Journal of Management Info

Journal Homepage: https://readersinsight.net/JMI

Research Article

Impact of institutional quality and macroeconomic variables on stock market in Pakistan

Areeba Rahat Alvi[1]*, Syed Muhammad Ahmad Hassan Gillani[2], Maria Rana[3], Asad Ali[4]

[1,2,3]Lyallpur Business School, Government College University Faisalabad, Pakistan
[4]Bangor Business School, Prifysgol Bangor University, UK

***Corresponding Author email: areebaalvi4@gmail.com**

Keywords

Institutional Quality;
Macroeconomic Variables;
KSE-100 Index;
Stock Market Volatility;
ARDL

Submitted:
29 July 2024

Revised:
01 September 2024

Accepted:
08 September 2024

ABSTRACT

The ongoing debate surrounding the stochastic behavior of financial markets and their relationship with institutional quality and macroeconomic factors remains unresolved, with no consensus reached on the nature of the interplay between institutional quality, macroeconomic variables, and stock market volatility. The significance of comprehending volatility lies in its potential to disrupt the smooth operation of financial markets and negatively impact economic performance. This study aims to examine the potential contributions of institutional quality and macroeconomic variables to the dynamic patterns of stock market volatility. Notably, the introduction of institutional quality is a relatively novel concept in Pakistan, warranting further exploration. Consequently, this research delves into the influence of institutional quality on stock market volatility, considering factors such as control of corruption and political stability as well as macroeconomic variables like inflation, interest rates, and GDP. This quantitative study relies on secondary data and employs ARDL models spanning yearly data from Pakistan Stock Exchange (PSX) from 1996 to 2022. The empirical findings offer insightful information that can help shape institutional reforms, guide policy decisions, and affect investment choices that support the stock market's stability and expansion.

1. INTRODUCTION

A robust stock market is of foremost importance to the development and well-being of an economy (Yalamati, 2023). It serves as a nexus where many elements come together to nurture the economy of any country. The term "stock market" refers to a collection of markets and exchanges in which day-to-day transactions such as the purchase, sale, and issuance of shares in listed companies take place. According to Masoud and Issues (2013), the stock market is a highly developed marketplace where stocks and bonds are bought and sold (Kehinde et al., 2023) and it plays a crucial role in the development and operation of a robust and competing economy (Sonkavde et al., 2023). The body which implements this market in an economy is called a stock exchange. The stock market is an appropriate vehicle for deploying and allocating savings among competing purposes for upholding the country's economic growth and efficiency. Stock exchanges allow businesses to raise capital from investors while providing investors the opportunity to receive a share of the

https://doi.org/10.31580/jmi.v11i3.3157

company's earnings in which they have invested. In this way, the stock exchange assists the economy to carry out long-term investment ventures with ample gains by efficiently allocating capital.

The stock market is widely known to be prone to volatility, which is defined by variations in stock values (Mallikarjuna et al., 2019; Mamtha & Srinivasan, 2016). Stock market volatility is a statistical indicator of how earnings are distributed in a certain market or index. In general, increased stock market volatility denotes higher levels of risk. The price swings in stock markets act as indicators of the country's economic climate, and this has effects outside of the stock market, such as increased risks, erratic dividends, the potential to erode investor confidence, disruption of the stability of the monetary system, and a hindrance to economic outcome (Bhowmik & Wang, 2020; Islam et al., 2023). In Pakistan's capital market, prices are inevitably volatile (Ahmad et al., 2016). Stock price behavior can be volatile and variation therefore it is pertinent to study the factors that influence it.

The impact of macroeconomic variables on the volatility of stock prices has grabbed the interest of financial analyst and macroeconomists. The global financial crisis has compelled experts to investigate the relationship between factors affecting the economy and SP. Numerous studies have presented direct evidence about the impact of various macroeconomic factors on stock market volatility (Abbas et al., 2018; Ajaz et al., 2017; Chang et al., 2019; Dinh et al., 2022; Sekati et al., 2020; Song et al., 2023). Secondly, country-level governance has also received significant attention as a critical policy challenge in the finance area (Nguyen et al., 2015; Nguyen et al., 2021; Sharma et al., 2022). Studies demonstrated that the expansion of financial markets is greatly aided by the institutional quality (Agyemang et al., 2018; Kuzey et al., 2021). The importance of maintaining adequate institutional quality at the national level is well acknowledged and encourages the formation of resilient financial intermediaries, facilitating the efficient exchange of information between transaction parties (Agyemang et al., 2018; Hooper et al., 2009).

The stock market serves as a crucial platform for capital allocation, economic growth, and investor participation. Studies by Chang et al. (2018), and Naeem et al. (2023), emphasize that emerging markets possess distinct features compared to developed markets, including different economic and political structures, as well as varying risk and return profiles. Developing economies typically exhibit higher risk and returns (Harvey, 1995). Emerging markets have a lower level of informational efficiency compared to developed markets, and most emerging economies distinguish themselves with political instability and strong currency fluctuation, and weak institutional infrastructure. As such, the structure of the emerging stock markets differs from that of the developed markets. Therefore, the stock market index movement may also vary. However, in the case of Pakistan, has experienced significant volatility in its stock market, raising concerns about market stability and its broader impact on the economy due to their unique characteristics. Nevertheless, the connotation between institutional quality, macroeconomic variables and stock market volatility in Pakistan remains largely unexplored. Investigating this relationship will provide valuable insights into the effectiveness of regulatory frameworks and governance mechanisms in maintaining market stability and fostering investor confidence.

