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Causal relationship between trade openness and economic growth: Pieces of evidence from Afghanistan

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Abstract
Trade is the term used to describe the willing swapping of goods or services between economic participants. As these transactions rely on mutual agreement, trade is commonly perceived as beneficial for all parties involved. In earlier times, gold and silver were the main mediums of exchange during trade. However, due to different obstacles, trade was predominantly confined within a country's borders in more recent centuries. Presently, trade has transcended national limits and encompasses a diverse array of activities known as international trade. This type of trade has grown in prominence owing to trade liberalization, with a specific focus on trade openness, therefore this paper attempts to investigate the causal relationship between trade openness and economic growth of Afghanistan. A time series data has been used for the period 2002–2020. The model includes GDP as a dependent variable and total trade and the official exchange rate as independent variables. Augmented Dicky Fuller test has been used to check the stationary of the variables and all variables were found stationary at level. The experimental results of the regression analysis revealed that total trade has a positive and significant impact on the country's economic growth. However, the exchange rate has a negative and insignificant impact on economic growth. The Granger causality test results showed that GDP causes trade and the model had unidirectional causality between trade openness and economic growth. Diagnostic tests confirm that residuals are normally distributed and the model is devoid of autocorrelation and heteroscedasticity. Therefore, based on the empirical analysis of the study it is recommended that the government of Afghanistan should prioritize human capital development, financial sector enlargement, and trade expansion, as well as improved trade policy reforms, to eliminate numerous trade restrictions that traders face during imports and exports of goods and services, and also the government should implement lower trade tariffs and a shift toward liberalization to ensure sustained long-run economic growth.

Keywords: Trade openness, gross domestic product, causality, Afghanistan

1. Introduction
The existing effort to make it easy to exchange goods and services, labor information, capital, and ideas across the borders is known as trade openness. Trade is vital for any successful dynamic modern economy. Trade liberalization not only boosts economic aspects but also social aspects such as living standards and life expectancy and the linkage concerning trade openness and growth has long been a debatable matter in the worldwide trade literature. It has been strong fact that many countries have opened their economies for the purpose of economic development and growth. It is a well-known truth that many countries have opened their economies in order to promote economic development and progress. Trade can occur between countries, regions, and even individuals. Trade between nations in the Asian region has a long history and the Silk Road is one of the world's oldest trade routes, this route linked China to the Mediterranean, and it was an important trade route for goods such as spices, tea, porcelain, and fabrics. It was also a major cultural exchange hub, Ideas, religions, and technology were exchanged along this route, allowing Buddhism, Islam, and other cultural influences to spread, and it had a long-lasting impact on the world. The road crossed Afghanistan's geography and the contemporary nation of Afghanistan was a significant Silk Road highway. Today, the region remains a crossroads for old and modern notions, East and west geography. Afghanistan was strategically located at the crossroads of the empires of Asia, Eastern Africa, and Southern Europe.

Traders and travelers on the Silk Road had the opportunity to contact cultures from China, India, Persia, Arabia, eastern Africa, the Maghreb, and the eastern Mediterranean. Afghanistan's strategic location on the Silk Road contributed to the region's amazing prosperity. The route was not only commerce products that went across Afghanistan but strong ideas diffused throughout the region. In addition to improving international trade, this road enhanced regional trade in Southeast and Central Asia.

Trade between the countries are based on mutual understanding and agreements in place and the countries in the specific region have bilateral and multilateral agreements to minimize or abolish tariffs and other trade obstacles between them. A free trade agreement, which decreases or removes tariffs and other trade obstacles among member nations, is the most prevalent type of regional trade agreement. These treaties may also cover other areas of trade, such as investment and services, as well as measures to enhance economic integration among member countries. The North American Free Trade Deal (NAFTA) between the United States, Canada, and Mexico is an example of a regional trade agreement, as is the European Union (EU) between 28 European countries and the Association of Southeast Asian Nations (ASEAN) between 10 Southeast Asian countries. China, India, Japan, South Korea, Thailand, Malaysia, Indonesia, and the Philippines are some Asian countries that are highly involved in international trade. These countries are significant exporters of manufactured goods, electronics, clothing, textiles, and agricultural products. They also import a wide range of goods, including raw materials, finished goods, machinery, and food. China, India, and Japan are Asia's three largest economies and among the United States and European Union's most important trading partners.

