

Relationship Between Trade Deficit and Economic Growth in Pakistan: An Econometric Investigation

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Abstract: The basic aim of this paper is to investigate the relation between trade deficit and economic growth of Pakistan. A time series data has been used for the period of 1971 to 2007 for our analysis. GDP is treated as dependent variable while trade deficit and foreign direct investment as independent variables. Augmented Dickey Fuller test has been used to check the stationary and all variables found stationary at 10% level of significance. The results of OLS are spurious so Johansen co-integration is used for long run and Error Correction Model for short run. The results of Johansen co-integration show that foreign direct investment has significant and positive relation with GDP of Pakistan in the long run while trade deficit has negative and insignificant relation with economic growth in the long run. The results of error correction model show both variables are statistically significant and have positive relation with Gross Domestic Product of Pakistan in the short run. Diagnostic tests show that there is neither ARCH effect nor serial correlation, residuals are normally distributed and coefficients are stable in our model. It is suggested that trade deficit is better for economic growth in the short run as it raises GDP and job opportunities but long run dependency would be harmful for economic growth of Pakistan.

Key words: (GDP, FDI, Trade Deficit, Pakistan).

INTRODUCTION

The basic aim of this paper is to investigate the relationship between trade deficit and economic growth of Pakistan. Trade deficit is the situation in which imports of a country increase than the exports of the country. Simply trade deficit means there is more coming in than coming out. There are different views of the economists about trade deficit. Some think it beneficial for the economy as it raises GDP and increases job opportunities. Some consider it bad for economic growth. But economists agree that capital inflow is good for economic growth. Although these are interlinked with each other. Capital inflow is the reason for growth of a country that have trade deficit. It helps to increase investment and in this way productivity increases. Marcio Holland (2004) investigates the relationship between economic growth and trade balance. He uses VAR specification to find the evidence from ten Latin American countries. He finds long run association among real GDP, exports and imports. Thirwall (2000) considers trade as an engine for economic growth. He says trade helps to allocate resources efficiently in the country. Trade liberalization improves growth performance. The volume of exports in developing countries grows slower than the developed countries. As developing countries export primary goods. Here is Ashok Parikh (2004) who finds the relation among trade liberalization on economic growth, investment share of GDP, openness, trade balance and current accounts. His study is based on 42 developing countries of Asia, Africa and Latin American. He says that trade liberalization leads to faster growth of imports than exports.

Najid Ahmad (2012) shed light on the importance of exports. He uses Cobb-Douglas production function for his estimation. He views that one percent increase in exports will raise GDP by 0.81%. He says it is necessary to better agriculture sector as most exported products depend on this sector. Increase in exports mean economic growth in the country. Sulaiman Mohammad (2010) says Pakistan is facing trade deficit from its globalization era. Persistence trade deficit is dangerous for Pakistan economy. There are hardly few years in which balance of trade was surplus. He explores the long run and short run determinant of trade deficit with the reference of Pakistan. The findings of his study suggest that foreign income, FDI, domestic household consumption and real effective exchange rate are significantly affect trade deficit. Najid Ahmad (2012) finds the effects of income inequality, population growth and trade liberalization on poverty in Pakistan. He finds negative relation between trade liberalization and poverty. Trade liberalization is necessary for poverty reduction. He thinks it as an engine for economic growth and poverty reduction.

Najid Ahmad (2012) shed light on the importance of foreign direct investment by thinking it as an important source of economic growth. Most developing countries think FDI as important source of funding. FDI and economic growth are correlated with each other. The author finds positive relation between FDI and economic growth of Pakistan. We can make progress by inviting foreign investors. Instead of replicating others'

policies we should make our own policies according to the need of our country. Najid Ahamd (2012) investigates the relation between inflation, investment, population, exports and gross domestic product of Pakistan. He finds positive relation between exports and economic growth of Pakistan and Fuat Sekmen (2011) finds tradeoff between current account deficits and economic growth in Turkey. He uses ARDL approach for his analysis and finds positive relation between current account deficits and economic growth in the short run and no relation in the long run. He says short run dependency is not harmful but in long run it can be harmful for the prosperity of the country. Najid Ahmad (2012), Iqbal Mahmood (2011), Abu Nurudeen (2010), Abdul Khaliq (2007), Zeshan Atique (2004), Niazi (2011), Mahar (2008), Falki (2009) and Hussein (2009) also talk about economic growth in their studies.

