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The Effect of Trade Liberalization on the Economy of Pakistan: A Time Series Data Analysis

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PAPER INFO   ABSTRACT

The purpose of this research was to learn how freer trade affects a country's GDP. The data was used from the period 1972 to 2021, we tested the impact of several independent indicators on the dependent variable of GDP per capita. These variables included trade openness, labor force participation rate, foreign direct investment, exchange rate, and trade openness multiplied by the exchange rate. The stationarity of the data was tested using unit roots, and cointegration analysis and relationship estimation were performed using the OLS (least square) method. The OLS analysis showed that the GDP per capita in Pakistan was positively and significantly influenced by trade openness, the labor force participation rate, FDI, and the exchange rate. A negative and statistically significant effect on Pakistan's GDP per capita was nevertheless found for the interaction term of trade openness multiplied by the exchange rate.

1   Introduction

Every country in the world strives for economic development, and economic growth is a key component of that development. It is usual practice to refer to the economic growth (GDP) of a country as a measure of its growth of the economy, with a higher GDP indicating greater economic growth. Fluctuations in GDP can have significant effects on a country's overall economy. One factor that can influence the growth of the economy is trade liberalization.

The extent to which a country can be described as open to international trade is a major factor in its economy and can have significant effects on both developing and industrialized nations. The mercantilists were the first to advocate for global trade based on the principle that amassing excess gold and other precious metals meant financial security. Adam Smith devised the concept of absolute advantage, which states that nations should prioritize manufacturing products for which they have a cost advantage relative to other nations. Even if one country has an absolute edge in the production of all items, trade can still be advantageous, according to David Ricardo's theory of comparative advantage. Expanding our knowledge of international trade even further were the Hecksher-Ohlin and Factor Endowment theories. Both neoclassical and endowment growth models predict a positive relationship between trade openness and GDP growth.

Trade liberalization, or the removal of barriers to the free movement of goods, services, and capital across national boundaries, is a significant concern for the governments of many emerging nations, including Pakistan. There has been a growing amount of research in recent years examining the

relationship between trade liberalization and economic development, with mixed findings depending on the study's setting and methodology.

Pakistan, a developing country in South Asia, has pursued trade liberalization policies over the past few decades to promote economic growth and development. These policies have included measures such as tariff reductions, trade agreements, and deregulation of foreign investment. As such, Pakistan provides an interesting case study to empirically examine the impact of trade liberalization on economic expansion. Over the years, Pakistan has implemented various trade policy reforms, including trade liberalization measures aimed at promoting international trade and attracting foreign investment. These reforms have had significant implications for the country's economic growth and development. Therefore, understanding the influence of trade liberalization on Pakistan's economic growth can provide valuable insights into the dynamics of trade policy and its impact on the economy.

The literature on trade liberalization and economic expansion is expanding, but the results are inconsistent and situation-specific. While some research suggests that increased trade liberalization can boost economic expansion by encouraging specialization, innovation, and technology diffusion (Rodriguez & Rodrik, 1999), other research suggests that it may have negative effects on domestic industries, income distribution, and employment. Therefore, it is important to do empirical research into the connection between trade liberalization and the growth of the economy in Pakistan to better realize the dynamics of trade policy and its effect on the economy.

Several scholars, notably Ullah, have found that freer commerce significantly affects economic growth and development, even in economically unstable nations like Pakistan. The literature of the last few decades has generally concluded that freer trade promotes economic expansion. To encourage trade openness, nations should better distribute their resources, adopt policies tailored to their needs, privatize international trade, correct any imbalances in their currency exchange rates, lower tariffs on imported goods, ensure political stability, and create more employment possibilities.

This research looks at how freer trade has helped the Pakistani economy expand. Using yearly time series data from 1972 to 2018, we examine the link between dependent variables like GDP per capita and explanatory indicators like trade liberalization, foreign direct investment, participation rate of labor force, rate of exchange, and trade liberalization multiplied by rate of exchange. The Unit Root Test (ADF) and the Least Squares (OLS) approach are only two of the many methods used. The research shows that freer trade has a favorable and substantial effect on Pakistan's GDP growth.

Trade imbalances are a problem for many developing nations, including Pakistan. To help with the problem of trade deficits in emerging nations, this study will examine the negative and positive effects of trade liberalization on economic expansion.

