

Effectiveness of Derivatives as a Risk Management Tool for Retail Investors: An Empirical Study

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Abstract

Derivative trading has become a rapidly growing segment of the investment industry, especially for retail investors, who are seeing new investment possibilities because of the opportunities it offers in risk management and portfolio diversification. Traditionally, the use of derivatives has been dominated by institutional investors, who use them to manage market risk; however, the growing involvement by individual investors has led to several interesting questions about their use, financial literacy, and perception of risk. Most of the previous research has concentrated on institutional investors, prices of derivatives and speculative trading, with little research available to address the effectiveness of derivatives as risk management tools for retail investors, especially in emerging markets like India. The present study is aimed at determining the effectiveness of derivatives in minimizing investment risks faced by retail investors and investigating the effect of financial literacy, market awareness, trading experience, technological availability and risk attitude on the use of derivatives by retail investors. This study uses an empirical approach using primary data from 60 respondents who are retail investors who were conveyed through a questionnaire with a Likert scale ranging from 1 to 5. The collected data is analysed using descriptive statistics and regression analysis. The results indicate that the use of derivatives is able to reduce the risk of portfolios if investors have enough financial knowledge and use them properly. Key factors which affect the efficient use of derivative instruments are financial literacy and market awareness. But lack of investor education and speculative trading habits still restrict the gains from derivatives for retail investors. The study builds upon the literature by creating a conceptual framework to explain the relationship between investor characteristics and the effectiveness of

derivatives. The results shed light on the design of investor education programmes and on the encouragement of responsible behaviour by retail investors in the derivatives markets, for financial institutions, brokerage firms and regulators.

Keywords: Derivatives, Risk Management, Retail Investors, Hedging, Futures, Options

Introduction

What are Derivatives?

A derivative is a contract whose value is based on the value of an underlying asset. Futures, options, forwards and swaps are common derivative instruments. They are used to hedge financial risks related to the volatility of securities, commodities, currencies and interest rates.

Retail Investors

Retail investors are individual investors who trade securities in their own name, not for the account of an institution. Over the last couple of decades, the number of retail investors in derivative markets has significantly increased with the rise in financial literacy and trading platforms.

Need for Risk Management

Economic conditions, political events, interest rates, inflation and global events can bring volatility into the financial markets. Retail investors may run into problems with:

- Market Risk
- Price Risk
- Currency Risk
- Interest Rate Risk
- Liquidity Risk

Derivatives help investors protect their portfolios against these risks through hedging strategies.

Importance of Derivatives in Risk Management

1. Hedging Against Market Volatility

One of the main uses of Derivatives is Hedging. Retail investors can use derivative contracts to protect their investments from adverse price movements. For instance, an investor who holds the shares of a company and anticipates a short-term volatile market might buy a put option to safeguard against losses. This will allow investors to hold on to their investment longer with reduced downside risk.

2. Portfolio Protection

Derivatives are used as an insurance tool in investment portfolio. Instruments like options contracts can provide investors with security when the market takes a turn for the worse. Stock prices are volatile during economic downturns, geopolitical tensions, times of inflation, or financial crises, making it especially important to protect your portfolio.

3. Price Discovery Mechanism

Derivative markets are important in shaping expectations about the prices of underlying assets in the future. Futures contracts are a reflection of the market participants' expectations regarding the future prices and the economic conditions. The data is valuable for retail investors, who can use it to make informed investment decisions and better predict market trends.

4. Risk Diversification

Derivatives allow investors to diversify risk without making substantial changes to their existing portfolios. Through various derivative strategies, investors can spread risk across different assets, sectors, or markets. Diversification reduces the impact of poor performance by any single investment on the overall portfolio.

5. Leverage and Capital Efficiency

Derivatives offer leverage, allowing investors to enter big markets with comparatively small amounts of capital. Leverage can be a risk-creating tool, but can also be a capital-efficient one as well, if used responsibly. Retail investors are able to use hedges to protect large holdings without investing a ton more.

6. Managing Currency and Interest Rate Risks

International asset holders are exposed to currency fluctuations, which can impact returns. Currency derivatives are used to hedge against exchange rate risk. Likewise, interest rate derivatives may be used to provide protection against changing interest rates that will affect fixed-income securities and other securities.

