

Impact of trade deficit, foreign direct investment and external debt on economic growth of Pakistan; a time series analysis.**Salma Zahir**

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Abstract

The current paper empirically scrutinize the effect and relationship between trade deficit, foreign direct investment, external debt and economic growth of Pakistan from the period of 1990-2017 with time series data. The Ordinary least squares (OLS), correlation and some other method are employed for the analysis of the produced data. The OLS estimation demonstrates the trade deficit and foreign direct investment has positive, but an insignificant relationship with economic growth, while external debt has also direct as well as a significant influence on gross domestic product of Pakistan. The correlation test shows that very low correlation exists between foreign direct investment, trade deficit, external debt and economic growth. Furthermore, the result displays that there is no problem of autocorrelation, heteroskedasticity and multicollinearity in the model.

Key Words: trade deficit, foreign direct investment, trade deficit, OLS, correlation, autocorrelation, heteroskedasticity, multicollinearity model.

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1. Introduction

The main objectives of the current paper is to estimate the impact of the trade deficit on economic growth of Pakistan with other control variables like foreign direct investment and external debt. For many decades Pakistan is distressing from deficit balance of payments. It is difficult for the Government of Pakistan to regulate the trade balance of payment and foreign currency as compared to the domestic currency. The trade deficit is the main source which has very strongest and most important contributor to economic growth of Pakistan. [2]. However, it is closely related to each other according some economists. The inflow of capital is the best sources of economic growth that have a trade deficit, and this situation is also helpful in the promotion of investment and in this way production of good and services increases [4].

The current paper has tried to contribute in the prevailing literature by using of some econometric techniques. This study is one of the few research which have estimated and examined the impact of the trade deficit, foreign direct investment and external debt on economic growth of Pakistan for the period of 1990-2017 as well as its findings are policy adopted.

1.2. Background

The concept of trade deficit comes from macroeconomics, which actually deliberates if the imports (payment) have greater than exports (receipt) of a country. It is also called “Basic Transaction Method”. The visible and invisible items, capital movement for long periods and payment transferal are also referred to as basic transaction of the balance of payment. Moreover, when the demand for dollars becomes greater than the supply, then the balance of payment comes at deficit condition [21].

The Trade deficit is considered as the international balance of trade. Mostly policymakers and researchers use trade balances to explain the impact and the correlation among economic growth rate and trade deficit in a country. The Trade deficit is an awful mark for long run economic growth rate of a country. Generally, the trade deficit may create due to many causes such as fluctuations in income level, price level, population, employment and many other factors of a nation. When income, price rate, and employment of a country increase as compared to other countries, as a consequence the country imports can be greater than country exports. Finally, the country payment has greater than receipts. In such condition, the balance of payment becomes deficit and external debt will increase [14].

Most of the country's endeavor to generate different trade policies like expenditure switching policy and expenditure changing policy to enhance the surplus balance of payment. They recognize that this condition is favorable for the country's to create more profit through the exports of more commodities. Then a country can get more income, more machinery, high rate of living standard. As a result, the problem of unemployment decreases and more income will be generated for a country [14].

The researcher has investigated the relationship between trade Liberalization, gross domestic product, trade openness, trade balance, investment share of GDP and current accounts. The research has related to 42 less developed countries of Asia, Africa and Latin American. The conclusion indicated that trade Liberalization leads to increase in imports against to export [15].

In the initial 11 months of 2016-2017 the trade deficit level of Pakistan was 30 billion US dollars, presenting 42 percent increase in the previous fiscal year. As a consequence, 3 percent to 18.5 billion US dollars, decreasing to exports and 21 percent to 48.5 billion US dollars increasing in imports due to import equipment and technology correlated with Pakistan - China Economic Corridor Projects [22].

