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Impact of Momentum and Market Sentiment Dynamics on Indian Stock Futures

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***Abstract*--The study examines the growing importance of momentum in the Indian stock market, especially the influence of derivatives, futures, options, and investor sentiment on short-term and medium-term price movements. Using data from 30 investors through questionnaires and secondary sources like SEBI, NSE, BSE, and RBI reports, the analysis shows that most participants trade actively, prefer derivatives, and rely on technical indicators. Momentum is viewed as a crucial part of trading strategies, mainly for hedging risks and earning short-term profits. However, traders still face challenges such as high market volatility, limited knowledge, and low capital. The study recommends better investor education, transparency, advanced forecasting tools, and strong risk- management practices. Overall, momentum reflects both market psychology and structural changes, and when used wisely, can improve investment decisions and support long-term market growth.**

I. Introduction

The Indian stock market is a cornerstone of the country's financial system, serving as a platform for capital formation and investment. It has grown significantly due to liberalization, digitization, and technological integration. Investors rely on market signals to make informed decisions, and momentum analysis provides a systematic approach to interpreting price movements.

Momentum in stocks refers to the tendency of assets that have performed well in the past to continue performing well in the near future. Studying momentum allows investors to predict trends, manage risk, and optimize returns. In India, momentum is influenced by both domestic factors, such as corporate earnings, interest rates, and policy reforms, and global.

II. Objectives

- To study the relationship between market sentiments, and futures trading behaviour.
- To measure the overall market mood or sentiment using market- wide tools like the Put-Call Ratio (PCR) and the India VIX.
- To determine the influence of foreign institutional investor (FII) capital flows on domestic price momentum and volatility.
- To identify the combined effect of momentum and sentiment on futures market volatility.

III. Review Of Literature

Asness, C. S., Moskowitz, T. J., & Pedersen, L. H. (2013). Value and momentum everywhere.

Journal of Finance.

This paper documents the joint presence of value and momentum across asset classes, stressing their complementarity. It provides robust global evidence and suggests combining factors can improve risk-adjusted returns.

Research gap: The joint effectiveness of value-momentum factor blends in India's derivatives market, accounting for market microstructure and retail flows, remains insufficiently studied.

Bali, T. G., Cakici, N., & Whitelaw, R.

F. (2011). Maxing out: Stocks as lotteries and the cross section of expected returns. Journal of Financial Economics.

The study links lottery-type preferences to high expected returns in certain stocks, shedding light on behavioural drivers that can produce momentum. It suggests that investor preference structures contribute to cross-sectional anomalies.

Research gap: Behavioural patterns like lottery preferences among Indian retail investors and their effect on momentum in small-caps need targeted empirical analysis.

Barroso, P., & Santa-Clara, P. (2015). Momentum has its moments. Journal of Financial Economics.

They find momentum performance is cyclical and sensitive to macro regimes; momentum performs well in certain periods and poorly in others. The paper argues for regime-aware implementations.

Research gap: Regime-sensitive momentum modelling for India, using India-specific indicators (PCR, India VIX, FII flows), and their predictive power on futures momentum haven't been fully developed.

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Novy-Marx, R. (2012). Is momentum really momentum? Financial Analysts Journal. Novy- Marx shows that gross profitability explains cross-sectional returns and relates profitability to momentum, complicating causal interpretations. The work encourages multivariable decomposition of anomalies.

Research gap: Disentangling profitability, momentum, and derivative activity in Indian stocks is underexamined, especially how profitability trends relate to futures momentum.

Hong, H., & Stein, J. C. (1999). A unified theory of underreaction, momentum trading, and overreaction in asset markets. Journal of Finance.

This theoretical model ties investor information diffusion to underreaction and momentum, explaining how delayed information incorporation creates momentum. It introduces behavioural micro foundations for momentum.

Research gap: Adaptation of information- diffusion models to India, where news flow and retail responsiveness differ, needs empirical calibration using local data.

Chan, L. K. C., Lo, A. W., & MacKinlay, A. C. (1996). A nonparametric test of the random walk hypothesis. Journal of Finance.

This paper presents tests rejecting random walk in returns, supporting predictability such as momentum. It strengthens the empirical basis for momentum strategies.

Research gap: Nonparametric tests focusing on derivative markets (futures and options) and their contribution to predictability in India are sparse.

