

# ECONOMIC AND POLITICAL UNCERTAINTY AND STOCK MARKET VOLATILITY IN PAKISTAN: A DYNAMIC STUDY

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## Abstract

*The main aim of this research is to explain how Political and Economic uncertainty creates an impact on stock market volatility in Pakistan by using the political stability score as a proxy for evaluations. This study has one more important parameter, fluctuating commodity prices (oil and gold prices are involved in the forecasting of the stock market. The KSE 100 index is used as a market index for stock market volatility for the period 2013-2023. The results of regression analysis and the GMM approach indicate that oil price, gold price, political instability, inflation, and interest rate are significant indicators of stock market volatility. Hence, this study concludes that such a combination of variables has a major impact. In the case of Pakistan, it can be perceived from the current political and economic uncertainties that Pakistan will continue with the same declining flow. The condition of its financial markets would be really bad for investors. Firstly, there is a need for a good and stable governing system to attract investors to the country.*

**Keywords:** Stock Market of Pakistan, Political turmoil, Crude Oil Price, Standard Gold Price, Macroeconomic Variables (Exchange Rate, Interest Rate, and Inflation), Dynamic Model, OLS Method

## Introduction

This research on stock market volatility has encouraged financial innovation, which has resulted in the creation of volatility indices, derivatives, and risk-management instruments like futures, options, and volatility-based strategies. Scholars and researchers examine the causes, trends, and effects of stock market volatility on asset pricing, market microstructure, and macroeconomic dynamics. A knowledge of stock markets and economic theories is further developed by an empirical study on volatility. The degree of fluctuation in stock prices over time is referred to as stock market volatility. Although excessive fluctuations can generate uncertainty and create issues for traders, investors, and policymakers, volatility is a natural feature of financial markets. The purpose of this paper is to examine the factors that contribute to stock market volatility, the effects these factors have on different stakeholders, and methods for controlling and capitalizing on volatility to meet financial goals.

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The stock market plays an important role in providing a systematic platform the organizations to increase financial capital for their growth and development. It has been proven by history that if the prices of stocks were high, the economy of a country would be considered a rising economy<sup>1</sup>. Pakistan's stock market is vital to the nation's economy since it is a financing source for enterprises, a channel for investment, and a gauge of the state of the economy. The KSE 100 index was launched on November 1st, 1991. The main stock exchange market of Pakistan is the Pakistan Stock Exchange (PSX), which was established in 2016 by combining the stock exchanges of Karachi, Lahore, and Islamabad. It provides Pakistan with an essential trading platform for stocks, bonds, and other financial products, promoting capital development and investment opportunities. The KSE-100 Index, a benchmark index that monitors the performance of the top 100 listed businesses on the market, is the foundation of the PSX.

According to the Director of the South Asia Institute at the Wilson Center, Pakistan must transform its governing bodies to maintain political stability because Pakistan cannot ignore such political disturbances anymore. If Pakistan faces continuous failure in maintaining stability will eventually lead the country toward the downfall of the state. Now it is high time for Pakistan to make crucial decisions to change those abnormal situations into favorable circumstances. Presently, Pakistan should stop this revengeful politics and pay complete attention to executing feasible strategies for the stability of the state. Political leaders have to transform their way of governance instead of engaging in retaliatory politics.

The major factors that cause the volatility in the stock market are discussed here; economic indicators such as changes in the GDP growth, inflation, and unemployment rates can have an impact on the mood of investors and the volatility of the market. According to the work of macroeconomic indicators have a strong relationship with stock prices<sup>2</sup>. The fiscal policies create shifts in government expenditure, taxation, and regulation that can have an impact on market dynamics and investor confidence, which in turn can increase volatility. Economic, political, psychological, and company-specific factors are only a few of the numerous, intricately linked elements that have an impact on stock markets<sup>3</sup>. The other main cause of market volatility is natural disasters and geopolitical events.

The objectives of this research are as follows;

- To investigate the impact of political uncertainty on stock market volatility in Pakistan by using a dynamic approach.
- To investigate the impact of fluctuations in prices of commodities (oil and gold prices) on stock market volatility in Pakistan.