The reason of trade deficit in Pakistan is the ignorance of small and medium enterprises or agriculture sector due to more taxes of raw material, infrastructure deficiency, particularly gas and electricity, and limited credit obtainability from a commercial banks. Accordingly, various import substitution industries have been incapable to compete with the international market and import capacity has been increased to many things. This kind of increase is extraordinary for various imports. Home remittances and money earned by Pakistani workers working abroad have supported the greatest part of the Pakistan trade deficit for many years. In 2016-2017, the extraordinary extent of trade deficit and deficiency of remittance both have reduced the volume of this support to 50 percent of the deficit. As a result the whole current account deficit has expanded, which will be funded by raise of foreign debt as well as through falling of foreign exchange reserve [22].

A number of studies have been carried out regarding the issue of trade deficit. For this purpose, the current study suggests a separate analysis related to trade deficit, foreign direct investment and external debt with the importance of economic growth.

1.4 Research Questions

1. How the trade deficit, external debt and foreign direct investment effect gross domestic product of Pakistan?
2. Whether there is a correlation among trade deficit, foreign direct investment, external debt and economic growth in Pakistan?

1.5 Research Objectives

1. To check the influence of trade deficit, foreign direct investment as well as external debt to gross domestic product.
2. To estimate the relationship between trade deficit, external debt, foreign direct investment and gross domestic product in Pakistan.

1.4 Hypothesis of the Study

Null: There is an insignificant linkage among dependent and explanatory variables.

Alter: There is a significant linkage among explained and explanatory variables.

1.5 Limitation of the study

1. The current study is using only quantitative data to carry out the research.
2. This study is doing research only on Pakistan economy, not on international economy.

3. The time period of the current study is merely 1990-2017
4. The study is based only on three independent variables while one dependent variable.

1.6 Significance of the study

The importance of the current study is to deliver the best informative as well as consider the variables like the trade deficit, foreign direct investment and external debt that influence the Pakistan economic growth. The current paper also used new actions and methods to control the deficit of trade and improve the gross domestic product of Pakistan economy, which is possible through more export and less import and encouragement for foreign direct investors for investment within the country.

1.7 Organization of the study

This part includes the following sections. **Chapter One** comprises the background, objectives, research questions, hypothesis, limitation, and importance of the study. **Chapter Two** contains preceding literature correlated to the present work. **Chapter Three** consists of data technique, and data sources. **Chapter Four** presents data exploration, model as well as various statistical instruments of SPSS version 16.0 for the study. **Chapter Five** offers the final conclusions and recommendations of the study. In the final the study shows references and appendix.

2. Literature Review

Abayomi (2013), found the causes of external trade in Nigeria economy since 1970 to 2010 with time period figures composed of Central Bank of Nigeria, International Financial Statistics, World Bank Digest of Statistics. The study applied the whole econometric techniques and displayed a statistically significant correlation between dependent and independent variables. The conclusion revealed that the inflation rate, exchange rate, GDP, capacity utilization rate, government expenditure, interest rate, export, and import have significant association with external trade with mutually long and short runs.

Shawa & Shen (2013), scrutinized the determinant of the trade balance in the Tanzania economy from the time period of 1980-2012 with ADF and Phillip Perron test and also Ordinary Least Square technique for result estimation. The consequences discovered the stationarity of data at the first difference instead at the level. Furthermore, the OLS result indicated the main significant elements on trade balance in Tanzania were human capital formation, FDI, inflation, family spending, public expenditure, foreign income, real rate of exchange and natural assets accessibility.

Nienga (2010), considered the causes of Kenya balance of trade from the era of 1970-2010 with OLS method. The paper has taken consumption of the government, real rate of exchange,

externalearnings, FDI, domestic income supply of money as predictor variables. The end result shows all these variable has significance, but foreign income has an insignificant influence on trade balance in Kenya.

Thirunavukkarasu & Achchuthan (2013), explored the import and export influence on the economic development of Pakistan in Sri Lanka during 1970 -2010. The outcome of correlation inquiry presented that there is a positive correlation between import and export. Moreover, the regression analysis showed that export and import has direct, but the statistically significant impression of Sri Lanka economic growth.

