

# Analyzing the role of Imports in Economic Growth of Pakistan; Evidence from ARDL Bound Testing Approach

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DOI Link: <http://dx.doi.org/10.6007/IJARBSS/v6-i9/2268>

Published Date: 02 September 2016

## Abstract

Imports were considered to be expenditure of an economy's budget in post liberalization era but soon world economies has realized the importance and value of imports in accomplishing requirements of growing economic development. Thus protectionist's policies were sidelined in the interest of economy and promote acknowledgement of technical and resource diffusion from developed economies. Pakistan is a developing country and with many problems it also experiencing deficit in balance of trade since independence. That is why this study attempted to endeavor the role of imports and its determinants in economic growth in Pakistan applying ARDL Bound testing approach. The study found optimistic and noteworthy effect of imports and its determinants in economic growth of Pakistan supportive of world income and other trade policy variables too.

**Keywords:** Economic Growth, Imports and it's determinates, Augmented Dicky-Fuller Test, Bound Testing and Auto-regressive Distributed Lag model, Co-integration and ARDL long-run Approach, Stability and Diagnostic Test.

JEL Codes: F00, F11, F14.

## 1.1. Background of the Study

An indispensable call for economic and structural reforms was felt to accomplish the growing demand of dense population for energy and other necessities keeping in view the manufacturing and infrastructural drawbacks of the economic system. Pakistan has to efficiently utilize its resources according to the world standards of development through advance regulations and modification of its economic and industrial structure. This can be achieved through intensification the agriculture base, advancing small and medium enterprises; efficient allocation of resources on necessity basis and to develop in accordance

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with development standards of the world. Most of the developing and less developed countries of the world supported restrictive trade policies to promote local or domestic industry but with the passage of time they realized the importance of trade liberalization to pace up in the race of industrial developments resulted from emergence of globalization. Comparative advantage and endowment are said to have great influence on development which in turn results in transformation of trade structure of an economy. Pakistan adopted IS (import substitution) policy for facilitating industrialization by providing protected atmosphere. For this purpose the main policy instrument adopted was quantitative controls on imports and other non tariff barriers. Due to these import restrictions Pakistan retained with the overvalued exchange rate. Like conventional LDC's Pakistan since its initiation has feeble industrial sector and depend mostly on agriculture resources. Therefore the revenue generation system greatly encompasses export duties on agriculture goods and import levies on imported manufactured merchandise.

The relationship between output and input at several industrial stratum shows the industrial structure. To determine optimum level of resource utilization and to identify the level of specialization or capability of that industry the ratio and combination of factors of production in various industries is very crucial. As well as it identifies the most important determinants of the growth and development of the industrialized economy. Modern economies or developed economies are frequently distinguished by structural adjustments and modifications in their nature and organization of investment and development. In the beginning of 21st century various socio-economic and political issues badly affected the industrial structure in Pakistan shaking the overall structure investment and macroeconomic environment of the economy. Political decisions and international incidences like of twin tower attacks and involvement of Pakistan in war against terrorism since 2001 has traumatized and demised the foundations of economy domestically and globally.

Pakistan is lacking efficiency and specialization in production resulting in higher cost per output despite intense efforts for export progression; therefore Pakistani products lacking demanded from both local and international markets due to high prices. Economic stagnation and recession leads to inefficient production process and thus lesser exports resulting an increase in imports. Pakistan is facing shortage of foreign direct investment due to which new industries can't be flourished and established. Pakistan is obsessed with the dilemma that exports are concentrated with just few specific items and trading partners. Historical evidence shows that exports of Pakistan are greatly concerted in five merchandise items and to seven nations only. Furthermore, trade deficit increased due to minor value addition and exports of conventional goods. Fluctuating exchange rate due to financial instability also influence the quality and quantity of exports.

Pakistan is trying to maintain only those import restrictions which are necessary for protecting health, safety and defence, religious, cultural and environment. Import sanction on cotton waste and steel and iron waste/scrap has been terminated. Appropriate standards are applied homogeneously to both imports and domestic commodities in accord with global requirements. Imports from India were also permitted under the constructive list of commodities, which increasing and is matter of applied <sup>3</sup>MFN or favoured tariffs by <sup>4</sup>SAPTA and <sup>5</sup> SAFTA agreements. Trading Corporation of Pakistan is the only public sector

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<sup>3</sup> Most favorite nation

<sup>4</sup> South-Asian Preferential Trade Agreement.