The purpose of this study was to ascertain how the PSX stock market's volatility was affected by institutional quality and macroeconomic factors by the following mentioned points.

1. The central objective of this study is to explore the impact of institutional quality on stock market volatility of Pakistan Stock Exchange (PSX).
2. The study's secondary goal is to investigate the impact of selected macroeconomic variables on the stock market volatility of Pakistan Stock Exchange (PSX).
3. To identify the core variables of institutional quality and macroeconomics that are highly correlated with stock market volatility of Pakistan Stock Exchange (PSX).

2. LITERATURE REVIEW

The financial theory known as arbitrage pricing theory (APT), which was developed and adopted by Stephen Ross in 1976, provides a method for calculating the expected return on an asset based on the correlation between return and a variety of macroeconomic factors. In other words, market volatility and the relationship between a security's return and the returns of other macroeconomic factors have an impact on the expected return of a security. Arbitrage pricing theory (APT) is relevant to stock market volatility because of its capacity to explain and predict fluctuations in asset prices, including stock prices. Roberts (1967) and Fama (1970) pioneered the concept of “efficient market," which claimed that share prices would take a random walk, meaning that neither the dimension nor the magnitude of their movement could be predicted (Fama, 1960). They asserted that share prices reflect all relevant information and are thus always reasonably priced, and that no investor can obtain exceptional returns in markets without taking on additional risks. According to Fama's (1970) research, the market is effective. if all relevant information on securities can be fully displayed by their prices. Thus, the market is hypothesized into three distinct performance levels. The third theoretical pillar of our research is institutional theory. It is a sociopolitical theory that examine how higher institutions create and administer laws, customs, culture, and other norms can act as reliable guidance for social behavior in contexts. According to Ritzer (2004) Institutions are social frameworks with substantial degrees of resilience that include culturally cognizant, normative, and governing elements along with related activities and resources to provide social life with stability and direction. The fundamental tenet of institutional theory is the idea that entities decide what people do or don't do. It restricts or defines other people's preferences and involvement. (Clemens & Cook, 1999).

Stock market volatility is an indicator of how unpredictable or risky the value of a stock market investment is. The study of stock market fluctuations is a crucial subject that demands close attention because of the stock market's significance and rising volatility (Ali et al., 2019). The stock market has gone through unprecedented volatility in the context of economic globalization, particularly in the wake of the recent global financial crisis. Such oscillations make the stock market more unclear and riskier, which is detrimental to the market's ability to function normally. It is crucial to precisely gauge the volatility of stock index to lessen this uncertainty. In addition, since the stock market plays such a significant role in the global economy, its growth has drawn a lot of attention. Additionally, prior

studies have revealed that developing market stock swings is often higher than developed market fluctuations (Adrian & Rosenberg, 2008; Mun & Brooks, 2012; Ramchand & Susmel, 1998). Most of the research in the literature relate stock market volatility to macroeconomic variables. We add to the literature a new paradigm that emphasizes institutional quality variables as well as diverse macroeconomic issues. Empirically, there is consensus that stock markets in advanced and developing economies can be unpredictable, although research appear to differ on the severity and time frame of this phenomenon. In Central and Eastern European markets, volatility endures more within advanced economies compared to less developed economies (Joseph et al., 2020). Similar views are presented by Mallikarjuna et al. (2019), which suggests that rich country stock markets are more information-sensitive than their counterparts in developing country stock markets. Kirkulak Uludag and Khurshid (2019) however, deduce a different conclusion. This perspective is backed by Khandaker and Al Farooque (2021) found that stock markets in emerging economies display higher volatility than those in established ones.

Corruption is a widespread issue globally, having detrimental effects on economic growth, productivity, and the delivery of public services. International institutions like the World Bank have identified corruption as a significant obstacle to social and economic progress, exacerbating inequality (Morgan, 1964). Concepts of corruption vary widely, but the most prevalent seems to be that proposed by (Klitgaard, 1991), which emphasizes deviations from official duties by public officials. This eventually impacts investment transparency and attracts both domestic and international funding (Drabek & Payne, 2002). This improves corporate performance and earnings, thereby increasing profitability for investors leads to a more stable financial market. At the same time, controlling corruption can reduce sharp price swings by encouraging long-term investment strategies, discouraging speculation, and smoothing out market trends, thereby reducing overall volatility in the stock market. The equity market, however, is affected asymmetrically or in both directions by control of corruption (COC) (Aijaz Syed, 2021; M. A. Khan et al., 2018; Van Thi Hong & Business, 2020). In Pakistan, Islam et al. (2023), revealed a compelling connection between the reciprocal impacts of government integrity and corruption control on the robustness of stock markets.

Political stability mitigates the risk of an unstable government arising from violent or unlawful actions, including politically motivated terrorism and acts of violence (Ahmed et al., 2021). The country's financial markets heavily depend on political system stability. However, political unrest breeds uncertainty in the nation, which is reflected in the investment graph. Most investors think that political unrest influences changes in the nation's policy. A more stable political environment encourages market capitalization and reduces market volatility. This aligns with the results obtained by (Boadi et al., 2017; Roe & Siegel, 2011). Studies have demonstrated that political stability is crucial for the expansion of a country (Abdul Rahman & Saif, 2020; Husnain et al., 2020; Ming & Jais, 2020). According to Brogaard et al. (2020), there is an association between political uncertainty and the decline in equities returns and an increase in market volatility. They explain that political instability makes investors more risk averse and may cause them to flee for safety.