Bayar (2014), reconnoitered the influence of GDP, export and FDI inflows on unemployment in Turkey through time period data since 2000 - 2013. The scholar verified the data for stationary through ADF and Phillips-Perron test and short and long run association between the variables through ARDL Bound test method and model of Vector Error Correction. The result expressed the long run linkage among the variables was existing. Furthermore, experimental conclusions illustrated the presence of an inverse relation of economic growth and export to unemployment, whereas a positive and progressive connection of foreign direct investment inflows with unemployment.

Adeniran, *et al.* (2014), examined the rate of exchange impact on economic growth of Nigeria since 1986-2013. The information about the data was composed through secondary sourced such as the Central Bank of Nigeria. The OLS outcome methodsshow that the exchange rate has insignificant plus positive, whereas inflation rate and interest rate were insignificant as well as indirectly interrelated with the growth of the economy.

Ahmed, *et al.* (2013), considered the linkage amongst deficit of trade and economy growth in Pakistan since 1971 – 2007 with data in the time period. The study recycled OLS for scrutinizing of relationship to FDI, trade deficit, and economic growth. The ADF and PP tests show the stationary of all the variables. FDI has positive significance, whereas the trade deficit has negative, but insignificant association with economic growth under Johansen co-integration test. The ECM result showed that all the predictor variables with GDP are positively as well as statistically significant. The test of Diagnostic result indicated that there was neither ARCH effect nor serial correlation.

Rauf & Khan (2011), deliberated the link with a budget deficit and trade deficit of Pakistan. Secondary as well as time series data has been used from 1980 to 2009. The researcher used the OLS and test of Granger Causality to find out the causality and association between trade deficit and budget deficit. The final outcome exhibited that budget deficit is affected mostly by trade deficit in Pakistan.

Hailu (2010), reflected the influence of foreign direct investment in the trade balance (export & import) in 16 African nations during 1980-2007. The result of Least Square Dummy Variable (LSDV) regression technique disclosed the elasticity's of mutual export and import that has direct and statistically significant with higher resistance's in place of exports relative to imports.

Adeleye, Adeteye, & Adewuyi (2015), tested global trade effect towards Nigeria economic growth from 1988 to 2012. The study has taken GDP as explained variable, while the balance of trade, entire import and export, balance of payment as an explanatory variable. OLS method of regression exploration, Co-integration and model of Error correction process have been used toward ascertaining the long term affiliation between international trade and economic growth. The regression investigation shows only export has positive but significant, whereas import, BOT, and BOP keep an insignificant impression on the growth rate of Nigeria.

Azeez, Dada & Aluko (2014), attested the international trade proxy by trade openness, imports and exports effect on the growth rate of Nigeria with yearly time period data in 2000-2012. The OLS approximation technique proved that imports and exports have positive and trade openness has negative, but significant impact on the growth rate of Nigeria.

Lotfalipour & Bazargan (2014), estimated the exchange rate volatility influences on trade balance in Iran with panel data during 1993 to 2011. Through unit root method, GARCH tests and balance panel data model the results indicated that there was no significant impact of the real effective rate of exchange on balance of trade. Moreover the study originated that import is only one factor as compared to export that effects the trade balance.

Akpan & Atan (2011), considered the exchange rate movement's effects on GDP of Nigeria. Quarterly time series data have been selected from 1986 – 2010. The estimated outcomes showed that the exchange rate has significantly and positively correlated with GDP. The result of Vector auto regression was further indicated that both variables were significantly co-integrated with each other's.

Tufail, Anwar, & Abbas (2014), observed the correlation among trade deficit and budget deficit of Pakistan. The statistical data contains on time series since 1972-2011. The result of ADF proved that given variable at first difference has stationary. Furthermore, the end result of Johansen co-integration demonstrated the effect of budget deficit on trade deficit was positively significant. The ECM end showed that 30.88% adjustment at an annual level towards the short run to long run by way of variation in trade openness, deficit budget, exchange rate and financial expansion in Pakistan. Granger causality tests identified that there was bidirectional causation among variables.