<sup>5</sup> South- Asian Free Trade Area.

organization, authorized to manage imports and exports, however it does not have monopoly on the export or import of any good. It usually interferes to manage local demands of fundamental products under the state verdict of the Cabinet. Prior to any exports or imports order, a transparent system of public bidding is operated.

This study has chosen a different topic for the research as most of the economist do research on the importance of exports and economic growth. The sole aims behind this is that most of the developing countries and also Pakistan too have are strongly dependent on the imports of goods and services as well as on foreign investment. The empirical as well as theoretical literature shows that more or less developed countries also imports most of the goods and services too. That's why this study attempted to explore the role of imports and its determinants in economic growth of Pakistan and may be that study will became a guideline for other developing and imports dependent countries.

This study will add to existing literature of Pakistan regarding to imports and its importance in economic growth and development of the country. Being struggler in the race of the world economies Pakistan has strongly dependent on imports of goods to pace up its development and grab the advantages of free international market. But at the same time it's a less develop country with poor industrial base and has to protect domestic industry by providing incentives in the form of subsidies as well as protection in the form of import quotas and tariffs. The study will focus on providing suggestions to tackle this issue by signifying advance measures of trade which would nourish economic growth and domestic investment under free trade environment by doing so both quantity and quality of overall economic output could be enhanced. The study will hopefully provide guideline and will benefit future researcher, micro and macroeconomic agents and policy makers.

## **1.2. Objective of the Study**

The main objectives of this study are;

1. To analyze the importance of imports and its determinants in economic growth of Pakistan.
2. To examine the role of world income and trade policy variables that enhances the supportive role economic growth of Pakistan.

## **2. Literature Review**

During the slum or downturn in the economy of a country, seem a rapid decrease in their exports and increase in the imports. In this situation mostly economist started research studies to find out the reason of counter of that sudden fall and fluctuation, but also for enhanced comprehend of variation in export and import of goods and services and their impact on international trade and economic growth. Further, they have an objective to reinstate, refurbish the economy and gave some remedial measures for the future stability of the economic indicator and stability of the economic situation.

Bouoiyour (2003) assessed the impact of exports and imports in international trade and economic growth for Morocco. The cross sectional data was used covering the period of analysis from 1960-2000. In methodology the co-integration and error correction model applied to find the causal relation between international trade and economic growth. The study found that in short-run higher exports and imports bring much increase in GDP while in long-run this causal relation has not much significant in Morocco's economy.

Santos-Paulino and Thirlwall (2004) examined the impact of trade liberalization policies on the balance of payment, export, balance of trade and import. They used mixed

data including panel, time-series and cross-sectional data. The study was analyzed for those twenty-two developing countries have adopted trade liberalization policies in 1970's. The results showed that both export and import of these developing countries increase by adopting the liberalization policies. It was also evident from the results that increase in imports was much higher than export of these countries producing fluctuation and instability both in balance of payment and balance of trade, alternatively slowdowns the growth of the economies and also effect the living standard and output of these countries.

Khiyavi, Moghaddasi and Yazdani (2012) attempted to explore the bilateral trade factors of exports in 14 developing countries.<sup>6</sup> The panel data was used in the study for the period of 1991 to 2009. In the methodology they applied the Trade Gravity Model for the estimation and regression analysis. The results obtained from the study revealed that exports and imports have played positive and significant role in bilateral trade flows between these selected samples of 14 countries.

Malik and Chaudhary (2012) attempted to explore the determinants of Pakistan's imports from 26 Asian Countries. The data used in the study was panel and cross-sectional and the period of analysis from 1990 to 2010. They developed trade gravity model with slight modification an application of gravity model and regressed through General Least Square (GLS) model. They focused on the international trade and added some other macro-variables to find the reason for trade deficit of Pakistan. The empirical results obtained from the study shows that Asian Countries contributed much in the import of Pakistan. Surprisingly, the study found that previous year imports flows of Pakistan were strongly correlated to the current year imports flows affecting the trade deficit.