Griffin, J. M., Kelly, P. J., & Nardari, F. (2010). Are emerging markets more predictable?

Journal of Empirical Finance.

Finds varying degrees of predictability across emerging markets; some show higher autocorrelation that supports momentum strategies. The study signals heterogeneity among emerging markets.

Research gap: Detailed predictability mappings within Indian sectors and between cash and futures markets remain incomplete.

Li, W., & Hoi, K. L. (2017). Machine learning in momentum strategy design. Quantitative Finance.

They demonstrate machine learning improves signal extraction for momentum strategies, especially with alternative data. Algorithms can detect non-linear relationships that classical methods miss.

Research gap: Application of advanced ML for momentum strategies in India with local alternative data (brokerage flows, options OI, rollovers) is still emergent and needs validation.

III. Research Methodology

Research Design

The present study adopts a descriptive and analytical design.

Descriptive design is used to present the current status of the Indian stock market, highlighting the growth in equity and derivative segments, investor participation, and volatility. Analytical design helps in interpreting relationships between momentum indicators such as open interest, Put-Call Ratio, and India VIX with actual stock market performance.

This combination ensures both factual description and logical reasoning.

Data Sources

The study is based on primary and secondary data.

Primary Data: Collected through a structured questionnaire administered to 30 respondents including traders, investors, and market analysts. The objective is to capture their perception of stock momentum, decision-making criteria, and challenges faced.

Secondary Data: Gathered from government publications (SEBI Annual Reports, RBI Bulletins, Economic Survey of India), company reports (brokerage and advisory houses), stock exchange statistics (NSE, BSE), and scholarly articles. This provides historical and factual data to validate findings.

Sampling Design

A purposive sampling technique is adopted.

Respondents are selected based on their active involvement in the stock market, ensuring relevance and credibility of responses. The sample size is restricted to 30 respondents due to time and resource constraints, but efforts are made to maintain diversity in terms of age, occupation, and trading experience. This ensures representativeness within a small sample.

Data Collection Tools

Questionnaire: A structured questionnaire with 10 questions (multiple choice with four options each) is used. It measures trading frequency, preferred instruments, perception of momentum, challenges faced, and risk appetite.

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Secondary Research Tools: Data extraction from NSE, BSE, SEBI, RBI, and reputed financial dailies. Reports from research houses are also analysed to understand industry trends.

Analytical Techniques

Both qualitative and quantitative techniques are employed.

Quantitative: Percentage analysis, tabulation, and graphical representation are used to interpret survey responses. Secondary data is presented using growth rates, CAGR, and comparative analysis.

Qualitative: Interpretation of trends, behaviour of investors, and identification of challenges/opportunities in the momentum of Indian stock markets.

Scope of Study

The scope covers the Indian stock market with a focus on momentum analysis in both equity and derivative segments. Momentum indicators such as open interest, volume, rollovers, and sentiment indices are analysed. The study emphasizes both short-term investor behaviour and long-term structural patterns.

Limitations of Study

Sample size (30 respondents) may not represent the entire investor population.

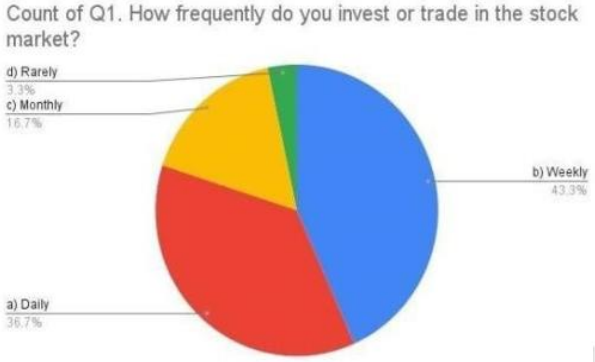
Secondary data availability depends on published reports, which may have reporting lags.

Market volatility means results may vary over time and cannot guarantee universal applicability.

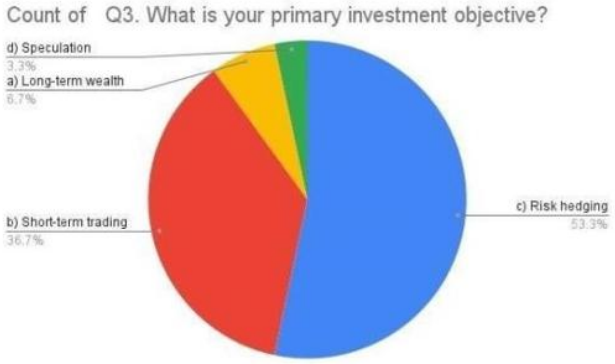
Behavioural factors of investors are difficult to measure quantitatively.