Inflation refers to a monetary rise in the average cost of goods and services. The inflation rate is the percentage change in the price index for a particular period relative to the preceding period's price index, usually calculated on annual basis (Eurostat statistics 2018). Many studies have explored the impact of inflation on stock market volatility. Unfortunately, when several factors are taken into account, such as differences in geographic area and length of time, the results are somewhat contradictory. (Damiran et al., 2022).

Interest rates, as a variable or tool, are an important factor in every economy. According to Saputra (2019), the interest rate is the fee paid for using money, and the interest rate is the amount of interest that must be paid per unit. The viability of interest rates directly affects capital markets, In Pakistan Nishat et al. (2004), suggested that interest rates have a small, yet positive effect on the performance of the stock market in Pakistan. In recent times (Ghani et al., 2022) no significant relationship with measures of volatility. J. Khan et al. (2018), examined interest rates have a significant long-term relationship with stock values.

An important factor in determining a country's economic health is GDP estimates for the future. Additionally, this serves as the foundational aspect and starting point for projecting and valuing stock prices. According to a study conducted by Mun and Brooks (2012) volatility is a major element in explaining changes in the structure of stock market correlations during the global financial crisis. They claim that stock markets are less erratic in nations with higher GDP per capita. The GDP has a negative reaction to shocks connected to stock market volatility, although this response has changed over time in the US market, according to (Beetsma & Giuliodori, 2012).

3. METHODOLOGY

The choice of research methodology in any study is determined by numerous elements such as the range of independent and dependent variables, data sources, and the process of estimating the model. This study uses time series data from Pakistan at yearly intervals covering the period from 1996-2022. This study took five attributes and one outcome. Pakistan stock exchange is the dependent variable measured by the KSE-100 index. Data on KSE-100 was gathered from the Investing.com database. Meanwhile, corruption control (CC), political stability (PS), GDP, Inflation, Interest rates are set as independent variables, and data are collected from world governance indicators (WGI), SBP, world development indicators (WDI), and IMF respectively. To conduct this analysis, descriptive, correlation, and ARDL are employed.

4. DATA ANALYSIS

4.1. Descriptive Analysis

Descriptive statistics are necessary in divulging key features of the variables. Table 1 illustrates the economic and institutional quality variables of this study. The Market Index (MI) indicates an average performance with a mean of 9.183 and moderate fluctuations (standard deviation of 1.326), ranging from 6.851 to 10.775. The variable with the highest

standard deviation (4.675) is Inflation (IF) showing Pakistan has experienced significant shifts of both low and high inflationary periods over the years. This might be due to terrorism and IMF stabilization programs that execute strict macroeconomic policies escalating variability in inflation (Akbar, 2023). Interest rates (IR), with a standard deviation of 3.629, demonstrate notable fluctuations that may arise from dependence on foreign loans, short-term debt, and fiscal deficits which raise borrowing costs (Munir & Perveen, 2021). The average GDP growth was 4.028%, reflecting overall economic performance. The negative mean of -0.939 for corruption control (CC) signals ineffective measures to control corruption. Similarly, the political stability (PS) means of -2.082, denotes substantial concerns implying instability in the country.

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
lnMI	9.183	1.326	6.851	10.775
IF	8.384	4.675	2.529	20.286
IR	11	3.629	6.25	20
GDP	4.028	2.030	-1.274	7.831
CC	-.939	.133	-1.22	-.801
PS	-2.082	.537	-2.81	-1.105

Market Index (lnMI), Inflation (IF), Interest Rates (IR), Gross Domestic Product (GDP), Control of Corruption (CC), Political Stability (PS).

4.2. Correlation Analysis

The correlation analysis table 2 shows relationships between six variables over the period from 1996 to 2022 in Pakistan. Market Index (MI) has a significant negative correlation with interest Rate (-0.552) and political stability (-0.619), representing that higher interest rates and lower political stability are associated with increased Market Index. MI has a significant positive correlation with corruption control which depicts that a surge in corruption control will ample the market index.

Table 2. Correlations Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) lnMI	1.000					
(2) IR	-0.552*	1.000				
(3) IF	0.157	0.534*	1.000			
(4) GDP	0.139	-0.352	-0.279	1.000		
(5) CC	0.542*	-0.482*	-0.186	0.039	1.000	
(6) PS	-0.619*	0.248	-0.255	0.195	-0.134	1.000

** shows significance at the .05 level*

4.3. Variance Inflation Factor Analysis (VIF)

The researchers suggested that VIF greater than 10 confirms the presence of a multicollinearity problem (Kim, 2019). Table 3 depicts the summary of VIF analysis for all the independent variables of this study. The resulting VIF values points out that multicollinearity is not a significant issue in the regression model. Overall, the model shows adequate multicollinearity levels. The outcomes support data for further analysis.

Table 3. VIF for Multicollinearity

Independent Variables	VIF	1/VIF
IF	2.423	.413
IR	2.372	.422
PS	1.720	.581
CC	1.369	.73
GDP	1.216	.822
Mean VIF	1.820	.

