



RESEARCH PAPER

Macroeconomic Variables the Indicators for the Economic Growth of Pakistan

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ABSTRACT

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Gross Domestic Product (GDP) is one of the most important measurements used by experts to assess a country's economic health. Almost all Government and financial decision-makers use GDP as a planning and policy formulation indicator. GDP incorporates the market values of all a country's total products and services over a specified period. This study aims to examine the impact of the Foreign Direct Investment (FDI), Trade Volume, and the Exchange Rate of Pakistani Currency Rupees concerning the Dollar on the Gross Domestic Products of Pakistan from 1972 to 2021. The nature of this study is quantitative, so used the deductive approach. The Secondary data for the GDP, FDI, Exchange rate, and the balance of trade was taken from the World Bank's website from 1971 to 2020. The data analysis technique was the regression method which the E-Views did. From the results of this study, it was found that FDI and the exchange rate have a significant impact on the Economic growth GDP of Pakistan. The effect of the foreign direct investment was positive, while the effect of the exchange rate on the GDP was negative. Balance of trade has an insignificant effect on the GDP of Pakistan. From this study, it is concluded that the Government must create a Peaceful environment for a foreigner to invest in Pakistan because it has a significant positive impact on the economic growth of Pakistan. It is also suggested to the Government that the money value fall should be controlled because it negatively impacts the country's economic development

Introduction

Researchers used GDP as one of the most significant indicators of a country's economic health. Almost all Government and financial decision-makers use GDP as a planning and policy formulation indicator. GDP incorporates the market values of all a country's total products and services over a specified period. Gross Domestic Product (GDP) is the current market price worth of all commodities and services

generated by a country over a particular time (Mohsin & Naseem, 2018). Several macroeconomic indicators affect a country's GDP, among which the most important are a foreign direct investment, exchange rate, interest rate, inflation, imports, and export (Mustapa, 2020).

FDI is one of the broadest indexes which capture the debt and securities market, banks, mutual funds, pension funds, insurance market, and equity market. The outcomes of this and prior studies suggest that it has a significant favorable influence on any country's economic growth (Tariq et al., 2020). It was observed from the different papers that the balance of trade has a significant impact on the GDP of India and so many Asian countries, which are developing nations (Prabhakar & Rentala, 2019). If a country's import exceeds its export, the Government will face a trade deficit, negatively affecting its economy. While on the other hand, if the export exceeds the imports, the Government will face a trade surplus. If the country's trade balance is in excess, will this positive change that country's economic growth? According to most financial analysts, the trade openness policies and the higher ratio of the trade size are positively associated with a country's economy (Parikh & Stirbu, 2011).

There are several studies conducted on the economic growth of Pakistan. Several factors have an impact on economic growth. But these factors have been ignored for the last several decades, which must be considered. These factors are FDI, exchange rate, and the balance of trade. This study aims to figure out how these elements affect Pakistan's economic growth. The objective of this study is to investigate the impact of the FDI, Trade Volume, and the Exchange Rate of Pakistani Currency Rupees concerning the Dollar on the Gross Domestic Products of Pakistan for a period from 1972 to 2021.

Literature Review

GDP

GDP is determined every year, sometimes referred to as Annual GDP. The annual GDP is the total monetary worth of a country's final products and services at market prices for a particular year (Ijirshar, 2019). The Gross Domestic Product, also abbreviated as GDP, is one of the vital tools used by economists to measure or gauge the production level of any economy or the strength of any economy. The Gross Domestic Product describes the current market price worth of all commodities and services produced by a country in a particular period. Several types of research have been undertaken on the link between inflation and the GDP exchange rate. Almost all of them have demonstrated that the exchange rate has a considerable positive influence on GDP, whereas inflation has a lesser impact (Ang et al., 2006, Mohsin & Naseem, 2018). Several indicators measure a country's macroeconomic development, but the GDP is the most useful indicator. There are several approaches to see the GDP, but the most common are the two types of approaches first is the expenditure-based approach, and the second is the income-based approach. First, let us discuss the expenditure-based process. In the expenditure-based practice, we account for all the

goods and services of the given year who's GDP we want to find. The best example of this approach is that we buy a foreign investor's daily household items and services. The second approach is the income-based approach. This approach is best defined as the compensation of all the workers, the income of the particular businesses, rents, taxes of the produced goods, interest rates, and the import levels (Semuel, Hatane & Nurina, 2015, Abbasi et al., 2021).

