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Analyzing the 130/30 Long-Short Strategy in Indian Stocks: A Comparative Study Using Sensex 30 and Benchmark Returns

Prof. Amit Bathia
NMIMS Anil Surendra Modi School of Commerce, Mumbai, Maharashtra

Mr. Charith Pechetti
Bachelors of Business Administration, NMIMS ASMSOC, Mumbai Maharashtra

Ms. Ananya Gupta
Bachelors of Business Administration, NMIMS ASMSOC, Mumbai Maharashtra

Prof. Nandip Vaidya
NMIMS Anil Surendra Modi School of Commerce, Mumbai, Maharashtra

Prof. Jagabandhu Padhy*
(*Corresponding author)
NMIMS Anil Surendra Modi School of Commerce, Mumbai, Maharashtra

Abstract
This study investigates the effectiveness of the 130/30 long-short strategy within the Indian Stock market, utilizing a sample of 30 stocks from the Sensex Index. By analyzing historical data from April 2019 to March 2024, the research evaluates the strategy's performance against benchmark returns through various metrics, including Holding Period Return, Sharpe Ratio, and Information Ratio. The findings reveal that while the strategy can outperform benchmarks in certain market conditions, it also exhibits vulnerabilities during downturns, leading to rejecting the null hypothesis.

Keywords: 130/30 Long Short Strategy, Indian Stocks Analysis, SENSEX returns, Long and short position, Performance Evaluation.

Introduction

The capital market is the backbone of India. A strong capital market supports the growth of the country's economy. According to Statista (*APAC: Largest Stock Exchanges by Market Cap 2024*, 2024), as of 2024, India's National Stock Exchange is the third largest stock exchange in the Asia Pacific region based on the market capitalization of 4648.41 billion US dollars for domestic companies. The growth of the capital market demand can also be concluded using the number of Demat accounts surge in India, according to ICICI Direct (*Which State in India Has the Highest Number of Stock Market Investors? - ICICIdirect*, 2024), Demat accounts surged from 36 million in March 2020 to 160 million in June 2024. The traded quantity in the National Stock Exchange has almost doubled since the year 2020 and has become almost 4 times since the year 2010-11.

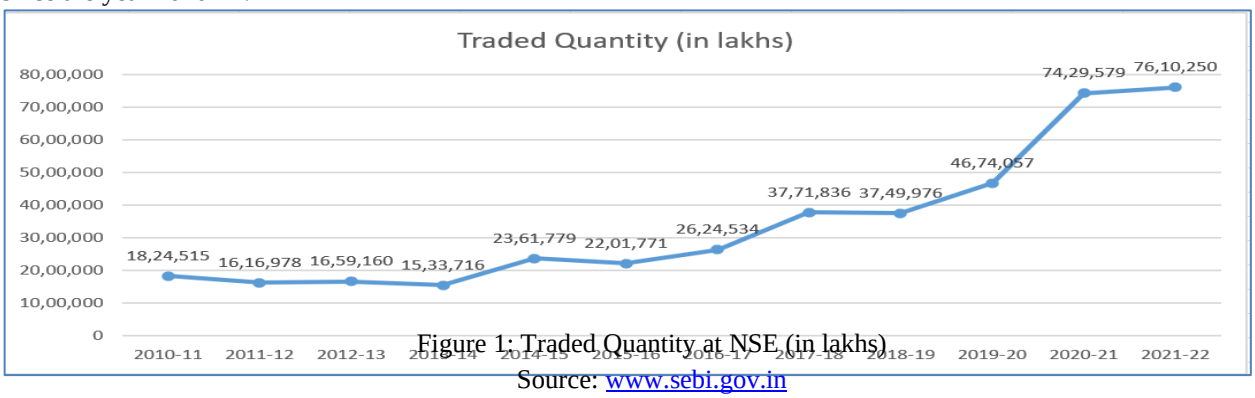

Figure 1: Traded Quantity at NSE (in lakhs)
Source: www.sebi.gov.in

The 130/30 strategy, as outlined by (Lo & Patel, 2008) extends traditional long-only portfolios by allowing a 130% long position and a 30% short position, thereby increasing potential returns while maintaining a net 100% market exposure. This strategy allows managers to capitalize on high-conviction ideas that gained prominence for generating alpha through