Yeboah, Naanwaab, Saleem, & Akuffo (2012), scrutinized the effect of exchange rate, foreign direct investment, the ratio of capital to labor and trade openness on economic growth in thirty eight African nations since 1980-2008. The paper has taken Cobb-Douglas production function to find the influence of predictor variables on predicted variable. The final result established that exchange rates and trade openness have a positive and significant impact on GDP.

As the literature shows that although a great work has been done related to trade deficit and foreign direct investment with economic growth. A several authors have studied the relationship between these variables and have concluded different results. But only a few studies focus on the effect and relationship of trade deficit, foreign direct investment and external debt role with the economic growth of Pakistan. So for this purpose, several models have been used for this study to fill up this gap in the literature.

3. Methodology

3.1 Overview

The chapter explains the data analysis, research methodology, data sources, and model specification.

3.2 Data Analysis

The data will be investigated through quantitative technique. The current study has taken multiple linear regression model to find the linkage among foreign direct investment, trade deficit, external debt and gross domestic product of Pakistan.

3.3 Data sources

In this research the time series data into 1990-2017 were attained through, Federal Bureau of Statistics, Economic Survey of Pakistan as well as World Development Indicators.

3.4 Model Specification

The Well-designed relationship among trade deficit, foreign direct investment, external debt and gross domestic product of Pakistan are stated hence:

$$GDP = (TRD, FDI, EXTD) \dots\dots\dots 1$$

In a linear form it is shown as follows

$$GDP = \beta_0 + \beta_1 TRD + \beta_2 FDI + \beta_3 EXTD + U_i \dots\dots\dots 2$$

In log form it is also shown as follows

$$\text{Log(GDP)} = \beta_0 + \beta_1 \text{Log(TRD)} + \beta_2 \text{Log(FDI)} + \beta_3 \text{Log(EXTD)} + U_i \dots \dots \dots 3$$

Where GDP = Gross Domestic Product

TRD = Trade Deficit

FDI = Foreign Direct Investment

EXTD = External Debt

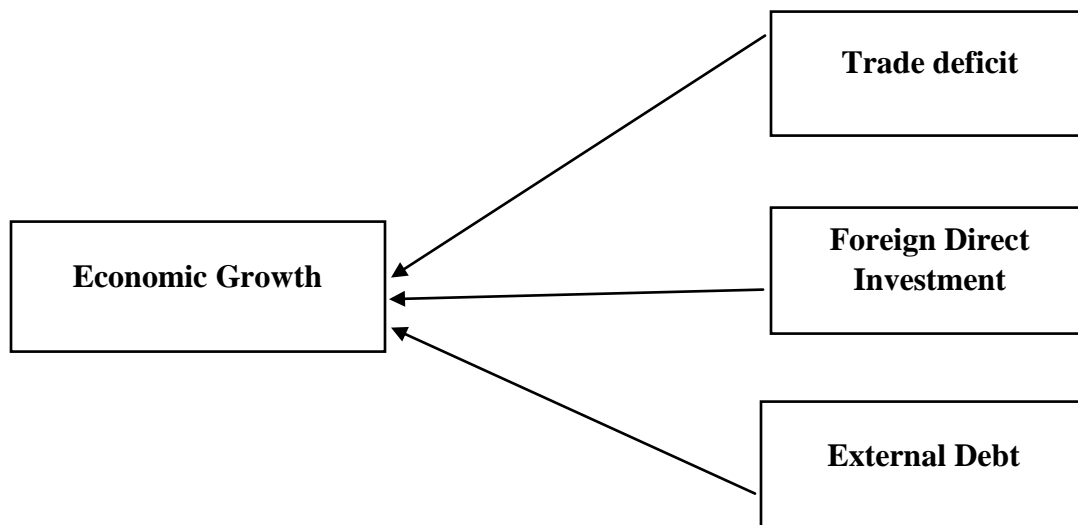
β_0 , is intercepted and $\beta_1, \beta_2, \beta_3$ are slopedas well as U_i is random error.

