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Institutional Quality, Geopolitical Risk, and Trade Openness in Pakistan

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ABSTRACT

The present study investigates how institutional quality and geopolitical risk affect trade openness in Pakistan from 1998 to 2023, using the autoregressive distributive lag (ARDL) technique. Trade openness (TRO) is the dependent variable, while institutional quality, geopolitical risk, financial development (FD), and the real effective exchange rate (REER) are independent variables. Long-run results show that geopolitical risk and the real effective exchange rate negatively impact trade, whereas institutional quality (IQ) and financial development (FD) have positive effects. In the short run, geopolitical risk and financial development negatively influence trade, while institutional quality and the real effective exchange rate positively affect it. The study recommends that policymakers focus on improving institutional quality and refining real effective exchange rate mechanisms to enhance trade openness in Pakistan. Additionally, addressing geopolitical risks is crucial for achieving sustainable and improved trade outcomes.

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1. Introduction

Trade openness is a fundamental factor in economic growth of any economy, as it facilitates the exchange of goods, services, and capital across borders, thereby promoting economic development. When a country experiences higher exports, it enjoys a trade surplus, whereas higher imports result in a trade deficit (Hawksworth et al., 2023; Ssekibaala, Ariffin, & Duasa, 2022). The economy of Pakistan has faced numerous challenges related to its trade balance for many years. Pakistan consistently records trade deficits because its imports exceed its exports. The country imports heavy industrial machinery to drive industrial growth and numerous consumer goods, leading to substantial payments. This trade deficit is a critical issue as it impacts foreign exchange reserves and economic stability (Ahmad & Ahmed, 2014; Khan, Malik, Jafar, & Khan, 2023). Moreover, geopolitical risk significantly influences trade openness and foreign investors' interest. High geopolitical risk leads to political instability and conflicts,

creating hurdles and imposing more restrictions on trade, increasing tariff rates, and disrupting trading chains (Caldara & Iacoviello, 2022).

Institutional quality plays a crucial role in trade openness. Strong institutions ensure effective governance, legal activities, and regulatory systems, all of which are vital for establishing robust trade policies and creating a conducive environment for investors. Economies with strong institutions engage in more trade agreements and expand their trade networks (Rodrik, 2000). Financial development, encompassing financial institutions and activities, also supports trade by providing low-cost finance and better risk management to investors (Beck, Feyen, Ize, & Moizeszowicz, 2008; Doerr, Frost, Gambacorta, & Shreeti, 2023). Additionally, the real effective exchange rate, which measures a country's currency value relative to others, enhances exports and attracts global markets (IMF, 2023). Long-term trade growth relies on good institutional quality, which positively impacts trade (Alvarez et al., 2017). Studies on Pakistan's economy by Ghani, Aziz, Tajularifin, and Samargandi (2018) and Tanveer, Song, Faheem, and Daud (2024) highlight the significance of institutional quality. Weak institutions lead to low exports, income levels, economic growth, investment, and increased poverty. To achieve sustainable development and revenue generation, economies must improve their institutions (Gani & Prasad, 2006). Strong institutions reduce production costs and are essential for economic development across various sectors (Chong & Calderon, 2000). In Pakistan, the effects of institutional quality on economic growth have been mixed, with both positive and negative impacts documented (Ahmad & Ahmed, 2014). The relationship between growth and institutions involves multiple factors, including technology, investment, geography, infrastructure, and socio-economic aspects. Political stability is crucial for economic growth, while institutional dysfunction can lead to the informal economy. Enhancing institutional quality is essential to mitigate these adverse effects. The 1997 economic crisis in Indonesia exemplifies how poor institutions and policies can exacerbate economic challenges. The complex links between institutional quality and economic growth are central to political economy discussions (Cole, 1993).

