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A Study on Financial Derivatives (Futures & Options) with Special Reference to Sensex

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ABSTRACT

The rapid growth of financial markets and the increased volatility in asset prices have led to the rise of financial derivatives as important tools for managing risk and discovering prices. In India, the start of derivatives trading was a major reform in the capital market system. Futures and Options (F&O), especially index-based derivatives, have become very popular among investors, traders, and institutions. The SENSEX, which is the benchmark index of the Bombay Stock Exchange (BSE), plays a key role as an underlying asset for derivatives trading. This study looks at the concept, growth, structure, and performance of financial derivatives, focusing on SENSEX Futures and Options. It also examines trading trends, risk-return features, and the role of SENSEX derivatives in hedging, speculation, and market efficiency. The study relies on secondary data gathered from BSE, SEBI, and published research. The findings show that SENSEX derivatives have greatly improved liquidity, transparency, and risk management in the Indian capital market, though they also create challenges due to leverage and the lack of investor awareness.

Keywords: Financial Derivatives, Futures, Options, SENSEX, Indian Capital Market, Risk Management

1. INTRODUCTION

The Indian financial system has undergone remarkable transformation since the liberalization reforms of the early 1990s. Globalization, technological advancements, and increased integration with international markets have resulted in greater volatility in asset prices. In such an environment, managing financial risk has become an essential requirement for investors and institutions. Financial derivatives emerged as powerful instruments to address this need.

Financial derivatives are contracts whose value is derived from an underlying asset such as equity shares, stock indices, commodities, currencies, or interest rates. In India, derivatives trading was introduced with the objective of providing efficient risk management tools, improving price discovery, and enhancing market efficiency. Index-based derivatives, especially SENSEX Futures and Options, have become highly popular due to their liquidity and broad market representation.

The SENSEX, introduced in 1986, is the oldest stock market index in India and consists of 30 large, well-established, and financially sound companies listed on the Bombay Stock Exchange. As a barometer of the Indian economy, movements in the SENSEX reflect overall market sentiment. The

introduction of SENSEX Futures and Options has enabled market participants to hedge against market-wide risk rather than individual stock risk. This paper attempts to provide a comprehensive study of financial derivatives with special reference to SENSEX Futures and Options.

2. OBJECTIVES OF THE STUDY

The present study has the following objectives:

- To explain the concept and significance of financial derivatives.
- To study the structure and functioning of Futures and Options.
- To analyze the growth of derivatives trading in India.
- To examine the performance and role of SENSEX Futures and Options.
- To analyze SENSEX derivatives trading trends using secondary data.
- To identify the benefits and risks associated with derivatives trading.
- To offer suggestions for effective and responsible use of derivatives.

3. REVIEW OF LITERATURE

Several contemporary studies provide deeper insight into the role, trends, and impact of financial derivatives, particularly in the Indian context. Recent research by Krishnamurthy and Singh (2024) investigated the use of derivatives by Indian equity mutual funds during the COVID-19 pandemic and found that funds used derivatives effectively to hedge market exposure, thereby reducing portfolio risk during periods of high volatility.

In 2025, Ganesh and Velmurugan analyzed equity derivatives trading trends in India using NSE data, highlighting remarkable growth in trading volume and turnover for futures and options over a decade. Their study suggests that the rapid expansion of India's derivative market has reshaped risk management practices and investor strategies.

Other recent work has assessed the broader implications of derivative markets. For example, Singh and Kumar (2024) provided evidence on the effectiveness of deterministic option pricing models for index options in India, showing improved accuracy for valuation and risk analysis in dynamic markets.

Additionally, Tsegenet Abebe, Swain, and Patnaik (2023) critically examined challenges in derivatives trading in Indian capital markets, pointing to structural issues such as volatility and investor awareness as key areas needing attention.

These recent findings complement foundational work by Hull (2009), Varma (2014), and others, underscoring the evolving nature of derivative markets and their implications for hedging efficiency, market liquidity, and investor behavior. Collectively, the literature highlights the sustained growth and complexity of derivatives trading in India, especially after regulatory changes and heightened retail participation.

4. RESEARCH METHODOLOGY

The study is descriptive and analytical in nature. It is entirely based on secondary data collected from reliable and published sources. The major sources of data include:

- Bombay Stock Exchange (BSE) publications and reports
- Securities and Exchange Board of India (SEBI) annual reports
- Research articles published in journals

- Books on derivatives and financial markets
- Official websites related to capital markets

The collected data have been analyzed using simple statistical tools such as averages, percentages, and trend analysis. Tables have been used to present data clearly and systematically.

5. CONCEPT OF FINANCIAL DERIVATIVES

A financial derivative is a contract whose value depends on the price of an underlying asset. Derivatives themselves have no independent value. Their value is derived from changes in the value of the underlying asset. Derivatives are primarily used for three purposes: hedging, speculation, and arbitrage.