innovative investment techniques. The 130/30 long-short strategy is an excess-return tool, tailored for active managers, which would leverage both sides of the market-taking long positions in those equities believed to outperform and selling short those believed to underperform. This is distinctly different from a long-only portfolio, but it would put to better use an investor's insights. It allows for managers to express all positive and negative convictions by shorting 30% of the portfolio and using the proceeds to augment the long positions to 130%. Studies like (Vakratsas et al., 2003) advocate the deletion of the long-only constraint enhances the efficiency of a portfolio and thereby potentially enables a better information ratio through diversification and risk management. This makes the 130/30 strategy especially useful in highly volatile stock markets, like emerging markets. This paper seeks to provide a comparative analysis of the 130/30 strategy and pair trading strategy, evaluating their risk-return profiles and performance relative to benchmark indices. By analysing historical data and applying various performance metrics, we aim to determine whether these strategies outperform the benchmark in different market conditions, offering valuable insights into their effectiveness for portfolio diversification.

Literature Review

(DiFonzo & Bordia, 1998) emphasized the importance of an information ratio above 0.5 for success in long-short portfolios. **(Qian & Hua, 2005)** argued that traditional risk models underestimate active risk in 130/30 strategies due to variability in the information coefficient. It introduced strategy risk, emphasizing the need to account for variability in information coefficients in evaluating 130/30 portfolios. **(Borchert & Zellmer-Bruhn, 2010)** discussed the potential risks of volatility in 130/30 strategies, advocating for robust risk management to mitigate the downside of short positions. **(Hübner, 2008)** introduced the Generalized Treynor Ratio, enhancing the assessment of risk-adjusted performance in long-short portfolios. **(Sharpe, 1994)** underscored the relevance of the Sharpe ratio in evaluating risk-adjusted returns for pairs trading strategies. **(Brush, 1997)** compared long-only and long-short strategies, showing the latter offers superior risk-return profiles. **(Clarke et al., 2008)** optimized short extensions in long-short portfolios, showing how strategic shorting can enhance returns. **(Tornberg, 2009)** reported that 130/30 funds outperform traditional long-only funds by 2-3% annually, particularly by mitigating losses during downturns.

(Lo & Patel, 2008) found that 130/30 strategies generated a 1.26% annualized return, with a favorable information ratio of 0.69, positioning them as superior to long-only strategies. **(Frino et al., 2011)** highlighted momentum-based 130/30 strategies in the Australian market, generating significant alpha. **(Briere & Szafarz, 2017)** showed how short-selling constraints impact factor portfolios, emphasizing the advantages of 130/30 strategies in mean-variance optimization.

Research Objectives

There is a significant gap in research applying the strategy specifically to the Indian Stock Market and comparing the performance of the strategy with the benchmark. Minimal attention has been given to emerging markets like India, where unique market conditions such as higher volatility and liquidity constraints may affect strategy performance. The Sensex, representing 30 of India's largest stocks, remains unexplored in this context, leaving a gap in understanding how this sophisticated trading strategy might perform in the Indian Market. No existing literature has comprehensively evaluated whether the 130/30 long-short strategy can consistently outperform the benchmark, highlighting the need for this research.

The objectives to conduct this study are:

1. To analyse the 130/30 Long Short Strategy in the Indian Stock Market using the 30 stocks of the Sensex and comparing it to the benchmark returns.
2. To construct and critically evaluate the stock selection criteria for the 130/30 long-short strategy.

Hypothesis

Null Hypothesis (H0) - There is no significant difference in the returns generated by the 130/30 Long Short strategy when compared to the benchmark returns of the SENSEX.

This implies that the portfolios constructed using the respective strategy do not yield performance that is statistically distinct from the benchmark, indicating that the selection of stocks does materially enhance returns beyond what the SENSEX achieves.

Methodology

The data for the analysis to test the hypothesis was collected through Yahoo Finance. The adjusted close price of the 30 companies of the Sensex was collected from April 1, 2019, to September 30, 2024. Along with the data of the 30 companies, the price of risk-free government bonds was also collected which was used in the formulation explained later. The benchmark price (Sensex) was collected for the abovementioned period to test whether the strategy has outperformed the benchmark returns.

The data once cleaned was divided into a period of 6 months dividing the data set into 11 equal periods. The Holding Period Return (HPR) was calculated for all 30 stocks, and the Benchmark (Sensex) to measure if the mentioned strategy outperformed the benchmark returns.

HPR= (Price at the end of 6 months - Price at the beginning of the 6 months) / Price at the beginning of 6 months.

130/30 Long Short Strategy

The strategy of 130/30 requires the stocks to be classified based on whether to take a short position or a long position. In the period of 11, 6 monthly data equal data set, the following tools were used to formulate the criteria for classification.

