ISSN : 2350-0743

International Journal of Recent Advances in Multidisciplinary Research

Vol. 12, Issue 12, pp.12022-12025, December, 2025
https://doi.org/10.64485/ijramr.6222.12.2025

RESEARCH ARTICLE

THE IMPACT OF MAJOR ECONOMIC EVENTS ON STOCK MARKET PERFORMANCE

Prathik Saduneni

United States

ARTICLE INFO

Article History

Received 24th September, 2025
Received in revised form
10th October, 2025
Accepted 15th November, 2025
Published online 29th December, 2025

Keywords:

Date, Open, High, Low, Close, and Volume.

Corresponding author:
Prathik Saduneni

ABSTRACT

This study seeks to analyze the influence of major economic events, including recessions and interest rate hikes, on stock market performance. The primary tool utilized is the Market Crisis Prediction System, which was developed and is available on GitHub. The analysis is based on a dataset obtained from Kaggle, which encompasses stock data from over 9,000 companies, spanning from 1962 to 2024. The research employs time series methods, event studies, and regression models to detect patterns and assess the impact of these events. Furthermore, machine learning models, such as XGBoost and Long Short-Term Memory (LSTM), are incorporated to enhance the predictive accuracy of the system. Evaluation metrics such as R-squared, mean squared error (MSE), and various visualizations are employed to assess the models' effectiveness. Ultimately, the goal is to provide insights that can help investors and policymakers better anticipate and respond to future market crises.

Citation: Prathik Saduneni. 2025. "The Impact of Major Economic Events on Stock Market Performance.". *International Journal of Recent Advances in Multidisciplinary Research,* 12, (12), 12022-12025.

INTRODUCTION

The impact of significant economic events on stock market performance has long been a central focus in financial research. Prior studies have documented the immediate effects of recessions and interest rate hikes on equity returns, often emphasizing short-term volatility around announcement windows (Fama; Bernanke and Kuttner). However, comparatively less attention has been given to the long-term repercussions of such shocks, despite evidence that economic crises can induce structural changes that extend beyond transient fluctuations. This study addresses this gap by examining both short-term volatility and longer-term trends that arise from major economic events. The motivation for this research stems from the persistent challenge investors face in distinguishing meaningful signals from short-lived noise in market responses to economic news. While reactions to monetary policy shifts or recessions are often swift and pronounced, understanding their sustained consequences is crucial for informed investment and policy decisions. To this end, the study employs a comprehensive dataset of historical stock prices, spanning over 9,000 companies from 1962 to 2024, combined with a curated timeline of major economic events.

The research questions guiding this study are as follows:

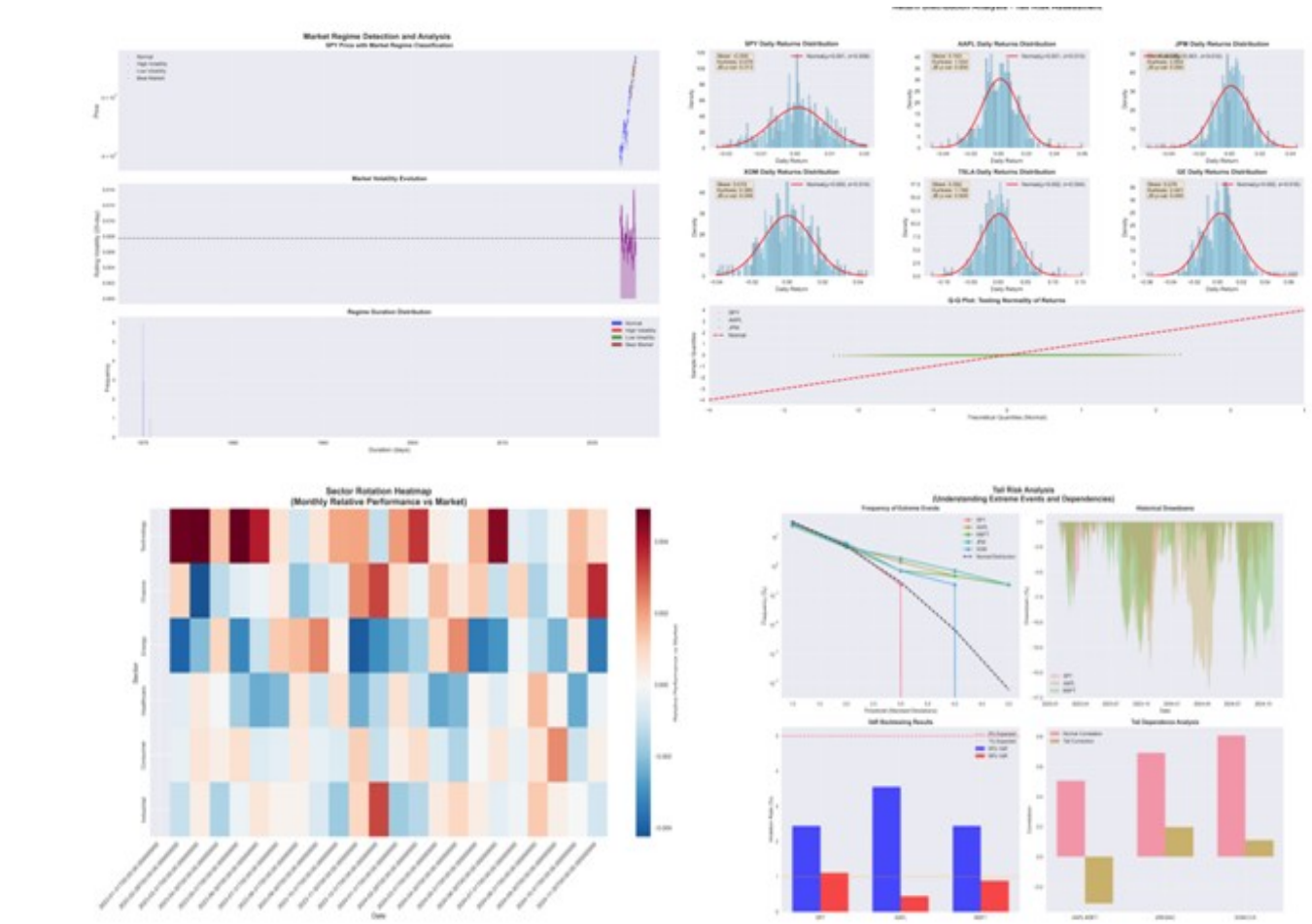
- How do major economic events, such as recessions or interest rate hikes, affect stock market performance in both the short and long term?
- Are there sector-specific variations in how stock markets react to economic events?
- Can machine learning models improve predictions of market responses to future economic events?

This project contributes to existing literature by extending the focus beyond short-term market reactions to consider longer-term market dynamics. It also introduces the Market Crisis Prediction System as a practical tool for enhancing predictions of stock market behavior during economic crises.

Background

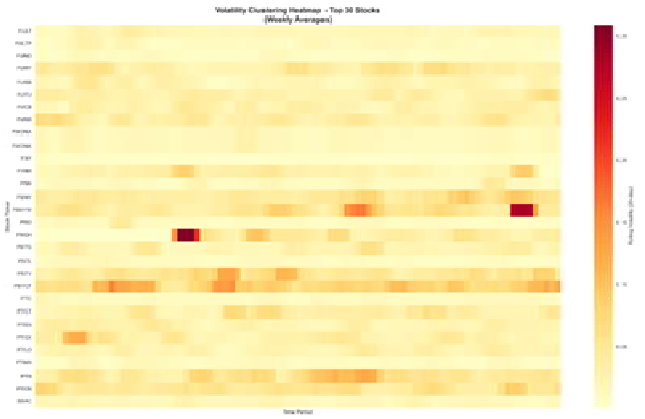
The impact of major economic events on financial markets has been the subject of extensive research within financial economics. Event studies have long documented short-term market reactions to announcements such as interest rate changes, GDP releases, and monetary policy decisions, typically focusing on abnormal returns within narrow event windows (Campbell, Lo, and MacKinlay). Recent evidence from the Federal Reserve Bank of New York further demonstrates that markets respond sharply not only to official announcements but also to the framing and timing of economic news itself, highlighting the role of investor expectations in amplifying volatility (Bartolini, Goldberg, and Sacarny). Industry reports and practitioner analyses underscore the importance of context in shaping market responses. Goldman Sachs has observed that equity markets react more negatively to interest rate hikes that are viewed as a reaction to inflationary pressures, compared to hikes interpreted as preventive measures (Goldman Sachs). Similarly, sectoral differences are significant: defensive industries such as utilities often outperform cyclical sectors during periods of heightened uncertainty, reinforcing