It was seen that the economic growth of Pakistan was not good in the last few decades. There are several factors which are responsible for this unsatisfactory growth of the GDP: like the raising of the imports, high level of the inflation rate, the lack of the exports, shot up in the interest rate, mismanaged banking system, the high growth rate of the population and the political instability. We know that economic growth plays a vital role in increasing humankind's income level and helps the country reduce the unemployment rate. When the inflation rate shot up, foreign investment also declined, which has a destructive impact on the GDP or the economic growth of any country (Mohsin & Naseem, 2018). From the results of several empirical analyses, it was found that the three macroeconomic indicators, GDP, FDI, and exchange rate, are closely related to each other and have a significant impact on each other. It was found that FDI has a significant positive association with GDP, but the exchange rate has an essential negative link with GDP (Mustapha, 2020). It was seen that whenever the exchange rate of a currency became lower than all other things also became lower like the wages of labor etc. so that why when any country's currency exchange rate became lower, then it will automatically attract the foreign as well as the local investors to invest in that country to get more profit (Azam et al., 2021). As a result of increased investment, the country's tax return and production level also increase. So that is why we can say that lowering the exchange rate will lead to higher Gross Domestic Product (GDP) (Khushnood et al., 2019).

FDI

According to (Ijirshar 2019), the total earnings, stock capital, and other capital reinvestment are referred to as foreign direct investments. All those Investments in the boundaries of a country are considered the Foreign Direct Investment (FDI) if the 10% or more equity shares of that investment belong to the people who are not the residents of that country. It will include all types of investment like fellow enterprises and direct investment. Sometimes it also includes even less than 10 percent shareholding (Hakizimana, 2015). Most recent studies on the macroeconomic indicators have focused on the Gross Domestic Product and the Foreign Direct Investment relationship. But initially, the association of both variables was a mix. Still, with time, it was seen that the foreign direct investment in the host country started to generate technologies, productivity, and local knowledge, so that's why in a result, the economic growth of the country is also increased (Thi & Nga, 2019, Hakizimana, 2015). However, several empirical studies results have claimed that the FDI doesn't need positive effects on the country's growth. This may be the big gap in the home and host countries' technology and productivity levels (Thi & Nga, 2019).

FDI is one of the broadest indexes which capture the debt and securities market, banks, mutual funds, pension funds, insurance market, and equity market. The outcomes of this and prior studies suggest that it has a significant favorable influence on any country's economic growth (Tariq et al., 2020, Ciobanu, 2020). FDI is among one of the principal sources in the macroeconomic indicators that directly influence the country's economic growth if it was seen in the consent of Pakistan, so we see that the high level of inflation and the lower level of foreign investment are the fundamental problems creator for the economy (Mohsin & Naseem, 2018).

H1: there is an impact of FDI on the GDP

Trade Balance

The trade balance, also known as the net export or commercial credit, is the monetary difference between imports and exports during a specific period. A trade deficit occurs when imports exceed exports; a trade surplus occurs when exports surpass imports (Lane & Milesi-Ferretti, 2002, Alessandria & Choi, 2021). It was observed from the different papers that the balance of trade has a significant impact on the GDP of India and so many Asian countries, which are developing nations (Prabhakar & Rentala, 2019). Trade is the exchange of goods and services across a country's border (Ijirshar, 2019). A study was conducted on the top five emerging economies of the world, including 1993 to 2016. According to the findings of this study, there was a considerable influence on the economic growth of these selected nations on the balance of trade, labor force, inflation, and technology (Raghutla, 2020, Proietti et al., 2021).

