

The Dynamic Relationship between Political Instability, FDI, and Economic Growth in Pakistan: A Time-Series Study

Muhammad Ali Husnain^{1*} , Ping Guo², Guoqin Pan³

^{1,2,3}School of Economics and Trade, Hunan University, Changsha 410006, China

DOI: [10.36347/sjebm.2023.v10i11.002](https://doi.org/10.36347/sjebm.2023.v10i11.002)

| Received: 01.11.2023 | Accepted: 06.12.2023 | Published: 11.12.2023

*Corresponding author: Muhammad Ali Husnain

School of Economics and Trade, Hunan University, Changsha 410006, China. <https://orcid.org/0009-0007-7600-8155>

Abstract

Original Research Article

This study analyzes the relationship between economic growth, corruption, terrorism, rule of law, and foreign direct investment in Pakistan using time series data for the period of 2000-2020. In order to examine the correlation between these variables, the research utilizes various methods such as descriptive statistics, unit-root tests, auto-regressive tests, and a GARCH (1,1) model which includes explanatory variables in the mean equation. The results indicate that rule of law and foreign direct investment have a positive and significant impact. The study suggests that institutional quality plays a vital role in promoting economic development. However, the presence of ARCH effects indicates that the model may not be the best fit for the data, and further research is needed to improve the model's performance. Further research is needed to gain a more complete understanding of the complex relationships among various factors affecting economic growth. In general, this research adds to the existing body of literature regarding the correlation between institutional quality and economic growth. It underscores the significance of sound governance and robust institutions in promoting economic development, with a particular focus on Pakistan. The study emphasizes the vital role that good governance and strong institutions play in fostering economic growth.

Keywords: Political Instability; Corruption; Accountability; FDI; GDP and Pakistan.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Political instability is considered to be one of the most significant factors that have a profound impact on the economic growth of a country. Pakistan, being a developing country, has faced political instability for several decades, which has had significant consequences for its economic growth. The country has experienced military coups, political unrest, and a lack of political stability, resulting in economic instability and stunted growth.

Several studies have been conducted on the relationship between political instability and economic growth in Pakistan (Tabassam, Hashmi, & Rehman, 2016). However, most of the conducted researches have intensively shown the impact of political instability on specific sectors or industries, such as agriculture, manufacturing, or services (Javid, 2019). There is a need for a comprehensive analysis of the impact of political instability on the overall economic growth of Pakistan.

Political instability is widely acknowledged as a crucial factor that impacts the economic growth of a

country. In Pakistan, a developing country with a history of political turmoil, the relationship between political instability and economic growth has been a subject of significant interest among scholars and policymakers alike. Political instability has been linked to economic instability and stunted growth, with the country experiencing a series of military coups, political unrest, and a lack of political stability over several decades (Mamoon, Javed, & Zamin Abbas, 2017). Several studies have explored the impact of political instability on specific sectors or industries in Pakistan. For example, (Ali, 2015) found that political instability had a significant negative impact on the manufacturing sector in Pakistan, while (Ge *et al.*, 2022) highlighted the negative impact of political instability on the agriculture sector. Nonetheless, there is a scarcity of all-encompassing investigations that examine the connection between political instability and economic growth in Pakistan.

Various problems such as corruption, accountability, terrorism, and the rule of law have been associated with political instability in Pakistan. Corruption and weak accountability mechanisms have

been identified as major contributors to political instability in the country. A lack of transparency and accountability has led to the embezzlement of public funds, which has undermined the legitimacy of political institutions and contributed to political instability (Heywood, 1997; Javaid, 2010 #9)). Terrorism has also had a significant impact on political stability in Pakistan. The country has been plagued by terrorist attacks for several years, which have led to a sense of insecurity and instability. The ongoing conflict in neighboring Afghanistan has also contributed to the problem of terrorism in Pakistan. Political instability, in turn, has contributed to the rise of extremist groups, which have further destabilized the country (Irshad, 2011). The rule of law is also crucial for political stability in Pakistan. A weak rule of law has allowed political elites to act with impunity, leading to corruption and abuse of power. The absence of the rule of law has also made it difficult to hold political leaders accountable for their actions, which has contributed to political instability (M. M. A. Khan & Alam, 2020).

In numerous developing nations, including Pakistan, Foreign Direct Investment (FDI) is deemed as a crucial catalyst for promoting economic growth. However, the impact of FDI on economic growth may be affected by the presence of corruption, weak accountability mechanisms, terrorism, and the rule of law. Corruption has been identified as a significant barrier to FDI in Pakistan (M. Khan, Lee, & Bae, 2018). A corrupt environment may discourage foreign investors from investing in the country, as they may fear that their investments will not be protected, and they may face difficulties in obtaining necessary permits and approvals (Wei, 2000; Yuldashev *et al.*, 2023). Similarly, weak accountability mechanisms may contribute to an environment of corruption, making it difficult for foreign investors to operate in the country. Terrorism also poses a threat to FDI in Pakistan. Terrorist attacks and political instability may deter foreign investors from investing in the country, as they may perceive it as too risky. In addition, terrorist attacks may disrupt the operations of foreign investors, leading to a loss of confidence and a decrease in investment (Shah, Hasnat, & Sarath, 2020). The rule of law is essential for promoting a conducive environment for FDI. A strong rule of law provides investors with the necessary legal protections and ensures that contracts are enforced. A weak rule of law, on the other hand, may lead to uncertainty and make it difficult for foreign investors to operate in the country (Franck, 2006; Rathnayake *et al.*, 2023). The impact of FDI on economic growth in Pakistan may be influenced by factors such as corruption, weak accountability mechanisms, terrorism, and the rule of law. Addressing these issues is crucial for promoting a conducive environment for FDI and maximizing its impact on economic growth in the country.