Geopolitical risks are considered essential by investors bankers, the financial sector, and the press, as these risks influence investment decisions. Geopolitical risks (GR) are likely to affect not only business cycles and financial markets but also international trade. Geopolitics traditionally describes the practice of states controlling and competing for territory. However, the term now encompasses power struggles and events involving corporations, civil organizations, political parties, and rebel groups. Thus, modern usage of "geopolitics" covers a wide range of events with diverse causes and effects, from terrorist incidents to nuclear tensions, and from global warming to the great trade collapse of 2009. Trade costs significantly impact the cross-country pattern of trade, influencing industrial specialization, income, and the distribution of gains from trade. In an increasingly globalized world, countries with high trade costs are more likely to be excluded from global production networks, missing out on dynamic growth areas in international trade (Caldara & Iacoviello, 2022).

The economic growth rate in Pakistan has also faced challenges, with a modest 3.29 percent recorded in 2018-19. This sluggish economic growth, coupled with an expanding trade deficit, poses significant threats to the overall health of Pakistan's economy. This policy shift removed various trade restrictions, albeit maintaining custom duties. The liberalization strategy yielded positive outcomes, contributing to an improvement in the balance of trade, and the average value of trade openness demonstrated a positive trajectory. The imports value was higher as compared to exports, since from 2002 to 2018. This imbalance of trade is the main hurdle in the balance of trade (Abidin et al., 2013). The study mentions geopolitical risks including risks and uncertainties that are connected with war, terrorism, and issues that affect normal and peaceful international trade (Tabassum, Rahman, Zafar, & Ghaffar, 2023). Significant events such as the September 11, 2001, terrorist attacks on the World Trade Center in New York, the US military interventions in Afghanistan and Iraq, the Arab Spring that began on December 18, 2010, in Tunisia and spread to North Africa and the Middle East, the terrorist

attacks in Paris in November 2015 (Ibrahim, 2023). The aggressive policies of the US towards Mexico, China, and other countries after Donald Trump's election as US president in November 2016, the tensions between North Korea and the US from 2017 to mid-2018, the COVID-19 pandemic, and the Taliban's capture of Afghanistan in August 2021 have all contributed to increased geopolitical instability (Gupta, Gozgor, Kaya, & Demir, 2019). Recent studies emphasize the effect of institutional quality on trade, considering political and legal systems, corruption, and imperfect contract enforcement. Contemporary economics literature recognizes international trade as a major factor positively contributing to economic growth and development. However, African countries have traditionally lagged behind the rest of the world in this area (Khalil, Hussain, Bhatti, & Ibraheem, 2022).

This study investigates the impact of institutional quality and geopolitical risk on trade openness in Pakistan from 1998 to 2023, using the autoregressive distributive lag (ARDL) technique. This study uses unique combination of these variables. It finds that in the long run, geopolitical risk and the real effective exchange rate negatively affect trade, while institutional quality and financial development have positive effects. In the short run, geopolitical risk and financial development negatively influence trade, whereas institutional quality and the real effective exchange rate positively impact it. The study contributes by highlighting the need for policymakers to improve institutional quality and refine real effective exchange rate mechanisms to enhance trade openness, as well as addressing geopolitical risks for sustainable trade outcomes.

This study proceeds with a literature review extent in section 2. In section 3, data, methodology, and model description are presented. Section 4 reports the empirical results and discussion of the findings. In section 5 the conclusion of this study and policy implications.