4.4. Augmented Dickey-Fuller for Unit Root Test

The outcome of the Augmented Dickey-Fuller (ADF) test table 4 shows stationarity details of several economic and institutional variables. At level, none of the variable's MI, IR, IF, GDP, PS, and CC are stationary as inferred by the test statistics being higher than the 5% critical value both without a constant and with a trend, affirming the existence of a unit root and non-stationary at the level. However, when the series is differenced, all variables fall below the 5% critical value, both with and without a trend. This indicates stationarity of the series after differencing and the variables are integrated in order 1, i.e., I (1). These results illuminate the requisite to difference the data to eliminate unit root at level and to achieve stationarity.

Table 4. Augmented Dickey-Fuller for Unit Root Test

Description	Z(t)	lnMI	IR	IF	GDP	PS	CC
At level							
No constant	Test Statistics	0.989	-1.399	-0.279	-0.696	0.051	-0.273
	5% Critical value	-1.950	-1.950	-1.950	-1.950	-1.950	-1.950
Trend	Test Statistics	-2.106	-2.467	-1.726	-3.156	-1.829	-3.782
	5% Critical value	-3.600	-3.600	-3.600	-3.600	-3.600	-3.600
At First Difference							
No constant	Test Statistics	-2.982	-3.144	-3.547	-4.775	-2.058	-5.650
	5% Critical value	-1.950	-1.950	-1.950	-1.950	-1.950	-1.950
Trend	Test Statistics	-3.417	-3.252	-3.588	-4.572	-3.096	-5.399
	5% Critical value	-3.600	-3.600	-3.600	-3.600	-3.600	-3.600

4.5. Selection of Final ARDL Specification

Using the accurate lag order in postulating the ARDL models is critical. Lag length selection is imperative in describing time-series models to capture the precise dynamics. Lower values AIC, Schwarz–Bayes information Criterion (SBC), and Hannan–Quinn information Criterion (HQC) delineate a better model fit. For Lag 2, the AIC (-102.540), HQIC (-102.347), and SBIC (-98.773) values are relatively low with the lowest FPE (5.6e-51), representing the best forecasting accuracy. Lag 3 might be the optimal lag length. However, Lag 2 is a suitable choice based on the liaison between prediction precision and model efficiency (Table 5).

Table 5. Lag Order Selection

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-92.988				0.010	12.373	12.388	12.663
1	-28.070	129.840	36	0.000	0.000	8.759	8.863	10.787

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
2	898.319	1852.800	36	0.000	5.6e-51*	-102.540	-102.347	-98.773
3	2970.310	4144*	36	0.000		359.288*	359.051*	354.653*
4	2967.250	-6.117	36			-358.906	-358.669	-354.270

Endogenous: lnMI IR IF GDP CC PS *Exogenous: _cons*

4.6. ARDL MODEL

The ARDL regression illustrates key insights into the relationship between independent variables and the dependent variable. Initially, MI demonstrates a significant negative effect in the first lag (L1 = -6.078) and a positive effect in the second lag (L2 = 4.662). Next, interest rates have a persistent negative and significant impact both in the current period and at lag 2. Meanwhile, inflation depicts a cyclical effect with a positive transient impact, a negative lagged effect at L1, and a positive effect at L2. Following that, GDP lessens MI in the short term, but its lagged effect is insignificant. Alongside, Corruption control swaying shifts, with a significant positive effect in the short term but a negative impact at lag 1. Lastly, Political stability reflects a volatile nature, from an insignificant negative relationship in the current period to a positive association at lag 1 and a negative relationship at lag 2. The constant term is significantly positive, indicating the base level of MI when other aspects are excluded (Table 6).

ARDL(2,2,2,1,2,2) regression

F(16, 1) = 728.82
Prob > F = 0.0291
R-squared = 0.
Adj R-squared = 0.99859999
Log likelihood = 64.870533 Root MSE = 0.0279

Table 6. Regression Results

lnMI	Coef.	Std. Err.	t	P>t	[95%Conf.	Interval]
lnMI						
L1.	-6.078	0.373	-16.290	0.039	-10.818	-1.338
L2.	4.662	0.253	18.400	0.035	1.443	7.881
IR						
--.	-0.781	0.051	-15.430	0.041	-1.424	-0.138
L1.	-0.360	0.033	-10.980	0.058	-0.777	0.057
L2.	-0.831	0.058	-14.270	0.045	-1.570	-0.091
IF						
--.	0.427	0.032	13.540	0.047	0.026	0.827
L1.	-0.336	0.019	-17.700	0.036	-0.577	-0.095
L2.	0.567	0.035	16.200	0.039	0.122	1.011
GDP						
--.	-0.693	0.048	-14.350	0.044	-1.306	-0.079
L1.	-0.289	0.027	-10.660	0.060	-0.633	0.056
CC						
--.	6.471	0.437	14.810	0.043	0.919	12.024
L1.	-6.755	0.397	-17.010	0.037	-11.802	-1.708

lnMI	Coef.	Std. Err.	t	P>t	[95%Conf.	Interval]
L2.	0.933	0.170	5.500	0.114	-1.222	3.088
PS						
--.	-0.812	0.119	-6.840	0.092	-2.320	0.697
L1.	8.270	0.536	15.430	0.041	1.462	15.078
L2.	-7.544	0.442	-17.070	0.037	-13.161	-1.928
_cons	42.957	2.519	17.050	0.037	10.952	74.962

5. DISCUSSION AND CONCLUSION

This study analyzed the relationship between institutional quality, macroeconomic variables, and the Market Index of PSX from 1996-2022 using the Autoregressive Distributed Lag model.