- To observe the correlation between macroeconomic variables (exchange rate, interest rate, and inflation) with the stock market volatility of Pakistan in the KSE-100 index.

## **Significance**

The novelty of this paper lies in studying the trends of the stock market of Pakistan with economic and political factors. So, to make this area more distinct, we picked this topic. This research explains the relationship between stock market volatility and macroeconomic indicators, including exchange rates, inflation, and interest rates. On the other hand, the uniqueness of this research is that it is a study that has the time horizon of COVID-19 with stock market volatility in Pakistan, and the impact of political disturbances on stock market volatility in Pakistan using a Dynamic approach. Moreover, examined two important categories of commodities, such as metal (gold) and energy (oil) the impact of commodity prices on stock market volatility.

## **Literature Review**

In different literature reviews, we have studied the relationships between the stock prices and macroeconomic indicators. Stock price returns have a significant impact on the national economy as well as socioeconomic development, hence, it is an important area for researchers to review. It has been 75 years, and Pakistan is still unable to maintain political stability, even from the leadership time of Muhammad Ali Jinnah, founder of Pakistan, to the removal of the government of the last leader, Imran Khan, chief of PTI. Unfortunately, in Pakistan, our political leaders are busy with revengeful politics instead of maintaining political order in the country. Pakistan is still in the quest for maintaining political stability. According to the political stability index data from the World Bank, Pakistan has a weak performance. From 1996 to 2021, the average value for Pakistan was 2.09 points, a weak performance in the index. According to the research, in 2021, Pakistan, with a score of -1.67, ranked 181 out of 194 countries. After the dismissal of Imran Khan, the Prime Minister of Pakistan, there was a noticeable further decline in the statistics of political stability. The latest COVID-19 outbreak had an unpredictable negative impact on the global economy and financial markets. The academic research, very next after the Covid-19 outbreak,<sup>4</sup> concluded a negative impact on stock market returns. When there were restrictions across borders or within borders, it affected the supply and demand<sup>5</sup>. The suggested theory to support this research work is APT. The Arbitrage Pricing Theory (APT) introduced by Ross (1976) is the most important theory to study the relationship between macroeconomic variables. Generally, APT is a commonly known and easy explanation as a theory and as a model.

According to this theory, several factors, including interest rates, currency rates, inflation rates, dividend yields, GDP, consumer price index, industrial output index, unemployment rate, interest rates, domestic savings, and stock market liquidity, can affect an asset's return. The APT is a model based on risk-return equilibrium. Using US macroeconomic factors, a study examined the validity of APT in the US securities market<sup>6</sup>. From January 1952 to November 1984, they examined seven macroeconomic factors: oil prices, term structure, industrial production, risk premium, inflation, market return, and consumption. These evolving markets have been facing different macroeconomic inconveniences, so they have high volatility. According to some previous work, Pakistani stock market trends are delicate towards macroeconomic volatility<sup>7</sup>. The literature of this paper is mainly focused on the impact of political instability, inflation, interest rates, oil, gold & exchange rate on stock market volatility.

a) **Political Uncertainty and Stock Market Volatility**

One of the fascinating subjects and factors influencing the financial markets in emerging and developing nations is the stability of the state political system<sup>8</sup>. A study on the Iraq Stock Exchange, these factors will harm the performance of the Iraq Stock Exchange. Thus, research supported the negative impact of terrorism, political unrest, and corruption on the performance of the Iraqi stock market<sup>9</sup>. Additionally, it has been demonstrated that an unstable political environment will increase investment risks and decline in equity markets<sup>10</sup>. The situation of unpredictability harms the economic development of the country<sup>11</sup>. When there is an increase in political uncertainty, financial risk is involved, and it will create a decline in the financial market of that country<sup>12</sup>.