2. Literature Review

Understanding the determinants of trade balance openness is very important for economists and policymakers because trade balance shows the economy's competitiveness and efficiency in the global market. This study explored how geopolitical risk, institutional quality, financial development, and real effective exchange rates influenced the trade balance. There is a main role of these indicators in trade balance. High geopolitical risk, bad institutions, low financial development, and unstable exchange rates badly affect trade and break the trade chain within the global market (Jones, Wright, & Scullion, 2024). Institutional quality factors such as property rights, regulatory efficiency, and governance play crucial roles in creating a fostering environment for investment and trade. Advanced institutions reduce costs, increase market awareness attract foreign direct investment, and give a positive addition to the trade balance (Acemoglu, Johnson, & Robinson, 2001; Sharma et al., 2022). Other study highlights those improvements of institution quality positively impacted on trade balance (Sajid, Ansari, Tanveer, Faheem, & Waseem, 2023; Zhang et al., 2021). Financial development and financial institutions of an economy like financial market banking and the efficiency of these institutions have a great role in controlling exchange rates helping in financial transactions of trade and supporting the investment flow. A well-functioning financial system plays a role in the exporting industry creating credit facilities for investment and all these factors fostering the trade balance (Beck et al., 2008; Ju, Wu, & Zeng, 2010). Financial development boosts exports and gives a positive addition in the balance of trade (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2014). Real effective exchange rate evaluates the country's currency-adjusted against inflation and trade with other countries or trade partners (Bahmani-Oskooee, Harvey, & Hegerty, 2013). High exchange rates lead to a trade deficit and it impacts on overall trade balance negatively (Bojanic, 2012).

Adebayo, Akadiri, Riti, and Tony Odu (2023) highlighted the relationship between geopolitical risk and trade in India and suggested that geopolitical risk has an asymmetric impact on trade in India. The quantile technique showed that geopolitical risk reduces trade

quality in the middle quantile. Increased in low and high quantiles. Kim and Jin (2023) checked the association between trade and geopolitical risk in Korea. Found the negative relationship between geopolitical risk and trade. Song, Zhang, and Hu (2023) examined the asymmetric effect of geopolitical risk and trade. Time-varying parameter technique was used and found that three conclusions first was the asymmetric effect and the shocks in different periods. Third explained other variables like crude oil and imports have a significant impact. Tekin, Gürbüz, and Kayadibi (2023) investigated the global financial crises of 2008-2009. Used cash holding and global trading as indicators. Suggested that geopolitical risk reduces trade and increases cash balance. Kalogiannidis, Kalfas, Chatzitheodoridis, and Kontsas (2022) explained that the GDP rest of the world has great importance for trade and highlighted if the global market enhances more goods and services will be required in the economy. The countries that have geopolitical risks need to improve. Monacelli and Perotti (2006) examined the multi-sector model to check the risk of trade in a couple of countries. Trade imbalances and household consumption were used to check this relationship. Found that in China and the USA, trade declined due to geopolitical risk. Doyle and Martinez-Zarzoso (2011); Faheem, Azali, Chin, and Mazlan (2020) examined the impact of the role of institutions, labor force, and trade on geopolitical risk in Saudi Arabia. Used GMM technique to expose the relationship among them for a group of countries and found that those countries which have strong institutions have produced more as compared to weak institutional quality economies. And defined that more production countries enhance their trade. Hou, Wang, and Xue (2021) explored the association between institutional quality and cost of trade. Included total cost, manufacturing, and agriculture cost. Institutional cost has a significant impact and decreases the cost. Gani and Prasad (2006) investigated the relationship between trade and institutional quality in Pacific Island countries. Rule of Law, government effectiveness, regulation, and control of corruption were used to measure the institutional quality. Suggested that government effectiveness has a positive impact on import and regulatory systems affect positively trade.