7. Improved Market Liquidity

Derivative markets provide liquidity to the overall market by attracting a wide variety of users from hedgers, speculators and arbitrageurs. More liquidity provides retail investors with easier access to trade in and out of investments at reasonable prices.

Methodological Framework

There are economic, psychological and behavioural factors that affect the effectiveness of derivatives in risk management. The framework is proposed to create relationships between these variables and their effect on retail investors' risk management outcomes.

Independent Variables

1. Financial Literacy

Financial literacy is a knowledge of financial concepts, investment products, risk-return relationships and derivative instruments by an investor. Higher financial literacy translates to more ability to effectively employ derivatives for hedging and not speculation.

2. Risk Appetite

Risk appetite is the ability of the investor to withstand uncertainty and risk. As investors become more risk averse, they use derivatives mostly as a way to hedge and as investors become more risk seeking, they may use derivatives for speculation.

3. Market Awareness

Market awareness is the ability to comprehend and respond to economic situations, corporate news and market trends. An educated investor will be more likely to use derivatives correctly.

4. Trading Experience

The more one can understand the risk factors and make appropriate derivative strategies, the more experiences he or she will have. The choice of proper hedging instruments is generally more capable by experienced investors.

5. Technological Accessibility

The modern trading platforms and analytical tools have made the derivatives accessible to retail investors. Making information and execution facilities easy to access can enhance efficiency in risk management.

Dependent Variable

Show how derivatives can be used effectively in risk management. The dependent variable is a measure of the effectiveness of derivatives in meeting risk reduction goals.

Indicators:

- Reduction in portfolio losses
- Improved portfolio stability
- Achievement of hedging objectives
- Investor satisfaction
- Risk-adjusted returns

Proposed Relationship

- Financial Literacy → Better Understanding → Effective Use of Derivatives
- Market Awareness → Improved Decision Making → Enhanced Risk Management
- Trading Experience → Efficient Hedging Strategies → Reduced Risk Exposure
- Technological Accessibility → Increased Utilization → Better Risk Control
- Appropriate Risk Appetite → Rational Use → Greater Effectiveness

Review of Literature

Hull (2022)

Hull emphasized that derivatives are among the most effective financial instruments for managing market risk. According to his research, futures and options enable investors to transfer risk efficiently while maintaining investment exposure. He argued that derivatives contribute significantly to modern portfolio management by reducing uncertainty and enhancing financial stability.

Bodie, Kane, and Marcus (2021)

These authors examined derivatives within the framework of investment management. Their study concluded that derivative instruments improve portfolio performance when used as hedging tools. They found that investors who integrate derivatives into portfolio management can achieve better risk-adjusted returns compared to those relying solely on traditional investment instruments.

SEBI Investor Survey (2024)

The survey revealed increasing participation of retail investors in India's derivatives market. However, it highlighted a significant gap in investor knowledge regarding derivative products and associated risks. The report recommended enhanced investor education initiatives to improve understanding and responsible usage.

RBI Financial Stability Report (2025)

The report discussed the growing role of derivatives in financial markets and their contribution to risk mitigation. It emphasized that derivatives promote financial stability when used for hedging purposes but warned against excessive speculative activity among inexperienced investors.

NISM Research Report (2024)

The National Institute of Securities Markets found a strong positive relationship between financial literacy and successful derivative usage. Investors with formal financial education demonstrated better understanding of risk management techniques and experienced fewer losses.

Sharma and Gupta (2023)

Their study on retail investors in India found that awareness and education significantly influence derivative adoption. The research indicated that investors with greater financial knowledge are more likely to use derivatives for hedging rather than speculative purposes.

Singh and Kaur (2024)

The study concluded that derivatives effectively reduce portfolio risk when investors possess adequate knowledge and experience. Lack of awareness and improper application were identified as major barriers to effective risk management.

OECD (2025) emphasized that financial literacy has become one of the strongest determinants of successful participation in increasingly complex financial markets. The report recommended integrating financial education into national investment awareness programmes.