**H1:** *Political Uncertainty has a significant impact on Stock Market volatility.*

b) **Exchange rate and Stock market volatility**

All these changes in the foreign exchange rates occur because of supply in the foreign exchange market<sup>13</sup>. The exchange rate is also an important macroeconomic indicator as it is involved in the imports and exports of goods. An increase in the exchange rate of any currency harms domestic and local markets since it lessens the benefit of exports for that specific nation<sup>14</sup>. If the exchange rates of a country are extraordinary, its profits become maximum. It has also been proven by the research that there is a positive link between exchange and share prices or stock returns.<sup>15</sup>

**H2:** *There is a significant impact of the Exchange rate on Stock Market volatility.*

c) **Inflation rate and Stock Market Volatility**

When any country has an irregular price index, it will affect the decision of investors in the market. It will be a great risk for investors if a country has a high inflation rate<sup>16</sup>. There are a large number of studies that apply the Fisher effect for the analysis of the inflation rate. Moreover, a study that used data from the Indian stock market by applying time series statistics and found stock market returns are negatively related to stock market returns<sup>17</sup>. According to the written context, there is a negative relationship between inflation and stock market prices. Whereas the empirical results presented by Hewamana, Siriwardhane, and Rathnayake in 2022 and Khalid and Khan in 2017 concluded a positive correlation between the stock market and inflation. As per the work of Chia and Lim in 2015 and Hsieh in 2013<sup>18</sup>, inflation harms the stock market.

**H3:** *There is a significant impact of inflation on Stock Market volatility.*

d) **Interest rate and Stock Market Volatility**

In old-time studies, a negative relationship was found by Mark J. Flannery and Christopher M. James (1984) during the study of the US market between interest rate and stock market returns. Interest rate is generally a price charged to a borrower by a lender and is normally stated in the form of a percentage of the total amount<sup>19</sup>. In the Turkish stock market, there has been seen a negative correlation between stock prices and interest rates<sup>20</sup>. According to previous similar results, which are convincing that stock returns are negatively affected by the increased interest rate<sup>21</sup>.

**H4:** *There is a significant impact of Interest rate on Stock Market volatility.*

e) **Gold price and Stock Market Volatility**

When the economy of a country is turbulent and there is a decline in the stock market will lead to increased gold prices<sup>22</sup>. According to another research work, there is also a study regarding the linkage between stock market volatility and gold price volatility, but the main factor behind this is the existence of geopolitical risk<sup>23</sup>. The relationship between the price of energy and metals, particularly gold and oil, is an intriguing topic to research in the context of commodities outpacing financial assets. According to Kumar et al., there is a negative linkage between stock return and gold price<sup>24</sup>. The gold prices and stock prices have an inverse relationship. The volatility in gold prices is more stable than other investments, so we can say that gold investments have lower risk<sup>25</sup>.

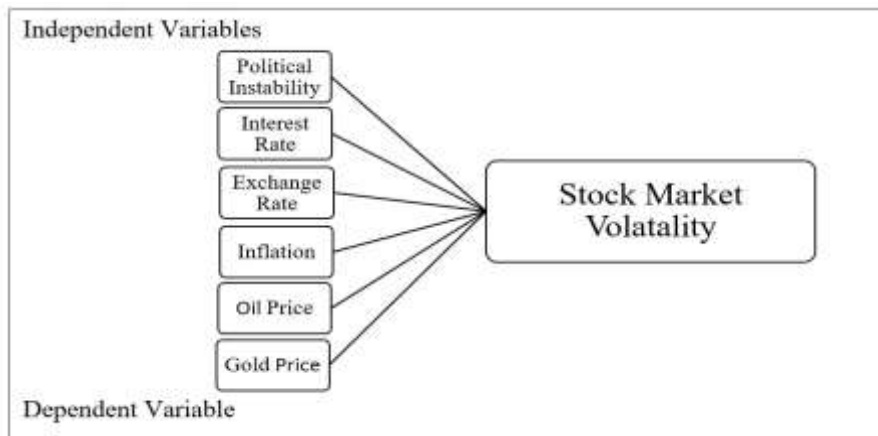
**H5:** *There is a significant impact of Gold prices on Stock Market volatility.*

f) **Crude Oil price and Stock Market Volatility**

Oil prices have a great impact on the global economy due to variations in the exchange rates, as the trade of oil takes place in USD, and the increasing demand for oil in the country leads to the depreciation of the local currency<sup>26</sup>. Empirical research has explained significant relationships between oil prices and stock prices because oil is a major indicator of the economy<sup>27</sup>. The irregularity in the prices of energy sources such as oil has a great impact on the economy of a country. The most recent study of the Mexican stock market index through the test of quantile integration found that the oil price is negatively related to stock price<sup>28</sup>.