Zakariya (2014) empirically analyzed the impact of trade liberalization on balance of trade, imports and exports of Pakistan. The data used in the study was time series data on quarterly basis for the period of 1981-82 to 2007-2008. The model used was export growth model and regressed through Generalize Method of Movement. The other variables used in the study were real exchange rate, domestic and foreign income, trade balances and foreign exchange market. The dummy variable was used for adopting the liberalization policy. The results showed that both exports and imports increases dramatically having major effect on balance of trade, balance of payment and economic growth of Pakistan, but the increase in exports are much less than the imports.

### **3. Econometric Model and Description of Data**

This research study observing the behavior of embodied imports and its determinants on economic growth of Pakistan. The economy is assumed as open economy depending on the exports and imports of goods, that's why all other factors (Consumption, Investment, government expenditure etc) are taken as constant and just focus on the impact of imports and its determinants on the economic growth of Pakistan. Thus, the economic growth is dependent on the exports, imports, world income and exchange rate.

For this, the econometric model for the economic growth, exports and imports of the country was developed. The basic idea for the development of these theoretical models have been taken from previous models used by Santos-Paulino and Thirlwall (2004), Wacziarg and Welch (2008) and Ju et. el. (2008) extended their work to develop models for this study.

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<sup>6</sup> Iran, India, Malaysia, Pakistan, Thailand, Turkey, Brazil, Indonesia, Kenya, Venezuela, Tunisia, Romania, Chile and Mexico.

The demand for goods in the international market (international trade) depends on the assessment of the comparative prices of goods, the relative prices of the currencies of both the trading countries and demand for goods in the world countries and in international market. If the world income, the elasticity of world income and the proportional price of the goods in the world countries assume as constant than the international trade equation are expressed as;

$$GDP_t = A(X_t)^{\alpha_1} (M_t)^{\alpha_2} (Y_t)^{\alpha_3} (ER_t)^{\alpha_4} \dots\dots\dots (3.1)$$

In the above equation,  $GDP_t$  is the economic growth of Pakistan in time period "t",  $X_t$  is the exports in time period "t",  $M_t$  is the Imports in time period "t",  $Y_t$  is the World Income in time period "t" and take as constant and  $ER_t$  is the exchange rate in time period "t".

In equation (3.1),  $\alpha_1$  is the price elasticity of demand for exporting goods,  $\alpha_2$  is the price elasticity of demand for Importing goods,  $\alpha_3$  is the Income elasticity of demand for both exports and imports goods and  $\alpha_4$  is the price elasticity of exports and imports from Country "i" to country "j". In other words  $\alpha_4$  is the price elasticity of trading goods in relative currencies for the both the countries.

To make the equation (3.1) in linear form, the logarithmic can be taken on both side of the equation (3.1).

$$Ln(GDP_t) = Ln(A) + \alpha_1 Ln(X_t) + \alpha_2 Ln(M_t) + \alpha_3 Ln(Y_t) + \alpha_4 Ln(ER_t) \dots\dots\dots$$

(3.2)

Now, take the derivatives on both side of the equation (3.2) with respect to time "t", to find out the growth rate in international trade with respect to exports, imports, world income and exchange rate.

$$(\dot{GDP}_t / GDP_t) = (\dot{A} / A) + \alpha_1 (\dot{X}_t / X_t) + \alpha_2 (\dot{M}_t / M_t) + \alpha_3 (\dot{Y}_t / Y_t) + \alpha_4 (\dot{ER}_t / ER_t) \dots\dots\dots$$

(3.3)

In the econometric form for the empirical regression the equation (3.3) can be expressed as;

$$gdp_t = \alpha_0 + \alpha_1 x_t + \alpha_2 m_t + \alpha_3 y_t + \alpha_4 er_t + \mu_t \dots\dots\dots$$

(3.4)

Here,  $gdp_t (=GDP_t^*/GDP_t)$ ,  $x_t (=X_t^*/X_t)$ ,  $m_t (=M_t^*/M_t)$ ,  $y_t (=Y_t/Y_t)$  and  $er_t (=ER_t^*/ER_t)$ .  $\alpha_0 (=A^*/A)$  and take as constant like Consumption, Investment, technology, etc.  $\alpha_1$  and  $\alpha_2$  are the price elasticity of demand for exports and Imports of goods,  $\alpha_3$  is the Income elasticity of demand for both exports and imports goods and  $\alpha_4$  is the price elasticity in relative currencies for the both the countries.  $\mu_t$  is the error term or the white noise error stochastic term. The random error term is assumed to be normally distributed through the subsequent restrictions,  $[E(\mu_t) = 0], [E(\mu_t)^2 = \sigma^2], [E(\mu_t, \mu_j) = 0]$

This process is known "White noise process".