- Tracking Error quantifies how closely a portfolio follows its benchmark by measuring the return deviation. A lower tracking error implies that the portfolio more closely mimics the benchmark, with minimal discrepancies.
  Tracking Error= Standard deviation (Daily Return of stock - Daily Return of benchmark index)
- The Information Ratio compares an asset's excess returns relative to a benchmark against the volatility of those returns. A higher information ratio reflects better risk-adjusted performance, indicating that the asset has consistently outperformed the benchmark.
  Information ratio= Active Returns/ Tracking Error
  Active Returns are the excess return earned by the portfolio as compared to the benchmark returns.
  Active Return = Average returns of Portfolio - Average Returns of the benchmark
- Sharpe Ratio measures the performance of a portfolio in comparison to the Risk-free rate of the government bonds, after adjusting for its risk.
  Sharpe Ratio = (6 monthly returns of Portfolio - 6 monthly returns of the risk-free asset)/ Standard deviation of the returns of the portfolio
  The standard deviation of the portfolio returns has been computed using the function of Excel. This is what adjusts the risk in the Sharpe ratio.
- Treynor Ratio is similar to that of the Sharpe ratio. It measures the excess returns of the portfolio in comparison to the risk-free rate. However, it measures the adjustments for systematic risk.
  Treynor Ratio = (6 monthly returns of Portfolio - 6 monthly returns of the risk-free asset)/ Beta of the portfolio
  The beta of the portfolio measures the volatility of the stock or portfolio regarding the movement of the market.
  Beta = (covariance of the benchmark and the stock)/variance of the market.

Based on the above-mentioned tools, the following criteria have been made for the stocks that require to take a short or long position.

Criteria for classification of stocks for long and short positions:

Particulars	**Long Position**	**Short Position**
Tracking Error	Bottom 40% of the total stocks.	Top 40% of the total stocks.
Information Ratio	Top 40% of the total stocks.	Bottom 40% of the total stocks.
Sharpe Ratio	Top 40% of the total stocks.	Bottom 40% of the total stocks.
Treynor Ratio	Top 40% of the total stocks.	Bottom 40% of the total stocks.

Figure 2: Criteria for classification of stocks for long and short positions

The use of the top and bottom 40% for the stock selection provides a balanced and methodical approach to classifying stocks ensuring a sufficiently large pool for analysis.

- Avoiding extremes- By focusing on the top and bottom 40%, you avoid the potential biases that come from focusing only on extreme performers (such as the top or bottom 10%). This ensures that the strategy includes a diverse range of stocks.
- Capturing significant trends- The 40% split is wide enough to capture meaningful performance variations while ensuring that only stocks with a noticeable outperformance or underperformance are selected for long and short positions.

Once classified in any of the 6-month time frames, the returns generated by the stocks were then compared to the benchmark (Sensex) of the next 6 months to identify whether the strategy had outperformed the benchmark returns.

Data Analysis and Findings

To analyse the 6 monthly collected data, we examined an investment of Rs 1,00,000 in each of the two strategies and the benchmark Sensex to determine if the respective strategy has outperformed the benchmark. Along with the returns, a transaction cost of 26 basis points and a short selling cost of 84 basis points have been taken into account, making the overall transaction cost 1.1% of the net gain/loss value for the classified stocks. However, a transaction cost of only 26 basis points has been considered concerning the returns of Benchmark (SENSEX) as assumed no short position has been taken in SENSEX.

130/30 strategy

To find the respective returns of the long and short positions in each stock, an equal weight is considered based on the amount invested. In the strategy where the stocks require a short, the weight is decided by dividing negative 30,000 by the number of stocks classified in that year. The sign is negative because the shorting strategy requires an investor to borrow. Similarly, for the stocks classified and requiring a long position, the weights are calculated by dividing 1,00,000 by the number of stocks classified in that year based on the criteria mentioned in the Methodology. The weights are then multiplied by the 6-month Holding Period Returns of the respective stock.