Méon and Sekkat (2008) checked the institutional quality impact on total exports and imports of final goods. Results showed that manufacturing goods positively and export have a negative impact. Farooq, Tanveer, and Faheem (2023); Yushi and Borojo (2019) investigated the impact of institutional quality and the efficiency of transport. The findings disclosed that institutions' quality and the efficiency of transport manufacturing determined trade in Africa. Álvarez, Barbero, Rodríguez-Pose, and Zofío (2018); Faheem, Mohamed, Farooq, and Ali (2019) concluded that institutional quality has a relationship with trade. Yang, Niu, and Gao (2022) explored time-varying fluctuations of geopolitical risk with trade and policy uncertainty. The results showed that policy uncertainty and geopolitical risk have a significant impact on the commodity market. Wang, Wang, and Wang (2023) construct a way in which they described that geopolitical risk and international trade have negative relations and the interest rate has a big role. Geopolitical risk is measured with the investment and export of two nations. And Suggested that significantly higher risk among the US and Chinese economies. Özçelik (2023) explored the relationship between 11 countries among geopolitical risk and trade flow. Nonlinear ARDL results showed that positive geopolitical risk has a negative impact on trade inflow and decreases the exports of Turkey, South Africa, Argentina, China, and Israel. In some countries, imports have an increasing effect in South Africa, China, Israel, Russia, and Argentina. In some countries, geopolitical risks have a symmetrical and in some countries asymmetrical impact. Li, Liu, and Sun (2021) studied that trade is an important support of every country's development and also includes the difference between consumption and production. The regression discontinuity model showed the negative impact of geopolitical risk on trade. Gupta et al. (2019) checked the association of trade and geopolitical risk in 164 developing countries and used the gravity model. Findings showed the negative impact of trade on geopolitical risk.

3. Data and Methodology

This study employs yearly time series data from 1998 to 2023 taken from the World Development Indicator (WDI) and International Country Risk Guide (ICRG). This section of the study also explains the econometric techniques. The study employs the Auto Regressive Distributive Lag (ARDL) model technique to examine the impact of selected variables on trade. This methodology provides reliable estimates in the short and long run (Chaudhry, Faheem, Hussain, & Ahmad, 2021). It is suitable even in case of small size of data (Hussain, Anjum, Yousuf, & Ahmad, 2023). The term ECT provides the long-run adjustment (Mehmood, Faridi, Hussain, & Sehr, 2024). The mixed order of integration leads to the adoption of this methodology i.e., the results of the unit root test provide a mixed order of integration I(0) & I(1). It is assumed that no variable is on I(2). To assess data stationarity, we conduct unit root tests such as Augmented Dickey-Fuller (ADF) and Phillips Parron (PP) tests. To check the stationarity is crucial but it will not provide information about cointegration. For this purpose, this study adopted a bound testing approach that is reliable while applying the ARDL methodology. Post-regression tests are very important to test the reliability of the results. For this purpose, this study employs several diagnostic tests, including the Lagrange Multiplier (LM) test, the Heteroscedasticity test, the Ramsey Reset test, Jarque Bera test.

According to the above literature review following model constructs:

$$TRO = f\,(GR, INSQ, FD, REER) \tag{1}$$

In our model trade openness is the function of geopolitical risk, institutional quality, financial development, and real effective exchange rate

where,
TRO= Trade openness (Dependent Variable)
INSQ= Institutional Quality
GR= Geopolitical Risk
FD= Financial Development
REER= Real Effective Exchange Rate

The general equation of the model is:

$$TRO_t = \lambda_1 + \lambda_2 INSQ_t + \lambda_3 GR_t + \lambda_4 FD_t + \lambda_5 REER_t \mu_t \tag{2}$$

The equation above explains are following, λ2>0, λ $_3$>0, λ $_4$>0, and λ $_5$ >0. The error term is considered to be normally distributed. The coefficients β_2, β_3, $\beta_4$and β_5 are the elasticities of trade openness concerning the institutional quality geopolitical risk, financial development, and real effective exchange rate.
The general equation of the ARDL model is given below:

$$\Delta TRO_t = \alpha_0 + \sum_{i=1}^{l} a_{1_i} \Delta\, INSQ_{t-1} + \sum_{i=0}^{p} \alpha_{2_i} \Delta\, IGR_{t-i} + \sum_{i=0}^{q} \alpha_{3_i} \Delta\, FD_{t-i} + \sum_{i=0}^{q} \alpha_{3_i} \Delta\, REER_{t-i} + \mu_t \tag{3}$$

Table 1 concludes the information about the variables. Here we explain the sources of data that were from data collected and which proxies we use abbreviation uses in this study.