In the context of Afghanistan and its trade, the country has trade relations with many countries, including European countries, Russia, and China. Afghanistan has a robust export market with goods such as carpets, fruits and nuts, and gems and the country imports a variety of goods, including fuel, machinery, and food. The primary exports from Afghanistan are fresh fruits and nuts, hand-woven carpets, precious and semi-precious gems, and livestock. The majority of Afghanistan's trade is conducted with its neighbors, including Iran, Pakistan, India and China. And the country has several bilateral and multilateral agreements and a member of the South Asian Association for Regional Cooperation (SAARC) and the association's goals are to promote the welfare of South Asian peoples and improve their quality of life, as well as to enhance economic growth. Furthermore, the SAARC countries agreed to promote and sustain mutual trade and economic cooperation within the SAARC region through the exchange of concessions and signed the South Asian Free Trade Agreement (SAFTA) in 2004, it went into effect on January 1, 2006. SAFTA stands for the South Asia Free Trade Agreement. It is a free trade agreement between the seven South Asian countries of Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, and Sri Lanka. The primary purpose of SAFTA is to reduce tariffs and other barriers to trade between the member countries, thereby promoting economic cooperation and integration in the region (SAARC, 2020) [13]. The stated goal of the SAFTA agreement is to strengthen intra-SAARC economic cooperation to maximize the realization of the region's trade potential and the development of the South Asian countries accordingly. The agreement calls for the removal of trade barriers and the facilitation of the cross-border movement of goods between contracting countries. In addition, the country has the Afghanistan-Pakistan Trade and Transit Agreement (APTTA), which allows for the free movement of goods and services between the two countries. The agreement was signed in 2010 as part of the Afghanistan-Pakistan Action Plan for Peace and Reconciliation, and it is intended to help Afghanistan and Pakistan's economic integration. The agreement allows for the free movement of goods and services, including the free movement of Afghans and their goods into Pakistan as well as Pakistanis and their goods into Afghanistan. The agreement also includes provisions for the development of cross-border infrastructure, such as roads, bridges, and railway lines, to facilitate the movement of goods and services across borders. The agreement is intended to help both countries' economic prospects and is seen as an important step toward regional stabilization. Despite several agreements the county of Afghanistan has a huge amount of trade deficit amounting US$ 4,458 in the year 2021.

According to the Afghanistan's statistical yearbook export was approximately US$850.1 million in 2021, excluding smuggling and re-export and exports increased by 9.4 per cent in 2021 compared to 2020 from US$776.7 million to US$850.1 million. Dry and fresh fruits account for 39.1 per cent of total exports in 2021. Carpet exports increased by 82.6 per cent in 2021 compared to 2020, but the total import of goods in 2021 was US$ 5307.8 million, excluding smuggled and duty-free goods. Total imports decreased by 18.8 per cent in 2021 compared to 2020 from US$ 6537.6 reached to US$5307.8 million. And the main reason for the decrease in imports is due to the collapse of the Afghan government as foreign troops, diplomats, and other foreigners living in the country have left the country and most of the Afghans have migrated to neighboring countries, Europe, and America, as well as the cut in foreign aid to the country. Such a political crisis that began in August 2021 led to a significant economic contraction and decreased the power consumption of the people living in Afghanistan, resulting in a decrease in imports. However, the increase in exports is also due to economic shrinkage, poverty, and starvation, as well as an increase in unemployment; additionally, if we look at the increase in exports of dry and fresh fruits and carpets, the people living in the countries demand for such expensive items has decreased; as a result, the same goods export mostly to neighboring countries, and exports increased in comparison to the previous year.