Import plays a substantial role in filling the gap between the resources, the demand of the individuals and the economic sector especially in the developing countries. It is one of the important and volatile components of the economic growth for a country. A country can't produce all the goods to meet and fulfill all the requirements, and then it imports the goods and commodities from the other countries. The developing countries mostly import heavy capital and machinery from the developed countries which create enormous loss in the economic growth at the mean time of the developing countries. In order to capture the impact of import on international trade the econometric model developed for this section from the model (3.4).

The dependent variable is the Economic Growth (GDP) and the independent variables are; international trade (IT), imports (M), imports of food products (MFP), imports of Heavy Machinery (MHM), Imports of petroleum products (MPP), imports of textile and metals (MTM), imports of agriculture products and their chemicals (Magri), imports of other goods (MOP), world income (Y), exchange rate (ER), tariff imposition on imports (TRF<sup>M</sup>), Dummy variable for Trade openness or Liberalization policy (TOP), terms of trade (TOT) and balance of trade (BOT). The theoretical model that expressed the relationship between dependent and independent variables is expressed as;

$$GDP = f (IT, M, MFP, MHM, MPP, MTM, Magri, MOP, Y, ER, TRF^M, TOP, TOT, BOT) \dots\dots\dots (3.5)$$

The econometric model of the above equation (3.5) can be formed as follows;

$$GDP_t = \beta_0 + \beta_1 IT_t + \beta_2 M_t + \beta_3 MFP_t + \beta_4 MHM_t + \beta_5 MPP_t + \beta_6 MTM_t + \beta_7 MAGri_t + \beta_8 MOP_t + \beta_9 Y_t + \beta_{10} ER_t + \beta_{11} TRF_t^M + \beta_{12} TOP_t + \beta_{13} TOT_t + \beta_{14} BOT_t + \mu_t \dots\dots\dots (3.6)$$

The sign of the coefficient/ estimator are expected as

$$\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0, \beta_5 > 0, \beta_6 > 0, \beta_7 > 0, \\ \beta_8 > 0, \beta_9 > 0, \beta_{10} < 0, \beta_{11} < 0, \beta_{12} > 0, \beta_{13} < 0, \beta_{14} > 0$$

#### 4. Methodology, Results and Discussion (Regression Analysis of Model)

It is sturdily recommended to check the data for the unit root before running an appropriate method for regression analysis, especially when the study is consist on time series data. As this study is also consist on time series data, therefore, before going to regression analysis the data is tested for unit root through applying the Augmented-Dicky Fuller (ADF) test. Unit root has been found at level I(0) for some variables. To remove the problem of unit root and to select an appropriate method for analytical technique, the data were tested by applying the ADF test for first difference I(1). Further, there hasn't any source of spurious relation been detected in the data and the results of ADF is integrated in table (6.1).

To encompass insightful of Imports of Pakistan and its impact on Economic Growth, the Auto-Regressive Distributed Lag (ARDL) method is preferred on the basis of ADF test results. The imports and its determinants is selected as independent variables consists on International Trade (IT), imports (M), imports of food products (MFP), imports of Heavy Machinery (MHM), Imports of petroleum products (MPP), imports of textile and metals (MTM), imports of agriculture products and their chemicals (Magri), imports of other goods (MOP), world income (Y), exchange rate (ER), tariff imposition on imports (TRF<sup>M</sup>), Dummy variable for Trade openness or Liberalization policy (TOP), terms of trade (TOT) and balance of trade (BOT), while Economic Growth (GDP) is taken as dependent variables to analyze the role of imports and its important determinants in economic growth of Pakistan. The theoretical model that conveys the relationship between imports and its determinants in foreign trade of Pakistan can be expressed as;

$$GDP = f (IT, M, MFP, MHM, MPP, MTM, Magri, MOP, Y, ER, TRF^M, TOP, TOT, BOT) \dots\dots\dots (4.1)$$

