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Trade Deficit and Economic Growth: Using ARDL Technique for the Economy of Pakistan

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Keywords:

Trade deficit, Economic growth, Time series, ARDELL.

ABSTRACT

The current study aims to find out the impact of the trade deficit on economic growth in Pakistan. For this purpose times, series data is used from 1980 to 2015. ADF test is used to know about the order of stationarity. The estimation technique is used Autoregressive Distributed Lag (ARDL) based on the outcomes of the AFD test. Results show that the impact trade deficit is negative and significant on output growth in the short-run as well as in long run. The study suggests that the government should improve the balance of trade by increasing the output and decreasing unemployment. Population growth rate must be controlled, Literacy rate should be increased, stable foreign exchange policy and inflation must be controlled.

INTRODUCTION

Foreign trade is not only the name of exchange of goods or services across the countries, but it is an effective way for the exchange of technology, labor, capital, culture, and opportunities. Foreign trade is important because a single country is not able to produce all goods for the people according to their demand and consumption because of resource constraints and different factors endowment. Therefore, trade liberalization proposes that the economy needs to engender revenue by exporting goods and importing that type of goods that a country cannot produce (Adeleye, 2015 and Shafiei, 2014). The economists have been modifying Ricardian models for centuries and discussed that base for international trade is a comparative advantage, availability of different factors of production and specialization lead to effective utilization of resources which increase production in the world. According to liberal economists, trade openness makes growth faster (Helpman and Krugman, 1985). In agriculture & industrialization development international trade plays an important role. Trade includes several regions across the world. The benefits of international trade will increase with the increase of regions. The trade involves the exchange of ends and means, skills, expertise, and knowledge which are necessary to achieve the required desires and goals like reduction of poverty, efficient allocation of resources, create more employment opportunities, utilization of surplus produce, source of revenue for the country, availability of more choices at low cost, enhances the domestic competitiveness and development of mental and physical abilities (Yasmin and khan, 2005).

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Misunderstanding the economy and trade deficit can persuade policymakers to do something about trade deficit which adversely affects the economic growth. They will raise the trade barriers to reduce imports which will reduce the trade deficit and stimulate the economy (Griswold, 20015).

International trade set the new outline for all countries due to economic factors, pressures and with the advancement of communication technology and telecommunications new commercial relationship has been developing between different regions and countries of the world, which increases FDI (Foreign Direct Investment) and EG (Economic growth) (Salvatore, 1997).

To analyze the performance of less and highly developed economies, trade balance plays an important role. Pakistan is facing a sluggish economic performance from the very beginning. Pakistan adopted several structural adjustments and implemented several policies which helped in the stabilization of both financial& economic sectors. (Abbas, 2013). Our country Pakistan faces a negative balance of trade because of import of Technology and exporting raw material are semi-finished goods. The insufficient export sectors of the country have also been unable to get benefits from the devaluation of the rupee because the prices of the imported goods have increased. Beneath its wretched enactment of the textile industry, the export of commodities that are not used for development benefits or research is increasing at a faster speed and helps in expanding the basket of export of the country (Raza, 2013). Each year Pakistan is facing a trade deficit because its imports exceed its exports except for two fiscal years 1951-52 and 1972-73. In 1951-52, due to Korean War, Pakistan sold its cotton and jute (exported commodities) at higher prices (Akhtar,1955) while in 1972-73, due to the devaluation of Pakistan's currency the exported commodities of Pakistan became cheaper in the international market which increased demand for exported goods due to which balance of trade became positive (Suleman, 2010). The exports of Pakistan for the year 2015-16 was $16.01 billion, imports were $30.6 billion, the trade deficit was $14.1 billion, the unemployment rate was5.90%, economic growth was 4.2%, inflation was 8.7% and the balance of payment was -1.267$ billion (Economic Survey of Pakistan, 2015-16). The main reason behind the decline in the economic growth of Pakistan was a proactive role in the Soviet Union and Afghanistan war and internal war against terror. Pakistan has lost valuable lives and infrastructure along with 35 billion $ against war and terrorism and this destruction is still in progress. This destruction was multifaceted because of external oil prices in 2013-14 such harmful activities caused an unstable macroeconomic situation (Pakistan Economic Survey, 2013-14).

Over the decades the economic growth has been the central point of the researchers. It is a known fact that economic growth is vital for the economies to overcome the problems of poverty, unemployment, poor education, weak infrastructure, and for the betterment of the standard of life of people. Economic growth has been discussed both theoretically and empirically (Arvanitidiset al.2009). The theoretical work on the determinants of economic growth can be categorized as neoclassical, forwarded by Solow (1956) that emphasized the role of capital accumulation, and endogenous growth theory, given by Romer (1986) & Lucas (1988), the central points of which are human capital and innovation capacity. The

importance given to the investment by neoclassical and endogenous growth theory compels researchers to empirically test its relationship with growth. Some of the researchers empirically examined that investment is the main factor influencing economic growth for instance (De Long and Summers 1991; Levine and Renelt 1992; Mankiw et al. 1992; Sala-i-Martin and Barro1995; Podrecca and Carmeci 2001).