The purpose of this article is to empirically investigate, using a time series econometric approach, the causal relationship between Afghanistan's trade openness and economic growth. Since trade is essential for national prosperity and a key to combating poverty and achieving the Millennium Development Goals, it allows countries to import ideas and technologies, realize comparative advantages and economies of scale, and foster competition and innovation, all of which increase productivity and achieve higher levels of sustainable employment and economic growth. Countries that are open to international trade provide more opportunities for their citizens and grow faster.

The study is based on secondary data. The data has been collected from a wide variety of sources: websites, journals

on international trade, and statistical yearbooks publishing statistical data with respect to trade, namely World Bank, National Statistics and Information Authority NSIA of Afghanistan and WTO.

The rest of the article is organized as follows. Following introduction, the second section reviews of the empirical literature about causal relationship between trade openness and economic growth. The third section convenes methodology of the study for estimation. The fourth depicts the estimation results. The fifth section reveals diagnostic tests. And the final section concludes the study and provides some policy implications.

1.1. Export Trends in Afghanistan

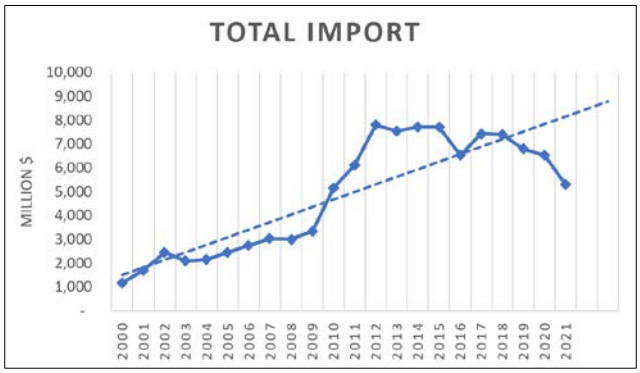
Afghanistan's main exports include hand-woven carpets, wool, cotton, and precious and semi-precious gems, the country also exports livestock and animal products, such as sheep and goats, as well as processed foods and agricultural products like fresh and dry foods. Additionally, Afghanistan also exports some minerals like lapis, copper, and precious stones, and the primary export markets for Afghanistan are Pakistan, India, and Iran. The country has been heavily impacted by ongoing conflict and insecurity in the past, which has severely limited economic development and hampered export sector growth. Furthermore, the country is profoundly reliant on foreign aid, which has resulted in a lack of diversification in its export economy. Therefore, the country's export is very less in comparison to the import with around 4,458 million US dollar deficits in the year 2021. The Figure 1 shows the trend in the export of goods and services from 2000 to 2021. The data has been taken from the Afghanistan statistical yearbooks. The horizontal axis presents the export of goods and services in millions of US dollars, and the vertical axis shows the years. The graph shows that total export was at a very low level in the year 2001 with an amount of 68 million US dollar, however, the trend of export is in increasing mode and export were at a high level in 2018, with an amount of 875 million US dollar, but after that, it was in a declining mode until 2020, However, it starts increasing again and the total export in the year 2021 was amount 850 million US dollar.

Source: Afghanistan statistical yearbooks.

Fig 1: Shows the trend in the export of goods and services from 2000 to 2021

1.2. Import Trends in Afghanistan

Afghanistan imports a wide variety of goods, including food, fuel, machinery, vehicles, and consumer goods. Some of the major countries that Afghanistan imports from including Pakistan, China, the United Arab Emirates, India, and Iran. Afghanistan also receives substantial aid and assistance in the form of imports from a variety of international organizations and countries. Due to ongoing conflict and insecurity, Afghanistan has found it difficult to fully participate in international trade and commerce, limiting import and export activities. Furthermore, the ongoing economic sanctions imposed on some countries have an impact on Afghanistan's import trade particularly with Iran. The Figure 2 shows the trend in the import of goods and services from 2000 to 2021. The information comes from Afghanistan's statistical yearbooks. The horizontal axis presents the import of goods and services in millions of US dollars, and the vertical axis shows the years. The graph shows that total imports were at a very low level in the year 2000, with an amount of 1,176 million US dollars, but the rate of imports was increasing, and imports were at a high level in 2012, with an amount of 7,794 million US dollars, but it then declined until 2021. However, before 2012, the graph was in an increasing mode, but after 2012, the graph was in a declining mode until the year 2021, with the total import in the year 2021 being $5,308 million US dollars with some fluctuation during the period in the country.