5.1. Impact of Institutional Quality on Market Index

In this study, institutional quality proxied by control of corruption and political stability significantly contributes to elucidating the Market Index. The immediate effect of Corruption Control on the stock market index is positive and significant (6.471, p=0.043), showing that corruption control upsurges investor confidence and boosts stock market performance. CC illustrates a drastic shift (-6.755) at first lag contradicting the consensus potentially due to Pakistan's specific challenges. Initially, positive effects of CC may not be sustained potentially due to rigid governmental regulations to control corruption can lead influential investors to manipulate the market, and companies involved in corrupt practices may face financial decline, while increased compliance costs further reduce profitability hampering business growth, which negatively affects the market index. However, the second lag (L2) of 0.933 represents a reliable association between CC and the market index over a longer period indicating retrieval of the market. These movements display a non-linear and swift relationship between corruption control and market performance.

Political stability establishes an inverse relation with the stock market index (-0.812). Interestingly, political stability positively (8.270) supports the market at the first lag (L1). However, the second lag (L2) reveals a sharp negative shift (-7.544). This negative turn may result from investor overconfidence in a politically stable economy, which can lead to speculative bubbles and abandon long-term drivers, eventually resulting in market downturns. Also, this illusion of stability diminishes market resilience to external shocks and limits portfolio diversification.

5.2. Impact of Macroeconomic Variables on Market Index

The influence of interest rates on the stock market is negative (-0.781), which is predictable. Rising interest rates usually escalate debt expenses and lessen liquidity, consequently suppressing stock market activity. The negative effect of interest rates stays consistent over time at the first lag (-0.360) and second lag (-0.831). This lasting effect validates that high interest rates create pressure on stock market performance as companies and investors begin to increase capital costs. Inflation has a positive effect (0.427) on the stock market index, inferring that moderate inflation can catalyze nominal earnings and proliferate

stocks. In an economy like Pakistan, controlled inflation may also reflect economic activity that yields equity markets in the short term. The first lag (L1) of inflation is negative (-0.336), meaning higher prices may erode purchasing power and raise concerns about the sustainability of the economic system, deteriorating the stock market. The second lag (L2) is positive (0.567), predicting stock values may rise when inflation stabilizes.

In Pakistan, the impact of GDP growth on the stock market index is negative, with a coefficient of -0.693, which is further supported by a negative first lag of -0.289. While economic growth is generally linked with positive market conditions, it is important to note that higher growth rates can induce short-term volatility in the market, particularly when the growth is irregular or sector specific. This phenomenon suggests that GDP growth may not be constantly depicted in stock market gains over years. Such dynamics may exhibit constitutional deficiencies within the economy that hinder the efficient transfer of growth to the stock market, or possibly the influence of political threats and global economic pressures.

5.3. Core Variables of Institutional Quality and Macroeconomics Highly Correlated with Market Index

The analysis divulges control of corruption, interest rates, and political stability are the core variables highly correlated with the stock market index of Pakistan. CC shows a significant positive impact on the stock market, showing improved investor confidence, although its effects can be volatile in the short term. IR has a robust negative influence, where rising interest rates consistently weaken market performance. PS shows mixed results, with initially negatively impacting the market, but greater stability providing strong positive effects over time. The ARDL results confirm these relationships, emphasizing both immediate and lagged effects. These aspects should be considered in any policy or investment strategy aimed at managing stock market risk.

6. CONTRIBUTION OF THE STUDY

The study's two main contributions are its establishment of empirical data and its policy implications. The findings of this study contribute to the growing body of literature on the Market Index of Pakistan. By exploring the relationship between institutional quality, macroeconomic factors, and the Market Index in Pakistan, this study addresses a significant gap in current knowledge. Unlike previous research which discusses primarily the connection between macroeconomic variables and Market Index, this study takes a unique approach by integrating indicators of institutional quality. This expands the body of research already available and offers a more comprehensive insight into the variables affecting stock market behavior in developing economies like Pakistan. Enhancing the precision of Market Index models has historically posed challenges for both academics and practitioners. To assess the effects of macroeconomic factors and institutional quality, this study utilizes the Autoregressive Distributed Lag Model. This model enables our research to better portray the distinctive characteristics of the Pakistani stock market. The findings of this study suggest that policymakers can improve their forecasting skills by considering

these relationships. This study can help predict economic downturns and upturns and give policymakers the knowledge they need to act promptly and wisely to fend against recessions and foster advancement.

From policy implication point of view, it offers investors information that allows them to analyze macroeconomic dynamics and make analytical decision. The stock market sectors in Pakistan have experienced significant negative repercussions because of the 2008 financial crisis, volatile political structure, and subsequent intervention of external factors. Despite having an agriculture-based economy, Pakistan's business sector is as imperative to the country's economic growth. This has the potential to proliferate capital investment in the market and assist the development of the global financial system. The quantitative analysis of the research also amplifies investor confidence. The study's findings are also useful to policymakers since they provide insightful information for putting into practice policies that control financial markets and achieve economic goals. The study may be used to help create policies that encourage the extension of the capital stock market, which is essential for economic progress.

7. IMPLICATIONS OF THE STUDY

This research demonstrates the importance of institutional reforms and upgrades for Pakistan's economy as a whole and implies that elevating institutional standards may help create a stock market that is more robust and stable. The research also examines the intricate relationship between financial markets and the broader economy by considering macroeconomic variables such as interest rates, inflation, and GDP. This analysis aids policymakers in comprehending the possible impacts of their decisions on the Market Index.