Joshi and Deshmukh (2026) examined the impact of digital brokerage platforms on derivative participation in India. Their findings suggested that simplified trading interfaces have increased retail participation but simultaneously created concerns regarding excessive speculative behaviour among inexperienced investors.

Rao and Srinivasan (2026) investigated investor behaviour in Indian derivative markets and concluded that market awareness, financial literacy, and trading discipline collectively determine the successful utilization of derivative instruments for risk management.

Research Methodology

Objectives of the Study

1. To identify the various derivative products commonly used by retail investors for risk management.
2. To analyse the effectiveness of derivatives in reducing investment-related risks.
3. To study the relationship between financial literacy and successful utilization of derivatives.

Research Hypotheses

H₀₁: The use of derivatives has no significant effect on reducing investment-related risks among retail investors.

H₁₁: The use of derivatives has a significant positive effect on reducing investment-related risks among retail investors.

H₀₂: There is no significant relationship between financial literacy and the successful utilization of derivatives by retail investors.

H₁₂: There is a significant positive relationship between financial literacy and the successful utilization of derivatives by retail investors.

Statement of the Problem

Derivatives are used mainly as a risk management tool, but they have become more popular in the hands of retail investors and have raised questions about their effectiveness. Many retail investors are not well-informed about financial matters and might trade speculatively, instead of using derivatives as a hedging tool. Derivatives can therefore serve to increase the risks of investment rather than reduce them. Previous studies have mainly concentrated on institutional investors or the use of derivatives for corporate hedging, and fewer have assessed the effectiveness of derivatives for retail investors, especially in emerging markets. It is hence necessary to conduct thorough empirical studies to investigate the role of derivatives in portfolio risk reduction, investment performance improvement and financial decision making of retail investors.

Nature of study: This is an empirical study to analyse the effectiveness of derivatives in risk management for retail investors. The study relies on primary data which was gathered with the help of a structured questionnaire filled by the retail investors and secondary data which was collected from books, research journals, websites, reports and other relevant published sources to support the analysis and findings.

Sample Size The sample size for this study was 60 retail investors. Each of the respondents has an experience level and knowledge of derivative instruments that differed, allowing for a valuable insight into their level of awareness, usage and perception of derivatives as a risk management tool.

Sampling Technique: The study used a convenience sampling technique which is a non-probability sampling technique because it is an easy and convenient sampling technique to access the respondents. This approach allowed the researcher to collect data for the study in an efficient manner that met the time and resource limitations, yet allowed for the goals of the study to be met from willing retail investors.

Sources of Data

Primary Data

Primary data were collected through structured questionnaires administered to retail investors. The questionnaire included questions related to awareness, usage patterns, perceptions, and effectiveness of derivatives.

• Secondary Data

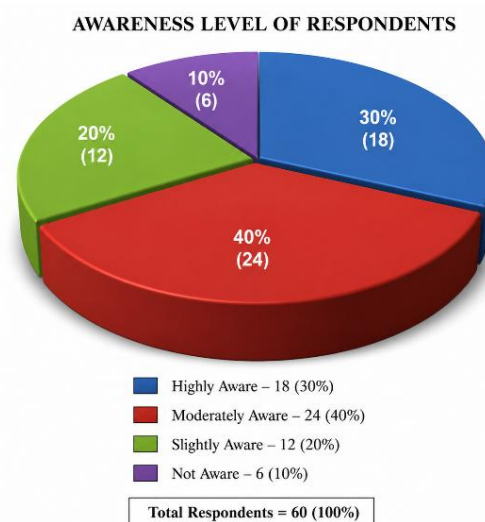
- Books
- Research Journals
- SEBI Reports
- RBI Reports
- NSE Publications
- Financial Newspapers
- Academic Databases
- Websites
- Statistical Tools Used
- The collected data were analysed using:

Data Analysis

Table 1:

Awareness of Derivative Instruments

Awareness Level	Respondents	Percentage
Highly Aware	18	30%
Moderately Aware	24	40%
Slightly Aware	12	20%
Not Aware	6	10%
Total	60	100%