Source: Afghanistan statistical yearbooks.

Fig 2: Shows the trend in the import of goods and services from 2000 to 2021

2. Literature Review

Extensive empirical studies on trade openness and economic growth have been conducted by researchers all over the world, indicating that trade has an impact on economic growth in various regions and countries. And also numerous research in Asian nations has been done to study the relationship between trade openness and economic growth. (Tahir & Khan, 2014; Nguyen & Bui, 2021; Chowdhary & Joshi, 2022; Kong, Cui, & Wang, 2022) [15, 11, 4, 9] investigated trade openness and economic growth in Asian countries. The studies used a variety of data analysis techniques and approaches, however the results demonstrated that trade openness has a favorable and considerable impact on economic growth in Asian countries. The causal relationship between trade openness, economic growth, and energy consumption was analyzed by (Nasreen & Anwar, 2014) [10] the empirical result of the study found that cointegration between variables are present. Economic growth and trade openness have a favorable impact on energy use, the panel granger causality analysis demonstrates a bidirectional causal relationship between economic growth and energy consumption, as well as trade openness and energy consumption.

In the context of Sub-Saharan African countries (Brueckner & Lederman, 2015; Cinar & Nulambeh, 2018; Brueckner & Lederman, 2015) [2, 3, 5] went through a panel data analysis to

explore trade openness and economic growth, the empirical analysis of the research indicated that trade openness has a positive and significant impact on economic growth in Sub-Saharan Africa. Furthermore, (Aremo & David, 2021) [1] analyze the individual and combined effects of trade and financial openness on economic growth in Sub-Saharan African nations between 1980 and 2017 and the countries were separated into two groups: low-income and middle-income. For dynamic panel analysis, the generalized method of moments (GMM) and system GMM were employed. The study found that trade openness has a positive influence on economic growth; however, empirical findings for the entire panel show that financial openness and the combination of financial and trade openness have no significant growth-enhancing effects. Trade openness has a strong and favorable influence on economic growth in low-income nations, whereas financial openness, combined trade openness, and financial openness have no significant positive impact on economic growth. The impacts of trade openness on economic growth in middle-income nations are mixed; that is, the consequences are either negative or beneficial. Meanwhile, financial openness, as well as joint trade and financial openness, do not boost economic growth in Sub-Saharan African countries.

In the emerging economy, trade is a critical issue for countries to improve their economies by importing new technology and maintaining an open border policy with other countries. As a result, (Raghutla, 2020) [12] examined the impact of trade openness on economic growth using a panel data analysis from five emerging market economies from 1993 to 2016. The empirical results demonstrated a long-run association between trade openness, economic growth, financial development, inflation, labour force, and technology using panel estimate methods, whereas long-run elasticities show that trade openness has a positive substantial impact on economic growth. Furthermore, the heterogeneous panel non-causation tests show a bidirectional causality between economic growth and inflation, as well as a unidirectional causality in the short run that runs from economic growth to trade openness and economic growth to financial development.

(Wani, 2019) [16] Examine the relationship between trade liberalization and economic growth in Afghanistan by using biannual data for the period 1995–2016 and use econometric tools to assess the comparative effect of three different indicators of trade openness on economic development. The ARDL technique, JJ CO-integration, and ordinary least squares (OLS) results indicate a significant positive long-run association between export and economic growth. The entire volume of commerce and imports, on the other hand, has a large negative impact on economic growth. The addition of variables and fully adjusted OLS findings indicate that the results are robust. The Granger causality and variance decomposition analyses show that trade openness and economic growth are unidirectional related. Causation in the export model runs from export to growth. Whereas the total volume of commerce and imports, causation in Afghanistan goes from growth to total volume of trade and imports.

Overall, most studies acknowledged a positive link between openness and economic growth despite the different methodologies, approaches and openness proxies used. In certain circumstances, the impact of trade openness on economic growth was shown to be indirect, focusing first on productivity or investment before promoting economic development. Furthermore, trade policies should frequently be adequately supplemented with other policies for the main and combined aims of countries' sustainable economic growth.