The econometric model of the above equation (6.17) can be formed as follows;

$$GDP_t = \beta_0 + \beta_1 IT_t + \beta_2 M_t + \beta_3 MFP_t + \beta_4 MHM_t + \beta_5 MPP_t + \beta_6 MTM_t + \beta_7 MAGri_t + \beta_8 MOP_t + \beta_9 Y_t + \beta_{10} ER_t + \beta_{11} TRF_t^M + \beta_{12} TOP_t + \beta_{13} TOT_t + \beta_{14} BOT_t + \mu_t \dots\dots\dots (4.2)$$

The ARDL technique for Regression analysis of the above model can be written as;



(6.2) revealed that one percent increase in imports of food items will bring an increase of seventeen percent in economic growth trade of Pakistan. The results of this study for the imports of food (primary) items is consistent with the studies of Buzby and Unnevehr (2004), Blalock and Veloso (2007), Dengfeng (2008), Buzdy and Robert (2010), Qiang (2010) and Islam et. al. (2013).

The role of manufacturing sector is very decisive for the development and rapid economic growth of the country. To enhance the steady and consistent growth of the economy developing countries imports capital intensive goods to offset the gap between developed and developing countries. Pakistan too, imports heavy machineries and capital goods intend to formulate their manufacturing sector more strapping and effectual that can contribute significantly to economic growth of Pakistan. The import of capital and heavy machinery goods is integrated as an explanatory variable to explore empirically its role in economic growth of Pakistan. The results acquire from the regression analysis of the study reveals that one percent increase in imports of capital goods may lucratively contribute approximately up to twenty-seven percent in growth of Pakistan. The studies of Lee (1994), Eaton and Kortum (2001), Eaton and Kortum (2002), Alfaro and Hammel (2006), Alvarez and Lucas (2007), Sun and Heshmati (2010), Waugh (2010), Mutreja, Ravikumar and Sposi (2013) have also found remarkable and significant role of imports of capital goods in economic growth of different countries.

The importance of oil products and their imports remains a debatable issue especially for the development and growth of developing economies. Increase in the consumption of oil and petroleum products depend upon the domestic demand and consumption of petroleum products that leads to increase in imports of petroleum products for non-producing oil countries. Due rapid increase in the growth of economies and globalization the demand for petroleum products also increases. After experiencing financial shocks the world economies once again persist to extend the healing process of their economy and convergence of their growth. As Pakistan is non-oil producing country, therefore, like other developing countries it also imports petroleum products to meet and fulfills the demand for petroleum products. In this study the imports of petroleum products is included as independent variable to empirically observe its role in economic growth of Pakistan. The results originate encouraging and momentous affect of imports of petroleum products on economic growth and the regression analysis of ARDL approach revealed that one percent increase in imports of Pakistan can significantly contribute an approximately fourteen percent to economic growth of Pakistan. The earlier studies of Al-Moneef (2006), Bedi-uz-Zaman, Farooq and Sami Ullah (2011), Baghebo (2012), Jawad (2012), Baghebo and Atima (2013), Kiani (2013), Nazir and Qayyum (2014), Usman, Ikemefuna and Fatimah (2015) have also found noteworthy role of petroleum products in economic growth and in foreign trade of Country.

Textile manufacturing sector had usually determined a reasonable performance and significantly contributing to economic growth of Pakistan. However, to make this sector more fruitful and contribute full to the growth of the country, Pakistan imports a number of items and material for its improvement. As mentioned that textile manufacturing sector is one of the important sector in economy of Pakistan since independence, therefore, in this research study the textile manufacturing sector is included as a variable to assess its contribution empirically in economic growth of Pakistan. The results found important and optimistic effect of imports of textile manufacturing on economic growth of Pakistan and that one percent increase in imports of textile manufacturing sector related goods can contributed fourteen percent to overall growth of Pakistan. The share of textile manufacturing sector shrinks 7.1

percent during 2014-15 from previous year and remained approximately Sixteen<sup>7</sup> percent during 2014-15. The earlier studies of Pan, Somwaru, and Tuan (2004), Khan and Khan (2010), Alam (2011), Aliya (2012), Islam et. al. (2013) and Khaliji et. al. (2013) have also found significant and positive role of textile manufacturing sector products in foreign trade of different countries.