LITERATURE REVIEW

Ahmad (2013) studies the correlation between economic growth & trade deficit. A data consists of time series was taken from 1971 up till 2007 for analysis. In the study Gross domestic product is used as an explanatory variable while FDI and Trade deficit is taken as explanatory variables. The results show that Gross Domestic Production has a positive and significant correlation with some of the studies variables. Gulzar (2011) studied the factors of the balance of trade in Pakistan. The empirical study shows that Pakistan is facing a deficit balance of trade for a long period. This trouble arises from the inequality between the worth of imports and exports, export values of Pakistan are less than the imports value which makes the balance of trade negative. Pakistan is agricultural land, 70% of the population is working in this sector. Due to this case, most of the exported products of Pakistan are agricultural products while the imported goods technology manufactured goods. The difference in the value of imports and exports leads Pakistan to a deficit balance of trade. Wagner (2007) studied that empirically, it seems good to confirm the positive impact of international trade on economic growth by facilitating institutional advancement, upgrading industrial structure, capital accumulation, and technological improvement. Especially intermediate & capital goods imports increases which before are not available in the local market may boost the production of the manufacturing sector. Helpman (1995) investigates the balance of trade and growth. The study focused on the issue that whether liberalized economies are lean towards faster growth. In the early stages, tariffs on intermediary and capital goods were kept low as compared to consumer goods. Agriculture inputs prices were kept lower from the world market prices, which made available the basic resources to the industrial sector at low charges. Tariff strategies, control of imports, tax concession, availability of loans at the low-interest rate, noticeably highlight the feasibility of Pakistan's industries competitiveness in the international market. The conversion to the new system leads Pakistan to alteration in rupee due to which Pakistan imports increased. For analysis, an annual time series of facts and figures on real imports, exports, and real GDP were obtained from WDI (World Development Indicator). Granger Causality and Vector Auto-Regression test was applied for analyzing the correlation between economic growth & trade openness. The result shows that more trade openness leads to a high growth rate, obligations to the positive effects of competition, economies of scale, competition, and improvement in production made possible by the advent of new technologies. Barro (1991), Baker (1998) investigated that external and internal factors are inversely related to economic growth. In a developing country like Pakistan, there are three core factors for unstable economic growth. The first main factor in terms of trade and financial markets, Secondly developing countries experience

internal shocks due to intrinsic instability and policy fault. The third factor of developing nations is the weak absorption power of shocks.

Blassa (1986) analyzed that inward-oriented developing countries achieved less economic growth as compared to outward-oriented developing countries. Kavoussi (1984) analyzed 73 low-income and middle-income countries and found a powerful correlation between export & economic growth. He shows that export and growth have a positive relationship in low and also middle-income nations but with the development, the effect shows a decline. Magee (1973) for the first time noticed that in 1971 despite the devaluation of the dollar the US balance of trade deteriorated. Then he theoretically argued that with the currency depreciation the balance of trade can deteriorate mainly because of lags in the reaction of trade flows to a change in the exchange rate. The balance of trade improves once the lags are realized.

RESEARCH METHODOLOGY

Theoretical framework

When exports are less than imports trade deficit rises. The simple reason behind this is that exports are too much or at least less than they would be under trade balance. The wage rates in the less developed countries are low which affects production adversely and results from an increase in imports. The effect of increased imports is due to the availability of low price foreign goods as compared to the slightly expensive domestic products. As demand for products of local firms falls they are forced to downsize, which results in the firing of domestic workers from the jobs. Therefore, it is believed that deficit trade is the reason for the loss of domestic jobs. Another story says that the most common reason for low exports in developing countries is comparatively high trade barriers, even various countries join world trade organizations (WTO) but the barriers in the developing countries are still high as compared to the developed countries. If the barriers are removed; it will increase the export and jobs would be created in the country (Suranovic, 2012). Depreciation will increase the prices of imported goods and services which will help to improve the balance of trade. We assume that exports and imports are highly elastic to real depreciation. This special mechanism is known as the J-curve phenomena or Marshall-Lerner condition (Muhammad, 2010).

Data collection

In this paper, the researchers used annual time series data from 1980 to 2016. Data are collected from World Development Indicator. Variables like Economic growth, Real Effective exchange rate, population growth rate, inflation growth rate, and trade deficit are collected for the study under consideration.