If the import of a country exceeds its export, then the Government will face a trade deficit, negatively affecting that country's economy. While on the other hand, if the export exceeds the imports, the Government will face a trade surplus (Dr. Jasdeep Kaur Dhami, 2021). If the country's trade balance is in excess, this will positively change that country's economic growth. Most financial analysts believe that trade openness policies and a more significant trade volume ratio are associated with a country's GDP (Parikh & Stirbu, 2011). According to Economic theory, increasing trade openness will lead to a higher growth rate if the exports increase. This will increase the foreign sources of income, which is why the economy will grow. If the exports increase, then the local market production power increases due to increased demand (Çevik et al., 2019). There are several vital instruments of the economy that mainly drive the economy of a country. These key instruments are money supply, exchange rate, trade, and interest rate. It was empirically observed that these instruments play a highly significant impact on a country's economy. If the country's trade balance is positive, it will lead the economy towards a positive edge. Countries facing a trade deficit will seem to be having minor improvements in the economy (Hossain & Maitra, 2020).

H2: there is an impact of Trade Balance on the GDP

Exchange Rate

An exchange rate is a tool for comparing currency values. We used the exchange rate to compare the worth of any currency to another. Exchange rates are classified into two sorts. The fixed exchange rate is one, while the adjustable interest rate is another. The government sets the exchange rate in the event of fixed interest rates.

On the other hand, the adjustable exchange rate is decided by the equilibrium of market forces, both with and without government involvement (Tiwari, 2006) (Semuel, Hatane & Nurina, 2015). Countries have adopted a wide range of exchange rates choosing from the fixed to the floating rate. The selection of the rate for the country is based upon several characteristics: the size of the economy, the current economic condition of that country, the long-term monetary policy of the Government, and the type of exchange rate the other countries are using (Babubudjnauth & Seetana, 2021). Price stability is essential for the countries whose large portion of the GDP stands on exports. So that's why these types of countries less adopt the floating mechanism of the exchange rate to encourage international trade (Mohammed et al., 2018). From 1976 to 2001, a study of twelve emerging Asian countries and eighteen established Asian countries discovered two intriguing tendencies (Safitri et al., 2021). Initially, it was found that the exchange rate chosen had no substantial influence on European countries' economic progress. Flexibility, on the other hand, has a good impact on this. At the same time, the exchange rate has a considerable influence on economic growth in Asian emerging nations. As a result, we may argue that the exchange rate influences economic growth dependent on the country's development position (Mohammed et al., 2018).

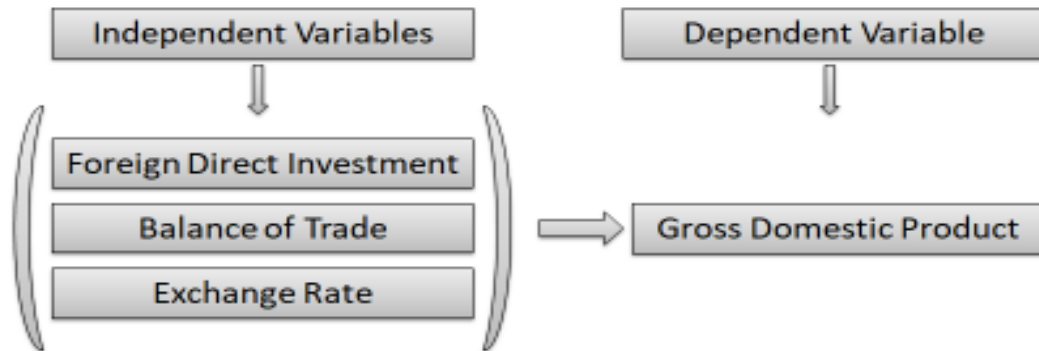
The prices of the goods and services which the business organization imports or export are mainly based on the money value of the countries. The money value moves up and down. This will also force the prices to move up and down. These phenomena, as a result, will create a factor of risk for the investors to import or export (Mohsen et al., 2021). To reduce this risk, the Government mostly tries to increase the money value or stabilize the exchange rate to avoid these types of changes for the investors. As a result, if there is more investment automatically, there will be positive economic growth (Broda, 2004). The continuous and constant fluctuation in the exchange rate is known as the exchange rate volatility. Several empirical studies have been conducted on the developing countries, which seem that these countries face the problem of the exchange rate fluctuation or volatility. This was also observed that the economies of such countries are also getting a huge impact (Ahiabo & Amoah, 2019). In today's world economies exchange rate plays a crucial role in measuring the strength of any economy. It is an essential tool that controls the different other macroeconomic variables. Pakistan is a developing country, so its exchange rate plays a vital role in the stability of its economy by controlling the exchange rate to control other variables indirectly. Different studies were conducted on selective macroeconomic factors like GDP, inflation, import-export with the exchange rate of