**H6:** *There is a significant impact of Crude Oil prices on Stock Market volatility.*

**Theoretical Model**



## Methodology

This research considers the KSE-100 index and stock market volatility as the dependent variables and the list of independent variables: Oil price, Gold price, Exchange rate, Inflation, Political stability, and Interest rate. The data explored in this study consists of macroeconomic indicators and time series of the stock market. In this thesis, we draw conclusions and results based on the testing of hypotheses and measurements from variables. Therefore, we can say it is a quantitative type of research. The secondary data is collected for this research. Took a monthly average of data from a sample that covers the full period from 2013 to 2023. This time horizon also contains the duration of the COVID-19 pandemic, and it had a significant impact on the economy of the country. The data source of the above variables for analysis is from the official websites: the State Bank of Pakistan, the Federal Bureau of Statistics of Pakistan, the Pakistan Stock Exchange (KSE 100 INDEX), and the World Bank.

**Table - 1: Operationalization of Variables & Data Source**

<b>Variables</b>	<b>Symbol</b>	<b>Operationalization</b>	<b>Data source</b>
Crude Oil price	COP	In this research, for the CO weighing unit, 1 Barrel. It is priced in dollars to see the trends of international CO Prices in the stock market. Monthly average data throughout 2013-2023 for analysis.	Trading Economics (US)
Standard Gold prices	SGP	In this research, the gold weighing unit is 1 troy ounce. Its price is in dollars to see the trends of the international standard GP in the stock market. Monthly average data throughout 2013-2023 for analysis.	Trading Economics (US)
Exchange rate	ER	The ER is the midpoint of T.T. (telegraphic transfer), buying, and selling. Its value is in Dollars per Rupee to see trends in the stock market. Monthly average data throughout 2013-2023 for analysis.	The State Bank Of Pakistan
Political instability	PS	It measures PS Score & PS Rank. Its unit to evaluate is Country's score ranges from -2.5 to 2.5, and the Country's percentile rank is 0(low)-100(high). Annual data throughout 2013-2023 for analysis.	The World Bank
Inflation	I	Here took the Inflation Rate was taken as a proxy of the CP index. The Laspeyres formula is generally used to evaluate CPI value. Consumer price index (2010 = 100). Annual data throughout 2013-2023.	International Monetary Fund, International Financial Statistics, and data files.
Interest rate	IR	In this research, IR values are the Money market	The State Bank Of Pakistan

		Interest rates. It is the weighted average overnight repo rate. Its unit of measurement is %. Daily data throughout 2013-2023.	
Stock market volatility	SMV	Monthly average data (closing values of a market index) throughout 2013-2023.	Pakistan Stock Exchange

The software or tools used in this research for the data analysis are E-views and STATA. It is a standard statistics tool for data analysis and is used to generate effective results from the collection of data. This paper improves the already existing literature in the area of the stock market because we are using here a combined methodology in which the OLS model (Ordinary Least Square Model) and GMM (generalized method of moments) in this way we can evaluate the co-existing casual and dynamic impact creating variables in the stock market index. We test the stability of the factors after applying the ordinary least squares (OLS) approach.

#### a) Empirical Model

In this research, the empirical analysis is applied with the combination of stock market volatility, political instability, macroeconomic variables (exchange rate, inflation and interest rate) and commodity prices (oil and gold price) using the OLS (Ordinary least square) technique and it involves in the evaluation of regression model as per the assumptions. The abbreviations used in the equation can be seen in Table 1. Moreover, it works for the normality tests and multi-collinearity tests. As per this study, the equation of this model is as follows;

$$Y = \beta^0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon$$

Where Y= Dependent variable.

$X_1 + X_2 + \dots + X_n =$  Independent variables.