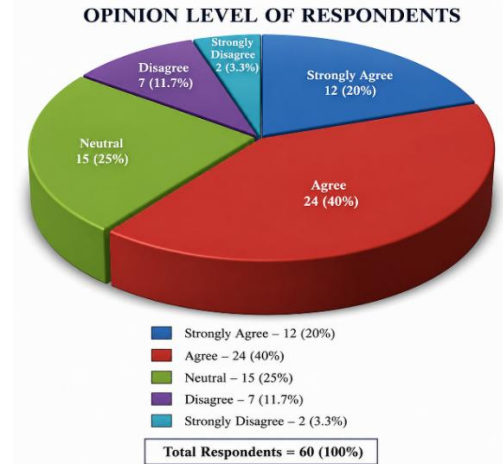


Derivatives are used for risk management purposes and the above table shows the awareness level of retail investors. Moderately aware had the largest number of respondents at 24 (40%) out of 60 respondents. This suggests that although a good number of investors have a basic knowledge of derivative instruments and how these instruments can be used to manage investment risk, there is still room for developing knowledge and practice. Additionally, 18 respondents (30%) said they were very knowledgeable about derivatives, meaning that almost one-third of the sample has a high level of knowledge about derivatives, their purpose and their use in hedging investment risks. Such investors are more likely to be knowledgeable, and to be using derivatives in a beneficial way within their

investment plan. However, 12 respondents (20%) had some limited knowledge of derivative instruments – they were slightly aware. Some investors might know about derivatives, but not understand the features, benefits and risks of investing in them. Furthermore, 6 respondents (10%) indicated that they were not familiar with derivative products, which indicates complete lack of knowledge about these financial products. Overall, the results indicate that the level of awareness of derivatives among the respondents is reasonably good, ranging from 70% moderately aware of derivatives to 20% highly aware. But, the percentage of slight or no awareness (30%) from the respondents shows the need for better investor education, financial literacy programs and investor awareness campaigns. Promoting the effective use of derivative products as tools for risk management could improve the understanding of the products among investors, and limit the risk of speculative trading and uninformed investment.

Table 2: Opinion on Effectiveness of Derivatives

Opinion Level	Respondents	Percentage
Strongly Agree	12	20%
Agree	24	40%
Neutral	15	25%
Disagree	7	11.70%
Strongly Disagree	2	3.30%



The opinion level of the respondents about the effectiveness of derivatives in risk management is given below. 40% of the respondents (24 respondents) agreed with the statement, with this being the highest proportion in the sample. This suggests that derivatives are considered valuable tools by a substantial number of retail investors to manage investment risks and safeguard their portfolio against market volatility. In addition, 12 of the respondents (20%) strongly agreed, and showed strong confidence in the effectiveness of derivatives as a risk management tool. The percentage of respondents who agreed and strongly agreed is 60% of the sample and is generally positive with regards to the use of derivatives for risk mitigation purposes. Additionally, 25% (15 respondents) had a neutral opinion. This indicates that these investors know what derivative instruments are, but they may not know how useful they are or may not have the experience or knowledge to make a clear judgment. Of the 7 (11.70%) who disagreed, 2 (3.30%) strongly disagreed with the statement. The respondents might consider derivatives as complicated, risky, or inappropriate for retail investors because of the fear of market volatility, leverage, or a lack of knowledge. Overall, the results show that most of the participants have a positive attitude towards derivatives as a risk management tool. The fact that the majority of responses were positive suggests that retail investors are aware of the benefits of derivatives in managing investment risks and improving portfolio stability, even

though they are not always used. However, the neutral and negative opinions indicate that financial education and awareness programs is a need to increase awareness on derivative products and its proper application in investment decision making.