Pakistan from time to time to see the consequence of exchange rate on these variables (Khushnood et al., 2019).

H3: there is an impact of Exchange Rate on the GDP

Conceptual Framework

The following is the conceptual framework for this study, derived through a thorough examination of the literature.



Material and Methods

This study was solely based on secondary data. To improve the quality of obtained secondary data, data for the literature was gathered from various journals, books, articles, theses, periodicals, and electronic sources. The data for the statistical analysis was obtained from the World Bank's website. FDI, exchange rate, and the trade balance are the independent variables, while the Gross Domestic Product is dependent. The sample size for the data analysis of this study was based on 50 years from the year 1972 to 2021. The statistical technique used to analyze the data was the ordinary least square regression method. The software used for this was E-Views.

Result and Discussion

Data Stationary Test

The ADF Test is the most popular test for time series data to ensure that the data is steady in e perspectives. To find the unit root of each variable, the researcher employed the A.D.F test. The ADF test indicates that the data set containing all four variables in this study is non-stationary. The P values of all the variables GDP, FDI, Exchange rate, and trade balance are more significant than 0.01, as shown in table 1 of the ADF test. This demonstrates that the supplied data set is non-stationary for all variables in the data.

Table 1
Unit Root Test

ADF test statistics	t-Statistics	Prob.*
GDP	-2.493735	0.3298
FDI	-2.334907	0.4.78
Exchange Rate	-4.154581	0.0102
Trade Balance	2.219327	1
Test critical values:	1% level	-4.161144
	5% level	-3.506374
	10% level	-3.183002

All the data belong to 1972 to 2021, about 50 year's observation. So that's why we check the cointegration. If co-integration exists in the data, it is an equilibrium for the long term. So our non-stationary data regression also will be meaningful. So for that, we test the co-integration of the data. The A.D.F test was conducted on the error term, and it was found that the error term of the data is stationary, which shows that the data has been in equilibrium for a long time. Table 2 shows that the error term's p values and t statics are significant, which means the error is stationary?

Table 2
Null Hypothesis: ERROR has a unit root Lag length: 0

	t-Statistics	Prob.*
ADF test statistics	-3.553618	0.0007
Test Critical values:	1% Level	-2.61301
	5% Level	-1.947665
	10% Level	-1.612573

From the above table 2, it is clear that our data error has no unit root and it is stationary, and the data is long-term equilibrium.

Multi co-linearity Test

Multi co-linearity is a very severe issue in the time series data. If multi-co-linearity exists in the data, the regression result will be meaningless. The Variance Inflation Factor test, most commonly named the VIF test, is used to detect the multi-co-linearity of the data set. If the VIF value means the data set is perfectly non-co-linear. There are different cut-off values for the VIF, but most statisticians say the data is good if the VIF value is below ten. Table 3 provides the VIF values for all of the variables. We may state that our data is somewhat free of multi-co-linearity concerns because the VIF values of all the variables are less than 10.

