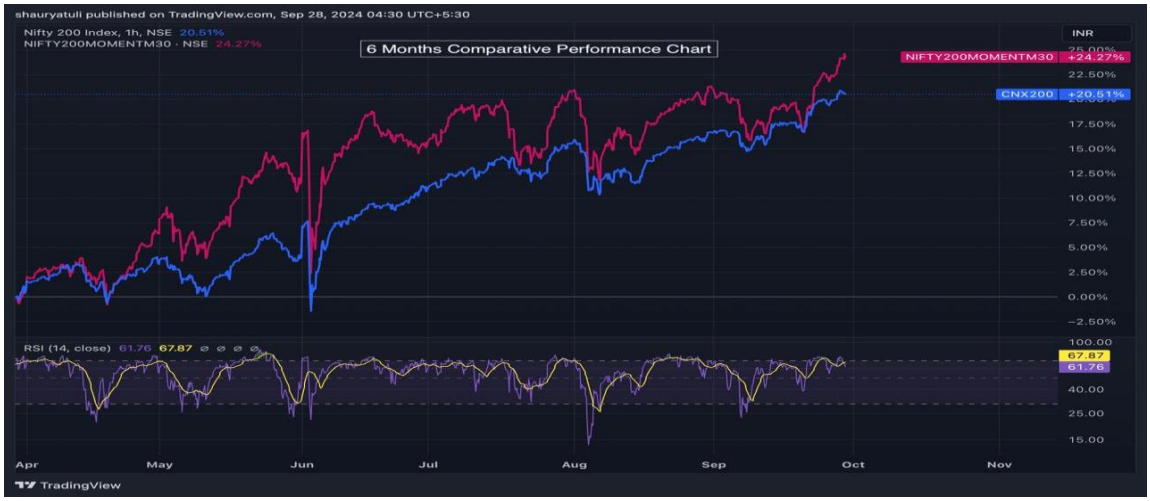

Fig. 4: Past 6 month performance comparison of NIFTY200 and NIFTY30 Index

For further comparison, we have plotted the 6 monthly performance comparisons of the NIFTY200 and NIFTY30 Indexes to depict the wide gap between the performances of the two. We chose to include performance measures of the past 6 months since the index is rebalanced every 6 months and the stocks not performing are replaced by better-performing stocks.

There are several factors that can influence a stock's momentum score which are listed below:

- Recent Price Action: Stocks with strong price appreciation in both the 6-month and 12-month windows will have higher scores.
- Consistency of Returns: Stocks with steady, upward trends tend to score higher than volatile stocks with sharp ups and downs.
- Volatility (if included): Stocks with lower volatility and stable price trends may receive a boost when risk-adjusted metrics are used.

The table below is a summary of 2 charts plotted of the 6 monthly performances.

It showcases how NIFTY30 is less volatile as the drawdown is almost 1/3rd of the NIFTY200 index. The absolute returns are also higher for NIFTY30, further supporting our alternate hypothesis.

NIFTY200 Momentum30 Index	Performance	NIFTY200	Performance
	234,068.80 INR		214,487.40 INR
Net Profit	23.41%	Net Profit	21.45%
	234,068.80 INR		214,487.40 INR
Gross Profit	23.41%	Gross Profit	21.45%
	234,937.60 INR		215,352.50 INR
Max Run-up	19.02%	Max Run-up	17.72%
	8,328.00 INR		24,190.00 INR
Max Drawdown	0.83%	Max Drawdown	2.42%
	234,068.80 INR		214,487.40 INR
Buy & Hold Return	23.41%	Buy & Hold Return	21.45%
Max Contracts Held	32	Max Contracts Held	82
Percent Profitable	100.00%	Percent Profitable	100.00%
	234,068.80 INR		214,487.40 INR
Avg Trade	23.98%	Avg Trade	21.49%
	234,068.80 INR		214,487.40 INR
Avg Winning Trade	23.98%	Avg Winning Trade	21.49%
Avg Losing Trade	N/A	Avg Losing Trade	N/A
Ratio Avg Win / Avg Loss	N/A	Ratio Avg Win / Avg Los	N/A
	234,068.80 INR		214,487.40 INR
Largest Winning Trade	23.98%	Largest Winning Trade	21.49%
Largest Losing Trade	N/A	Largest Losing Trade	N/A