The study may offer key information for risk management tactics. Investors can more accurately identify downside risk and alter their portfolios if asymmetric effects are present. Institutional quality is revealed to be a significant factor in Market Index, this may highlight the worth of additional regulatory and investor protection changes. Understanding the relationship between macroeconomic variables and Market Index can be useful in devising effective monetary and fiscal policies that propagate stability in financial markets. Ultimately, the research may contribute to strategic decision-making, potentially leading to a more stable and prosperous investment climate in Pakistan.

8. LIMITATIONS OF THE STUDY

Firstly, ARDL models support linear relationships but if the true relationships are nonlinear, it may lead to inaccurate forecasts. Secondly, the findings of this research might not back other developing and developed economies due to the exclusive nature of the Pakistani sector.

9. FUTURE RESEARCH RECOMMENDATIONS

The proposed study offers several areas of future research that grasp significant potential. This study analyzes data on yearly intervals from 1996 to 2022 in Pakistan, which may not

provide a holistic insight into the market. Future studies can exploit data at different frequencies to extend the study's timeframe. Also, it is paramount to integrate other emerging markets or regions to identify similarities or differences to improve the generalizability of the outcomes. Specifically, the research considers only 5 explanatory variables (IR, IF, GDP, CC, PS) which may not capture the material aspects affecting performance in terms of institutional quality and macroeconomic conditions in Pakistan. Subsequent studies can assimilate more variables like the unemployment rate, industrial production, and behavioral finance factors, such as investor sentiment, and herding behavior into the analysis which will assist in identifying essential performance drivers. Furthermore, executing an event study analysis like elections, the 2007–2008 financial crises, and the Russia-Ukraine war that has affected the world financial markets, or inspecting the Covid-19 pandemic to better conceive the nuanced dynamics of the Market Index. Dynamic modeling like neural networks, or deep learning can reflect convoluted patterns in the data that conventional econometric models cannot depict.

Author Contributions:

Ms. Areeba Rahat Alvi conceptualized the main idea, aiming on how institutional quality and macroeconomic variables affect stock market. She carried out a comprehensive literature review, developed the conceptual framework, and undertook data collection. Mr. Syed Muhammad Ahmad Hassan Gillani offered significant contribution in data analysis and thoroughly reviewed the paper at each stage to ensure accuracy and rationality. Ms. Maria Rana and Mr. Asad Ali assisted in the write up, thorough proofreading, and offered valuable recommendations to improve the paper's quality.

Funding:

There is no funding involved. This research is self-funded by the authors.

Institutional Review Board Statement:

In this section, please add the Institutional Review Board Statement and approval number for studies involving humans or animals. Please note that the Editorial Office might ask you for further information. Please add “The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of NAME OF INSTITUTE (protocol code XXX and date of approval).” OR “Ethical review and approval were waived for this study, due to REASON (please provide a detailed justification).” OR “Not applicable.” for studies not involving humans or animals. You might also choose to exclude this statement if the study did not involve humans or animals.

Informed Consent Statement:

This study is bases on secondary data so there is no data is obtained from human as primary data so there is no need of get any consent.

Data Availability Statement:

Data is collected from world governance indicators (WGI), SBP, world development indicators (WDI), IMF and Investing.com database.

Acknowledgement:

I Areeba Rahat Alvi appreciate and acknowledged to my co-authors. Their collaboration and sustenance were important to the completion of this research.

Conflicts of Interest:

There is no conflict of interest.

References:

Abbas, G., McMillan, D. G., & Wang, S. (2018). Conditional volatility nexus between stock markets and macroeconomic variables: Empirical evidence of G-7 countries. *Journal of Economic Studies*, *45*(1), 77-99. https://doi.org/10.1108/JES-03-2017-0062

Abdul Rahman, E., & Saif, A. D. (2020). The impact of Political Stability and Absence of Violence/Terrorism on foreign direct investment flows in the Arab countries. *North American Academic Research*, *3*(1), 1-20.

Adrian, T., & Rosenberg, J. (2008). Stock returns and volatility: Pricing the short-run and long-run components of market risk. *The journal of Finance*, *63*(6), 2997-3030. https://doi.org/10.1111/j.1540-6261.2008.01419.x

Agyemang, O. S., Gatsi, J. G., & Ansong, A. (2018). Institutional structures and financial market development in Africa. *Cogent Economics & Finance*, *6*(1), 1488342. https://doi.org/10.1080/23322039.2018.1488342

Ahmad, N. & Ramzan, M. (2016). Stock market volatility and macroeconomic factor volatility. *International Journal of Research in Business Studies and Management, 3*(7), 37-44.

Ahmed, K., Khan, B., & Ozturk, I. (2021). Dynamics between disaggregates of governance and stock market performance in selected South Asia countries. *International Journal of Finance & Economics*, *26*(1), 802-813. https://doi.org/10.1002/ijfe.1821

Aijaz Syed, A. (2021). The asymmetric relationship between military expenditure, economic growth and industrial productivity: An empirical analysis of India, China and Pakistan via the NARDL approach. *Revista Finanzas y Política Económica*, *13*(1), 77-97.

Ajaz, T., Nain, M. Z., Kamaiah, B., & Sharma, N. K. (2017). Stock prices, exchange rate and interest rate: evidence beyond symmetry. *Journal of Financial Economic Policy*, *9*(1), 2-19.