Econometric Model

To know the trade deficit effects on economic growth, the below-given model will be estimated. The following study of bakers (2014), Abbas (2013), Ahmad (2013), Kim (2011), and Muhammad (2010) have used similar econometric models as given below for trade deficit and Economic Growth, trade deficit, and unemployment.

$$EG = f (TD + FDI + RER+EMP + INF)$$

$$EG = \beta_0 + \beta_1 TD + \beta_2 FDI + \beta_3 ER + \beta_4 EMP + \beta_5 INF + \mu$$

Where EG is Economic Growth, TD is Trade Deficit, FDI is Foreign Direct Investment, RER is Real Exchange Rate, EMP is Employment Rate, INF is Inflation and μ represents error term.

RESULTS AND DISCUSSIONS

Augmented Dickey-Fuller Test for Stationarity of Variables

Using time-series data, the estimation methods start with stationary of data for which ADF (Augmented dickey fuller) test is used. Results of the ADF test are given below.

Table-1: ADF RESULTS

Variables	Level		1st Difference		Conclusion
	Statistical value	Critical value	Statistical value	Critical value	
EG	-3.79	-2.94			I(0)
TD	-0.24	-2.95	-5.86	-2.95	I(I)
FDI	-2.04	-2.98	-5.01	-2.97	I(l)
REER	-2.00	-1.95			I(0)
EMP	-2.19	-2.94	-4.58	-2.95	I(I)
INF	-5.33	-2.94			I(0)

***5% level of significance (Results obtain from Eviews 9).**

The above table shows that variables are stationary at mixes. Economic growth, real effective exchange rate & Inflation are stationary at level, while trade deficit, foreign direct investment, and employment are stationary at first difference. In such a situation literature suggests using the ARDL model.

Bound Test

To know the existence of co-integration among variables F bound test is used. Results of the F bound test are given below.

Table-2: Bound Test Results

Equation	Calculated F-value	Tabulated F values at 10% I(0)----------I(I)	Results
EG=(TD, RER, FDI, EMP, INF)	**3.91**	**2.62----------3.79**	**Co-integration**

1. **At a 5% level of significance**

The bound test shows that the calculated F value is greater than the upper-class value. The test shows long-run co-integration among studied variables, after that estimation of short & long run parameters could be possible.

Long-Run Relationship

After using ARLD the long-run estimates of the dependent and independent variables are estimated are as follow:

Table-3: Long Run Results

Dependent Variable EG (Economic Growth)			
Variables	Coefficients	t-statistics	Probability
TD	-0.0001	-1.79	0.08
FDI	1.20	2.65	0.01
RER	0.02	2.76	0.01
EMP	0.54	2.13	0.04
INF	-0.07	-0.93	0.36

Results obtained from the ARDL model show a significant but having negative effect on the trade deficit on economic growth. The result shows that if other things remain the same when an increase in deficit occurs; it will decrease the economic growth because economic theory suggests that persistent trade deficits will be detrimental to a nation's economic outlook by negatively impacting employment, growth, and devaluing its currency. These results are similar to the results of Ahmad, 2010. FDI has a significant impact and is directly related to economic growth. When FDI increases economic growth will also increase. When the foreign investors increase their investment in the country's economy; it will increase the EG. This result is in union with the results of Abbas, 2010. The effect of REER is significant& positive. When REER increases the economic growth also increases. The result of this study is similar to the result of Waliullah (2010). The effect of the Employment rate is also significant and positive with

economic growth. When extension occurs in the employment rate the value of Economic growth also increases. This result is in line with the result of Zulfiqar (2008). Inflation shows insignificant and negative effects on economic growth. It means inflation will not affect the economic growth because of petrol prices and prices of other commodities in the basket. In inflation the commodities prices become volatile. This result is similar to the results of Attari (2013).

Short Run Results

After the long-run estimation, the results of the short-run are as followed.

Table-4: Short Run Results

Dependent Variable EG (Economic Growth)			
Variables	Coefficients	t-statistics	Probability
DTD	-0.0001	-1.70	0.10
DFDI	1.2	2.41	0.02
DRER	0.02	2.37	0.02
DEMP	0.16	0.80	0.42
DINF	0.01	0.30	0.76
ECM(-1)	-0.92	-5.93	0.00

It is interesting to see that the behavior of all the variables is almost the same in the long run. The trade deficit has negative effects on economic growth. There is a little change in the values of the coefficients of trade deficit as shown in the above table. The results show the negative impact of trade deficit which means that when trade deficit increases economic growth will decrease. The short-run show a small effect as compared with the long-run results. Foreign Direct Investment (FDI) has also shown significant and positive results in the short run. It means that when an increase in foreign direct investment occurs in the short run the economic growth increases. Variable real effective exchange rate found significant and throw positive impact on economic growth. It shows when REER increases Economic growth will also increase. Employment has also had significant and positive results on economic growth. This is logical since that with the increase of employment level people will earn more and their savings will increase which will be used as an investment so it has a positive impact on the economic growth. The impact of inflation is negative and insignificant on Economic growth. It means that there is no effect of Economic growth in the short run. The result shows the value of the Error Correction Model is negative and 0.92 which means that if any disequilibrium occurs in the model it will come to equilibrium in 0.92 % in one year.