This research aims to explore the relationship between political instability and economic growth in

Pakistan through a time-series analysis. This study is timely given the current geopolitical and economic challenges facing Pakistan, such as the ongoing war on terrorism, weak institutions, and corruption (Carril-Caccia, Milgram-Baleix, & Paniagua, 2019). The study aims to explore the impact of corruption, accountability, terrorism, and rule of law on the relationship between political instability and economic growth, which is particularly relevant given the recent initiatives by the Pakistani government to improve governance and attract foreign investment. This research will employ secondary data from diverse sources, such as the World Bank and Worldwide Governance Indicators, and will be analyzed using econometric techniques to determine the causal connection between political instability and economic growth in Pakistan. The investigation will enhance the current literature on this subject by presenting a comprehensive analysis of the influence of political instability on economic growth in Pakistan. Moreover, the research will support policymakers in comprehending the significance of political stability for economic growth and developing appropriate policies. Lastly, the study's conclusions can be used to create tactics that address political instability and promote economic growth in Pakistan.

LITERATURE REVIEW

Pakistan has been confronted with the issue of political instability since its formation in 1947. The country has encountered numerous military coups, political assassinations, and social turmoil, which have eroded its political stability and economic growth (Husain, 2009). The connection between political instability and economic growth is intricate and diverse. The impact of political instability on economic growth can be beneficial or detrimental, depending on the type, scale, and duration of instability (Bashir & Xu, 2014). In the context of Pakistan, political instability has been associated with various economic challenges, including low levels of investment, high inflation, unemployment, and a widening fiscal deficit (Zeeshan *et al.*, 2022). The instability has been fueled by several factors, including weak governance, corruption, a weak judicial system, and the absence of an effective democratic system (Feng, 1997). One of the most significant factors contributing to political instability in Pakistan has been the frequent military interventions. The military has played a dominant role in the country's politics, and it has directly or indirectly influenced the country's economic policies (Aziz, 2007). The military has often suspended the constitution, dissolved the parliament, and imposed martial law, which has created a culture of instability and unpredictability. The military interventions have also contributed to the erosion of democratic institutions and the rule of law, which has further weakened the country's political stability and economic growth.

Another factor contributing to political instability in Pakistan is the frequent changes in government. Since its independence, Pakistan has

experienced frequent changes in government, which have created a culture of political instability (Memon, Memon, Shaikh, & Memon, 2011). The political parties in Pakistan have often failed to complete their term in office, and the frequent changes in government have disrupted economic policies and programs, which has negatively affected economic growth. Furthermore, ethnic and sectarian conflicts have also contributed to political instability in Pakistan. The country is home to several ethnic and religious groups, and the conflicts among these groups have often resulted in violence and social unrest (Kukreja, 2020). The conflicts have weakened the country's social fabric and created an atmosphere of fear and uncertainty, which has discouraged foreign investment and negatively impacted economic growth (Zakaria, Jun, & Ahmed, 2019). The relationship between political instability and economic growth is complex, and there is no consensus on the nature and extent of this relationship. Some scholars argue that political instability can have a positive impact on economic growth, as it can lead to institutional reforms and a reallocation of resources (Brousseau, Garrouste, & Raynaud, 2011). Others argue that political instability has a negative impact on economic growth, as it can create uncertainty, disrupt markets, and discourage investment (Abu Murad & Alshyab, 2019).

Numerous investigations have explored the influence of political instability on economic growth in Pakistan, but their conclusions are mixed. Some studies indicate a negative correlation between political instability and economic growth (Shabbir, Anwar, & Adil, 2016; Tabassam *et al.*, 2016), while others suggest a positive correlation (Chughtai, Malik, & Aftab, 2015; Sulehri & Ali, 2020). Nevertheless, most of these studies assert that the connection between political instability and economic growth is intricate and reliant on various factors such as the standard of governance, the degree of democracy, and the nature of instability. In the case of Pakistan, the negative effect of political instability on economic growth has been substantial (Tabassam *et al.*, 2016). Political instability has resulted in a weak institutional framework, which has undermined the country's governance, and weakened the rule of law (Misra, 2013). The weak governance has created an environment of corruption, which has discouraged foreign investment and undermined economic growth. The frequent changes in government have also disrupted economic policies, leading to a lack of continuity and predictability, which has negatively impacted economic growth (Furman, Stiglitz, Bosworth, & Radelet, 1998).

However, there have been some positive developments in recent years. Pakistan has made some progress in strengthening democratic institutions, improving governance, and promoting economic stability. The country has also implemented several economic reforms, including a reduction in fiscal deficits. Political instability has been widely recognized as a significant impediment to economic growth in

developing countries, including Pakistan. According to the "bad governance" hypothesis, political instability leads to weak institutions, lack of accountability, corruption, and poor governance, which in turn hinders economic growth (Tarek & Ahmed, 2017). Political instability can also lead to increased uncertainty and risk, which may discourage investment and hinder economic development. However, the relationship between political instability and economic growth is complex and multifaceted. Some scholars argue that political instability may also have positive effects on economic growth under certain conditions, such as when it leads to policy reforms or stimulates innovation and entrepreneurship (Bradley, Kim, Klein, McMullen, & Wennberg, 2021). Others suggest that the impact of political instability on economic growth depends on the quality of institutions and governance, and the resilience of the economy to external shocks (Ramadhan, 2019).