3. Model Specification

Model specification is a mathematical representation of the interrelationships that exist between economic dependent and independent variables. The model is a three-variable model, with GDP at constant prices as the dependent variable and total trade and the official exchange rate as the independent variables. However, for the country's economic growth in the post-Keynesian era several economic development models were developed in an attempt to comprehend the role of the government in a country's growth. The Harrod-Domar model is a well-known post-Keynesian development model in which an economy's production is determined by the amount of capital and labour available. If the amount of capital and labor in a country increases, the country's production will also increase. A production function derived from the Harrod-Domar model is shown below.

Y= F (K, L) ……..…… (1)

Where Y is output, K is capital, and L is labor. The model assumed a constant capital-output ratio in their model and said that growth does not need to be sufficient to maintain full employment. Similar to Keynes' beliefs, the Harrod-Domar growth theory suggests that full employment and stable growth cannot be attained naturally in an economy. Their growth theory advocated the role of government in inspiring growth. Based on the above model, we can mention that

GDP = F (Trade, ER) ….....…… (2)

Where
GDP = Gross Domestic Product
Trade = Total Trade Export + Import
ER = Official exchange rate

Econometrically the model is specified as:

$$\text{LnGDP} = \beta_0 + \beta_1 \text{LnTRADE} + \beta_2 \text{LnER} + \mu \ldots\ldots\ldots \quad (3)$$

Where,
The prefix "Ln" is used for the natural logarithm of the time series variables and β_0 is Intercept and d $\beta 1$ and $\beta 2$ are the elasticity coefficients of GDP concerning Trade and ER respectively. "M" is the white noise error term.

This empirical research is based on time series data from 2002–2020. Therefore, we used Ordinary Least Square (OLS), an econometric technique, to analyze the data. The Augmented Dickey-Fuller (ADF) test was applied to check the stationarity of the series.

3.1 Data description and sources

The three variables used in this study such as gross domestic product, Total Trade, and Official Exchange Rate by using time-series data from 2002 to 2020 as illustrated in Table 1 The data are collected from the World Development Indicator [17].

Table 1: Data description and sources

Variables	Symbol	Definition measuring method	Data source
Gross Domestic Product	GDP	GDP (current US$)	WDI
Total Trade	TRADE	Trade (Export + Import)	WDI
Official Exchange Rate	ER	LCU per US$, period average	WDI

4. Empirical Results

4.1 Descriptive Statistics of the Economic Variables

Table 2 shows the descriptive statistics for the time series variables Ln GDP, Ln TRADE, and Ln ER for the period from 2002 to 2020. The probabilities of Jarque–Bera statistics discovered the acceptance of null hypotheses of normal distribution for all the time series variables, thus the concerned variables follow the normal distribution. Also, in order to determine whether the model contains multicollinearity, the variance inflation factors (VIFs) have been estimated. The values of the VIFs of the respective variables have come out very low (less than 10), thus it can be concluded that there is an absence of severe multicollinearity among the regressors in the specified model.

Table 2: Descriptive Statistics and Variance Inflation Factors

	Ln GDP	Ln TRADE	Ln ER
Mean	6.133815	22.35190	4.019371
Median	6.265498	22.59072	3.918502
Maximum	6.343818	22.87788	4.353344
Minimum	5.767843	21.53197	3.838429
Std. Dev.	0.224015	0.499612	0.177564
Skewness	-0.604191	-0.381212	0.776817
Kurtosis	1.627381	1.467387	2.075710
Jarque-Bera	2.647548	2.319736	2.587239
Probability	0.266129	0.313528	0.274276
Sum	116.5425	424.6861	76.36806
Sum Sq. Dev.	0.903292	4.493025	0.567523
VIF		1.806312	1.806312

Source: Authors' calculations

4.2 Unit Root Test Result

To start with, the Augmented Dicky-Fuller test was used to determine the unit root of the variables in order to determine which technique is appropriate for the model. Time series data typically show a trend over time, however, this trend can be removed by differencing. In Table 3, the result of the ADF test of the time series variables is presented. It is evident that the all-data series are non-stationary at the level, while they become stationary at the first-order difference. Thus, it is clear that the variables under consideration are integrated into order one (I) [1].