5.1 FEATURES OF FINANCIAL DERIVATIVES

- Value derived from an underlying asset
- Used for risk management and speculation
- Can be exchange-traded or over-the-counter
- Highly leveraged instruments
- Standardized contracts in exchange-traded derivatives
- Subject to market and price risk

6. TYPES OF FINANCIAL DERIVATIVES

The major types of financial derivatives traded in financial markets are:

- Forward Contracts: A forward contract is a customized agreement between two parties to buy or sell an asset at a predetermined price on a future date. It is traded over-the-counter and involves counterparty risk.
- Futures Contracts: A futures contract is a standardized agreement traded on an exchange to buy or sell an asset at a specified price on a future date. It involves margin payments and daily settlement.
- Options Contracts: An option gives the buyer the right, but not the obligation, to buy or sell an asset at a fixed price within a specified period. Options limit risk to the premium paid.
- Swaps: A swap is a derivative contract in which two parties exchange cash flows, such as interest rates or currencies, to manage financial risk.

In the Indian capital market, Futures and Options are the most actively traded derivatives, especially index-based derivatives such as SENSEX and NIFTY.

7. FUTURE CONTRACTS

A futures contract is a standardized agreement to buy or sell an underlying asset at a predetermined price on a specified future date. Futures contracts are traded on recognized stock exchanges and are regulated by SEBI.

7.1 Features of future contracts

- Exchange-traded futures contracts are characterized by standardized contract sizes and fixed maturity dates, it means that each contract linked to a particular index has a predetermined lot size and expiry.
- This standardization enables futures to be traded on organized exchanges such as the NSE and BSE, where the clearing corporation guarantees all transactions and acts as the counterparty to both buyers and sellers, thereby significantly reducing the risk of default.

- Futures trading operates through a margin-based system, which allows market participants to take positions in large contract values by depositing only a small portion of the total value as margin.
- To maintain financial integrity, exchanges conduct daily mark-to-market settlements, under which gains or losses are credited or debited to traders' accounts based on daily closing prices.
- Along with transparent data on trading volume and open interest, this mechanism ensures high liquidity, transparency, and fair price discovery in the futures market.

7.2 SENSEX futures

SENSEX Futures are index futures contracts where the SENSEX index acts as the underlying asset. These contracts enable investors to hedge their portfolios against adverse market movements and also provide opportunities for speculation based on expected index movements.

8. OPTIONS CONTRACTS

An option is a financial contract that gives the buyer the right, but not the obligation, to buy or sell an underlying asset at a specified price within or at the end of a specified period.

8.1 TYPES OF OPTIONS

- Call Option: Right to buy the underlying asset
- Put Option: Right to sell the underlying asset

8.2 SENSEX OPTIONS

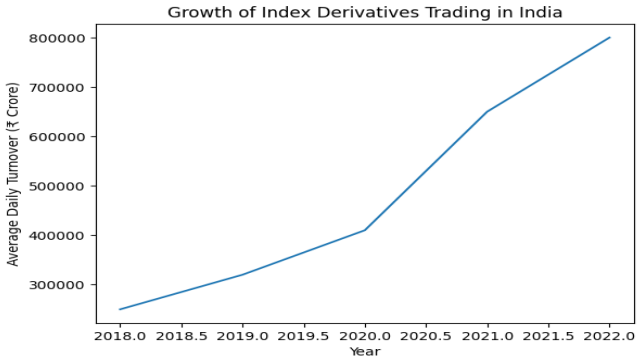
SENSEX Options are index options that allow investors to manage systematic market risk. These options are widely used by institutional investors, mutual funds, and experienced retail traders.

9. GROWTH OF DERIVATIVE MARKETS IN INDIA

Since their introduction in 2000, derivatives have witnessed exponential growth in India. Index derivatives dominate the derivatives segment in terms of volume and value. The increasing participation of institutional investors and technological improvements have contributed to this growth.

- **Growth of Derivatives Trading in India (Index-Based)**

YEAR	AVERAGE DAILY TURNOVER (Rs. In Crores)
2018	2,50,000
2019	3,20,000
2020	4,10,000
2021	6,50,000
2022	8,00,000



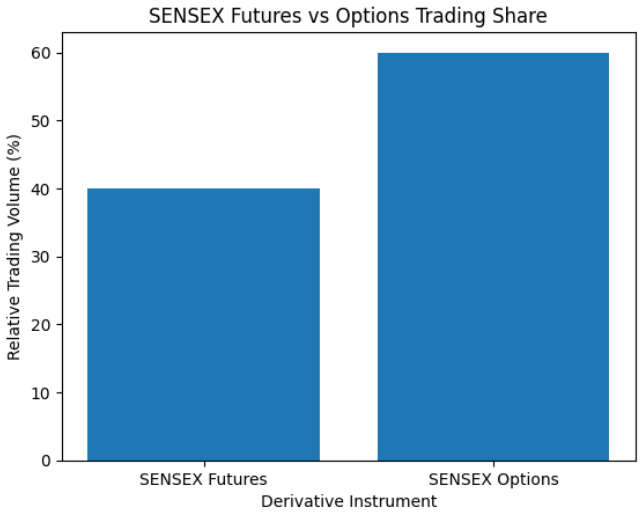
Source: SEBI and Exchange Reports

10. SENSEX Derivatives: Data Analysis

SENSEX derivatives have shown consistent growth in terms of trading volume and open interest. Futures are mainly used for hedging and short-term trading, while options are preferred for strategic risk management.