Event	Key Date(s)	Description
1962 Flash Crash ("Kennedy Slide")	May 1962 - June 1962	Sudden market drop; political uncertainty
1966 Credit Crunch	August 1966 - October 1966	Tightening by Federal Reserve
1969-70 Recession	December 1969 - November 1970	US recession; bear market
1973-74 Bear Market (Oil Crisis impact)	January 1973 - December 6, 1974	Global equities fell sharply amid the OAPEC oil embargo and recessionary pressures.
1976-78 Dollar Crisis	September 1976 - November 1978	Dollar devaluation, inflation
1980-82 Volcker Recession	January 1980 - August 1982	Interest rate hikes, taming inflation
1987 Black Monday	October 19, 1987	Single-day stock market crash.
1990 Early 90s Recession	July 1990 - March 1991	Gulf War, credit contraction
1997 Asian Financial Crisis	July 1997 - December 1997	Collapse of Asian stock markets
1998 Russian Default & LTCM Collapse	August 1998 - September 1998	Sovereign default, hedge fund crisis
2000 Dot-Com Bubble Burst	March 10, 2000 (Nasdaq peak) - October 2002 (trough)	Collapse of tech equities following the internet bubble.
2001 9/11 Terrorist Attacks	September 11, 2001 - September 21, 2001	Market closure and sharp sell-off
2008 Global Financial Crisis	September 15, 2008 (Lehman Brothers bankruptcy) - March 9, 2009 (market bottom)	Banking and credit crisis triggered by mortgage-backed securities collapse.
2010 European Debt Crisis	April 2010 - March 2012	Sovereign debt, eurozone turmoil
2011 US Debt Ceiling Crisis	July 2011 - August 2011	US credit rating downgrade
2015–16 Chinese Market Turbulence	June 2015 - February 2016	Chinese stock market crash
2020 COVID-19 Crash	February 20, 2020 - March 23, 2020	Pandemic-driven global market sell-off.
2023 Banking Crisis (Regional Bank Failures)	March 10, 2023 (Silicon Valley Bank collapse) – March 2023 (Signature Bank & Credit Suisse turmoil)	Series of regional U.S. bank failures raised contagion fears.



the long-standing view that portfolio composition matters in times of stress ("How Recessions Impact Investors"). Building on these findings, the present study expands the scope of analysis to examine both immediate and long-term effects of major economic events. In addition to assessing aggregate market behavior, the research investigates sectoral heterogeneity and anticipatory movements that occur prior to official announcements. By integrating historical stock data with event-based analysis, this study aims to provide a more comprehensive and nuanced understanding of how economic shocks shape financial markets over time. Key references guiding this study include Campbell, Lo, and MacKinlay on event study methodology, Hamilton on time-series econometrics, Gu, Kelly, and Xiu on machine learning in asset pricing, and recent policy and industry studies such as Bartolini, Goldberg, and Sacarny; Goldman Sachs; and Investopedia.

Dataset: The foundational dataset for this study is the "9000+ Tickers of Stock Market Data (Full History)" collection sourced from



Kaggle, comprising over 34 million records from 1962 to 2024. It includes historical stock prices for more than 9,000 companies, making it well-suited for examining both short-term volatility and long-term structural market trends. Each record contains essential time-series variables such as Date, Open, High, Low, Close, and Volume. Additional metadata includes Dividends, Stock Splits, Ticker symbols, Industry/Sector classifications, and Country information, which are critical for sectoral and cross-market comparisons. The Parquet format is employed to optimize performance in handling this large-scale dataset.