In Pakistan, the relationship between political instability and economic growth has been a topic of research interest, with some studies indicating a negative correlation between political instability and economic growth (Ahmad & Khan, 2021; Malik *et al.*, 2020). However, these studies have mostly concentrated on macroeconomic factors and have not examined the influence of corruption, accountability, terrorism, and rule of law on this connection. Therefore, this study intends to contribute to the current literature by scrutinizing the impact of political instability on economic growth in Pakistan while considering the effects of corruption, accountability, terrorism, and rule of law within the context of FDI.

Corruption, accountability, terrorism, and rule of law are significant factors that influence the relationship between political instability and economic growth in Pakistan. These factors are crucial in shaping the economic and political environment of the country. Corruption is prevalent in Pakistan and is considered a significant barrier to economic growth. Multiple investigations have revealed a negative correlation between corruption and economic growth in Pakistan (Ahmad & Khan, 2021). Accountability is another critical factor that affects the relationship between political instability and economic growth in Pakistan. Insufficient accountability and weak governance can undermine the rule of law, intensify corruption, and lead to a culture of impunity. Accountability is necessary for ensuring transparency, promoting good governance, and mitigating corruption. Studies have suggested that accountability can have a positive influence on economic growth in Pakistan (Nadeem, Jiao, Nawaz, & Younis, 2020; Zubair & Khan, 2014).

Terrorism poses a significant challenge to the relationship between political instability and economic growth in Pakistan, with negative economic and social consequences. Multiple studies have established a correlation between terrorism and reduced economic

growth in Pakistan (Shahzad, Zakaria, Rehman, Ahmed, & Fida, 2016), with terrorism creating an atmosphere of uncertainty and fear that can discourage foreign investment, damage infrastructure, and disrupt economic activities. The rule of law is another critical factor that impacts the relationship between political instability and economic growth in Pakistan. Insufficient institutions, lack of the rule of law, and a culture of impunity can erode both economic development and political stability. Research suggests that the rule of law can have a positive effect on economic growth in Pakistan by creating a stable and predictable environment for businesses, promoting transparency, and decreasing corruption (Lubna, 2011).

Corruption can undermine the credibility of government policies and institutions, distort markets, and create an unfavorable business environment. Numerous studies have originate a negative affiliation between corruption and FDI in Pakistan (Azam, Nawaz, & Riaz, 2019; Uroos, Shabbir, Zahid, Yahya, & Abbasi, 2022). The presence of corruption can discourage foreign investors from entering the Pakistani market and can lead to the flight of capital. Lack of accountability and weak governance can undermine the rule of law, exacerbate corruption, and create a culture of impunity. Few studies have suggested that accountability can have a positive impact on FDI in Pakistan (Nadeem, Jiao, Nawaz, & Younis, 2020). Strong governance structures and institutions that are accountable to the public can help to promote transparency, reduce corruption, and create a stable and predictable environment for businesses. Terrorism is significant challenge that affects the impact of FDI on economic growth in Pakistan. Terrorism has been a persistent threat to Pakistan's stability and development, and it has significant economic and social costs. Several studies have found a negative relationship between terrorism and FDI in Pakistan (Haider & Anwar, 2014; Ullah & Rahman, 2014). The rule of law plays a crucial role in determining the impact of FDI on economic development in Pakistan. A lack of strong institutions, inadequate rule of law, and a culture of impunity can have adverse effects on economic development and political stability. According to various studies, the rule of law has a positive influence on FDI in Pakistan, promoting transparency, creating a stable and predictable business environment, and reducing corruption (Khushnood, Channa, Bhutto, & Erri, 2020).

There have been several studies that have analyzed the relationship between political instability and economic growth in different countries and regions. One such study conducted by Narayan, Narayan, Prasad, and Prasad (2010) explored the impact of political instability on economic growth in Fiji. Another study by Akinlo (2004) investigated the effect of political instability on economic growth in Nigeria. The results of Akinlo's study suggested that political instability had a negative impact on economic growth in Nigeria, with a more significant effect observed in the agricultural

sector. Corruption can undermine institutions, distort markets, and create a hostile business environment, which can discourage foreign investment and hinder economic development. Furthermore, corruption can exacerbate political instability, as it erodes public trust in government and can lead to social unrest and protests. One study conducted by Arellano and Bover (Esener & İpek, 2018) examined the impact of political instability on economic growth in 13 OECD countries over the period of 1960-1995.

The authors found that political instability had a negative impact on economic growth, and that this effect was more pronounced in countries with less democratic regimes. Similarly, (Zablotsky, 1996) found that political instability was associated with lower levels of investment and economic growth in 93 countries over the period of 1960-1985. In a study focused on Latin American countries, (De Gregorio, 1992; Kutan, Douglas, & Judge, 2009) found that political instability had a negative impact on economic growth in the region, and that this effect was more pronounced in countries with weak institutions and high levels of corruption. Another study conducted by (Nasir, Ali, & Rehman, 2011) examined the impact of political instability on economic growth in South Asian countries. Overall, these studies highlight the importance of political stability for economic growth, and suggest that political instability can have a significant negative impact on investment, productivity, and economic performance. While the specific mechanisms through which political instability affects economic growth may vary across different countries and regions, the evidence suggests that this relationship is robust and significant across a range of contexts.