Yearly trend of GDP, FDI and Trade Deficit in Pakistan:

Yearly trend of foreign direct investment, Gross Domestic Product of Pakistan and Trade deficit of Pakistan is shown in below tables (1,2) for the period of 1971-1980 and 2000-2007. In 1971 GDP was 10560.92 mls \$, Foreign direct investment 2.8 mls \$ and trade deficit was 47 mls \$ while GDP in 1980 jumped to 23654.55 mls \$, FDI 60.9 mls \$ and trade deficit increased to 2451 mls \$. If we move to second table in year 2007 GDP reached to 120300 mls \$, FDI 3317 mls \$ and trade deficit 16806 mls \$. These results pictures clearly show that FDI show positive trend with the time but with very low frequency as is the case of GDP. Trade deficit increased with fast speed. There were different factors for it like political instability and terrorism activities reduce FDI and GDP growth speed as was expected in such type of environment. Trade deficit increased because our exports were low and intermediate goods but we imports final goods that results in high trade deficit. This trend is also shown in figure (1).

Table 1: Trend of variables 1971-1980.

years	FDI	GDP	TD
1971	2.8	10560.92	47
1972	2.9	9296.647	-20
1973	3	6332.886	336
1974	3	8772.727	1075
1975	3.2	11230.3	930
1976	4.1	13167.68	1184
1977	11.7	15126.26	1499
1978	23.7	17811.11	1966
1979	45.3	19688.89	2375
1980	60.9	23654.55	2451

Source: WDI

Table 2: Trend of variables 2000-2007.

years	FDI	GDP	TD
2000	414.3	61424.84	1527
2001	343.6	58450.42	1205
2002	593.3	59094.22	1060
2003	684	68686.23	3279
2004	951	80500	6207
2005	1128	92400	12130
2006	2579	106300	13564
2007	3317	120300	16806

Source: WDI

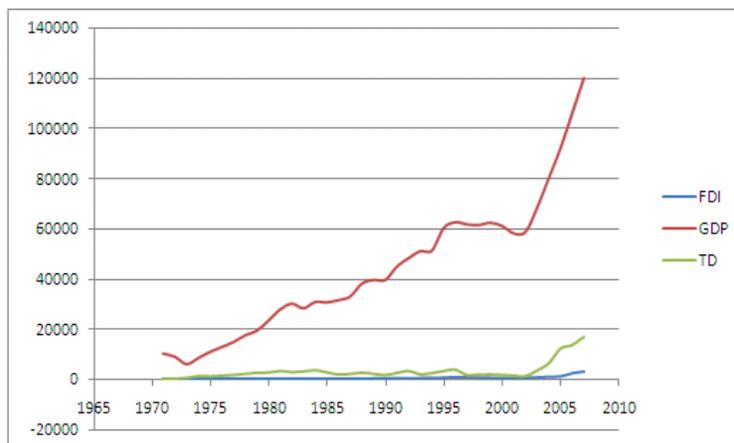


Fig. 1:

Data Collection, Methodology and Interpretation:

In order to study the impact of trade deficit and foreign direct investment on economic growth of Pakistan, a time series data has been used for the period of 1971-2007. The data on these variables has been collected from world development indicator (WDI).

The econometric model is given as

$$GDP = \alpha + \beta_1(FDI) + \beta_2(TD) + \mu$$

GDP is the gross domestic product of Pakistan. FDI is the foreign direct investment and TD is the trade deficit (imports-exports) of Pakistan. Augmented Dickey Fuller test is used to check the stationary of the data as time series data usually show trend with the time. The results of Augmented Dickey Fuller tests are in table 3:

Table 3: Results of Augmented Dickey Fuller Test.

Variables	Only Intercept	Trend and Intercept	None
GDP			
Level	1.308645 (0.2000)	-0.786452 (0.4376)	-2.170004* (0.0373)
FDI			
Level	2.155056 (0.0388)	0.941012 (0.3540)	-2.517284* (0.0169)
TD			
Level	1.064769 (0.2949)	0.409732 (0.6848)	-1.715027* (0.0957)
Note: *indicates variable is significance at 10% level of significance. Values in parentheses are p-values			
Source: Author			

As all variables are stationary at 10% level of significant so we can use Ordinary Least Squares method. But the results are spurious. That are not acceptable. In order to avoid from such type of results we can use Johansen Co-integration method for long run and Error Correction Model for short run. The results of Johansen Co-integration test are given below:

Table 4: Johansen Co-integrating Normalized Equation Results.

Variables	Coefficient	Standard Error	T-statistic
C	28091.33	13388.6	2.0982
FDI	83.73136	27.6654	3.0266
TD	-17.79806	14.9284	1.1922
Source: Author			

The results of Johansen co-integration test show that there is a positive relation between foreign direct investment and GDP of Pakistan in the long run. The coefficient of trade deficit is negative that means there is negative relation between trade deficit and gross domestic product of Pakistan in the long run. The value of t-statistic for the variable foreign direct investment is 3.0266 that is greater than 2 means FDI is significant in the long run. The value of t-statistic for the variable trade deficit is 1.1922 that is less than 2 means variable is insignificant in the long run. Here t-statistic for C is 2.0982 that means there are not only these two variables that can affect the GDP of Pakistan. But there are also other variables that are affecting the GDP in the long run.

Table 5: The results of Error Correction Model.