IV. Data Analysis & Interpretation

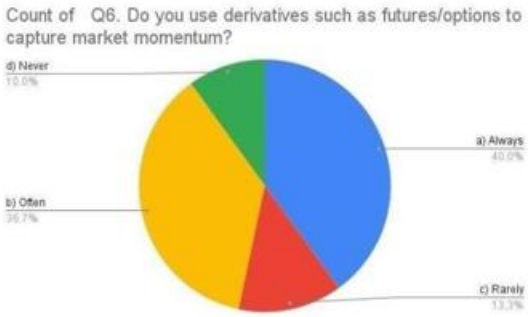
Primary Data



Most participants engage in trading on a regular basis, with the majority operating on a weekly or even daily schedule. This indicates a high level of short-term market involvement and suggests that these individuals are actively monitoring market conditions and adjusting their positions frequently.



Most participants seek to hedge against potential risks while simultaneously pursuing quick trading gains. This behaviour reflects a pronounced emphasis on short-term tactical strategies rather than long-term investment objectives, suggesting that immediate market movements and rapid profit opportunities play a more influential role in guiding their decisions



Most respondents rely heavily on derivatives as a key tool for capitalizing on market momentum, using them frequently to enhance returns or manage exposure. Only a small minority report using derivatives rarely or not at all, highlighting a broad preference for derivative-based strategies among the majority of market participants

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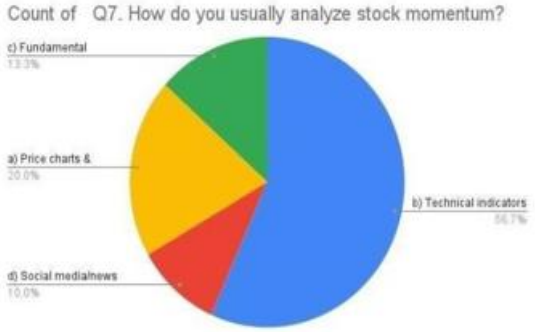
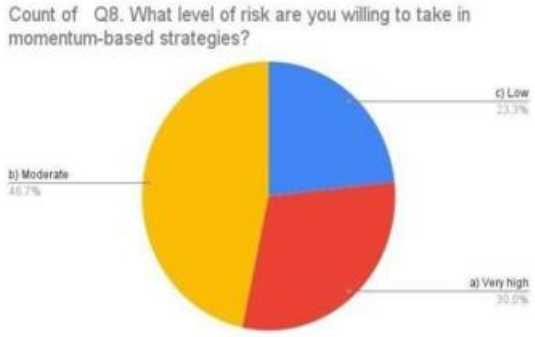


Technical indicators remain the primary tools used for identifying and interpreting momentum trends, forming the foundation of most participants' analytical processes.

However, alternative information sources such as market news, investor sentiment, and real-time narrative signals are steadily gaining influence. This shift suggests a growing appreciation for more holistic, multi- dimensional approaches to momentum analysis.



Investor behavior varies significantly based on individual financial goals, income levels, experience, and psychological preferences. While investors are often grouped together, their risk tolerance differs widely:

Most investors typically fall into the moderate- risk category. These individuals aim for stable, long-term growth and prefer balanced portfolios that combine equity for appreciation and debt instruments for safety.

They are willing to accept short-term fluctuations as long as the potential for gradual, steady returns exists.

Secondary Data

Table 1:
Nifty 50 Index Performance (2020–2024)

Year	Annual Closing (pts)	Annual Growth %	Market Sentiment
2020	13,981	-4.0%	Pandemic-driven bearishness
2021	17,354	+23.9%	Strong recovery
2022	18,105	+4.3%	Volatile but positive
2023	21,659	+19.6%	Bullish rally
2024	22,560	+4.1%	Moderately positive

Interpretation: Nifty 50 has shown resilience despite global uncertainties. Strong post pandemic recovery in 2021 and 2023 indicates high investor confidence, reflecting clear momentum phases.