2   Literature Review

Turkey's trade liberalization and real GDP expansion are examined by Çevik et al. (2019). From 1950 to 2014, we used time series data. Granger-causality; frequency-domain studies were applied in this methodology. The findings demonstrate that the study consolidates previous data linking trade liberalization and real economic growth in Turkey.

Ullah (2018) investigates how international commerce, investment, and human capital have affected Pakistan's GDP growth. Secondary data from the period of 1980-2012 is used. Unit Root Test ADF, Johansen Co-Integrated Test, Error Correction Model (ECM), and Causality test are the methodologies used to examine the data. All of the variables are first-difference stationary, as shown by the Unit Root Test ADF. According to the data, trade liberalization, GFCF, and HC, all have a statistically significant and positive effect on Pakistan's economy.

The effects of trade liberalization on the GDP expansion of Nigeria are examined by Yakubu and Akanegbu (2018). The time series data used extends from 1981 to the present day. Trade liberalization

and GDP growth were studied using Unit Root Test ADF and Least Square. The findings indicate that the degree of liberalization, the exchange rate, and income per capita all have significant and positive effects on the growth of the economy in Nigeria after controlling for other factors.

The effect of trade liberalization on Nigeria's GDP was studied by Godslove and Adaku (2018). The time range covered by the data is 1975-2015. Auto-Regressive Distributive Lag (ARDL) is employed as the analysis method in this methodology. The findings indicate that trade liberalization and gross capital formation each have both negative and positive effects on GDP expansion in the near run. The tests of causation reveal a unidirectional relationship between the growth of GDP and foreign direct investment, the formation of capital and TP, and trade liberalization and FDI.

The effects of financial liberalization and increased exports on Pakistan's economy were studied by Chandio et al. (2017). The data used is a time series that spans from 1970 to 2014. The purpose of this study, we employ the following methods: the Unit Root Test ADF, the Philips Peron Test, the Causality Test, and Co-integration (Johanson). The findings demonstrate the long-term existence of connection among the considered factors. The additional findings demonstrate a bidirectional causality linking economic growth and financial development, as well as a link between financial development and trade liberalization. However, trade liberalization does cause economic growth, and this effect is unidirectional. Thus, it is clear that progress in the areas of financial development and trade liberalization play crucial roles in fostering GDP expansion.

The impact of trade liberalization on the GDP expansion of Pakistan was studied by Ahmad et al. (2017). Information is drawn from 1975 until 2014. The Co-Integration test (Johanson) is used as the tool to examine the long-term connection between the macroeconomic variables. Economic growth in Pakistan was found to be positively affected by trade openness, imports, exports, and FDI, and negatively affected by gross fixed capital creation and labor force.

Abdillahi and Manini (2017) investigated how freer trade affected Kenya's economy. The time frame covered by the data is from 1970 to 2014. OLS (Least Square) was used to analyze the data. Empirical evidence suggests that trade openness, FDI, and investment portfolios all contribute positively to economic growth, while the impact of investment portfolios is favorable but not statistically significant. However, inflation, human capital, and gross capital formation all have detrimental but noticeable effects on Kenya's economic expansion.

The impact of trade liberalization on China's GDP expansion was investigated by Hye et al. (2016). The time frame covered by the data is from the period of 1975 to 2009. ARDL (Auto Regressive Distributed Lag) is the methodology that is applied here. The results indicate a positive short-term and long-term correlation between trade liberalization and the growth of the economy.

Ali and Abdullah (2015) looked into how freer trade affected Pakistan's economy. The data used is a time series that spans from 1980 to 2010. Unit root test (PP) and (ADF), VECM (vector error correction model), and multivariate approach (Johanson) are employed in this methodology to examine both long-term and short-term associations. According to the findings, trade openness has a positive impact on economic growth in the short term but a negative impact on economic growth in the long term.

The impact of trade liberalization and external debt on the Middle East, South Asia, and East Asia was studied by Zafar et al. (2015). From 1980 to 2012, we employed both cross-sectional and time-series data. Unit Root Test and Panel Regression Analysis are the methods employed here. The results show that trade liberalization has a positive effect economy of the Middle East, East Asia, and South Asia, but external debt negatively affects economic growth in these regions.

The impact of trade liberalization on the economic growth of Pakistan was studied by Umer (2014). From 1960 through 2011, we employ time series data. Unit Root Test (ADF) and ARDL (Autoregressive Distributed Lag) Approach are utilized for analysis in this method. The research

shows that freer trade, investment, and human capital all contribute positively to economic growth, while trade restrictions have a negative but still significant effect. The increase in Trade Liberalization of the country and the less growth you may expect in the short-run.