Table 3: Augmented Dickey-Fuller (ADF) Test Results

		AT Level		
		GDP	Trade	EXCH_R
With Constant	T-Statistic	-1.7342	-1.2185	0.7196
	Prob.	0.3985	0.6424	0.9890
		n0	n0	n0
With Constant & Trend	T-Statistic	-0.203	-0.6008	-1.1448
	Prob.	0.9871	0.9657	0.8914
		n0	n0	n0
Without Constant & Trend	T-Statistic	1.9907	1.7993	2.5309
	Prob.	0.9849	0.9779	0.9951
		No	No	No
		AT First Difference		
		d(GDP)	d(TRADE)	d(EXCH_R)
With Constant	T-Statistic	-3.4069	-3.6243	-2.928
	Prob.	0.0256	0.0168	0.0628
		**	**	*
With Constant & Trend	T-Statistic	-4.0446	-4.1981	-3.2676
	Prob.	0.0279	0.0212	0.1050
		**	**	n0
Without Constant & Trend	T-Statistic	-1.3709	-3.0164	-2.4961
	Prob.	0.1515	0.0049	0.0161
		No	***	**

Source: Authors' calculations.

4.3 Regression Analysis

The Ordinary Least Squares technique was used to analyze Afghanistan's trade openness and economic growth, and the results of the regression analysis showed that the R-squared value indicated 94 per cent goodness of fit. This suggests that approximately 94 per cent of the total variation in the

dependent variable is explained by the independent variables. The value of the F-statistic is calculated at 135.36 with a probability value of 0.0000, which is extremely small and shows that the overall model is significant. The DW value of 1.529 specifies the absence of serial autocorrelation in the model. Results from the regression model show that a one per cent increase in TRADE holding other regressors constant will lead to a 0.45 per cent increase in GDP. This implies that there is a positive and significant relationship between gross domestic product GDP and the total trade; a percentage increase in ER, holding other variables constant, leads to a 0.08 per cent decrease in GDP, which means it has a negative and insignificant relationship with real gross domestic product GDP. Consequently, with its insignificant nature, it suggests that the ER does not contribute to GDP growth and the results showed in Table 4.

Table 4: Regression Results

Explanatory Variables	Coefficient	Std. Error	T-Statistics	P-Value
C	-3.705906	0.605902	-6.116349	0.00000
Ln TRADE	0.456378	0.035589	12.82373	0.00000
Ln ER	-0.089861	0.100135	-0.897396	0.38280
R-squared.	0.944197			
Adjusted R-squared	0.937222			
Durbin Watson stat	1.529583			
F-statistics	135.3614			

Source: Authors' calculations.

4.4 Granger causality Test

The short dynamic relationship between trade openness and economic growth can be examined by using the granger causality test proposed by [7] and popularized by [14]. Stationary of the variables is the pre-requisite condition of this method. The Granger causality test helps to examine the forecasting relationship between two variables. The causal relationship between trade and GDP was shown in Table 5, and the result indicated that GDP causes trade, and we can see that GDP has a unidirectional impact on trade openness.

Table 5: Pairwise Granger Causality Tests

Null Hypothesis	F-Statistic	Prob.
TRADE does not Granger Cause GDP	0.42028	0.6662
GDP does not Granger Cause TRADE	7.98823	0.0062
EXCH_R does not Granger Cause GDP	0.69871	0.5164
GDP does not Granger Cause EXCH_R	8.48027	0.0051
EXCH_R does not Granger Cause TRADE	1.12506	0.3566
TRADE does not Granger Cause EXCH_R	4.00853	0.0464

Source: Authors' calculations.