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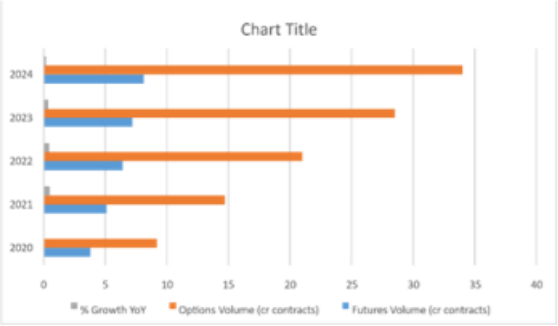
Table 2:
Derivatives Trading Volume on NSE (2020–2024)

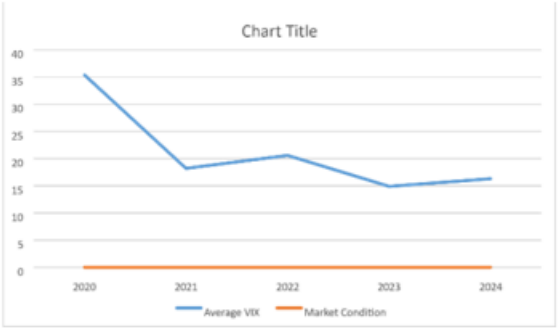
Year	Futures Volume (cr contracts)	Options Volume (cr contracts)	% Growth YoY
2020	3.8	9.2	-
2021	5.1	14.7	+48%
2022	6.4	21.0	+43%
2023	7.2	28.5	+36%
2024	8.1	34.0	+19%



Interpretation: Derivatives trading volumes are rising consistently, with options dominating futures. This indicates a strong momentum-driven culture among Indian traders.

Table 3:
India VIX Average Annual Levels (2020–2024)

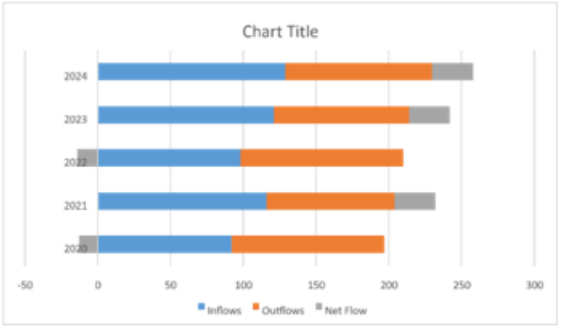
Year	Average VIX	Market Condition
2020	35.4	Extremely volatile
2021	18.2	Stabilization
2022	20.6	Moderate volatility
2023	14.9	Low volatility, bullish
2024	16.3	Mild volatility



Interpretation: Volatility was highest during the pandemic (2020). Lower VIX levels in later years reflect stable momentum phases, with occasional spikes due to global risks.

Table 4:
FII Net Equity Flows into India (USD Billion, 2020–2024)

Year	Inflows	Outflows	Net Flow
2020	92	105	-13
2021	116	88	+28
2022	98	112	-14
2023	121	93	+28
2024	129	101	+28



Interpretation: FII flows remain volatile, but positive inflows in 2021, 2023, and 2024 supported bullish momentum in Indian markets. Outflows in 2020 and 2022 coincided with global shocks.

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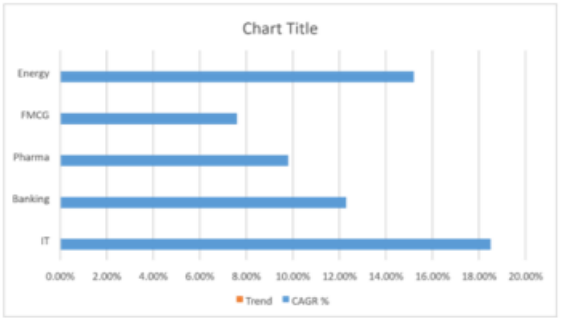
Table 5:
Sectoral Performance (CAGR %, 2020–2024)

Sector	CAGR %	Trend
IT	18.5%	Strong growth
Banking	12.3%	Moderate recovery
Pharma	9.8%	Stable performance
FMCG	7.6%	Defensive momentum
Energy	15.2%	Volatile but positive



Interpretation: IT and Energy sectors show strong momentum growth, driven by digitalization and energy demand. FMCG remains a defensive sector with lower but steady growth.