$\beta^0, \beta_1, \dots, \beta_n =$  Coefficients.

$\epsilon =$  Term for error.

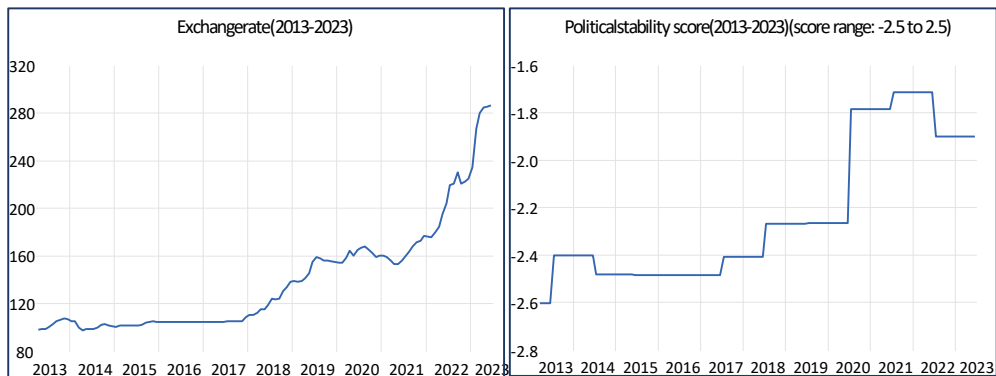
$$Y = \beta^0 + \beta_1(PS) + \beta_2(ER) + \beta_3(IR) + \beta_4(I) + \beta_5(SGP) + \beta_6(COP) + \epsilon$$

## Results and Discussions

The movements of variables included in this study. The sharp spikes and fluctuations in the above market index graph represent the market volatility over the period (2013-2023). But up till now, its value has not reached its maximum position. The market index is a proxy for stock market volatility, and the CP index is used as a proxy for inflation. It can be seen that there is an abnormal increase in the year 2022.



The following graph represents the Exchange rates in Pakistan w.r.t to US dollar over (2013-2023), data source website “The World Bank” that has given a range. As per the below graph, the political stability score of Pakistan ranges from -2.6 to -1.9. This indicates that Pakistan has low political stability compared to many of those countries whose values are close to 2.5.



**Primary Test:** For the time series data to check the reliability of data in the regression analysis we used VIF test (Variance Inflation Factor). When multi-collinearity is significant ( $VIF > 5$ ), the resulting coefficient estimate may not be accurate. The following table of robustness test is indicating that all the values are below 5. So it indicates the reliability of coefficients.

Variance Inflation Factor Test							
Test	SMV	PS	ER	IR	I	SGP	COP
Variance Inflation Factor Test	----	2.51875	2.08463	2.64573	2.90689	2.48732	2.5885

The following Table 2 shows the regression results. As per the results, the Standard Gold Price and Exchange Rate have a significant positive value of the coefficient. It explains that when there is a (0.69% and 1.8%) increase in these variables, as a result, there will be an increase in stock market volatility. However, at the same time, these results also find out about those variables that have significant negative coefficients (0.084, -0.399, -0.017, and 4.17) that create a negative impact on the stock market volatility. Such performance was shown by the coefficient of Crude Oil prices, Political Stability score, Inflation, and Interest rate, and these results are good for the stock market.

The regression model analysis has shown that an increase in the Standard Gold Price has a significant positive impact on stock market volatility. While keeping the other factors constant, the increase in the gold price will increase the volatility of the market (0.00699357) units. The results from the regression table suggest that oil prices have a significant negative coefficient at 5%, and it is backed by many of the theories and work.