Table 3
Variance Inflation Factors

Sample:	1972-2021		
Included Observation	50		
Variable	Coefficient Variance	Un centered VIF	Centered VIF
C	0.064383	270.2689	NA
LNFDI	0.001742	523.7229	5.707068
LNEX	0.00841	83.25877	5.95843
LNBT	0.000112	54.74653	1.107975

Table 4
Heteroscedasticity Test: BP-Godfrey

F-statistic	9.120557	Prob. F(3,46)	0.0001	
Obs*R-squared	18.64848	Prob. Chi-Square(3)	0.0003	
Scaled explained SS	18.53482	Prob. Chi-Square(3)	0.0003	
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Sample: 1972 2021				
Included observations: 50				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.151081	0.032233	4.687164	0.0000
LNFDI	-0.024907	0.005302	-4.697737	0.0000
LNEX	0.038742	0.01165	3.325593	0.0017
LNBT	0.00119	0.001403	0.848489	0.4006
R-squared	0.37297	Akaike info criterion	-5.642438	
Adjusted R-squared	0.332076	Durbin-Watson stat	1.692221	
F-statistic	9.120557	Prob(F-statistic)	0.000076	

We must remove the Heteroscedasticity from the data and then run it for other OLS regression processes. So for that, we take the first difference of the data and then test it for Heteroscedasticity. After taking the first difference, we see the Heteroscedasticity problem was removed from the model. So now our data is good at a different level. Now we can further run the data in the OLS Regression in the difference. Below is table 5 shows the Heteroscedasticity result after taking the difference. We see the p-value of the F statistics is insignificant, which indicates that the issues are resolved at first difference.

Table 5
Heteroscedasticity Test: BP-Godfrey

F-statistic	1.839515	Prob. F(3,45)	0.1536	
Obs*R-squared	5.352663	Prob. Chi-Square(3)	0.1477	
Scaled explained SS	14.47315	Prob. Chi-Square(3)	0.0023	
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Sample: 1973 2021				
Included observations: 49				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001191	0.000626	1.901364	0.0637
D(LNFDI)	-0.003432	0.001477	-2.323986	0.0247
D(LNEX)	0.012031	0.012460	0.965596	0.3394
D(LNBT)	2.98E-05	0.000256	0.116491	0.9078
R-squared	0.109238	Akaike info criterion		-8.371907
Adjusted R-squared	0.049854	Durbin-Watson stat		1.415889
F-statistic	1.839515	Prob(F-statistic)		0.153570

Autocorrelation Test

Autocorrelation is also a severe issue of the time series data. To detect the autocorrelation in the data set, we used the Breusch-Godfrey Serial Correlation LM Test. Below is table 6, which shows the Breusch-Godfrey test of the Serial Correlation LM Test result for the data set. The p-value for the f statistics is very high, which shows that the data is free from the issue of autocorrelation.

Table 6
Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.036923	Prob. F(1,43)	0.8485
Obs*R-squared	0.042039	Prob. Chi-Square(1)	0.8375

Regression Model

After removing all the issues, the data set is ready to be run for the OLS regression. We run the regression on the data by the Eviews. Table 7 displays the regression analysis findings after excluding the first difference in the data. The FDI and the Exchange rate regression coefficients are significant, having a p-value less than 0.05. The coefficient of the balance of trade is insignificant, having a high level of the p-value. We see the probability of the F statistics is also very significant, having a value less than 0.01. The R square value is 0.38, which is small due to the taking of the data difference. The R square value shows that the 38.1% variation in the dependent variable GDP is due to the independent variables (FDI, Exchange Rate, and Trade Balance). The coefficient of the FDI is 0.04, which shows that the increase in one

percent of the FDI will increase the GDP by 0.04 percent. The exchange rate coefficient is -0.69, which indicates that a rise in one percent of the devaluation of the Pakistani currency will decrease the GDP by 0.69%. This shows that both have a negative relationship. The sum of all the coefficients is less than one, which offers a decreasing rate of the return scale.

Table 7
Dependent Variable: D (LNGDP)

Method: Least Squares				
Sample (adjusted): 1973 2021				
Included observations: 49 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.048836	0.006955	7.021601	0.0000
D(LNFDI)	0.040869	0.016401	2.491829	0.0165
D(LNEX)	-0.689427	0.138401	-4.981366	0.0000
D(LNBT)	-0.003039	0.002842	-1.069104	0.2907
R-squared	0.381395	Akaike info criterion		-3.556625
Adjusted R-squared	0.340155	Durbin-Watson stat		2.516351
F-statistic	9.248123	Prob(F-statistic)		0.000070

Model Specification

The Ramsey RESET Test is the most popular way to ensure that an economic model's specification is correct. So this was done on the research model to discover what the model's specifications were. The Ramsey reset test results are shown in Table 8 below. As seen below, the probability values of both F and t statistics are vast and inconsequential. These findings suggest that our model has no model specification errors.