In developing countries agriculture and primary goods have prevailing role in economic growth. In growth of Pakistan too agriculture and primary sector have most influential role as well as in reducing and poverty and providing unemployment. Unfortunately, this sector has experiencing downward trend and its contribution to growth of Pakistan has stick up to twenty percent from last decades. In order to make this sector more influential, a lot of goods, materials, Pesticides and capital are imported from other countries. In this study import of agriculture and primary products related goods is included to empirically observe its effect on economic growth of Pakistan. The results obtained from regression analysis of model (4.3) originate noteworthy and constructive impact of agriculture and primary sector imports in economic growth of Pakistan as integrated in table (6.2), enlightening that one percent enlargement in imports of agriculture and primary products fetch to an augment of twenty percent in growth of Pakistan. The results of this research study are consistent with the past studies of Dorosh and Valdes (1990), Akhtar (1999), Mahmood and Akmal (2010), Sharif et. al. (2010), and Faridi (2012).

Pakistan imports a number of items to prolong its growth and fulfill the requirements. In this study the variables imports of other items have been included to empirically scrutinize its role in economic growth of Pakistan. The regression analysis showed that imports of other items have noteworthy role in growth of Pakistan, as the results incorporated in table (6.2) indicating that one percent rise in imports of other items can fetch an augment of approximately fifteen percent.

World income has directly or indirectly affected the imports and growth of the economies. In this study the variable world income as an explanatory variable been included to empirically assess their role in imports and economic growth of Pakistan. The study found considerable and affirmative effect as shown in table (6.2) and the results obtained from regression analysis of model 5 reveals that one percent increase in world income will affect imports that leads to significant contribution of twelve percent in growth of Pakistan. Acemoglu and Ventura (2002), Basco and Mestieri (2013), Antras (2014) and Johnson (2014) have also found significant effect of world income on economic growth.

The effect of exchange rate on economic growth is extremely crucial especially for developing countries. It is supposed that decrease in exchange rate attract foreign demand that successfully contribute to domestic growth. Theoretical literature strongly supports the inverse relation between exchange rate and economic growth. This study also attempts inspect the role of exchange rate in economic growth of Pakistan. The empirical results obtained from regression analysis confirming the inverse relation between exchange rate and economic growth of Pakistan as integrated in table (6.2) and signify that appreciation in foreign exchange rate will make imported goods more expensive that can escorts fall in economic growth of Pakistan up to twenty-six percent approximately. The results of this study is consistent with the past studies of Bahmani-Oskooee (2001), Gomes and Paz (2005), Kemal (2005), Wai-mum, Yuen-ling and Tan (2008), Edward (2010) and Shawa and Shen (2013).

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<sup>7</sup> *Economic Survey of Pakistan 2014-15*

After the independence Pakistan has started multi-lateral trading system. The key element advocated for trade policy were the imports tariffs aiming to protect domestic infant industries and as well as to increase the exports and promote the foreign trade of Pakistan. At the early stage import substitution policies were implemented to provide defensive environment for industrial sector. Later on, more open policies for international trade were implemented to promote Pakistan's economic growth. This study too emphasizes to empirically examine the role of imports tariffs on economic growth of Pakistan. The results obtained from regression analysis have found negative relation between economic growth and import tariffs as expected. The theoretical and empirical literature exists about the relation of economic growth and import tariffs as incorporated in table (6.2) strongly supports the results of this study, revealed that increase in imports tariffs will contract the growth of Pakistan. The earlier studies of Ismail and Wijnbergen (1993), Li (2005), Jing and Lu (2011), Yuri and Irina (2013) had found consistent results with this research study.