5. Residual Diagnostic Tests

5.1 Histogram Normality Test

With the assumption of normality, the Jarque-Bera test reveal whether the residuals at a given point in time are not only correlated but also normally distributed. The test for residual normality is important because it specifies the statistical distribution of estimators. This hypothesis allowed the inference statistic to be realized. Jarque-Bera results showed in Figure -3 is equal to 10.491 greater than the 10 per cent of significance level, which we interpret as our residuals are normally distributed, indicating the model's good quality.

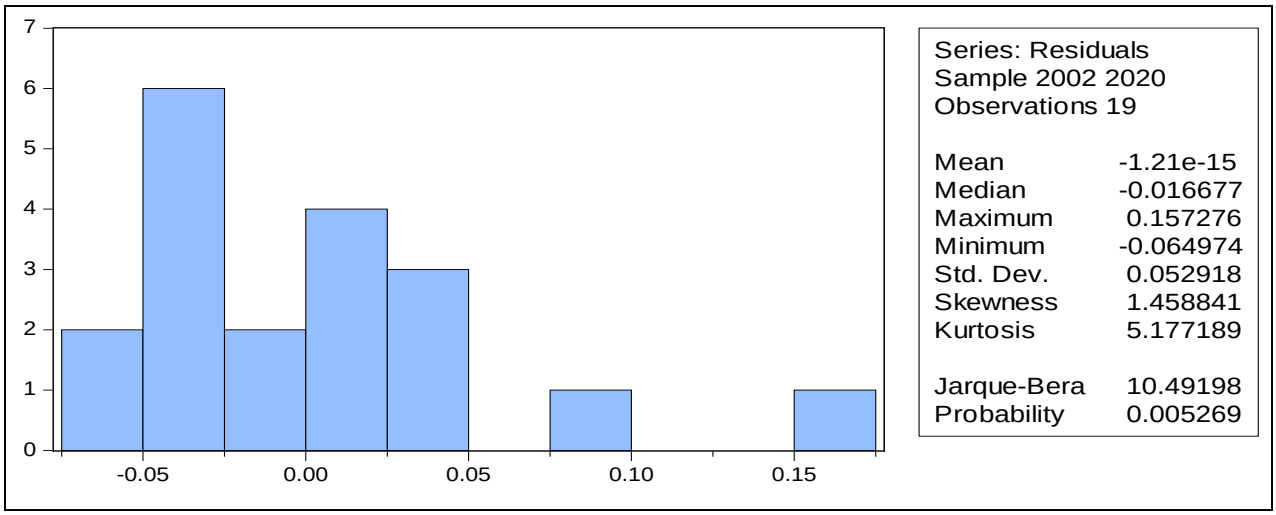


Fig 3: Jarque-Bera results

5.2 Serial Correlation LM Test

Serial correlation is a statistical term that defines the relationship between a variable's current value and a lagged value of the same variable from previous periods. To deduct the problem of serial correlation in the model we performed the Bresusch-Godfrey Serial Correlation LM test. and the

result shown in Table 6 as the probability value is less than 0.05 therefore we are saying that there is no serial correlation in the model.

Table 6: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.363839	Prob. F(2, 14)	0.7014
Obs*R-squared	0.938768	Prob. Chi-Square (2)	0.6254

5.3 Heteroskedasticity Test

Heteroscedasticity test result referring to the Breusch-Pagan probability (0.6083) which is greater than 5%, hence observed estimations by OLS are optimal.

Table 7: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.512894	Prob. F(2,16)	0.6083
Obs*R-squared	1.144733	Prob. Chi-Square (2)	0.5642
Scaled explained SS	1.695474	Prob. Chi-Square (2)	0.4284