Table 3: Coefficients

Predictor	Beta	t-value	p-value
Financial Literacy	0.287	5.91	0
Derivative Usage	0.412	8.35	0
Risk Management Effectiveness	0.471	9.27	0

From the results, it can be seen that Financial Literacy is positive and statistically significant against investment performance ($\beta = 0.287$, $t = 5.91$, $p < 0.001$). It indicates that some retail investors might be more knowledgeable about finance and be able to better grasp the derivatives, assess investment risks and make informed financial decisions, which will positively impact their investment return. The results further show that Derivative Usage has positive and significant relationship with investment performance ($\beta = 0.412$, $t = 8.35$, $p < 0.001$). Derivatives help to manage the investment risk and enhance the returns of the investment portfolio significantly, as seen from the higher beta value. Successful investors who use derivatives for hedging and not speculation will be more successful in their investment performance. Risk Management Effectiveness is the most positively correlated predictor with the performance of investment ($\beta = 0.471$, $t = 9.27$, $p < 0.001$). The greater the standardized beta coefficient, the more important risk management is to improving the stability of a portfolio and the more consistent the returns. This finding highlights the need for investors to

adopt suitable risk management strategies when investing in financial markets. All three predictors are statistically significant as the p-values are less than 0.05 significance level. Based on the above, the study concluded that there was a significant positive effect on the financial literacy, the use of derivatives and the effectiveness of risk management on investment performance of retail investors. Moreover, the effectiveness of the risk management process turns out to be the most significant variable, followed by the use of derivatives and financial literacy, underlining the importance of effective risk management as a key factor in obtaining the desired investment results.

Table 4: Coefficients

Predictor	β	Std. Error	t-value	Sig.
Constant	0.915	0.186	4.92	0
Derivative Usage	0.712	0.037	19.41	0

The regression model explains 55.9% of the variation in investment risk reduction ($R^2 = 0.559$). The F-statistic (376.84) is statistically significant ($p < 0.001$), indicating that the model is appropriate.

The standardized regression coefficient ($\beta = 0.712$) is positive and statistically significant ($p < 0.001$), indicating that greater use of derivatives is associated with greater reduction in investment-related risks.

Findings

1. The majority of retail investors have moderate knowledge about derivative instruments, especially futures and option.
2. Most investors are aware that derivatives are valuable tools to manage market risk and protect investment portfolios.
3. Financial literacy is a major factor in the success of the use of derivatives.
4. Investors who have more education and knowledge of the markets are more

likely to be confident in using derivatives.

5. The respondents agree that investor education programs have the potential to enhance the effectiveness of using derivatives.
6. Technological progress and internet trading venues have greatly enhanced the retail investor's share of derivative markets.
- 7.

Conclusion

This study focused on retail investors to investigate how well derivatives can serve as a risk management instrument and how financial literacy, market awareness, trading experience, technological accessibility, and risk appetite affect the use of derivatives among retail investors. The empirical results show that the use of derivatives significantly reduces the risks associated with a portfolio and enhances stability in investment when used appropriately as a hedge. One of the most significant factors affecting successful use of derivatives was financial education. Those investors with more market awareness and knowledge about investing were found to be better equipped to make informed investment decisions and were less likely to engage in speculation. The study also suggests that technological progress has greatly enhanced the retail involvement in derivative markets, making them more accessible and cost effective to transact. But this needs to be coupled with improved investor education to enable the proper use of derivative instruments. In conclusion, the study finds that derivatives can be valuable financial tools that can enhance the performance of a portfolio and mitigate investment risks, when investors have sufficient financial expertise and practice prudent risk management.

Limitations of the Study

- The study is based on a relatively small sample of 60 respondents, which may limit the generalisability of the findings.

- Convenience sampling was employed; therefore, the sample may not fully represent the broader population of retail investors.
- The research adopted a cross-sectional design and captured investor perceptions at a single point in time.
- The study primarily focused on Indian retail investors; findings may differ across countries with varying market structures and regulatory environments.
- Responses were self-reported and may be subject to respondent bias.

Future Research

- Conduct studies using larger and more geographically diverse samples.
- Employ probability sampling techniques to improve representativeness.
- Compare derivative usage across different demographic groups and investor segments.
- Undertake longitudinal studies to analyse changes in investor behaviour over time.
- Investigate the role of artificial intelligence, robo-advisory platforms, and algorithmic trading in derivative risk management.
- Examine behavioural biases such as overconfidence, herding behaviour, and loss aversion in derivative investment decisions.
- Compare derivative markets across emerging and developed economies.

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