Akbar, M. (2023). Effects of inflation uncertainty and exchange rate volatility on money demand in Pakistan: Bayesian econometric analysis. *International Journal of Finance & Economics, 28*(2), 1470-1487.

Ali, S., Waqar, S., & Haris, M. (2019). The Nexus between Political & Institutional Corruption Events with the Stock Market: A Study of Pakistan. *Journal of Finance and Economics Research*, *4*(1), 59-71.

Beetsma, R., & Giuliodori, M. (2012). The changing macroeconomic response to stock market volatility shocks. *Journal of Macroeconomics*, *34*(2), 281-293. https://doi.org/10.1016/j.jmacro.2012.02.008

Bhowmik, R., & Wang, S. (2020). Stock market volatility and return analysis: A systematic literature review. *Entropy*, *22*(5), 522. https://doi.org/10.3390/e22050522

Boadi, I., & Amegbe, H. (2017). The link between quality of governance and stock market performance: International level evidence. *European Journal of Government and Economics*, *6*(1), 78-101. https://doi.org/10.17979/ejge.2017.6.1.4324

Brogaard, J., Dai, L., Ngo, P. T., & Zhang, B. (2020). Global political uncertainty and asset prices. *The Review of Financial Studies*, *33*(4), 1737-1780. https://doi.org/10.1093/rfs/hhz087

Chang, B. H., Ahmed, P., Ghumro, N., & Rehman, M. U. (2018). Are gold markets weak form efficient? Evidence from China, India and Russia. *Sukkur IBA Journal of Management and Business*, *5*(1), 52-65. https://doi.org/10.30537/sijmb.v5i1.189

Chang, B. H., Meo, M. S., Syed, Q. R., & Abro, Z. (2019). Dynamic analysis of the relationship between stock prices and macroeconomic variables: An empirical study of Pakistan stock exchange. South Asian Journal of Business Studies, 8(3), 229-245. https://doi.org/10.1108/SAJBS-06-2018-0062

Clemens, E. S., & Cook, J. M. (1999). Politics and institutionalism: Explaining durability and change. *Annual review of sociology*, *25*(1), 441-466. https://doi.org/10.1146/annurev.soc.25.1.441

Damiran, S., Dorjdagva, O., Sukhee, B., & Myagmarsuren, T. (2022). Macroeconomic determinants of stock market volatility: Evidence from post socialist countries. *Journal of Eastern European and Central Asian Research (JEECAR)*, *9*(4), 569-580. https://doi.org/10.15549/jeecar.v9i4.966

Dinh, T., Goutte, S., Nguyen, D. K., & Walther, T. (2022). Economic drivers of volatility and correlation in precious metal markets. *Journal of Commodity Markets*, *28*, 100242.

Drabek, Z., & Payne, W. (2002). The impact of transparency on foreign direct investment. *Journal of Economic integration*, 777-810. https://www.jstor.org/stable/23000835

Ghani, M., Guo, Q., Ma, F., & Li, T. (2022). Forecasting Pakistan stock market volatility: Evidence from economic variables and the uncertainty index. *International Review of Economics & Finance*, *80*, 1180-1189. https://doi.org/10.1016/j.iref.2022.04.003

Harvey, C. R. (1995). Predictable risk and returns in emerging markets. The review of financial studies, 8(3), 773-816. https://doi.org/10.1093/rfs/8.3.773

Hooper, V., Sim, A. B., & Uppal, A. (2009). Governance and stock market performance. *Economic Systems*, *33*(2), 93-116. https://doi.org/10.1016/j.ecosys.2009.03.001

Husnain, M., Islam, K., & Ali, W. (2020). Reflection of regulatory announcement in equity market: fresh insight from oil & gas sector of Pakistan. *Journal of Accounting and Finance in Emerging Economies*, *6*(3), 799-820. https://doi.org/10.26710/jafee.v6i3.1357

Islam, K., Bilal, A. R., Saeed, Z., Sardar, S., & Kamboh, M. H. (2023). Impact of government integrity and corruption on sustainable stock market development: linear and nonlinear evidence from Pakistan. *Economic Change and Restructuring*, *56*(4), 2529-2556. https://doi.org/10.1007/s10644-023-09523-7

Joseph, N. L., Vo, T. T. A., Mobarek, A., & Mollah, S. (2020). Volatility and asymmetric dependence in Central and East European stock markets. *Review of quantitative finance and accounting*, *55*(4), 1241-1303. https://doi.org/10.1007/s11156-020-00874-0

Kehinde, T., Chan, F. T., & Chung, S. H. (2023). Scientometric review and analysis of recent approaches to stock market forecasting: Two decades survey. *Expert Systems with Applications, 213*, 119299. https://doi.org/10.1016/j.eswa.2022.119299

Khan, J., & Khan, I. (2018). The impact of macroeconomic variables on stock prices: a case study of Karachi Stock Exchange. *Journal of economics and Sustainable Development*, *9*(13), 15-25.

Khan, M. A., Ilyas, R. M. A., & Hashmi, S. H. (2018). Cointegration between institutional quality and stock market development. *NUML International Journal of Business & Management*, *13*(2), 90-103.