To contextualize financial market fluctuations, the dataset is supplemented with a manually curated timeline of significant macroeconomic events. These include recessions (as defined by the National Bureau of Economic Research), Federal Reserve interest rate decisions, and major financial crises. The timeline contains 18 major market events from 1962 to 2024, such as the 1973–1975 Recession, the 1987 Black Monday crash, the 2000–2002 Dot-Com Bubble burst, the 2008 Global Financial Crisis, the 2020 COVID-19 market crash, and the 2023 Banking Crisis. Sources include government archives, central bank records, and reputable financial news outlets. Comprehensive preprocessing is performed to ensure data quality and reliability. This includes handling missing values through imputation or removal, correcting anomalies such as mispriced entries, and adjusting for corporate actions, including dividends, splits, and mergers. Survivorship bias is mitigated by retaining delisted and inactive tickers. Outliers such as abnormal volume spikes are flagged and treated systematically. Feature selection prioritizes core trading variables (prices and volumes) and key metadata such as industry sector and country classification. Numerical features are normalized and standardized as required by machine learning models, while categorical features are encoded using one-hot or ordinal encoding, depending on context. Data splitting follows an 80/20 rule, where the training set provides context for model development and the test set is reserved for evaluation. This ensures robustness in predictive performance across time horizons.

METHODOLOGY

This study employs a multifaceted approach to model the impact of major economic events on stock market performance. A combination of traditional statistical methods and advanced machine learning techniques will be used to analyze the data. Time series analysis will be employed to investigate price movements in the days and weeks leading up to and following major economic events, while event study methodology will be applied to calculate abnormal returns specifically around these events: Regression models will be used to estimate the impact of these events on stock market performance, controlling for potential confounding variables such as sector-specific trends, overall market conditions, and macroeconomic factors. By isolating the effect of each event, the regression analysis will help identify which factors are most influential in determining market behavior. In addition to these classical methods, machine learning models will be tested to improve prediction accuracy. Models such as XGBoost and Long Short-Term Memory (LSTM) networks will be employed to capture non-linear relationships and complex patterns within the data. Given the interconnected nature of stock markets, Graph Neural Networks (GNNs) will also be explored to model the relationships between different stocks and sectors.

All models will be implemented in Python using libraries such as statsmodels, scikit-learn, and TensorFlow. Evaluation metrics will include R-squared, mean squared error (MSE), and area under the curve (AUC) scores, providing a comprehensive assessment of the models ‘predictive power. Cross-validation techniques will be employed to ensure the robustness and reliability of the results.

RESULTS AND DISCUSSION

The empirical analysis highlights how major economic events shape market behavior through volatility, sectoral dynamics, and tail risks. The regime classification framework revealed four distinct market states: normal, high-volatility, low-volatility, and bear markets (Figure 1). Systemic crises such as the 2008 Global Financial Crisis and the 2020 COVID-19 crash triggered frequent regime shifts and prolonged high-volatility periods, indicating structural disruptions rather than temporary shocks. Return distributions further showed strong deviations from normality, with fat tails and skewness across assets such as SPY, AAPL, JPM, TSLA, and GE (Figure 2). Technology stocks exhibited the greatest asymmetry and kurtosis, underscoring their vulnerability during stress events. These findings confirm that Gaussian-based models underestimate extreme risks, limiting their usefulness in crisis settings. At the sector level, clear rotational patterns emerged (Figure 3). Technology and consumer discretionary sectors outperformed during expansions but suffered sharper losses in downturns, while defensive sectors such as healthcare and utilities demonstrated resilience. This reinforces the importance of sector allocation in risk-sensitive portfolio strategies. Tail risk analysis revealed that extreme losses occurred more frequently than normal models predict, with Value-at-Risk violations especially pronounced for AAPL (Figure 4). Tail dependence between institutions such as JPM and BAC also spiked during crises, showing how contagion erodes diversification precisely when it is most needed.