Table 5: Performance metric of NIFTY30 and NIFTY200 Index for past 6 months

Value Investing vs Momentum Investing

1. Value Investing Portfolio (Piotroski F-score) Vs Mi Evergreen (smallcase)

Yearly Returns of the Piotroski Portfolio		Yearly Returns of the MI Evergreen	
Yr 1	-41.49%	Yr 1	-6.19%
Yr 2	96.08%	Yr 2	64.39%
Yr 3	10.97%	Yr 3	42.71%
Yr 4	13.70%	Yr 4	7.10%
Yr 5	27.96%	Yr 5	68.66%
5 yr CAGR	13.12%	5 yr CAGR	31.79%

Table 6: Yearly returns for Piotroski and MI Evergreen portfolio

5-Year Performance Comparison

- Piotroski Portfolio:

0 5-year CAGR: 13.12%

  - The returns are extremely volatile in the first 2 years from giving a loss of (-41.49&) to rising as high as 96% in the second year. Returns stabilize relatively for the following 3 years being observed.

- MI Evergreen Portfolio:

0 5-year CAGR: 31.79%

  - Compared to the Piotroski Portfolio, MI Evergreen has much more volatility but also shows a better overall performance. This is because while Piotroski's portfolio had gone through extreme fluctuations in the first 2 years, MI Evergreen is volatile throughout the 5 years being observed. The first year the fund faced a decline (-6.19%), and in the following years showed strong gains, particularly in Yr 2 (+64.39%) and Yr 5 (+68.66%).

Yearly Performance Breakdown and Analysis

- Year 1: Piotroski Portfolio (-41.49%) vs. MI Evergreen (-6.19%)
  Piotroski's portfolio suffered immense losses in the first year when compared to MI Evergreen. This could be because investors were losing confidence in value stocks and sold off their major holdings, which created a downward pressure on the index.
- Year 2: Piotroski Portfolio (+96.08%) vs. MI Evergreen (+64.39%)
  After the steep drop in Year 1, the Piotroski portfolio experienced a remarkable recovery (+96.08%), likely due to a rebound in undervalued stocks. Value stocks may have been overly sold off, and investors rushed back in, leading to a sharp recovery. MI Evergreen also sees huge gains but with steadier performance.
- Year 3: Piotroski Portfolio (+10.97%) vs. MI Evergreen (+42.71%) In this year MI Evergreen's portfolio accrues much higher returns in comparison to the Piotroski portfolio which could be because the value stocks were stabilized after the short periods of volatility and momentum investing outgrew its returns.
- Year 4: Piotroski Portfolio (+13.70%) vs. MI Evergreen (+7.10%)
  Both portfolios posted modest gains this year, possibly due to broader market consolidation or economic slowdown. There is a sluggish growth in MI Evergreen stocks which could indicate changing market behavior and trends that were not efficiently captured by the strategy used.
- Year 5: Piotroski Portfolio (+27.96%) vs. MI Evergreen (+68.66%)
  In this year again MI Evergreen outperformed the other portfolio. This is mainly due to the bull run being witnessed in the current year in the Indian Economy. This is said to be because of the positive future growth potential of the country.