Variable	Coefficient	Std .Error	t-Statistic	Prob.
C	1478.916	400.2981	3.694536	0.0008
D(FDI)	7.687805	1.526633	5.035791	0.0000
D(TD)	1.847908	0.295511	6.253273	0.0000
ECM(-1)	-0.002005	0.031080	0.064508	0.9490
R-squared	0.773294	Mean.dependent.var	3048.308	
Adjusted R-squared	0.752040	S.D. dependent var	4459.465	
S.E. of regression	2220.616	Akaike info criterion	18.35340	
Sum squared resid	1.58E+08	Schwarz criterion	18.52934	
Log likelihood	-326.3611	F-statistic	36.38396	
Durbin-Watson stat	2.079236	Prob(F-statistic)	0.000000	
Source: Author				

Here R-squared is 0.773294 that means 77% variations in the dependent variable (GDP) are due to independent variables (FDI and trade deficit) and others are due to error term. So model is good fit. The Durbin-Watson stat is 2.079236 that is good sign. The coefficient of D(FDI) is 7.0687805 that shows positive relation between foreign direct investment and GDP in the short run. The value of t-statistic for variable FDI is greater than 2 that mean FDI is significant in the short run. The t-statistic for the variable trade deficit is 6.253273 that is also greater than 2. It means D(TD) is significant in the short run. The coefficient of trade deficit is 1.847908 that means there is positive relation between GDP and trade deficit of Pakistan in the short run. One unit

increase in trade deficit will raise GDP by 1.85 units in the short run. The coefficient of speed of adjustment has negative sign and it is statistically insignificant.

Diagnostic tests are applied to check whether the series are free from autocorrelation, normality problems and heteroskedasticity.

Table 6: Diagnostic tests.

Breusch-Godfrey Serial Correlation LM Test:	
F-Statistic	0.079728 (0.923556)
Obs* R-Squared	0.184227 (0.912002)
Normality Test	
Jarque-Bera	0.269617 (0.873883)
Heteroskedasticity test: ARCH	
F-Statistic	0.280247 (0.600083)
Obs* R-Squared	0.294729 (0.587206)
Ramsey RESET Test (Stability test)	
F-Statistic	0.426165 (0.518540)
Source: Author	

Breusch-Godfrey Serial Correlation LM test is used to check whether model is serially correlated or not. We are testing serial correlation at 0.05 levels of significances. The p-value is 0.912002 that means our model is not serially correlated or the residuals of the model are not serially correlated. The normality test shows that residuals are normally distributed as p-value is 0.873883 that is greater than 0.05. The ARCH effect is tested at 5% level of significance. The p-value is 0.587206 that is greater than 0.05. So there is no ARCH effect in the model. It is always desirable that a model should not have ARCH effect. Ramsey RESET test is used to check the stability of the coefficients. The p-value is 0.518540 that is greater than 0.05. So the coefficients are stable. The residuals are normally distributed. There is no ARCH effect and no serial correlation in the model. The coefficients are stable. These are the good sign for a model.

Conclusion and Policy Implication:

An attempt is made to find the relationship between trade deficit and economic growth of Pakistan. GDP is taken as dependent variable while trade deficit and foreign direct investment as independent variables. All variables are stationary at 10% level of significance. So OLS is an appropriate technique in this situation but the results obtain from ordinary least squares are spurious i.e. R-squared > Durbin Watson. Johansen co-integration and error correction model is used for long and short run respectively. The results of Johansen co-integration show negative relation between trade deficit and GDP of Pakistan in the long run while there is positive relation in the short run between foreign direct investment and economic growth in the long run. While in the short run there is a positive relation between trade deficit and economic growth of Pakistan. There is also positive relation between FDI and economic growth of Pakistan. Foreign direct investment is necessary for the economic growth for Pakistan in the short and long run. Government of Pakistan should control terrorism activities in order to attract foreign investors that are the source of economic development in the short and long run. We can make progress and keep pace with the world if and only if we make our country peaceful by controlling these criminal activities otherwise it would be rather hard to attract foreign investors. The findings show that trade deficit is better for economic growth in the short run as it raises GDP and increases job opportunities in the short run. It is known fact that technological recovery is not good in developing countries. Pakistan’s economic growth is dependent on imported intermediate goods like energy and capital goods. But total dependency will be harmful as we have to repay prices in the form of debt burden. In order to increase the production in goods and services it is necessary to increase its imports for essential intermediate goods. Here foreign investors’ role is very important. It also highlights the importance of exports. We should increase our exports in order to maintain trade balance. Productivity of different imports sector like textile is very low as compared to other countries of the region. It is necessary to educate people through skills development programs. Second, cost of production is very high due to expensive inputs, high interest rate, and taxes. We should think about it if we want to keep pace with the world. It is fair to say here that our results has provided important insights that can be used in the future research for making policies for Pakistan.

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