Table 2. Regression Analysis of Stock Market Volatility				
Dependent variable: SMV	Method: OLS		Sample: (125) (2013-2023)	
	Coefficient	Std. Error	t- statistics	p- value
Constant	-5.82271	7.64336	-0.7618	0.4478
Crude Oil Price	-0.0844554	0.0320442	-2.636	0.0096 ***
Standard Gold price	0.00699357	0.00317453	2.203	0.0296 **
Interest	-4.17354	0.803564	-5.194	<0.0001 ***
Exchange Rate	0.0189547	0.00852535	2.223	0.0281 **
Political Stability Score	-0.399580	0.114585	-3.487	0.0007 ***
Inflation	-0.0179264	0.00466721	-3.841	0.0002 ***
R-squared	0.777661 F(6, 118)		68.78684	
Adjusted Rsquared	0.766356 P-value(F)		3.33e-36	
Durbin-Watson	0.402881			

As in the past during the 1980s, research conducted on US stock prices to examine the relationship between oil price fluctuations and the stock market concluded a negative impact<sup>29</sup>, but some of the studies also suggest that it had both positive and negative impacts on stock market volatility<sup>30</sup>. After getting this analysis, we accept the H6 hypothesis.

Moreover, the regression results concluded that the exchange rate is significant at 5%. So we cannot reject the H<sub>2</sub> hypothesis. Here, the results of the exchange rate signify a positive impact that was explained in early research. Nguyen supposed that there is a long-term positive effect of the exchange rate on a firm's stock price<sup>31</sup>. Also, the regression analysis model shows that the political stability score is significant at 5%. Which means that we cannot reject the H<sub>1</sub> hypothesis. In studies, we read that political disturbances result in a decline in the share prices of the country, and investors lose their investments.<sup>32</sup>

According to the regression model results the inflation has a significant coefficient at 5%. After getting that significant impact, we have to accept our H<sub>3</sub> hypothesis in this study. In the Nigerian case study, there is a negative linkage seen between stock market volatility and inflation volatility<sup>33</sup>. Inflation is such a variable that has both positive and negative significance, and it is tested in many research works<sup>34</sup>. However, research results indicate that there is no discernible relationship between oil price volatility and stock prices<sup>35</sup>.

$$SMV = -5.82 - 0.399*PS + 0.018*ER - 0.017*I - 4.17*IR + 0.0069*SGP - 0.084*COP$$

This research model has lagged endogenous variables, then I could correlate them with other coexisting variables. This has been considered an important reason to use the GMM approach, as it is more likely to treat the endogeneity problem of variables. Therefore, during the OLS regression analysis in the tables above, we have seen the lag effect. So for that reason, also choose the dynamic model for better results in different movements of variables. In this dynamic approach, GMM is applied, with stock market volatility as the dependent variable. From the results of Table 4.5 below, we can see the GMM approach to the variables. When the variables have a coefficient value less than 0.05, then these variables are statistically significant.

<b>Table 3. Dynamic GMM model</b>					
	Coefficient	Std. Error	t-statistic	p-value	
Stock market volatility (-1)	0.0981900	0.05010	1.960	0.05	**
Crude oil price	-0.0844554	0.0320442	-2.636	0.0096	***
Gold price	0.00699357	0.00317453	2.203	0.0296	**
Interest rate	-4.17354	0.803564	-5.194	<0.0001	***
Exchange rate	0.0189547	0.00852535	2.223	0.0281	**
Political Stability Score	-0.399580	0.114585	-3.487	0.0007	***
Inflation	-0.0179264	0.00466721	-3.841	0.0002	***
R-squared	0.777661	Adjusted R-squared	0.766356		
F(6, 118)	68.78684	P-value(F)	3.33e-36		
Durbin-Watson		0.402881			

The key findings of the following results from the table, the coefficient of stock market volatility is lagged and its p-value (0.05) shows that this relationship is statistically significant at a 5% level of significance. The coefficient of Crude Oil is  $-0.0844554$ , and a p-value of 0.0096 suggests that this relationship is statistically significant at a 1% level of significance. Such values of crude oil signify that the increasing oil prices are related to the lowering of the stock market volatility. The following results show that gold prices have a significantly positive impact on stock market volatility. The coefficient value of gold price is 0.00699357 with a p-value of 0.0296, suggesting that an increase in gold prices is associated with higher volatility in the market. The interest rate has a significantly negative impact on stock market volatility, with a coefficient of  $-4.17354$ , and its p-value is less than 0.001, which shows that this relationship is highly significant. The relationship between exchange rate and market volatility is statistically significant at a 5% level of significance with a p-value of 0.0281. It shows that stock market volatility has a positive correlation with the exchange rate. The coefficient value of political stability is  $-0.399580$ , with the p-value (0.0007) indicating that when there is an increased value of political stability, there will be more stability in the stock market at a 1% level of significance, showing it is statistically significant. The inflation rate with the p-value (0.0002) has a significantly negative impact on market volatility.