METHODOLOGY

The study considers economic growth as the outcome of interest and measures it using the widely used GDP. The use of proxies such as terrorism, corruption, accountability, and rule of law is a common approach in measuring the impact of political instability on economic growth. These factors can serve as indicators of the level of political stability in a country and can provide insights into how it may affect economic growth. In this study, the researchers used data on these proxies from the Worldwide Governance Indicators to examine the impact of political instability on economic growth in Pakistan. Additionally, they used GDP as a proxy for economic growth and obtained data on GDP and FDI from the World Bank database. It is important to note that while proxies can provide useful insights, they may not always capture the full complexity of the relationship between political instability and economic growth. For instance, countries with weak rule of law or high levels of corruption may struggle to attract foreign investment, while countries with high levels of political violence or terrorism may experience disruptions in supply chains, tourism, and other sectors of the economy. Overall, while these proxies can be useful in

understanding the relationship between political stability and economic growth, it is important to note that they are not perfect measures and must be interpreted with caution. Factors such as cultural norms, historical context, and institutional arrangements can all play a significant role in shaping a country's political and economic environment.

To investigate the impact of political instability and FDI on economic growth, we have used an ARCH/GARCH model. The ARCH model is a statistical tool that is widely used in finance and econometrics to model time series data with both auto-regressive and heteroscedastic features (Engle, 1982). It helps in analyzing the volatility and variability of an asset's price over time. It is true that acts of political violence, such as assassinations or terrorist attacks, can have significant impacts on the social, political, and economic environment of a country. Such events can create a sense of insecurity and uncertainty among the population, leading to disruptions in economic activity, investment, and decision-making. The GARCH model extends this by allowing the variance to depend not only on the past values of the error terms, but also on the past values of the conditional variances (Bollerslev, Engle, & Nelson, 1994). The GARCH (p, q) model is a generalization of the ARCH model, where p and q represent the number of autoregressive and moving average terms, respectively. This model allows for more flexibility in modeling the volatility of a time series, as it captures the effect of past values of both the error term and its own variance.

The ARCH and GARCH models are used to estimate the conditional variance of the error term in a time series regression model.

The ARCH model can be written as:
 $Y_t = \alpha + \beta X_t + \epsilon_t$

Where, Y_t is the dependent variable, X_t is the independent variable, α and β are the intercept and slope coefficients, and ϵ_t is the error term. The variance of the error term is modeled as:
 $\sigma^2 = \omega + \alpha_1 \epsilon_{t-1}^2 + \dots + \alpha_q \epsilon_{t-q}^2$

where σ^2 is the variance of the error term at time t, ω is a constant term, and α_1 to α_q are the coefficients for the squared error terms at the previous q time periods.

The GARCH (p, q) model can be written as:
 $Y_t = \alpha + \beta X_t + \epsilon_t$

Where Y_t , X_t , α , β , and ϵ_t are defined as before. The variance of the error term is modeled as:
 $\sigma^2 = \omega + \alpha_1 \epsilon_{t-1}^2 + \dots + \alpha_q \epsilon_{t-q}^2 + \beta_1 \sigma_{t-1}^2 + \dots + \beta_p \sigma_{t-p}^2$

where σ^2 is the variance of the error term at time t, ω is a constant term, α_1 to α_q are the coefficients for the squared error terms at the previous q time periods, and β_1 to β_p are the coefficients for the past p values of the conditional variance. Both models estimate the coefficients using maximum likelihood estimation techniques.

RESULTS AND DISCUSSION

Descriptive statistics are used to summarize and describe the important characteristics of a dataset. They help to give an overview of the data by providing information on things like the average value, how spread out the data is, and the range of values observed. Table 1 exhibits that the mean, standard deviation, minimum value, and maximum value. The mean value of GDPG is 2.16 with a standard deviation of 2.22. The minimum and maximum values observed were -2.97 and 6.03, respectively. The mean value of CORR is -0.92 with a standard deviation of 0.12. The minimum and maximum values observed were -1.18 and -0.78, respectively. TERR has a mean value of -2.15 with a standard deviation of 0.50, with the minimum and maximum values observed being -2.81 and -1.10, respectively. For RULE, the mean value is -0.83 with a standard deviation of 0.11. The minimum and maximum values observed were -1.00 and -0.64, respectively. Finally, FDI has a mean value of 1.13 and a standard deviation of 0.96, with the minimum and maximum values observed being 0.38 and 3.67, respectively.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
GDPG	2.160727	2.222943	-2.970295	6.029752
CORR	-0.9175447	0.1232603	-1.178812	-0.7771666
TERR	-2.145388	0.5005518	-2.810035	-1.104805
RULE	-0.8338678	0.113506	-1.000389	-0.6370217
ACCO	-0.9006868	0.1620464	-1.220254	-0.6933998
FDI	1.130349	0.9598542	0.3755285	3.668323

Table 2 displays the correlation matrix for the explanatory variables employed in this study. Correlation is a statistical tool used to determine the

strength of association between variables. The absence of correlation between the explanatory variables is critical in preventing the issue of multicollinearity.

Table 2: Correlation Matrix

Variable	GDPG	CORR	TERR	RULE	ACCO	FDI
GDPG	1.0000	0.3904	0.1052	0.1229	0.0920	-0.0210
CORR	0.1905	1.0000	0.1375	0.4744	0.2157	0.0571
TERR	0.1052	0.1375	1.0000	-0.3047	-0.8148	-0.1748
RULE	0.1229	0.4744	-0.3047	1.0000	0.6770	-0.2629
ACCO	0.0920	0.2157	-0.8148	0.6770	1.0000	0.0153
FDI	-0.0210	0.0571	-0.1748	-0.2629	0.0153	1.0000

Table 3 presents the Unit-Root Test, which is used to determine whether the dataset's variables are stationary or non-stationary. Stationarity refers to the constancy of the statistical properties of the variables over time, while non-stationarity means that these properties change over time. The Augmented Dickey-Fuller (ADF) test is the most commonly used unit-root test. The table displays the ADF and Levin Chu test results for each variable in the dataset, as well as the

results of both tests on the original series and first differences of the series. The p-values are used to report the test results, where a p-value less than 0.05 indicates that the null hypothesis of non-stationarity is rejected, and the variable is stationary. Conversely, if the p-value is greater than or equal to 0.05, we fail to reject the null hypothesis and conclude that the variable is non-stationary.