2. Value investing portfolio (Graham's Intrinsic value) Vs Mi Evergreen (smallcase)

Yearly Returns of the portfolio(Graham)		Yearly Returns of the MI Evergreen	
Yr 1	-46.93%	Yr 1	-6.19%
Yr 2	94.46%	Yr 2	64.39%
Yr 3	17.71%	Yr 3	42.71%
Yr 4	4.48%	Yr 4	7.10%
Yr 5	69.90%	Yr 5	68.66%
5 yr CAGR	16.61%	5 yr CAGR	31.79%

Table 7: Yearly returns for Graham's and MI Evergreen portfolio

5-Year Performance Comparison

- Graham Portfolio:

0 5-year CAGR: 16.61%

  - The returns fluctuate significantly with extreme volatility. Yr 1 shows a sharp decline (-46.93%) while subsequent years reflect strong rebounds, especially in Yr 2 (+94.46%) and Yr 5 (+69.90%).
  - MI Evergreen Portfolio:

1 5-year CAGR: 31.79%

- Compared to the Graham portfolio, MI Evergreen shows more consistent performance with fewer sharp downturns. The first-year decline (-6.19%) is much less severe, and the following years show strong gains, particularly in Year 2 (+64.39%) and Year 5 (+68.66%).

Yearly Performance Breakdown and Analysis

- Year 1: Graham Portfolio (-46.93%) vs. MI Evergreen (-6.19%)
  The Graham portfolio suffers a massive loss in the first year. This could be due to the rigid value-based stock selection under Graham's strategy. In a market downturn, value stocks are sometimes hit harder because of market pessimism. MI Evergreen, potentially following a different strategy, manages to limit the loss.
- Year 2: Graham Portfolio (+94.46%) vs. MI Evergreen (+64.39%)
  After the steep drop in Year 1, the Graham portfolio experiences a remarkable recovery (+94.46%), likely due to a rebound in undervalued stocks. Value stocks may have been overly sold off, and investors rushed back in, leading to a sharp recovery. MI Evergreen also sees significant gain but with steadier performance.
- Year 3: Graham Portfolio (+17.71%) vs. MI Evergreen (+42.71%)
  Both portfolios continue to gain, but the Graham portfolio grows at a slower rate. This could indicate that value stocks in the Graham portfolio did not have as much growth potential or were maturing. MI Evergreen, with a higher return, may be benefiting from broader market trends or growth stocks.
- Year 4: Graham Portfolio (+4.48%) vs. MI Evergreen (+7.10%)
  Both portfolios posted modest gains this year, possibly due to broader market consolidation or economic slowdown. The Graham portfolio's lower return suggests value stocks are struggling, while MI Evergreen benefits from steady performers.
- Year 5: Graham Portfolio (+69.90%) vs. MI Evergreen (+68.66%)
  Both portfolios perform exceptionally well in Year 5, with almost identical returns. This may be driven by a market-wide bull run where both value and growth stocks thrive. Previously undervalued stocks in the Graham portfolio likely appreciated as the market re-evaluates fundamentals.

Possible Reasons for Yearly Differences:

1. Market Cycles: The Graham portfolio's swings reflect the cyclical nature of value investing. Value stocks underperform during periods of market exuberance but rebound sharply when markets correct or investors shift to undervalued assets.
2. Portfolio Composition: Graham's formula focuses on undervalued, lower-priced stocks, which may experience more volatility, especially in down markets. MI Evergreen's steadier performance could be due to more diversification or focus on growth-oriented or defensive stocks.
3. Recovery Periods: The high volatility in the Graham portfolio indicates that value stocks, when underpriced, can rebound significantly as investor sentiment shifts. MI Evergreen's consistent performance suggests diversification or inclusion of stable growth stocks, leading to fewer extreme movements.

The Graham portfolio, with a 5-year CAGR of 16.61%, reflects the volatility of value investing. It experiences sharp declines but also shows strong recoveries in years like Yr 2 and Yr 5. MI Evergreen, with a higher CAGR of 31.79%, shows more consistent growth, possibly benefiting from a different investment approach. Key differences lie in portfolio composition and reaction to market cycles.