Trade policies and trade openness takes an important part and focusing analysis from several decades in the developing countries. Due to the sharp increase in economic growth of many developing countries after adopting the trade liberalization policies majority of the low economic growth and developing countries coincides their hopes for rapid economic growth with trade openness and trade policies. Trade policies may boom and speed up the process of economic growth that leads to economic development of that country. As trade liberalization is considered as "an engine of economic growth", that's why Pakistan too keeping the importance of trade liberalization has adopted and exercised different trade policies to gain maximum fruits from foreign trade. The earlier empirical studies have found mixed results and some of the studies couldn't find considerable role of trade openness in economic growth. Regardless of strong theoretical support an obvious empirical consensus on the role of trade liberalization exists. It has been attempted to empirically examine the role of trade openness in economic growth of Pakistan. The results integrated in table (6.2) indicate that the estimator value co-efficient trade openness has insignificant addressing that trade openness didn't play any foremost role in economic growth of Pakistan.

The trade balance is the alarming issue for most of the countries and especially for developing countries. Pakistan is facing a persistent trade deficit since its initiation because of poor economic performance and lack of infrastructural facilities. Exports of Pakistan consists of low value added and raw or semi-processed agricultural-products. This study attempted to empirically examine the situation of trade balance in economic growth of Pakistan by including balance trade as an explanatory variable. The results incorporated in table (6.2) showing positive and significant effect of trade balance revealing that one percent encouraging in Pakistan's trade balance of account can bring thirteen percent improvement in economic growth. The finding of this research study is consistent with earlier empirical studies of Akhtar and Malik (2000), Egwaikhide (2002), Sugema (2005), Mbayani (2006), Peter and Sarah (2006), Nienga (2010), Saadullah and Ismail (2012), Shawa and Shen (2013) and Abbas (2013).

Terms of trade have a leading role in economic growth and highly debated now-a-days especially in developing countries whose are deeply dependent on imports. A number of studies been conducted to examine the role of terms of trade in growth of the economies. Most of the studies found inverse relation between terms of trade and economic growth. In this study too, attempted to empirically assess the role of terms trade in economic growth of Pakistan. The results incorporated in table (6.2) found negative and significant effect of terms of trade, signifying that one percent decrease in terms of trade can bring significant

improvement of an approximately twelve percent in economic growth of Pakistan. The result of this study is consistent with the studies of Broda (2003), Blattman, Hwang and Williamson (2004), Eicher, Schubert and Turnovsky (2007), Wang (2009), Wang and Zhang (2009), Cakir (2009), Fatima (2010), Tehseen and Waheed (2011) and Kalumbu and Sheefeni (2014).

The error correction term (ECT) shows the speed of adjustment at which the system or model can come back to its original position. The results obtained from the regression analysis of model (4.3) shows that the value of ECT is negative and significant as indicated in table (6.2) concluding that it can back to equilibrium at a speed of forty-two percent.

The co-efficient value of the lagged economic growth is also significant and positive indicating that previous year growth has noteworthy role in current year economic growths. The estimator value of constant term is negative and insignificant as integrated in table (6.2).

#### 4.1. Diagnostic and Stability Analysis of Model

Stability and diagnostic test been applied to ensure the reliability, righteousness and sensitivity of the model. Furthermore, different analytical techniques were also applied for detecting Auto-correlation and Heteroskedasticity, Stability analysis of the model, Long-run relation and co-integration vector among the variables.

To check the stability and normality of the model, Ramsey RESET test was applied. The Stability Diagnostic test was regressed applying Ramsey RESET test and the results obtained authenticate the stability and normality of import and growth model.

Breusch-Godfrey LM Test was applied for Serial Correlation and the results obtained from the Residual Diagnostic correlation test does not show any sign of auto-correlation as well as of serial correlation nor any spurious relation {results for serial correlation is incorporated in table (6.3)}. Further, it could also be concluded from the results that the error term is independent from each other of the corresponding year.

Breusch-Pagan-Godfrey Test was applied to check the Heteroskedasticity in the model. The regression analysis of Residual Diagnostic test result incorporated in table (6.3) showing that the model is free from the problem of Heteroskedasticity corroborating that the variance (6.3) among the variables and random term is constant.