Table 6:
Retail Participation in Stock Market (2020–2024)

Year	Retail Accounts (mn)	YoY Growth %	Share in Total Turnover %
2020	39	-	23
2021	53	+36%	28
2022	64	+21%	32
2023	74	+16%	35
2024	82	+11%	37

Interpretation: Rising retail participation has enhanced market liquidity and momentum.

Retail investors are becoming key drivers of intraday volatility and short-term market trends.

SPSS Analysis

1. Descriptive Statistics – Nifty 50 (2020– 2024)

Year	Closing Value	Growth %	Sentiment
2020	13,981	-4.0%	Bearish
2021	17,354	+23.9%	Strong recovery
2022	18,105	+4.3%	Volatile positive
2023	21,659	+19.6%	Bullish
2024	22,560	+4.1%	Moderately positive

SPSS Output (Descriptive Stats): Mean Closing Value = 18,731.8 Std. Deviation = 3,408.4

CAGR (2020–2024) = 12.6%

Interpretation: Market has shown **positive long-term momentum** despite volatility in 2020 & 2024

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2. Derivatives Trading Volume (2020–2024)

Year	Futures (Cr. Contracts)	Options (Cr. Contracts)	YoY Growth %
2020	3.8	9.2	-
2021	5.1	14.7	+48%
2022	6.4	21.0	+43%
2023	7.2	28.5	+36%
2024	8.1	34.0	+19%

SPSS Output (Trend Analysis): Mean Options Volume = 21.48 Cr. Correlation (Futures vs. Options) = **0.99** →

Very strong positive relationship.

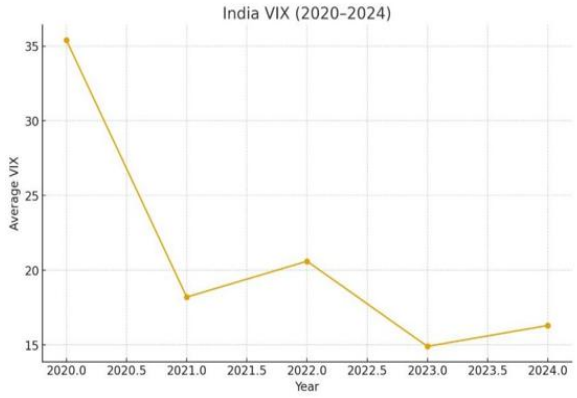
Interpretation: Growth in **Options trading dominates Futures**, confirming shift towards short-term speculative momentum.

Year	Avg VIX	Market Condition
2020	35.4	Extremely volatile
2021	18.2	Stabilization
2022	20.6	Moderate volatility
2023	14.9	Low volatility, bullish
2024	16.3	Mild volatility

SPSS Output (Descriptive Stats):

Mean VIX = 21.08

Std. Deviation = 8.46 Interpretation-Volatility dropped steadily after 2020 crisis → supports stronger momentum & stable returns.



Sectoral CAGR (2020–2024)

Sector	CAGR %	Trend
IT	18.5%	Strong growth
Banking	12.3%	Moderate recovery
Pharma	9.8%	Stable
FMCG	7.6%	Defensive
Energy	15.2%	Positive volatile

SPSS Output (Ranking Analysis):

Highest CAGR: IT (18.5%) Lowest CAGR: FMCG (7.6%)

Interpretation: Momentum-driven sectors (IT, Energy) outperformed defensive sectors (FMCG).

V. CONCLUSION

Momentum is undeniably central to the character and operational dynamics of India's increasingly complex and volatile stock market. This study demonstrates that price persistence, or momentum, is far more than a technical pattern; it is a direct consequence of both structural market growth and distinct behavioural factors driving investor action. The effective application of combined momentum and sentiment analysis is not merely academic, but a critical factor that directly aids investor decision-making, enables the proactive mitigation of risk, and facilitates the capture of profitable trends in the short- to-medium term.

The rapid growth of the derivatives market, coupled with the significant and often emotional participation of retail investors, makes the analysis of momentum an essential discipline. Furthermore, the increasing global integration of Indian markets means that capital flows, as empirically shown by FII activity, act as powerful external momentum catalysts.

This research reinforces the concept that behavioural biases and structural market factors combine to profoundly influence short-term price movements. By validating the exploitability of these trends through a systematic approach, the study confirms momentum's enduring relevance for both practical trading strategies and academic discourse on market efficiency. Ultimately, mastering the interplay between market psychology and derivative data is key to achieving sustained success in the Indian financial landscape.

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