- **Year 2019-20**

Time Period		Long Strategy					Short Strategy					Benchmark(Sensex)
Selection Period	Evaluation Period	Stocks	Weights	Amount Invested	Returns	Amount	Stocks	Weights	Amount Invested	Returns	Amount	
2019-20 April-September	2019-20 October- March	TCS Infosys HUL					No classified stocks					
2019-20	2020-21	RIL	0.2	26000	109.61%	54498.6	ITC	-0.06	-6000	8.49%	5490.6	
October- March	April-September	TCS	0.2	26000	46.41%	38066.6	Bajaj Finance	-0.06	-6000	47.73%	3136.2	
		Kotak Mahindra Bank	0.2	26000	7.32%	27903.2	Axis Bank	-0.06	-6000	18.40%	4896	
		Asian Paints	0.2	26000	24.01%	32242.6	Adani Ports	-0.06	-6000	39.60%	3624	
		Tech Mahindra	0.2	26000	56.15%	40599	IndusInd	-0.06	-6000	54.10%	2754	
						193310					19900.8	34.68%
					Net gain/loss	52625.4812						34590.57476

Figure 3: Net gain/loss of classified stocks and the Sensex in the year 2019-20

In the first six months of 2019-20, none of the companies satisfied the criteria for stocks that require a short position; hence the strategy cannot be implemented.

In the second half of 2019-20, 5 stocks each were selected to take long and short positions. If an investor would short the classified 5 stocks with a borrowed amount of Rs 30,000 in equal weights and finally invested Rs 1,30,000 in the stocks which requires a long position again in equal weights, then there would be a net gain of Rs 52625.48. However, if an investor invests Rs 1,00,000 in the benchmark (Sensex) for six months, then there would be a profit of Rs 34590.57. Therefore, this strategy managed to beat the benchmark by Rs 18035.

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- **Year 2020-21**

Time period		Long Strategy					Short Strategy					Benchmark(Sensex)
Selection Period	Evaluation Period	Stocks	Weights	Amount Invested	Returns	Amount	Stocks	Weights	Amount Invested	Returns	Amount	
2020-21	2020-21	RIL	0.2	26000	-9.98%	23405.2	ICICI Bank	-0.10	-10000	57.66%	4234	
April-September	October- March	HCL	0.2	26000	21.92%	31699.2	NTPC	-0.10	-10000	29.37%	7063	
		Sun Pharma	0.2	26000	18.96%	30929.6	Axis Bank	-0.10	-10000	57.19%	4281	
		M&M	0.2	26000	30.34%	33888.4						
		Tata Motors	0.2	26000	126.06%	58775.6						
						178698	48698				15578	27.94%
					Net gain/loss	33898.964					14422	27867.72775
2020-21	2021-22	L&T					No classified stocks					18.18%
October- March	April-September	Ultratech										

Figure 4: Net gain/loss of classified stocks and the Sensex in the year 2020-21

The year 2020-21, was the year with immense fluctuations in the market due to the pandemic of Covid-19. Investing Rs 1,00,000 in Sensex would have generated a net profit of Rs 27867.72. On the other hand, if the investor had shorted the classified three stocks (ICICI Bank, NTPC and Axis Bank) by borrowing stocks worth 30,000 in equal weights it would have generated a loss of Rs 14422. However, investing Rs 130,000 in the 5 classified stocks for a long position would have generated a profit of approximately Rs 48698. Overall, an investor would have gained Rs 33898.96 after paying the transaction costs beating the benchmark returns of Sensex by Rs 6031.
In the second half of the year, no stocks satisfied the classification criteria of shorting. Hence, the 130/30 strategy cannot be exercised.

- **Year 2021-22**

Time period		Long Strategy					Short Strategy					Benchmark(Sensex)
Selection Period	Evaluation Period	Stocks	Weights	Amount Invested	Returns	Amount	Stocks	Weights	Amount Invested	Returns	Amount	
2021-22	2021-22	No classified stocks					TATA Motors					-0.34%
April-September	October- March						Adani Ports					
2021-22	2022-23	Infosys	0.5	65000	-24.14%	49309	Asian Paints	-0.15	-15000	7.82%	13827	
October- March	April-September	SBI	0.5	65000	5.17%	68360.5	IndusInd Bank	-0.15	-15000	21.03%	11845.5	
						117669.5					25672.5	-5.25%
					Net gain/loss	-16474.762						-5240.799007

Figure 5: Net gain/loss of classified stocks and the Sensex in the year 2021-22

In the first six months of the year 2021-22, none of the companies satisfied the criteria of the stocks that require long positions. Hence, the strategy of 130/30 cannot be implemented.
The 2nd half of the year 2021-22 witnessed the second wave of the pandemic making the profit far less than that of the previous year. Investing in Sensex would have given a loss of Rs 5240.8 to an investor investing Rs 1,00,000 for 6 months. However, investing the borrowed 30,000 in Asian Paints and IndusInd Bank and then longing for the position in Infosys and SBI bank would have resulted in a net loss of Rs 16474.76 trailing the benchmark loss by Rs 11234.