4. Results and Discussion

The results of descriptive statistics are in the following table 4.1. Following are the mean value of trade openness 28.9586, geopolitical risk 100.135, institutional quality 0.275, financial development 0.263, and real effective exchange rate 108.417 respectively. The maximum value of trade openness is 34.348, geopolitical risk 206.434, institutional quality 2.634, financial development 0.370, and real effective exchange rate 117.347 respectively. The minimum value of trade openness is 21.459, geopolitical risk 46.899, institutional quality -1.825, financial development 0.200, and real effective exchange rate 99.736 respectively.

Table 1
Description of the Variables

Variable Name	Proxy	Abbreviation	Definition	Source of Data	Expected Sign
Trade Openness	Export+import/GDP	TRDO	Export-Imports	WDI	+
Institutional Quality	Index of Institutional Quality	INSQ	The efficiency of institutions	WDI	+
Geopolitical Risk	Index of Geopolitical Risk	GR	Economic, Social, and military influence in international affairs	ICRG (International Country Risk Guide)	-
Financial Development	Bank intermediaries	FD	The development of banks and their role	WDI	+
Real Effective Exchange Rate	Exchange rate	REER	The currency change with other country currency at fixed rate	WDI	-

Table 2
Descriptive Statistics and Correlation Matrix Results

	TRO	GR	INSQ	FD	REER
Mean	28.958	100.135	0.275	0.263	108.417
Median	29.674	92.003	0.194	0.228	109.671
Maximum	34.348	206.434	2.634	0.370	117.347
Minimum	21.459	46.899	-1.825	0.200	99.736
Std. Dev.	3.792	34.121	1.296	0.059	5.615
Skewness	-0.319	1.445	0.364	0.589	-0.028
Kurtosis	1.849	5.305	2.226	1.873	1.664
Jarque-Bera	1.876	14.812	1.224	2.881	1.934
Probability	0.391	0.000	0.542	0.236	0.380
Sum	752.923	2603.521	7.173	6.841	2818.843
Sum Sq. Dev.	359.627	29106.19	42.020	0.087	788.312
TRO	1				
GR	-0.295 (992)	1			
INSQ	-0.330 (260)	0.575 (166)	1		
FD	-0.015 (185)	0.075 (474)	0.501 (208)	1	
REER	-0.382 (264)	-0.095 (491)	-0.148 (379)	-0.272 (960)	1

The standard deviation value of trade openness is 3.792, geopolitical risk is 34.121, institutional quality is 1.296, financial development is 0.059 and the real effective exchange rate is 5.615. Additionally, correlation matrix values demonstrate the dependence of variables on each other's values showing that geopolitical risk has a coefficient of -0.295 has a negative but strong correlation with trade, institutional quality has a strong and negative correlation with trade with a coefficient value of -0.330, financial development is negative correlation having with trade but week coefficient of financial development is -0.015 and real effective exchange rate is also negative correlation on trade with -0.380 coefficient.

The unit root results show in (table 3) that TRO (Trade Openness), INSQ (Institutional quality), FD (financial development), and REER (Real effective exchange rate) are become stationary at 1st difference. While GR (Geopolitical risk) is stationary at both I(0) and I(1). Study found mixed order of co integration in variable data and uses the auto regressive distributive lag model.

Table 3
Results of Unit Root Test

	ADF		**PP**	
	Level	**1st Difference**	**Level**	**1st Difference**
TRO	-2.449	-4.804***	-2.599	-4.804***
	(0.139)	(0.000)	(0.106)	(0.000)
INSQ	-3.723**	-1.969	-2.126	-1.973**
	(0.010)	(0.297)	(0.236)	(0.048)
GR	-3.536**	-5.968***	-3.500**	-8.308***
	(0.015)	(0.000)	(0.016)	(0.000)
FD	-1.614	-2.875**	-1.285	-6.385***
	(0.460)	(0.043)	(0.99)	(0.000)
REER	-1.068	-2.195**	-1.068	-4.415***
	(0.711)	(0.030)	(0.711)	(0.002)
FDI	-2.495	-3.197**	-1.904	-3.241**
	(0.128)	(0.032)	(0.325)	(0.029)

Note:**,*** denotes significance level at 5% and 1%, respectively.