**Table -4: Breusch-Godfrey Serial Correlation LM Test**

F-statistics	2.928630	Prob. F (2,110)	0.0577
Obs*R-squared	6.268922	Prob. Chi-square(2)	0.0435

Briefly evaluating the model, we have seen that the regression model has no serial correlation. The residuals have a normal distribution. In the following table, it can be seen that the hypothesis for normal distribution is not rejected as per the results. To find autocorrelation in a regression model's residuals, apply the Breusch-Godfrey Serial Correlation LM (Lagrange Multiplier) Test. When the regression model's errors, or residuals, exhibit a correlation with one another throughout several periods, this phenomenon is known as autocorrelation. The premise that the errors in ordinary least squares (OLS) regression are independent and identically distributed (IID) is broken by this. Because of the innate temporal dependencies in observations, the test is very helpful in time series analysis. Through the identification of autocorrelation, researchers can pinpoint possible misspecification within the regression model and subsequently modify the model to enhance its dependability and precision. The Breusch-Godfrey test entails adding lagged values for the dependent variable's predictors to the initial regression model.

## **Conclusion**

This paper has studied the impact of Political instability, Macroeconomic indicators (Exchange rate, Interest rate, and Inflation), and Commodity prices (oil prices and gold prices) on the Stock market volatility in Pakistan from 2013-2023. The Stock market index is the KSE-100 index. By using the OLS (Ordinary Least Squares method) for data analysis. The regression analysis for Political stability, Exchange rate, Interest rate, Inflation, Standard Gold Price, and Crude Oil Price explains that these variables have significant coefficients at a level of 5%. Therefore, it is concluded that we cannot reject the H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, H<sub>4</sub>, H<sub>5</sub>, and H<sub>6</sub> hypotheses. The above results for these variables are supported by the reference in previous studies<sup>36</sup>. After observing the lag values, the Dynamic was also applied there. The results of the dynamic GMM model advocate that the macroeconomic indicators, gold prices, interest rates, exchange rates, crude oil prices, political stability, and inflation have a significant impact on the volatility of the stock market of Pakistan. The gold price and exchange rate contribute to an increase in volatility, whereas the other variables have a stabilizing effect on the volatility of a stock market.

The conclusion of this study reveals that political instability, exchange rates, interest rates, inflation, and fluctuating gold and oil prices are the major forecasting elements of stock market volatility in Pakistan. These elements help investors with their investments in a particular country. If a country is facing political disturbances, the stock market of such a country is highly volatile. At the same time, if a country has no stability in its gold prices, as gold is considered a standard of reserves, a country has against its currency that country has economic instability, and ultimately, it would create a bad impact on the stock market. The study of stock market volatility in Pakistan generally gives results that it is highly volatile, and the main reason behind this is all such abnormalities or uncertainties in these major indicators of the stock market. This study is very important for the external as well as the internal investors. Who is going to invest in the stock market of that country?

## **Future Implications and Limitations**

The insights gained from this research will help decision-makers create and modify policies that support macroeconomic stability, enhance stock market performance, and advance economic growth. Moreover, this research opens investors' eyes by offering helpful guidelines for capital market investing. Additionally, this research project acts as a resource for future studies in this area of study. Furthermore, it functions as a study guide for instructors and learners who are enthusiastic about this subject.

The first limitation, have performed a limited number of Econometric analyses over just 10 years, and we can get more improved results with an increased number of observations.

More research is required because the Pakistani stock market is still developing. The second important limitation is that the current study is restricted to only the stock market index to calculate the volatility. The third limitation of this work is to consider some other factors also such as imports and exports, government policies, natural mineral resources, and political disturbances of neighboring countries.

## Endnotes

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