The effect of trade liberalization on the economic growth of Pakistan was studied by Muhammad et al. (2012). From 1970 through 2012, we used time series data. Analysis was performed using the Johnson Co-Integration approach and ECM (Error Correction Model). Long-term economic growth in Pakistan appears to be positively affected by trade liberalization. Trade openness increases economic growth in the long period while having little impact in the near term. The role of institutional quality and domestic policy in the trade expansion link is also highlighted.

The empirical researches also confirmed a statistically significant and positive correlation between trade liberalization and the growth of the economy, suggesting that trade liberalization has aided in the growth of the economy in Pakistan. To fully realize the benefits of trade openness, the study also emphasizes the necessity for complementing policies such as investment in human capital and infrastructure. According to the empirical research, there is a favorable and considerable impact of trade liberalization and financial development on the growth of the economy in Pakistan, and the two factors work together to fuel growth. For long-term economic growth, the report stresses the need for concerted efforts to encourage freer trade and better financial infrastructure.

The analysis of historical research probed the linkage between trade liberalization and the growth of the economy in Pakistan. As shown, trade liberalization has played a major role in fostering the growth of the economy in Pakistan, with a statistically significant and positive influence on economic expansion. Further structural reforms and investment in critical areas are called for in the report as a means to fully realize the benefits of trade liberalization.

The researchers also analyzed how freer trade affected Pakistan's GDP growth. Increased trade liberalization has likely contributed to Pakistan's economic growth since the findings show a statistically significant and positive linkage among the two indicators. Investment in human capital, infrastructure, and institutional reforms are also stressed in the report as crucial for maximizing trade openness benefits. The findings of early research also showed that there is a statistically significant and positive impact on the growth of the economy in Pakistan. The research also shows that trade liberalization benefits economic growth by boosting both labor productivity and capital accumulation. The results highlight the importance of trade liberalization in promoting the growth of the economy in Pakistan.

3   Data and Methodological Issues

3.1   Data Source

Data of a secondary nature and time series were the primary foci of the investigation. The study analyzed annual data for Pakistan from the period of 1972 to 2021 to establish the correlation between the explained variable and the explanatory variable. Information is compiled from a wide range of resources, including the Central Bank of Pakistan's website, the WDI (World Development Indicators) database, statistical encyclopedias, and previous issues of the Economy Survey.

3.2   Model Specification

Estimating the following equation provides insight into the effect of trade liberalization on the growth of the economy in Pakistan by revealing the link between GDP per capita and trade openness.

Gross Domestic Product Per Capita = f (Trade liberalization, Foreign Direct Investment, Labor Force Participation Rate, Exchange Rate)

It can also be written as:

$GDPPC = \beta_0 + \beta_1 TL + \beta_2 LFPR + \beta_3 FDI + \beta_4 ER + \beta_5 TO{*}ER + \mu_i$

Here,

GDPPC Per Capita	=	Gross Domestic Product
TL	=	Trade Liberalization
LFPR Labor Force	=	Participation Rate of
FDI	=	Foreign Investment
ER	=	Exchange Rate
TL*ER of Exchange	=	Trade Liberalization*Rate
μ_i	=	Error Term
β_0	=	Intercept Term
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$	=	Slope of Coefficients

4 Empirical Findings

4.1 Descriptive Statistics

Descriptive statistics is a technique that is used to summarize the main features of collected data. Descriptive statistics results of dependent variables and independent variables are given below.

Table 1

Descriptive Statistics

	GDPPC	TL	LFPR	FDI	ER	TL*ER
Mean	612.7664	32.95277	54.54787	989.3511	44.35091	1416.331
Median	465.0800	33.25000	52.17000	378.0000	31.64300	1143.262
Maximum	1547.850	38.90000	62.99000	5591.000	121.8240	3407.417
Minimum	100.3000	25.30000	49.19000	-4	8.681000	249.6656
Std. Dev.	415.4000	3.368119	4.541482	1367.859	34.09005	1010.678
Skewness	0.948931	-0.3817	0.591115	1.951015	0.667015	0.473863
Kurtosis	2.586640	2.506254	1.709428	6.399491	2.155564	1.880861

Using E-Views 12, the author did some calculations.