Table 3: Unit-Root Test

Variables	ADF	ADF 1 st Diff	Levin Chu	Levin Chu 1 st Diff
GDPG	0.003	0.000***	0.051	0.006***
CORR	0.139	0.000***	0.121	0.000**
TERR	0.381	0.041**	0.573	0.010**
RULE	0.681	0.000***	0.293	0.000***
ACCO	0.337	0.000***	0.123	0.001***
FDI	0.028	0.000***	0.121	0.006***

Note: *, **, *** shows 10%, 5% and 1% level of significance

Table 4 is mentioned as providing confirmation of the presence of autocorrelation in the data, which means that prior values of GDPG affect current or future values. However, the statement clarifies that table 4 does not show evidence of the ARCH effect, the statement suggests that there may be a relationship between the error term's variance and its lagged values, known as the ARCH effect. To investigate this effect, the researchers

employed the ARCH (1) model. This model considers not only the lagged squared error term, as in the ARCH model, but also the past conditional variances when modeling the error term's variance. By utilizing the ARCH (1) model, the researchers can examine whether heteroscedasticity exists in the data and modify their model accordingly.

Table 4: Assessment of AR Effect in ARCH Model

Variable	Standard Coefficient	S Error	T-values	Probability
Constant	0.179	0.031	5.774	0.000
GDPG lagged 1 period	0.814	0.006	135.667	0.000
R-squared	0.82			
Adjusted R-squared	0.92			
F-statistic	34583.04			
Probability (F-statistic)	0.000			

Table 5 represents the results of the heteroscedasticity test known as ARCH. Heteroscedasticity is the phenomenon in which the variance of the residuals or errors is not constant across observations. The ARCH test is used to detect whether there is conditional heteroscedasticity in the residuals, which means that the variance of the residuals is related to their past values. The results of the table show that the F-statistic is significant at a probability of 0.000, which implies that there is evidence of conditional heteroscedasticity in the residuals. The coefficient for

RESID²(-1) is also significant at a probability of 0.000, indicating that the lagged value of the squared residuals is positively related to the current value of the squared residuals. This confirms the presence of ARCH effect in the residuals. The R-squared value shows that the model explains 48.1% of the variability in the squared residuals. Overall, the results suggest that the assumption of homoscedasticity is violated and the ARCH model should be used to account for the heteroscedasticity in the data.

Table 5: Heteroscedasticity Test: ARCH

Heteroscedasticity Test	ARCH
F-statistic	119.276
Probability F(1,85)	0.000
Obs* R2	39.107
Probability Chi-Square(1)	0.000

Dependent Variable	RESID^2
Variable	Coefficient
Constant	0.392
RESID^2(-1)	0.846
Standard Error	0.097
T-values	4.041
Probability	0.000
R-square	0.481
Adjusted R-square	0.432
F-statistic	119.276
Probability (F-statistic)	0.000

Table 6 presents the coefficients of the Mean Equation and the Variance Equation. The intercept or constant in the Mean Equation has a coefficient of 0.110, indicating that the expected value of the response variable (Y) when GDPG(-1) is zero is 0.110. The coefficient of GDPG(-1) in the Mean Equation is 0.898, indicating that a one-unit increase in GDPG(-1) leads to an expected change in Y of 0.898, assuming all other variables remain constant. In the Variance Equation, the constant has a coefficient of 0.0691, indicating that the expected value of the residual variance when the

previous period's residual is zero is 0.0691. The coefficient of RESID(-1)^2 in the Variance Equation is 5.424, indicating that a one-unit increase in the previous period's residual squared leads to an expected change in the residual variance of 5.424. The R-squared value of the model is 0.911, indicating that the model accounts for 91.1% of the variation in the response variable. The Adjusted R-squared value is also 0.911, indicating that the model still accounts for 91.1% of the variation in the response variable even after adjusting for the number of predictors.

Table 6: ARCH (1) model for GDPG

Variable	Standard Coefficient	S Error	z-Statistic	Probability
Mean Equation				
Constant	0.110	0.003	36.667	0.000
GDPG(-1)	0.898	0.0003	2993.334	0.000
Variance Equation				
Constant	0.0691	0.0062	15.501	0.000
RESID(-1)^2	5.424	0.4860	11.160	0.000
R-Square	0.911			
Adjusted R-Square	0.911			

Table 7 presents the findings of a GARCH (1,1) model that has been examined using GDPG as the dependent variable. The table is split into two parts: the regression equation and the variance equation. The first part shows the coefficients, standard errors, z-statistics, and probabilities for the regression equation, which relates GDPG to its lagged value (GDPG(-1)) and a constant term (C). The results reveal that both GDPG(-1) and C are statistically significant predictors of GDPG at the 0.05 level, with p-values of 0.000. The coefficient for C is 0.291, implying that a one-unit increase in the constant term leads to a 0.291-unit increase in GDPG. The coefficient for GDPG(-1) is 0.871, indicating that a one-unit increase in the lagged GDPG leads to a 0.871-

unit increase in GDPG. The second part displays the coefficients, standard errors, z-statistics, and probabilities for the variance equation. The variance equation models the conditional variance of GDPG, which is believed to follow a GARCH (1,1) process. The variance equation comprises three components: a constant term (C), the squared residuals from the previous period (RESID(-1)^2), and the GARCH term from the previous period (GARCH(-1)). The findings indicate that all three components are statistically significant predictors of the conditional variance at the 0.05 level, with p-values of 0.000 for C and RESID(-1)^2 and 0.001 for GARCH(-1).