CONCLUSION

In our study, we used 2 approaches to test our hypothesis about whether or not momentum investing provides significantly higher returns than value investing. When we compared the historical performance of the NIFTY200 and NIFTY30 momentum index we saw that the NIFTY30 momentum index gave 1.4 times higher returns in the 5-year time frame. The Piotroski analysis highlights the contrasting performance of momentum-based investing by comparing the traditional portfolios built using Piotroski and Graham portfolios with the MiEvergreen portfolio. The findings indicate that the MiEvergreen portfolio with a CAGR of 31.79% has outperformed both the Piotroski portfolio with a CAGR of 13.12% and the Graham Portfolio with a CAGR of 16.61%.

The yearly returns of Graham and Piotroski dropped in the first year but later on picked up. On the other hand, the yearly returns of MiEvergreen have shown significant fluctuations which gave insights into the recovery patterns and volatility of each portfolio.

The study suggested that under dynamic market conditions like bullish trends, the stability and growth of momentum strategy-based portfolios like MiEvergreen could provide significant advantages.
Both approaches leads to a common conclusion that momentum investing outperforms value investing. This leads to the rejection of null hypothesis and hence accepting the alternate hypothesis that momentum investing is a riskier strategy but provides higher returns.

LIMITATIONS

The methodologies being followed above are powerful tools and have been derived after a lot of research and rigor. However, they cannot account for all the factors in the environment and thus there are various limitations for the same.
Limitations for the Piotroski Score are as follows-

1. Since it only compares the financial performance and ratios to that of previous years it does not give very accurate information for the companies operating in a cyclical stage or when the economy goes through unprecedented times like the Pandemic.
2. It only considers historical data which could lead to bias as it does not take into consideration the future expected trends.
3. It is not useful for micro-cap stocks as they have higher volatility and less liquidity because of which even quality stocks can have low scores.
4. It does not take into account the fact that the previous year can have an unusual event, because of which the scores assigned are not very representative of the company's actual performance.

Limitations for comparing NIFTY200 with NIFTY30 Momentum index

1. Rebalancing Impact - Nifty200 Momentum30 is rebalanced every 6 months which adds up liquidity and timing risk for the investor. Not accounting for this can show more favorable momentum returns without analyzing the complete risk profile.
2. Results are based on Historical Returns - Our conclusion drawn is according to the historical returns of the company which may or may not be similar in the future. Market conditions in the future might be completely different from the past.
3. Concentration risk – Nifty200 Momentum30 is a concentrated index when compared to Nifty200 because of which it may lead to sectoral bias depending upon which sector exhibits momentum.
4. Overfitting - Relying completely on historical data and predicting returns according to it might lead to an overfitted model which may lead to inaccurate returns.

Limitation of a portfolio based on Graham's intrinsic value formula

1. Bias Toward Low-Growth Companies - Graham focused on safety and undervaluation, often leading to investments in mature, slow-growing companies. Even if the formula is adjusted, the portfolio may still be biased toward low-growth companies that miss out on high-growth opportunities (e.g., tech startups or rapidly scaling industries). This can limit long-term capital appreciation, especially in a growth-driven market.
2. Neglecting Macroeconomic Factors - Graham's formula doesn't explicitly account for macroeconomic variables like interest rates, inflation, or monetary policy. Adjusting the formula might improve stock selection but fail to adequately incorporate larger economic cycles. For example, low-interest environments can inflate stock prices or drive investor behavior in ways Graham's original framework doesn't account for.
3. Value Trap Risk - Graham advocated for buying stocks trading below their intrinsic value.In today's markets, many stocks may appear undervalued but are actually "value traps" (stocks that are cheap for a reason, such as deteriorating business models).

Future Scope

The future study could be expanded and the findings could be used in several ways as :

1. The analysis could be done for a longer period which will give insights into the momentum and value of investing over different market cycles, including downturns and recoveries.
2. The momentum vs value investing could also be done for a specific sector which could help in leveraging the sector dynamics.

3. The analysis could also be expanded to use other investing strategies apart from momentum and value using both modern and traditional methods in the current market landscape.
4. Construction of portfolios can be done to backtest various momentum strategies to get a broader view of Momentum investment returns.
5. Various indicators like RMS and moving averages could also be used to conduct an in-depth study of momentum strategies for different time horizons.

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