Table 1 displays descriptive statistics for the studied variables. The first row displays the median GDPPC as a percentage: (612.7664). The average values of TO, LFPR, FDI, ER, and TO*ER are 32.952773, 54.547879, 989.3511, 44.349190, and 1416.331 respectively. Table 1's skewness values can be found in the very last row. In statistics, skewness is a measure of disproportion and deviation from the average distribution of a set of numbers. In a normal distribution, the mean, median, and mode is all close to the center of the bell curve at its highest point. The median and mean, in a normal distribution with a completely symmetrical bell shape, are identical. We can see that TO is biased against us here. The mean values of all other variables, including GDPPC, LFPR, FDI, ER, and TO*ER, are higher than the median values, making them favourably skewed. Kurtosis values are listed in the very last column of the table. Kurtosis is a statistical measure of how close a data collection is to a normal distribution. The normal distribution has a kurtosis of 3, which is considered to be quite small. Having a kurtosis value greater than 3 indicates a leptokurtic, or severely skewed, probability distribution. If the kurtosis value is less than 3, the probability distribution is said to be Platykurtic, indicating that the data are spread out evenly. Our descriptive statistics research reveals that GDPPC,

TO, LFPR, ER, and TO*ER all have kurtosis values below 3, making them platykurtic, but FDI is leptokurtic.

4.2   Determined Correlations

The link between two variables can be evaluated by employing a method known as correlation. The identification of multicollinearity issues between explained and explanatory indicators necessitates the use of the pair-wise correlation coefficient. The multicollinearity issue is highlighted by a high degree of correlation between the variables.

Table 2

Correlation

	GDPPC	LFPR	TL	FDI	ER	TL*ER
GDPPC	1.000000					
LFPR	-0.51027	1.000000				
TL	-0.36081	-0.20394	1.000000			
FDI	0.697377	-0.46732	-0.12223	1.000000		
ER	0.900616	-0.61014	-0.40181	0.647781	1.000000	
TL*ER	0.879530	-0.67642	-0.26916	0.671900	0.984416	1.000000

Using E-Views 12, the author did some calculations

The correlation matrix for all of the indicators in this examination is displayed in Table 2. In the correlation matrix, we see how highly correlated each pair of variables is. To a lesser extent (-0.36081), (-0.51027), (0.697377), and (0.879530), respectively, GDPPC is connected with TO, LFPR, FDI, and TO*ER; to a greater extent (-0.900616), ER is correlated with GDPPC.

4.3   Unit Root Analysis

The ADF (Augmented Dickey-Fuller) test for unit root is used to avoid misleading regression findings and pick the right econometric approach. Table 3 displays the findings of the Unit root test (ADF) for determining whether or not the variables are stationary.

Table 3

Unit Root Test ADF (Augmented Dickey-Fuller)

Indicators	At Level		At 1st Difference		Conclusion
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	
GDPPC	- - - - - - -	-5.8617 0.0000	- - - - - - -	- - - - - - - -	I (0)
TL	-2.6405 0.0924	- - - - - - - - -	- - - - - - -	- - - - - - - -	I (0)
LFPR	- - - - - - -	-6.5898 0.0000	- - - - - - -	- - - - - - - -	I (0)
FDI	-3.8111 0.0250	- - - - - - - - -	- - - - - - -	- - - - - - - -	I (0)
ER	- - - - - - -	-3.61000 0.0094	- - - - - - -	- - - - - - - -	I (0)
TL*ER	- - - - - - -	-5.6472 0.0000	- - - - - - -	- - - - - - - -	I (0)

Using E-Views 12, the author did some calculations

Table 3 details the ADF test outcomes. All variables have been determined to be stationary at the same level by these results. We observe the GDPPC, TL, LFPR, FDI, ER, and TO*ER to be constant.

This time series is stationary in the same order I (0), as shown by the ADF test. Since the Unit Root (ADF) test shows that all indicators are in the same order and OLS may be performed in this scenario, the Auto Regressive Distributive Lag technique will be used to determine the co-integration connection. Therefore, we conclude that the OLS method, in conjunction with the I (0) series, can be utilized to measure the complexity of the variables in our study.

4.4   Auto Correlation

Table 4

Auto Correlation Breusch-Godfrey LM Test

F-statistic	Obs*R-squared	Prob. F (2,39)	Prob. Chi-Square
6.025327	11.09448	0.0052	0.0839

Using E-Views 12, the author did some calculations

Table 4 the significance level of the probability Chi-Square value (0.0839) is over 5%. This indicates that the data is not serially correlated. Due to the lack of a serial association, we have accepted the null hypothesis and rejected the alternative.