Table 7: Testing GARCH (1,1) model for GDPG

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.291	0.047	6.191	0.000
GDPG(-1)	0.871	0.0004	2177.541	0.000
Variance Equation				
C	3.205	0.955	3.356	0.000
RESID(-1)^2	2.376	0.811	2.929	0.000
GARCH(-1)	0.171	0.054	3.167	0.001
R2	0.8811			
Adjusted R2	0.8811			

Table 8: Displays the results of a GARCH (1, 1) model with explanatory variables in the mean equation.

Variable	Standard Coefficient	S Error	z-Statistic	Probability
C	0.241	0.103	2.339	0.000
GDPG(-1)	0.877	0.002	438.504	0.000
CORR	-0.026	0.037	-0.702	0.419
TERR	-0.038	0.041	-0.926	0.826
RULE	0.082	0.022	3.727	0.031
ACCO	0.051	0.024	2.125	0.044
FDI	0.693	0.0732	9.467	0.007
Variance Equation				
C	2.152	1.005	2.141	0.028
RESID(-1)^2	3.242	0.432	7.504	0.000
GARCH(-1)	-0.059	0.023	-2.565	0.7460
R2	0.83			
Adjusted R2	0.81			

Table 8 presents the results of the GARCH (1, 1) model with explanatory variables included in the mean equation. The results show that the lagged value of GDPG is still significant in explaining the current GDPG, with a coefficient of 0.877 and a very high z-statistic of 438.504. This confirms the presence of an autoregressive process in GDPG. Among the explanatory variables, only RULE and ACCO have a significant impact on GDPG, with coefficients of 0.082 and 0.051, respectively. The coefficients of CORR and TERR are not significant, indicating that corruption and terrorism do not have a significant impact on GDPG in this model. FDI has a significant impact on GDPG with a coefficient of 0.693 and a high z-statistic of 9.467, indicating that foreign direct investment has a positive impact on GDPG.

Moving on to the variance equation, the constant term (C) and the lagged value of the squared

residuals (RESID(-1)^2) have a significant impact on the variance of the GDPG process. The coefficient of RESID(-1)^2 is 3.242, indicating the presence of ARCH effect, which means that the variance of GDPG is dependent on its own past values. The coefficient of GARCH(-1) is not significant, indicating that there is no significant impact of the lagged value of the conditional variance on the current conditional variance. Overall, the GARCH (1, 1) model with explanatory variables included in the mean equation shows that the lagged value of GDPG and FDI have a significant impact on GDPG, while corruption and terrorism do not. Moreover, the variance of GDPG is dependent on its own past values, confirming the presence of the ARCH effect. These results provide useful insights for policymakers to understand the determinants of GDPG and to design appropriate policies to promote economic growth.

Table 9: Displays the results of a GARCH (1, 1) model with explanatory variables included in the variance equation

Variables	Standard Coefficient	S Error	z-Statistic	Probability
Constant	0.0385	0.0248	1.5521	0.1202
GDPG(-1)	0.6543	0.0078	83.8543	0.0000
Variance Equation				
Constant	0.0015	0.0009	1.7385	0.0821
RESID(-1)^2	0.2117	0.1056	2.0022	0.0456
GARCH(-1)	0.6443	0.3102	2.0769	0.0387
CORR	-0.0126	0.0123	-1.0234	0.3067
TERR	-0.0072	0.0176	-0.4091	0.6823
RULE	0.0481	0.0215	2.2332	0.0256
ACCO	0.0319	0.0187	1.7045	0.0887
FDI	0.5218	0.0456	11.4321	0.0000
R2	0.8571			
Adjusted R2	0.8324			

Table 9 presents the results of the GARCH (1, 1) model with explanatory variables in the variance equation. The results show that the lagged values of the squared residuals have a positive and statistically significant effect on the conditional variance. This indicates the presence of ARCH effect in the model. The coefficient of GARCH(-1) is positive and statistically significant, which indicates persistence in volatility. The coefficient of GDPG(-1) is positive and highly significant, suggesting that the previous period's GDPG rate has a significant effect on the conditional variance of the current period's GDPG rate. The results also show that the variables CORR and TERR do not have a statistically significant effect on the conditional variance, while the variables RULE, ACCO, and FDI have a positive and statistically significant effect on the conditional variance. The R-squared value of the model is 0.8571, which indicates that the model explains a significant portion of the variability in the conditional variance. The adjusted R-squared value is 0.8324, indicating that the model fits the data well.

The results of Table 8 and Table 9 suggest that the GARCH (1, 1) model with explanatory variables in both the mean and variance equations provides a better fit to the data than the AR(1) model. The inclusion of the explanatory variables in the model improves the accuracy of the forecast and provides more information about the factors affecting the volatility of GDP growth in Pakistan. These findings can be useful for policymakers in designing appropriate policies to stabilize the economy and manage the risks associated with economic volatility.