3.5 Research Methodology

The study used several techniques like Multiple Linear Regression Method, F-Test, R-Square Test, ANOVA and Multicollinearity Test for estimating the influence and correlation among trade deficit, exchange rate, external debt and gross domestic product.

3.6 Theoretical Framework

Dependent variableIndependent variables



5. Data Analysis and description of consequences

Table1:Descriptive statistics

Normality Test		
		Log GDP
Total Number (N)		38
Normal Parameters	Mean	11.0153
	Standard Deviation	.32740
	Skewness	Statistics= .348 and Std. Error =.388
	kurtosis	Statistics = -.990 and Std. Error = .759

Source: Calculation Results SPSS version 16 (1990-2017)

For calculation of normality test we must divide the measure by its standard error that gives the z-value which should lie between -1.96 and +1.96. The above table shows the statistic value of Skewness is 0.348 and its std. error is 0.388 while in Kurtosis the Statistics = 0.990 and std. error = 0.759. After the division, the z-value of skewness and kurtosis is 0.90 and 1.30 which is neither below -1.96 nor above +1.96 and lies between these values. It means all the data is normally distributed during the term of skewness and kurtosis.

Table 2:Test of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Log GDP	.113	37	.200 [*]	.943	37	.057

Source: Calculation Results SPSS version 16 (1990-2017)

Based on the above table the significance value (P-value) of both Kolmogorov-Smirnov and Shapiro- Wilk test are above from 0.05. Then we accept the null hypothesis, so we can assume that our data are approximately normally distributed in terms of both tests.

Table 3: Multiple Regression Analysis test

Regression Analysis

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	.450	2.696		.167	.869
Log trade deficit	.043	.055	.080	.771	.446
Log FDI_	.103	.118	.205	.878	.386
Log External debt	.901	.342	.611	2.632	.013

Source: Calculation Results SPSS version 16 (1990-2017)

$$\text{Log (GDP)} = \beta_0 + \beta_1 \text{Log (TRD)} + \beta_2 \text{Log (FDI)} + \beta_3 \text{Log (EXTRD)} + U_i$$

$$\text{Log (GDP)} = 0.450 + 0.043 \text{Log (TRD)} + 0.103 \text{Log (FDI)} + 0.901 \text{Log (EXTERD)}$$

The given model displays the outcomes of regression coefficients for the current study of data analysis. The above figures identify that the trade deficit, foreign direct investment and external debt have positive impact on gross domestic product. On analyzing the results it is clear that trade deficit and foreign direct investment have insignificant while external debt has significantly affected on gross domestic product. The values of Beta shows that how much unit variation in independent variable values will bring how much unit variation in dependent variable. While T value expresses the significance and insignificance of the explained and explanatory variables, therefore the figure of the Beta as log trade deficit is 0.043, T-statistics is 0.771 as well as Probability value is 0.446. The Beta value of log FDI is 0.103 and T value is 0.878 while the value of Probability is 0.386. Likewise Beta value on behalf of log external debt is 0.901 and T value is 2.632 and P-value is 0.013.

Table4:ANOVA

Model	Sum of Squares	df	Mean Square	F-value	Significance
Regression	2.712	3	.904	26.021	.000
Residual	1.147	33	.035		
Total	3.859	36			

Predictors: (Constant), Log External debt, log trade deficit, Log FDI

Dependent Variable: Log GDP

Source: Calculation Results SPSS version 16 (1990-2017)

The above table shows the value of F- statistics value is greater than 4 while the value of probability is less from 0.05 showing that trade deficit, external debt, and foreign direct investment have a positive and significant impact to gross domestic product and it is also a good sign.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.838	.703	.676	.18640	1.844

Predictors: (Constant), Log External debt, log trade deficit, Log FDI

Dependent Variable: Log GDP

Source: Calculation Results SPSS version 16 (1990-2017)

The value of R square expresses the whole changes in predictor variables. The given ends show that 70% variation in gross domestic product is caused by the trade deficit, foreign direct investment and external debt. The result of Durbin Watson is 1.844 which is near to 2, demonstrates that the model is well fit and free from the problem of autocorrelation.