Bound test results in table 4 showing the F-value 6.74 is greater than upper show the significance level of the variables in this study.

Table 4
Bound Test Outcomes

Linear Model ARDL					
F-Statistic					
	6.74	10%	5%	2.5%	1%
Lower bound		2.45	2.86	3.25	3.74
Upper bound		3.52	4.01	4.49	5.06

In the short run results (Table: 5) demonstrate that the Institutional quality coefficient is 0.139 and it has a positive significant impact on trade openness in Pakistan. The geopolitical risk coefficient value is -0.039 and it has an insignificant impact on trade openness in the short period. This means that 1 percent increase in geopolitical risk the trade will decrease at -0.528 percent. This means that 1 percent increase in institutional quality the trade will increase at 1.872 percent.

The financial development coefficient is -0.721 and it has a negative but significant impact on trade openness with 0.016 p-values. This means that a 1 percent increase in financial development will decrease the trade to -2.656 percent. The real effective exchange

rate coefficient is 1.628 and it has a positive and significant impact on trade openness with a 0.043 p-value. This means that one percent increase in real effective exchange rate the trade will increase at 1.986 percent in Pakistan.

Table 5
Short-run results of ARDL

Variable Name	Coefficients	Stnd. Error	T Statistic	P Value
D(INSQ)	0.139836	0.074671	1.872704	0.0784
D(GR)	-0.039679	0.075050	-0.528697	0.6039
D(FD)	-0.721307	0.271570	-2.656059	0.0166
D(REER)	1.628460	0.819920	1.986120	0.0434
CointEq(-1)	-0.574615	0.185789	-3.092837	0.0066

Source own author calculation

The long-term results (table: 6) show collective variables significant effect on trade openness. Specifically, the coefficient institutional quality is 2.656 and this is a significant impact on trade with 0.006 p value. This means that if one percent increase in institutional quality trade openness will be increased at 3.13 percent. The positive impact of institutions contributing to growth and leading to diversified exports and helping to reduce corruption. The coefficient of geopolitical risk is -0.3725 which is significant with the negative sign which shows that a one percent rise in geopolitical risk will reduce1854 percent trade openness. Financial development is the significance with a positive sign at 0.001 p-values in the long run meaning that a 1 percent increase in institutional quality increases 4.356 percent trade openness. And real effective exchange rate coefficient is significant with a negative coefficient of -1.7886 meaning that a 1 percent increase in the real effective exchange rate will decrease the trade by -2.4117 percent in Pakistan.

Table 6
Long-run results of ARDL

Variables	Coefficients	Stnd. Errors	T Statistic	P Value
INSQ	2.656268	0.847709	3.133468	0.0061
GR	-0.372529	0.170459	-2.185451	0.0398
FD	1.065683	0.244601	4.356819	0.0011
REER	-1.788690	0.741658	-2.411745	0.0275
C	10.943546	3.427598	3.192774	0.0053

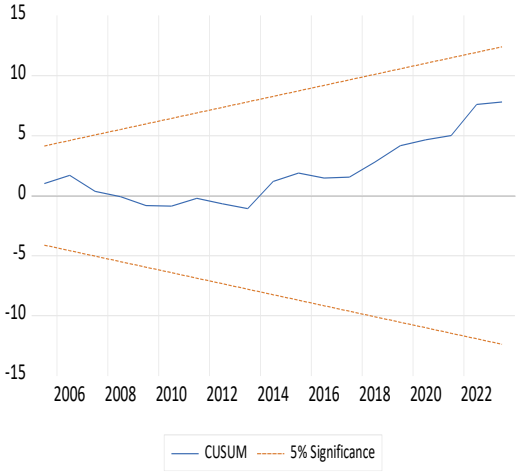
Source author's own calculation.