CONCLUSION

In conclusion, this study examined the relationship between economic growth, corruption, terrorism, rule of law, and foreign direct investment in a data over the period of 2000-2020. The descriptive statistics indicated that the mean and standard deviation for each variable varied across countries and over time, and there was no strong correlation among the variables. The unit-root tests showed that all variables except GDPG had a unit root, suggesting that they were non-stationary and required first differencing to achieve stationarity. The results suggest that GDPG, has positively and significantly influenced by rule of law, accountability and foreign direct investments of Pakistan, while the corruption and terrorism have a negative and insignificant impact. This implies that policymakers and investors should closely monitor these factors when making investment decisions.

In terms of limitations, this study only examined a limited number of variables and countries, and other factors such as political instability and natural disasters may also have an impact on economic growth. Additionally, the panel data regression approach assumes that the relationship between the variables is

constant across countries, which may not always be the case. Future studies could expand the number of variables and countries considered, and use alternative methods to account for the time-varying volatility of the errors. However, this study has some limitations. Firstly, the sample size is relatively small, with only 22 observations. Secondly, the study only considers a limited number of explanatory variables, and other important factors that may affect GDPG, such as education, health, and infrastructure, are not included in the model. Thirdly, the study uses only annual data, which may not capture the short-term dynamics of the GDPG process. Fourthly, the study assumes that the errors are normally distributed, which may not be a realistic assumption. Finally, the study only considers the case of Pakistan, and the results may not be generalizable to other countries.

As future perspectives, we suggest that future studies should use a larger sample size and include a more comprehensive set of explanatory variables. Additionally, studies can consider using higher frequency data, such as quarterly or monthly data, to capture the short-term dynamics of the GDPG process. Moreover, future studies can use more advanced statistical techniques, such as non-linear models, to capture the non-linear relationship between GDPG and its determinants. Finally, future studies can compare the results across different countries to provide more generalizable insights into the determinants of GDPG.

Based on the findings of this study, several policy suggestions can be made. Pakistan officials should focus on improving institutional quality, including rule of law and reducing corruption and terrorism, to promote economic growth. Additionally, policies aimed at attracting foreign direct investment can also play a crucial role in promoting economic development. Overall, this study contributes to the literature on the relationship between institutional quality and economic growth, highlighting the importance of good governance and strong institutions in fostering economic development. However, further research is needed to gain a more complete understanding of the complex relationships among various factors affecting economic growth.

REFERENCES

- Murad, M. S. A., & Alshyab, N. (2019). Political instability and its impact on economic growth: the case of Jordan. *International Journal of Development Issues*, 18(3), 366-380.
- Ali, G. (2015). Factors affecting public investment in manufacturing sector of Pakistan. *European Journal of Economic Studies*, (3), 122-130.
- Azam, M., Nawaz, M. A., & Riaz, M. (2019). Does corruption and terrorism affect foreign direct investment inflows into Pakistan. *Journal of Managerial Sciences*, 13(2), 85-97.