Khandaker, S., & Al Farooque, O. (2021). Institutional quality, macroeconomic factors and stock market volatility: A cross-country analysis for pre, during and post global financial crisis. *The Journal of Developing Areas*, *55*(1). https://doi.org/10.1353/jda.2021.0024

Kim, J. H. (2019). Multicollinearity and misleading statistical results. *Korean journal of anesthesiology*, *72*(6), 558-569. https://doi.org/10.4097/kja.19087

Kirkulak Uludag, B., & Khurshid, M. (2019). Volatility spillover from the Chinese stock market to E7 and G7 stock markets. *Journal of Economic Studies*, *46*(1), 90-105. https://doi.org/10.1108/JES-01-2017-0014

Klitgaard, R. (1991). *Controlling corruption.* Univ of California Press.

Kuzey, C., Uyar, A., Hamrouni, A., Kilic, M., & Boussaada, R. (2021). The link between institutional quality, ethical behaviors of firms, and market regulations on stock market developments. *Managerial and Decision Economics*, *42*(4), 998-1021. https://doi.org/10.1002/mde.3288

Mallikarjuna, M., & Rao, R. P. (2019). Volatility experience of major world stock markets. *Theoretical & Applied Economics*, *4*(621), 35-52.

Mamtha, D., & Srinivasan, K. S. (2016). Stock market volatility–conceptual perspective through literature survey. *Mediterranean Journal of Social Sciences*, *7*(1), 208-212. DOI:10.5901/mjss.2016.v7n1p208

Masoud, N. M. (2013). The impact of stock market performance upon economic growth. *International Journal of Economics and Financial Issues*, *3*(4), 788-798.

Ming, K. L. Y., & Jais, M. (2020). Impacts of macroeconomic environment and governance quality on the stock market. *Jurnal Ekonomi Malaysia*, *54*(3), 133-145. http://dx.doi.org/10.17576/JEM-2020-5403-10

Morgan, T. (1964). The theory of error in centrally-directed economic systems. *The Quarterly Journal of Economics*, *78*(3), 395-419. https://doi.org/10.2307/1879474

Mun, M., & Brooks, R. (2012). The roles of news and volatility in stock market correlations during the global financial crisis. *Emerging markets review*, *13*(1), 1-7. https://doi.org/10.1016/j.ememar.2011.09.001

Munir, K., & Perveen, A. (2021). Impact of Total, Internal and External Government Debt on Interest Rate in Pakistan. *Journal of Applied Economics & Business Research*, *11*(1), 25-40.

Naeem, M. A., Yousaf, I., Karim, S., Yarovaya, L., & Ali, S. (2023). Tail-event driven NETwork dependence in emerging markets. *Emerging Markets Review*, *55*, 100971. https://doi.org/10.1016/j.ememar.2022.100971

Nguyen, T., Locke, S., & Reddy, K. (2015). Ownership concentration and corporate performance from a dynamic perspective: Does national governance quality matter?. *International review of financial analysis*, *41*, 148-161. https://doi.org/10.1016/j.irfa.2015.06.005

Nguyen, T., Nguyen, A., Nguyen, M., & Truong, T. (2021). Is national governance quality a key moderator of the boardroom gender diversity–firm performance relationship? International evidence from a multi-hierarchical analysis. *International Review of Economics & Finance*, *73*, 370-390. https://doi.org/10.1016/j.iref.2021.01.013

Nishat, M., Shaheen, R., & Hijazi, S. T. (2004). Macroeconomic factors and the Pakistani equity market [with Comments]. *The Pakistan Development Review*, *43*(4), 619-637.

Ramchand, L., & Susmel, R. (1998). Volatility and cross correlation across major stock markets. *Journal of Empirical Finance*, *5*(4), 397-416. https://doi.org/10.1016/S0927-5398(98)00003-6

Ritzer, G. (2004). *Encyclopedia of social theory*. Sage publications.

Roe, M. J., & Siegel, J. I. (2011). Political instability: Effects on financial development, roots in the severity of economic inequality. *Journal of Comparative Economics*, *39*(3), 279-309. https://doi.org/10.1016/j.jce.2011.02.001

Sekati, B. N. Y., Tsoku, J. T., & Metsileng, L. D. (2020). Modelling the oil price volatility and macroeconomic variables in South Africa using the symmetric and asymmetric GARCH models. *Cogent Economics & Finance*, *8*(1), 1792153. https://doi.org/10.1080/23322039.2020.1792153

Sharma, A., Sharma, V., & Tokas, S. (2022). Institutional quality and health outcomes: Evidence from the EU countries. *Economics and Business Letters*, *11*(2), 70-78. doi:10.17811/ebl.11.2.2022.70-78

Song, Y., Tang, X., Wang, H., & Ma, Z. (2023). Volatility forecasting for stock market incorporating macroeconomic variables based on GARCH-MIDAS and deep learning models. *Journal of Forecasting*, *42*(1), 51-59. https://doi.org/10.1002/for.2899

Sonkavde, G., Dharrao, D. S., Bongale, A. M., Deokate, S. T., Doreswamy, D., & Bhat, S. K. (2023). Forecasting stock market prices using machine learning and deep learning models: A systematic review, performance analysis and discussion of implications. *International Journal of Financial Studies, 11*(3), 94. https://doi.org/10.3390/ijfs11030094

Van Thi Hong, P. J. (2020). Impacts of corruption control on economic growth in relationship with stock market and trade openness, *The Journal of Asian Finance, Economics and Business, 7*(12), 73-84.

Yalamati, S. (2023). Forecast Cryptocurrency Market Investments Based on Stock Market Performance. *International Journal of Innovations in Applied Sciences & Engineering, 9*(1), 19-27.