Table 5: Multicollinearity test

Variable	Tolerance	VIF
Log trade deficit	0.829	1.207
Log FDI	0.165	6.065
Log External debt	0.167	5.981
Dependent variable: Log GDP		

Source: Calculation Results SPSS version 16 (1990-2017)

In the above table the VIF value of all the variables lies between 1 to 10 and the VIF value of none of the independent variable is larger than 10. So the regression model displays that there is no multicollinearity between explanatory variables.

Table 6: Test of Glejser for Heteroscedasticity

Model	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.
	Beta-value	Standard Error	Beta-value		
Constant	-.112	.687		-.163	.872
Log Trade deficit	.001	.103	.003	.012	.990
Log FDI	.035	.081	.149	.436	.666
Log External debt	-2.800E-12	.000	-.304	-.751	.458

Dependent Variable: AbsUt2

Source: Calculation Results SPSS version 16 (1990-2017)

Based on the above table the significant value of the given variables is greater of 0.05 whichever can be concluded in order that there is no heteroskedasticity problem.

Table 7: Correlation test

		Log GDP	Log Trade deficit	Log FDI	Log External debt
Log GDP	Pearson Correlation for	1	.407*	.795**	.830**
	Sig. (2-tailed)		.013	.000	.000
	N	37	37	37	37
Log Trade deficit	Pearson Correlation	.407*	1	.411*	.396*
	Sig. (2-tailed)	.013		.012	.015
	N	37	37	37	37
Log FDI	Pearson Correlation	.795**	.411*	1	.912**
	Sig. (2-tailed)	.000	.012		.000
	N	37	37	37	37
Log External debt	Pearson Correlation	.830**	.396*	.912**	1
	Sig. (2-tailed)	.000	.015	.000	
	N	37	37	37	37

Source: Calculation Results SPSS version 16 (1990-2017)

The outcome of correlation shows that the P-value of all the variables lies from 0.000 to 0.019 which means that very low correlation exists between trade deficit, foreign direct investment and external debt and gross domestic product.

5. Conclusion and Recommendations

The paper investigates for the link and affect between Trade Deficit, Foreign Direct Investment, External Debt and Gross Domestic Product in Pakistan since 1990-2013. After that, the result from OLS showed that trade deficit and foreign direct investment have progressive and direct but then statistically insignificant effect on Gross Domestic Product. Although external debt has positive and statistically significant effect on GDP. Furthermore, the results also show that problem of auto-correlation, heteroskedasticity, and Multicollinearity are not exist in the model and data set is normally distributed in

the study. On the basis of the empirical conclusions, the current study recommended the following policy implications.

1. The government of Pakistan should increase the supply of petrol and other fuel assets because the greatest portion of receipts is spent on the import of such items. If we decrease the imports, then it will be helpful in the balance of trade deficit and increase of foreign exchange reserve.
2. Pakistan should take numerous steps for the encouragement of foreign direct investors and also increase and develop the workers remittance which will be helpful in the reduction of current account deficit.
3. For an increase in export receipts, domestic saving and economic growth the government of Pakistan should minimize the debt from foreign countries, because it creates economic problems.
4. The Pakistan government should build up domestic industries for the purpose to control trade deficit of the country through the rise of export as well as reduction of imports.
5. The Government of Pakistan must establish Industrial based agriculture production intended for receiving of the greater rate of external funding.
6. The government of Pakistan should control and regulate the activities of terrorism in order to fascinate foreign direct investors for the growth rate of the economy.

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