SENSEX Futures and Options – Trading Trend

INSTRUMENT	AVERAGE DAILY VOLUME	PURPOSE
SENSEX Futures	Moderate	Hedging and speculation
SENSEX Options	High	Risk Management



Source: SEBI and Exchange Reports

The data indicate that options trading has increased significantly compared to futures, reflecting growing awareness of limited-risk strategies among investors.

11. ROLE OF SENSEX DERIVATIVES IN THE CAPITAL MARKET

SENSEX Futures and Options play a vital role in the Indian capital market:

Modern derivatives markets play a crucial role in strengthening economic stability and supporting long-term growth. Through instruments such as index futures and options, market participants are able to hedge against broad market risks and protect their portfolios during periods of economic uncertainty. This process enables effective risk transfer, allowing investors who prefer stability to shift risk to those who are willing and able to assume it.

In addition, active participation in derivatives trading improves the process of price discovery by ensuring that market prices quickly incorporate new and relevant information. Increased trading activity also enhances market liquidity, making it easier for investors to enter and exit positions without significant price impact. These factors together contribute to the development of a transparent and efficient market structure, which is particularly attractive to foreign institutional investors. As a result, derivatives markets help promote sustained capital inflows and contribute to overall economic resilience.

12. BENEFITS OF DERIVATIVES TRADING

- Index derivatives have significantly transformed modern trading by providing investors with an efficient means of managing market risk.
- Through the use of index futures and options, investors can hedge their portfolios against overall market declines, thereby safeguarding their investments with a single contract rather than dealing with multiple securities.
- Since these instruments are traded on regulated exchanges, they offer high levels of liquidity and transparency, supported by standardized contracts and clearly visible price mechanisms that facilitate easy entry and exit.
- Another major advantage of index derivatives is their relatively low transaction cost when compared to purchasing all the individual stocks that constitute an index.
- Lower margin requirements and reduced brokerage charges make them a cost-effective alternative.
- In addition, index derivatives offer immediate portfolio diversification by providing exposure to a broad market segment through a single trade. This efficiency allows traders and investors to adopt flexible strategies, including positions that benefit from both rising and falling markets, as well as income-oriented strategies such as spreads and covered options.

13. RISKS ASSOCIATED WITH DERIVATIVES

- High leverage remains one of the most significant risks in derivatives trading. Although leverage has the potential to enhance returns, it more often exposes traders to substantial losses, as even minor adverse price movements can lead to rapid erosion of capital.
- This risk is further intensified by high market volatility, where sudden and sharp price fluctuations may result in forced liquidation of positions before investors are able to react.
- The growing complexity of financial instruments, particularly advanced and exotic derivatives, often conceals underlying risks that are difficult to assess accurately. This becomes especially problematic when retail investors participate without sufficient understanding of contract specifications and risk exposure.
- Excessive speculation, driven by short-term profit motives, can transform derivatives markets from instruments of risk management into platforms of speculative trading, thereby increasing systemic risk and undermining long-term market stability.

14. FINDINGS OF THE STUDY

- The Indian financial market has experienced a major transformation with the rapid expansion of the derivatives segment, where trading turnover has reached unprecedented levels.
- A key feature of this growth is the increasing dominance of SENSEX Options in index derivatives trading on the BSE, particularly after their reintroduction.
- The availability of weekly expiry contracts has further increased participation by offering frequent trading and hedging opportunities.
- These derivative instruments contribute positively to market efficiency by supporting hedging and arbitrage activities, which in turn enhance liquidity and help prices reflect current market information more accurately.

However, the growing sophistication of derivatives also poses challenges.

- Limited awareness and inadequate understanding among retail investors often result in significant losses, especially due to the misuse of leverage and insufficient knowledge of risk parameters. In response, regulatory measures introduced by SEBI aim to protect retail investors and encourage the use of derivatives primarily as risk management tools rather than speculative instruments.

15. SUGGESTIONS

To build a resilient financial ecosystem, stakeholders must prioritize stability over quick gains. Investors should acquire proper knowledge by mastering market fundamentals and technical analysis before committing capital, as informed decisions mitigate the risk of avoidable losses. Simultaneously, regulatory authorities should strengthen investor education programs, ensuring that even retail participants understand complex financial instruments.

On the execution side, risk management techniques should be strictly followed, utilizing tools like stop-loss orders to protect portfolios from volatility. Finally, excessive speculation should be discouraged to prevent market bubbles and promote a culture of sustainable, long-term wealth creation rather than high-stakes gambling.

16. CONCLUSION

Financial derivatives, particularly Futures and Options, have become indispensable components of the Indian capital market. SENSEX derivatives play a crucial role in providing hedging opportunities, improving price discovery, and enhancing market efficiency. While derivatives offer significant benefits, they also involve substantial risks due to leverage and volatility. Therefore, prudent use of these instruments with adequate knowledge and regulatory oversight is essential. The study concludes that SENSEX Futures and Options will continue to play a pivotal role in the growth and stability of the Indian financial system.

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