- **Year 2022-23**

Time period		Long Strategy					Short Strategy					Benchmark(Sensex)
Selection Period	Evaluation Period	Stocks	Weights	Amount Invested	Returns	Amount	Stocks	Weights	Amount Invested	Returns	Amount	
2022-23	2022-23	ICICI Bank	0.25	32500	3.41%	33608.25	Tata Motors	-0.10	-10000	5.82%	9418	
April-September	October- March	SBI	0.25	32500	0.77%	32750.25	Power grid	-0.10	-10000	12.21%	8779	
		ITC	0.25	32500	20.08%	39026	JSW Steel	-0.10	-10000	10.35%	8965	
		NESTLE	0.25	32500	4.37%	33920.25						
						139304.75					27162	3.88%
					Net gain/loss	6395.61575						3868.689895
2022-23	2023-24	HDFC Bank	0.33	43333.33	-4.14%	41539.33	Bajaj Finance	-0.08	-7500	37.25%	4706.25	
October- March	April-September	ITC	0.33	43333.33	18.01%	51137.67	Adani Ports	-0.08	-7500	32.32%	5076	
		L&T	0.33	43333.33	40.90%	61056.67	Bajaj Finserv	-0.08	-7500	20.12%	5991	
							IndusInd Bank	-0.08	-7500	33.91%	4956.75	
						153733.67					20730	11.37%
					Net gain/loss	14304.5663	2.236620662					11343.08356

Figure 6: Net gain/loss of classified stocks and the Sensex in the year 2022-23

The year 2022-23 saw the stocks satisfying the criteria for both halves of the year. In comparison to the year 2021-22, the 130/30 long short strategy and the benchmark result in profits. In the first 6 months of the year 2022-23, if an investor would have shorted Tata Motors, Power Grid and JSW Steel and invested Rs 130,000 in ICICI Bank, SBI Bank, ITC and Nestle, then the net gain would have been Rs 6395.61. However, investing Rs 1,00,000 in Sensex would have provided the investor with a profit of Rs 3868.7. Hence, the strategy has outperformed the benchmark returns by Rs 2526.9.
Likewise, in the second half of the year, an investor would have gained Rs 14304.56 which is more than 2 times the previous 6 months gains. However, during this time, the returns of the Sensex have increased by almost 3 times from Rs 3868.7 in the previous 6 months to Rs 11343.

- **Year 2023-24**

Time period		Long Strategy					Short Strategy					Benchmark(Sensex)
Selection Period	Evaluation Period	Stocks	Weights	Amount Invested	Returns	Amount	Stocks	Weights	Amount Invested	Returns	Amount	
2023-24 April-September	2023-24 October-March	No stocks classified					Infosys Tech Mahindra					12.42%
2023-24	2024-25	RIL	0.5	65000	-0.21%	64863.5	Infosys	-0.15	-15000	27.20%	10920	
October-March	April-September	Titan Company	0.5	65000	2.62%	66703	Bajaj Finance	-0.15	-15000	6.77%	13984.5	
						131566.5					24904.5	13.90%
					Net gain/loss	-3490.181						13860.09697

Figure 7: Net gain/loss of classified stocks and the Sensex in the year 2023-24

No company satisfied the classification criteria in the first 6 months of the year 2023-24, hence the 130/30 long short strategy cannot be exercised. Following the 130/30 strategy in the second half of this year by investing Rs 1,30,000 in RIL and the Titan Company after shorting Infosys and Bajaj Finance, an investor would generate a net loss of Rs 3490 which is approximately 5 times less than what an investor would generate if they invested Rs 1,00,000 in the Benchmark.

Conclusion

Year		130/30 strategy	Returns(%)	Benchmark(Sensex)	Returns (%)	Difference %
2019-20	April-September	No implementation				
	October-March	52625.4812	52.63%	34590.57476	34.59%	18.03%
2020-21	April-September	33898.964	33.90%	27867.72775	27.87%	6.03%
	October-March	No implementation				
2021-22	April-September	No implementation				
	October-March	-16474.762	-16.47%	-5240.799007	-5.24%	-11.23%
2022-23	April-September	6395.61575	6.40%	3868.689895	3.87%	2.53%
	October-March	14304.56633	14.30%	11343.08356	11.34%	2.96%
2023-24	April-September	No implementation				
	October-March	-3490.181	-3.49%	13860.09697	13.86%	-17.35%

Figure 8: Findings of the 130/30 Long-Short Strategy

The strategy 130/30 long-short shows mixed performance across different periods. In the initial years, particularly from October 2019 to March 2020, the strategy significantly outperformed the benchmark, with returns of 52.63% compared to the Sensex's 34.59%, resulting in an 18.03% excess return. Similarly, in the first half of 2020-21, the strategy generated an excess return of 6.03%. These results suggest that in favourable market conditions, the 130/30 strategy can be effective in capturing upside movements.