6. Conclusion

This study examines the causal relationship between trade openness and the economic growth of Afghanistan for the period 2002–2020. For the empirical analysis, the augmented Dicky fuller ADF test has been used to check the stationary of the variables, and all variables were found stationary at level. The experimental results of the regression analysis revealed that total trade has a positive and significant impact on the country's economic growth. However, the exchange rate has a negative and insignificant impact on economic growth in the country. The Granger causality test results showed that GDP causes trade and that the model had unidirectional causality between trade openness and economic growth. Diagnostic tests confirm that residuals are normally distributed and the model is devoid of autocorrelation and heteroscedasticity. Based on the empirical analysis and conclusions, it is recommended that government high-ranking officials and policymakers focus on bilateral and multilateral trade promotion strategies to boost Afghanistan's trade, as well as to increase the production capacity of domestic firms, support in the form of land, electricity, and other financial and technical assistance should be provided to the firm, and proper utilization of capital products should be ensured. As a result, a balanced emphasis should be placed on all sectors contributing to economic growth. Afghanistan should also take steps to develop an effective services sector, as this sector contributes the most to the country's GDP. Consequently, a balanced emphasis on all sectors contributing to economic growth should be placed, as this is vital for effective and long-term economic development in Afghanistan.

7. References

1. Aremo AG, David AO. Effect of Trade Openness and Financial Openness on Economic Growth in Sub-Saharan African Countries. African Journal of Economic Review; c2021. p. 109-130.
2. Brueckner M, Lederman D. Trade openness and economic growth: panel data evidence from sub-Saharan Africa. Wiley on behalf of the London school of Economics and Political Science; c2015. p. 1302-1323. Retrieved from https://www.jstor.org/stable/24752001
3. Brueckner M, Lederman D. Trade openness and economic growth: Panel data evidence from Sub-Saharan Africa. *Economica*; c2015. p. 1302-1323. DOI: 10.1111/ecca.12160
4. Chowdhary R, Joshi I. Economic Growth and Trade Openness: A Case of Asian 9. Economic Studies Journal, Bulgarian Academy of Sciences - Economic Research Institute. 2022;31(2):3-14.
5. Cinar M, Nulambeh NA. Foreign Direct investment, trade openness and economic growth: A panel data analysis for sub-saharan Africa. Business and Economics Research Journal; c2018. p. 749-760.
6. Domar. Capital Expansion, Rate of Growth, and Employment. *Econometrica.* 1946;14:137-147. Retrieved from https://www.jstor.org/stable/1905364
7. Granger CW. Investigating causal relations by econometric models and cross-spectral methods. The Econometric Society; c1969. p. 424-438. Retrieved from https://www.jstor.org/stable/1912791
8. Harrod. An Essay in Dynamic Theory. The Economic Journal; c1939. p 14-33. Retrieved from https://www.jstor.org/stable/2225181
9. Kong S, Cui W, Wang H. The influence of trade openness on economic growth based on the experience of Asian Developing Countries. Journal of Pharmaceutical Negative Results. 2022;13(6):2591-2601.
10. Nasreen S, Anwar S. Causal relationship between trade openness, economic growth and energy consumption: A panel data analysis of Asian countries. Energy Policy; c2014. p. 1-10. Retrieved from http://dx.doi.org/10.1016/j.enpol.2014.02.009
11. Nguyen MLT, Bui TN. Trade openness and economic growth: A Study on Asean-6. Economies; c2021. p. 113. DOI: https://doi.org/10.3390/economies9030113
12. Raghutla C. The effect of trade openness on economic growth: Some empirical evidence from emerging market economies. J Public Affairs; c2020. DOI: 10.1002/pa.2081
13. SAARC. Economic Trade and Finance. Retrieved from South Asian Association for Regional Cooperation; c2020 Jul 16. https://www.saarc-sec.org/index.php/areas-of-cooperation/economic-trade-and-finance
14. Sims A. Money, Income, and Causality. American Economic Association; c1972.Pp. 540-552. Retrieved from https://www.jstor.org/stable/1806097
15. Tahir M, Khan I. Trade openness and economic growth in the Asian region. Journal of Chinese Economic and Foreign Trade Studies. 2014;7(3):136-152. DOI: http://dx.doi.org/10.1108/JCEFTS-05-2014-0006
16. Wani NU. Nexus between Openness to Trade and Economic Growth: An Empirical Investigation of Afghanistan. South Asia Economic Journal; c2019. p. 1-19. DOI: 10.1177/1391561419858242
17. WDI. World Bank. Retrieved from World Development Indicators; c2022 12 30. https://databank.worldbank.org/source/world-development-indicators?l=en