4.5   Heteroskedasticity

Table 5

Breusch-Pagan-Godfrey: Heteroskedasticity Test

F-statistic	Obs*R-squared	Prob. F	Prob. Chi-Square
1.686704	8.018353	0.1595	0.1552

Using E-Views 12, the author did some calculations

In Table 5 since Probability F's (0.1595) inconsequential value is larger than 5%, the data are not heteroskedastic. Due to the lack of heteroskedasticity, we find that the null hypothesis is correct and reject the alternative.

4.6   Ordinary Least Square Results

Table 6

Long Run OLS Method

Estimate Long Run Results Using the OLS Method				
Dependent Variable: GDPPC				
50 Observations Used for Estimation from 1972-2021				
Variables	**Coefficient**	**Std. Error**	**t-Statistics**	**Prob.**
LFPR	19.39871	4.54347	4.269581	0.0001
TL	30.63891	7.175727	4.269798	0.0001
FDI	0.044681	0.012653	3.531282	0.0010
ER	23.60693	3.616382	6.527776	0.0000
TL*ER	-0.35188	0.118196	-2.977078	0.0049
C	-2047.845	421.0561	-4.863592	0.0000

Using E-Views 12, the author did some calculations

Table 6: According to the data in the table above, there is a statistically significant and positive association between trade liberalization and GDP per capita. The empirical evidence indicates that an increase of 1% in trade liberalization leads to a 3%0.6389% increase in the growth of the economy over the long term. The results of my research corroborate those of Ullah (2018). The correlation between the labor force participation rate and the economic growth per capita is statistically significant and

positive. If the labor force participation rate were to rise by just one percent, GDP per person would rise by 19.39871 percent. The results I got back up the research done by Shahid (2014). There is a statistically significant and positive correlation between GDP per capita and FDI, another economic indicator. A rise of 1% in fixed investment would result in a 0.044681 % expansion in GDP per capita. The results of Godslove and Adaku (2018) are corroborated by my research. The coefficient of exchange rate (ER) has a statistically significant and positive association with per capita growth. The findings indicate that a rise of 1% in the labor force will result in a rise of 23.60693 % in GDP expansion. Results from this study do not seem to back up those from Yakubu and Akanegbu (2018). The GDPPC shows that a negative multiplier of trade openness by the exchange rate is statistically significant. The GDP per capita would rise by 0.3518 percent if the labor force participation rate increased by one percent. Except for TL*ER, all of the coefficient values show a statistically significant result that indicates a beneficial impact on macroeconomic stability in Pakistan.

5   Conclusion and Policy Recommendation

The main purpose of this research paper was to interrogate how trade liberalization affected the growth of the economy in Pakistan. The effect of trade liberalization reforms on GDP growth is also investigated. The study analyzed annual time series data from 1972 to 2021 and a literature analysis to find that trade liberalization is positively correlated with the growth of the economy. Three important hypotheses are also studied to further illustrate how changes in trade might affect a country's economy and its overall performance. Among these are the Endogenous Growth Theory, the Purchasing Power Parity Theory, the Comparative Advantage Theory, and the Absolute Advantage Theory. First, we utilized descriptive statistics to summarize the data, and then we ran a correlation analysis, which revealed a weak relationship between trade liberalization, the rate of labor force participation, FDI, and the rate of exchange. The data's stationarity was tested using unit roots, and the ADF (Augmented Dickey-Fuller) test found that all indicators were indeed stationary at the level. To determine the short-term and long-term connections between the explained indicator and the explanatory indicators, the Ordinary Least Squares (OLS) approach for co-integration analysis was used in the present investigation. Short-term and Long-term growth of the economy in Pakistan was positively affected by trade liberalization, labor force participation rate, FDI, and fluctuations in the exchange rate. There was a significant and negative effect of the trade liberalization rate of exchange on economic growth in Pakistan.

The following measures are proposed as a result of the study's findings:

The government must fund both infrastructure and human resources. The expanding labor force necessitates policymakers to create new jobs. To increase trade liberalization and promote quicker growth of the economy in the long term, policymakers should speed up the process of trade liberalization. Increasing investment spending by policymakers will improve exports, which in turn will raise per capita income and economic growth. Investments from overseas can help the economy expand, thus they should be actively sought out. The government should exert more control over the currency exchange rate to reduce inflation, boost productivity, and stimulate economic expansion.

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