Diagnostic Tests Results

Results of the diagnostic tests are given below.

Table-5: Diagnostic Tests for Model

Tests	F Statistic	P value
Lagrange Multiplier test for Serial Correlation	5.4	0.06
White test for Heteroscedasticity	2.6	0.88
Jarque - Bera test for Normality	2.1	0.34
Ramsey's Reset for Functional Form	0.43	0.51

The results of the diagnostic tests are insignificant which shows the stability of the model. For detection of serial correlation in the data Lagrange multiplier test is used the probability of the data is 0.6 percent which shows no serial correlation in data because the probability is above 5%. Ramseys Test and Jarque-Bera are used to know the normality the probability is above 5% which shows that the data is normal, to know heteroscedasticity in the data white test is used. the value of heteroscedasticity is also above 5% which shows the normality of the model.

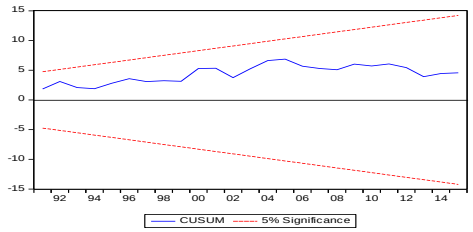

Fig-2: CUSUM Results

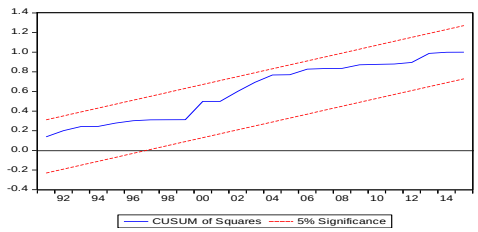

Fig-2: CUSUM Squares

The lines of recursive residuals or cumulative sum (CUSUM) and cumulative sum of square recursive residual (CUSUMQ) confirm no indication of gross volatility because, in both cases, the calculated lines are within the boundaries which shows the stability of the results.

CONCLUSION

It is evident from the empirical findings that a trade deficit has negative effects on Economic growth in the short as well as in long run. In the case of Pakistan when the trade deficit increase, economic growth decreases. Through the Augmented Dickey-Fuller test it is found that some variables are stationary at the level and some at first difference. In such circumstances, the literature suggests to used the Auto regressive distributed lag model (ARDL) model. The F Bound test shows long-run cointegration between variables. In Long run, when one unit change in trade deficit occurs; it decreases the economic growth by 1.7 units. The Error Correction Model (ECM) is statistically significant and negative which means if any disequilibrium occurs there will be the restoration of equilibrium for all the components of the trade deficit based on short-run dynamics. In the study, four other variables are also taken to analyze their impact on economic growth in Real Effective Exchange Rate Foreign Direct Investment, Inflation, and Employment. There is a positive and significant impact of FDI on Economic Growth. FDI plays an important role in decreasing the trade deficit and increasing economic growth. The results show that one unit change in foreign direct investment will increase economic growth by 2.41 units in the long run while in the short run one unit change in Foreign Direct Investment will bring 2.65 unit changes. There is a positive and significant effect of the Real Effective Exchange rate on economic growth in the long run and short run. One unit real effective exchange rate increases it will increase the economic growth by 2.76 units in the long run while in short-run one unit change in the real effective exchange rate will bring about 2.37 units. Employment has a significant and positive effect on the Economic growth, One unit increase in total employment level will increase the economic growth by 2.13 units in the long run while in the short-run the impact of employment level is insignificant for Pakistan Inflation has a negative and insignificant impact both in length as well as in short run. According to Classical economists, there is a negative relationship between economic growth and inflation because the increase in price leads to decrease firms' profit due to higher wage costs.

SUGGESTIONS

In the light of the above findings and conclusions, some suggestions are given as under.

- The trade deficit has a negative and significant impact on economic growth. To improve the economic growth of the country, the state should take steps the improvement the balance of trade. The state should give relaxation to the domestic industrial sector in the form of relaxation in taxes it will encourage the local producers to invest more and increase their production level to boost exports level which positively affects the balance of trade.
- The government should take steps to improve the real effective exchange rate which will also help to improve the economic growth by following a stable exchange rate policy.

- The Government should take steps to improve the employment level of the country so that more and more people can work and earn. In such a case the saving of the people will be increased and those savings will be used as an investment.
- Inflation must be controlled so that the prices remain constant which will help to improve trade and economic growth.

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