Table 8
Ramsey RESET Test

Equation: UNTITLED			
Specification: D(LNGDP) C D(LNFDI) D(LNEX) D(LNBT)			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	0.084313	44	0.9332
F-statistic	0.007109	(1, 44)	0.9332
Likelihood ratio	0.007916	1	0.9291
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	1.12E-05	1	1.12E-05
Restricted SSR	0.069533	45	0.001545
Unrestricted SSR	0.069522	44	0.001580
LR test summary:			
	Value	df	
Restricted LogL	91.13732	45	

Unrestricted LogL	91.14128	44
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Pair-wise Granger Causality Test

Below table 10 of the pair-wise causality test shows the casual relationship between the variables. We see that FDI causing GDP and GDP causing FDI are significant at 0.05 levels. At the same time, the exchange rate is causing the GDP also to have a very low p-value. The exchange rate is also driving the FDI. The other causal relationships in the table are insignificant. We also see that these results align with the outcome of our model regression result.

Table 9
Pair wise Granger Causality Test

Sample: 1972 2021			
Lags: 2			
	Obs	F-Statistics	Prob.
DLNFDI ==> DLNGDP	47	7.93186	0.0012
DLNGDP ==> DLNFDI		4.21537	0.0215
DLNEX ==> DLNGDP	47	49.4685	0.0000
DLNGDP ==> DLNEX		0.78263	0.4638
DLNBT ==> DLNGDP	47	1.74541	0.1870
DLNGDP ==> DLNBT		0.14269	0.8674
DLNEX ==> DLNFDI	47	6.47904	0.0035
DLNFDI ==> DLNEX		1.33652	0.2737
DLNBT ==> DLNFDI	47	0.07018	0.9323
DLNFDI ==> DLNBT		0.06037	0.9415
DLNBT ==> DLNEX	47	2.82530	0.0706
DLNEX ==> DLNBT		0.40292	0.6709

Hypothesis Testing Table

The below table shows that there were three hypotheses in our research study, among which our results support the two hypotheses while our results do not support the one. FDI and exchange rate are creating an impact on the GDP while the trade balance has no significant effect on the GDP of Pakistan.

Table 10
Hypothesis Testing Table

Hypothesizes	Results
H1: there is an impact of FDI on the GDP	Supported
H: 2 there is an impact of Trade Balance on the GDP	Not supported
H: 3 there is an impact of Exchange Rate on the GDP	Supported

Conclusion and Recommendations

Hypothesis one suggests that there is an impact of foreign direct investment on the GDP of Pakistan. The results of this study also support this hypothesis. Several past researchers also validate these findings from Pakistan and other countries that foreign direct investment impacts the country's gross domestic product (Zhang & Zhang, 2018, Comunale, 2017, Polbin et al., 2020).

The second hypothesis suggests an impact of the currency exchange rate on the gross domestic product of Pakistan. The result of this study also supports this hypothetical relationship. Several past researchers also validate these findings from Pakistan and other countries that there is an impact of exchange rate on the country's gross domestic product (Zhang & Zhang, 2018, Aini et al., 2017, Sayari et al., 2018).

According to this empirical data analysis from 1971 to 2020, foreign direct investment substantially influences Pakistan's Gross Domestic Product. With the increase of the FDI, the GDP of Pakistan also grows. The exchange rate also significantly impacts the GDP, but the exchange rate effect is negative. This means that as the devaluation of the Pakistani currency increases, it has brought a negative impact on the GDP.

So we can say that both have a negative relationship. The third factor of our study was the balance of the trade. We see that as the trade deficit decrease, the GDP grows more, but this relationship was not significant as per the findings of our study. Several gaps were filled by doing this research. There was no such study in the literature that combined analysis of these all variables for an extended period of 50 years.

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