Table 7 shows the results of different diagnostic tests. We use this study ARDL technique the R^2 value is 0.902 which shows that variations in the model are 90 percent and overall model is good and fit. The adjusted r^2 value is 0.796 which observes the predictor and shows the model is better. We use the LM (langrage Multiplier) test to check the autocorrelation and the p-value of this test is 0.7 which means it is greater than 0.05 and there is no detection of autocorrelation in this model. We use the Hetro test to check the non-constant variation in the model and mostly used in time series data Breusch Pagan test the value of this test is greater than 0.3 and greater than 0.05 meaning that there is no variations in this model.

Table 7
Diagnostic Test Result of the Study

R^2	0.9026	F-Value=113.4070
Adj. R	0.7964	D.W=2.2941
J.B	0.6637	(0.7175)
LM	0.5018	(0.7780)
Hetero	1.1323	(0.3889)
Ramsey	2.3716	(0.3060)

Ramsey reset test is commonly used to check for model specification correction is the model specification correct or not? The result of the Ramsey reset test is 0.306 which is greater than the significance value of 0.05 This concludes that the model specification is accurate. The reliability of the results based on the stability of the outcomes in the long run. For this purpose, CUSUM and CUSUMQ tests are adopted and results showed that the overall model is
stable.



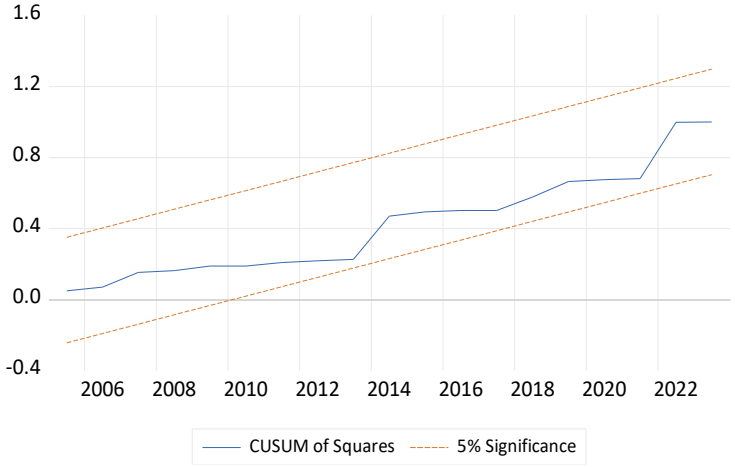


Figure No.1: Graph of CUSUM **Figure 2 Graph of CUSUMQ**

5. Conclusion and Policy Recommendation

This study utilizes the Auto Regressive Distributive Lag (ARDL) model to investigate the influence of geopolitical risk, institutional quality, financial development, and the real effective exchange rate on the trade openness dynamics of Pakistan's economy. The dataset spans from 1998 to 2023, sourced from the World Development Indicators (WDI) and ICRG. Our findings indicate significant long-term impacts, where both geopolitical risk and real effective exchange rate exhibit negative associations with trade openness, while institutional quality and financial development show positive correlations. In the short term, geopolitical risk and financial development demonstrate negative associations, while institutional quality and real effective exchange rate display positive correlations. The implications of these results suggest that government and policy interventions should prioritize improving institutional quality and refining exchange rate mechanisms to enhance Pakistan's overall trade landscape. Additionally, addressing geopolitical risks is crucial for fostering a conductive environment for trade growth in the country.

Author's Contribution:
Javaid Hussain: Writing - Original Draft, Conceptualization.
Hammad Ali: Editing and Review.
Zubair ul Hassan: Drafting, Results and Discussion
Muhammad Faheem: Formal Analysis, Methodology, Investigation

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