However, in later periods, the strategy underperformed, especially during the second half of 2021-22, where it experienced a loss of 16.47% while Sensex resulted in a loss of 5.24% resulting in an underperformance of 11.23%. When the market recovered in the year 2022-23, the strategy provided more percentage of net gain as compared to the benchmark in the same period. In the year 2023-24, the strategy provided an opposite stance in comparison to the benchmark. The benchmark provided a net gain of 13.86%, however, the strategy yielded a loss of 3.49%.

The inconsistent performance of the 130/30 long-short strategy highlights its sensitivity to market conditions and the need for a more robust stock selection process. While it demonstrated strong potential in favourable periods, capturing significant upside, its underperformance during downturns suggests that the strategy lacks resilience in volatile markets. Particularly, the poor results in 2021-22 and 2023-24 indicate that improvements are needed in the criteria for selecting short positions and managing risk.

We reject the null hypothesis that states 'There is no significant difference in the returns generated by the 130/30 Long Short strategy when compared to the benchmark returns of the SENSEX.

Limitation and Future Scope

Limitations:-

1. COVID-19 Pandemic- The period of study comprises the COVID-19 pandemic, which introduced significant market volatility and anomalies, affecting data reliability and the performance of trading strategies due to sector disparities and behavioral changes among investors.
2. The criteria formed for the classification of stocks for the 130/30 strategy were not successful in identifying stocks in some years.
3. The stocks that are taken into consideration belong to SENSEX which comprises only large-cap stocks. The research has not taken into consideration the small-cap and mid-cap stocks for the analysis of the strategy.
4. The analysis also did not consider sector-specific stocks and if the classified stocks had beaten the sector-specific indices, if not the SENSEX.

Future Scope:-

1. Including mid-cap and small-cap stocks- Future research studies can focus on the implementation of the 130/30 long-short and Pair trading strategies for mid-cap and small-cap stocks in addition to large-cap stocks. This shall provide a wider scope for analysis and may yield more insight into how the strategy works and can consistently outperform benchmark returns across various market capitalizations.
2. Inclusion of Behavioral Finance Elements- Future studies may research the impact of investor sentiment and biases exaggerated by crises such as the pandemic affect the performance of 130/30 long-short and Pair trading strategies.
3. Refining Stock Selection Criteria- As the existing study fails to identify stocks in a certain time frame, future researchers can develop an advanced adaptive form of stock selection criteria which could make use of machine learning or advanced econometric models that update their choice of stock according to changes in market condition and real-time data.

Appendix 1- List of 30 companies

Serial No.	Stock Name	Industry
1	Reliance Industries	Oil & Gas
2	HDFC Bank	Banking
3	Hindustan Unilever	FMCG
4	ICICI Bank	Banking
5	Infosys	IT
6	Larsen & Toubro	Construction
7	Tata Consultancy Services	IT
8	Kotak Mahindra Bank	Banking
9	Axis Bank	Banking

10	**Bharti Airtel**	**Telecom**
11	**State Bank of India**	**Banking**
12	**NTPC**	**Power**
13	**Bajaj Finance**	**Finance**
14	**Titan Company**	**Consumer Durables**
15	**Power Grid Corporation of India**	**Power**
16	**Sun Pharmaceutical Industries**	**Pharma**
17	**UltraTech Cement**	**Cement**
18	**Maruti Suzuki India**	**Auto**
19	**HCL Technologies**	**IT**
20	**Asian Paints**	**Paints**
21	**Mahindra & Mahindra**	**Auto**
22	**IndusInd Bank**	**Banking**
23	**Tech Mahindra**	**IT**
24	**Bajaj Finserv**	**Finance**
25	**Tata Motors**	**Auto**
26	**Nestle India**	**FMCG**
27	**JSW Steel**	**Metals**
28	**Adani Ports & SEZ**	**Logistics**
29	**Coal India**	**Coal Mining**
30	**SBI Life Insurance**	**Insurance**

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