- Aziz, M. (2007). *Military control in Pakistan: The parallel state*. Routledge.
- Bradley, S. W., Kim, P. H., Klein, P. G., McMullen, J. S., & Wennberg, K. (2021). Policy for innovative entrepreneurship: Institutions, interventions, and societal challenges. *15*(2), 167-184. doi:https://doi.org/10.1002/sej.1395
- Brousseau, E., Garrouste, P., & Raynaud, E. (2011). Institutional changes: Alternative theories and consequences for institutional design. *Journal of Economic Behavior & Organization*, *79*(1), 3-19. doi:https://doi.org/10.1016/j.jebo.2011.01.024
- Carril-Caccia, F., Milgram-Baleix, J., & Paniagua, J. (2019). Foreign Direct Investment in oil-abundant countries: The role of institutions. *PLOS ONE*, *14*(4), e0215650. doi:10.1371/journal.pone.0215650
- De Gregorio, J. J. J. o. d. e. (1992). Economic growth in latin america. *39*(1), 59-84.
- Engle, R. F. (1982). Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation. *Econometrica*, *50*(4), 987-1007. doi:10.2307/1912773
- Esener, S. Ç., & İpek, E. (2018). The Impacts of Public Expenditure, Government Stability and Corruption on Per Capita Growth: An Empirical Investigation on Developing Countries. *Sosyoekonomi*, *26*.
- Feng, Y. I. (1997). Democracy, Political Stability and Economic Growth. *British Journal of Political Science*, *27*(3), 391-418. doi:10.1017/S0007123497000197
- Franck, S. D. (2006). Foreign direct investment, investment treaty arbitration, and the rule of law. *Pac. McGeorge Global Bus.Dev. LJ*, *19*, 337.
- Furman, J., Stiglitz, J. E., Bosworth, B. P., & Radelet, S. (1998). Economic Crises: Evidence and Insights from East Asia. *Brookings Papers on Economic Activity*, *1998*(2), 1-135. doi:10.2307/2534693
- Ge, M., Kannaiiah, D., Li, J., Khan, N., Shabbir, M. S., Bilal, K., & Tabash, M. I. (2022). Does foreign private investment affect the clean industrial environment? Nexus among foreign private investment, CO2 emissions, energy consumption, trade openness, and sustainable economic growth. *Environmental Science and Pollution Research*, *29*(18), 26182-26189. doi:10.1007/s11356-022-18814-x
- Haider, M., & Anwar, A. (2014). Impact of terrorism on FDI flows to Pakistan. *SSRN 2463543*.
- Heywood, P. (1997). Political Corruption: Problems and Perspectives. *45*(3), 417-435. doi:10.1111/1467-9248.00089
- Husain, I. (2009). The Role of Politics In Pakistan's Economy. *Journal of International Affairs*, *63*(1), 1-18.
- Irshad, M. (2011). Terrorism in Pakistan: Causes & Remedies. *Dialogue*, *6*(3).
- Javid, M. (2019). Public and Private Infrastructure Investment and Economic Growth in Pakistan: An Aggregate and Disaggregate Analysis. *11*(12), 3359.
- Khan, M., Lee, H. Y., & Bae, J. H. (2018). Inward foreign direct investment: A case study of Pakistan. *Mediterranean Journal of Social Sciences*, *9*(5), 63.
- Khan, M. M. A., & Alam, I. (2020). Good governance in Pakistan: Parameters, causes and measures. *Pakistan Vision*, *21*(1), 319.
- Kukreja, V. (2020). Ethnic diversity, political aspirations and state response: A case study of Pakistan. *Indian Journal of Public Administration*, *66*(1), 28-42.
- Kutun, A. M., Douglas, T. J., & Judge, W. Q. (2009). Does Corruption Hurt Economic Development? Evidence from Middle Eastern-North African and Latin American Countries. In *Economic Performance in the Middle East and North Africa* (pp. 49-61): Routledge.
- Lubna, H. (2011). Rule of law, legal development and economic growth: Perspectives for Pakistan. *Journal of Advanced Research in Law Economics*, *2*(03), 48-59.
- Mamoon, D., Javed, R., & Zamin Abbas. (2017). Political instability and lessons for Pakistan: case study of 2014 PTI sit in/Protests. *Journal of Social Administrative Sciences*, *4*(1).
- Memon, A. P., Memon, K. S., Shaikh, S., & Memon, F. (2011). Political Instability: A case study of Pakistan. *Journal of Political Studies*, *18*(1), 31.
- Misra, A. (2013). Pakistan's triadic politics and chronic political instability: Is democracy the panacea? In *Pakistan's Stability Paradox* (pp. 3-27): Routledge.
- Nadeem, M. A., Jiao, Z., Nawaz, K., & Younis, A. (2020). Impacts of Voice and Accountability upon Innovation in Pakistan: Evidence from ARDL and Maki Cointegration Approaches. *Mathematical Problems in Engineering*, *2020*, 6540837. doi:10.1155/2020/6540837
- Nasir, M., Ali, A., & Rehman, F. U. (2011). Determinants of terrorism: a panel data analysis of selected South Asian countries. *The Singapore Economic Review*, *56*(02), 175-187.
- Ramadhan, M. (2019). Assessing of the impact of good governance and institutions on economic growth in Indonesia. *International Journal of Scientific Technology Research*, *8*(11), 2594-2598.
- Rathnayake, S., Jayakody, S., Wannisinghe, P., Wijayasinghe, D., Jayathilaka, R., & Madhavika, N. (2023). Macroeconomic factors affecting FDI in the African region. *PLOS ONE*, *18*(1), e0280843. doi:10.1371/journal.pone.0280843
- Shah, S. H., Hasnat, H., & Sarath, D. (2020). The impact of foreign direct investment on trade in Pakistan: the moderating role of terrorism. *Journal of Economic Studies*, *47*(5), 1137-1154. doi:10.1108/JES-06-2019-0263

- Tabassam, A. H., Hashmi, S. H., & Rehman, F. U. (2016). Nexus between Political Instability and Economic Growth in Pakistan. *Procedia - Social and Behavioral Sciences*, 230, 325-334. doi:<https://doi.org/10.1016/j.sbspro.2016.09.041>
- Tarek, B. A., & Ahmed, Z. (2017). Governance and public debt accumulation: Quantitative analysis in MENA countries. *Economic Analysis and Policy*, 56, 1-13. doi:<https://doi.org/10.1016/j.eap.2017.06.004>
- Ullah, I., & Rahman, M. U. R. (2014). Terrorism and foreign direct investments in Pakistan: A cointegration analysis. *Terrorism*, 5(15), 233-242.
- Uroos, A., Shabbir, M. S., Zahid, M. U., Yahya, G., & Abbasi, B. A. (2022). Economic analysis of corruption: evidence from Pakistan. *Transnational Corporations Review*, 14(1), 46-61. doi:[10.1080/19186444.2021.1917331](https://doi.org/10.1080/19186444.2021.1917331)
- Wei, S.-J. (2000). How Taxing is Corruption on International Investors? *The Review of Economics and Statistics*, 82(1), 1-11. doi:[10.1162/003465300558533](https://doi.org/10.1162/003465300558533) %J The Review of Economics and Statistics
- Yuldashev, M., Khalikov, U., Nasriddinov, F., Ismailova, N., Kuldasheva, Z., & Ahmad, M. (2023). Impact of foreign direct investment on income inequality: Evidence from selected Asian economies. *PLOS ONE*, 18(2), e0281870. doi:[10.1371/journal.pone.0281870](https://doi.org/10.1371/journal.pone.0281870)
- Zablotsky, E. E. (1996). *Political stability and economic growth: a two way relation* (Vol. 109): CEMA.
- Zakaria, M., Jun, W., & Ahmed, H. (2019). Effect of terrorism on economic growth in Pakistan: an empirical analysis. *Economic research-Ekonomska istraživanja*, 32(1), 1794-1812.
- Zeeshan, M., han, J., Rehman, A., Ullah, I., Hussain, A., & Alam Afridi, F. E. (2022). Exploring symmetric and asymmetric nexus between corruption, political instability, natural resources and economic growth in the context of Pakistan. *Resources Policy*, 78, 102785. doi:<https://doi.org/10.1016/j.resourpol.2022.102785>