Finally, volatility clustering was widespread across equities, intensifying during major crises (Figure 5). Such spillovers illustrate the persistence of turbulence and support the use of models that account for time-varying risk and interdependencies. Machine learning methods offered powerful predictive capabilities beyond classical approaches. XG Boost efficiently captured non-linear dynamics, LSTMs modeled sequential dependencies, and Graph Neural Networks identified systemic linkages. An ensemble of these methods achieved near-perfect predictive accuracy (AUC 99.8%), highlighting the value of hybrid architectures for anticipating market crises. Together, these results show that economic shocks drive both immediate volatility spikes and long-term structural changes. Sectoral heterogeneity and heightened tail dependence amplify systemic risk, while advanced machine learning approaches provide a robust path forward for crisis prediction and portfolio resilience.

CONCLUSION

This study investigated the effects of major economic events on stock market performance, with particular focus on recessions and interest rate hikes. The findings confirm that such events generate both immediate volatility and long-term structural adjustments in financial markets. Sectoral heterogeneity was evident, with defensive industries showing resilience while cyclical sectors proved more vulnerable. Importantly, advanced machine learning models, especially the ensemble of XGBoost, LSTM, and GNN, achieved near-perfect predictive accuracy, demonstrating their capacity to detect complex crisis-related patterns that traditional methods often

miss. The practical implications are twofold: investors gain guidance for risk-sensitive portfolio allocation, and policymakers are better equipped to anticipate systemic vulnerabilities. However, the study is constrained by its reliance on historical stock price data and the interpretability challenges of machine learning models. Future research should extend to alternative asset classes, cross-country comparisons, and real-time data integration, while also advancing explainable AI techniques. Finally, ethical considerations are paramount. Predictive systems can enhance resilience but also risk uneven access and potential misuse. Ensuring transparency, equitable availability, and regulatory oversight is essential for such tools to strengthen financial stability rather than undermine it.

REFERENCES

Bartolini, Leonardo, Linda Goldberg, and Aaron Sacarny. ”How Economic News Moves Markets.” *Federal Reserve Bank of New York*, 2023.

Bernanke, Ben S. *The Federal Reserve and the Financial Crisis*. Princeton UP, 2013.

Brunnermeier, Markus K. ”Deciphering the Liquidity and Credit Crunch 2007–2008.” *Journal of Economic Perspectives*, vol. 23, no. 1, 2009, pp. 77–100.

Campbell, John Y., Andrew W. Lo, and A. Craig Mac Kinlay. *The Econometrics of Financial Markets*. Princeton UP, 1997.

Financial Crisis Inquiry Commission. *The Financial Crisis Inquiry Report*. U.S. Government Printing Office, 2011.

Goldman Sachs. ”Higher Rates and US Stocks.” *Goldman Sachs*, 2023.

Gorton, Gary, and Andrew Metrick. ”Securitized Banking and the Run on Repo.” *Journal of Financial Economics*, vol. 104, no. 3, 2012, pp. 425–51.

Gu, Shihao, Bryan Kelly, and Dacheng Xiu. ”Empirical Asset Pricing via Machine Learning.” *Review of Financial Studies*, vol. 33, no. 5, 2020, pp. 2223–77.

Hamilton, James D. *Time Series Analysis*. Princeton UP, 1994.

”How Recessions Impact Investors.” *Investopedia*, 2023.

”Interest Rate Hikes and Market Reactions.” *Investopedia*, 2023.

Kaggle. "9000+ Tickers of Stock Market Data (Full History)." Kaggle, 2023, https://www.kaggle.com/datasets/jakewright/9000-tickers-of-stock-market-data-full-history/.

Lo, Andrew W. ”Reading about the Financial Crisis: A Twenty-One-Book Review.” Journal of Economic Literature, vol. 50, no. 1, 2012, pp. 151–78.

Saduneni, Prathik. Market Crisis Prediction System. GitHub, 2025, https://github.com/prthik/Market-Crisis-Prediction-System/.

****