The co-efficient Diagnostic test was applied to check the co-integration among the variables as well as long-run form. The ARDL Bound Testing Approach was also applied to confirm the long-run relation among the imports, its determinants and economic growth of Pakistan, following the ARDL long-run co-efficient value and critical value Pesaran F-statistics test. The <sup>8</sup> null hypothesis assuming that there hasn't any long run relation among the variables, whereas <sup>9</sup> alternative hypothesis assuming long run relation among the variables. The results integrated in table (6.5) and (6.6) illustrating that there is co-integrating vectors as well as long-run relation among the imports, its determinants and economic growth of Pakistan.

#### 5. Conclusion

Being major source of foreign exchange earnings, international trade also expanded the market and increase demand thus encourage the producers, which in return leads to increase

<sup>8</sup> Null Hypothesis is  $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12} = \beta_{13} = \beta_{14} = 0$ , and

<sup>9</sup> Alternative Hypothesis,  $\beta_1 \neq 0, \beta_2 \neq 0, \beta_3 \neq 0, \beta_4 \neq 0, \beta_5 \neq 0, \beta_6 \neq 0, \beta_7 \neq 0, \beta_8 \neq 0, \beta_9 \neq 0, \beta_{10} \neq 0, \beta_{11} \neq 0, \beta_{12} \neq 0, \beta_{13} \neq 0, \beta_{14} \neq 0$ ,

in rate of investment. Besides the domestic investment, foreign trade also proffer incentives for the foreign investors to reduce demand supply gap by analyzing benefit cost ratio between trade and direct investment. These all mutually contribute towards upgrading the scale of production and thus national income of the economy. Expansion of domestic market and optimal utilization of resources increase demand and subsequently increase employment rate. Foreign trade surrogate mobility of factors of production. All and all comparative advantage in production of certain commodities encourages specialization in the fabrication of those commodities thus increasing the quantity and quality through foreign trade. Foreign trade plays a vital role in reducing supply demand gap as well as it maintains price stability through exporting surplus commodities and importing out of stock goods. Consequently domestic monopolies are discouraged through allowing imports and preventing price discrimination, both possible just because of free trade.

Free trade generates opportunities for efficient utilization of resources, enhancement of technology and other facilities connected to trade which in turn results in higher foreign exchange earnings through which other sectors of economy are facilitated. The concept is supported by huge literature and some studies concluded that the role of international trade is very effective in the less developed countries. Trade being playing a vital factor in the economic development of any economy it can be stimulated by reducing import and export duties and barriers. Relatively higher incentives in imports rather than exports could be problematic for balance of payment and consequently restrain overall economic growth rate. This phenomenon known as trade liberalization conundrum and most common in developing countries due to lake of infrastructural and capital facilities.

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**6. Regression Results of Exports and its Determinates as Independent variables and Economic Growth of Pakistan as Dependent Variable are;**

**Table: 6.1. Augmented Dickey–Fuller Unit Root Test Results**

Variables	Acronyms	ADF Values		ADF Critical Values (At 5%)
		At Level	At 1 <sup>st</sup> Difference	
Economic Growth	GDP	-2.007128	-4.632220*	-2.9320
International Trade	IT	-0.862485	-3.893708*	-2.9320
Imports	M	-2.427453**	-4.500075*	-2.9320

Imports of food products	<b>MFP</b>	<b>-1.086570</b>	<b>-3.892350*</b>	<b>-2.9320</b>
Imports of Heavy Machinery	<b>MHM</b>	<b>-3.248487*</b>	<b>-4.289952*</b>	<b>-2.9320</b>
Imports of petroleum products	<b>MPP</b>	<b>-3.534812*</b>	<b>-4.973725*</b>	<b>-2.9320</b>
Imports of textile and metals	<b>MTM</b>	<b>-2.678600**</b>	<b>-5.073726*</b>	<b>-2.9320</b>
Imports of agriculture products and chemicals	<b>MAgri</b>	<b>-1.992232</b>	<b>-3.823919*</b>	<b>-2.9320</b>
Imports of other goods	<b>MOP</b>	<b>-2.159266</b>	<b>-3.724687*</b>	<b>-2.9320</b>
Import duties	<b>TRF<sup>M</sup></b>	<b>-1.520033</b>	<b>-4.141358*</b>	<b>-2.9320</b>
World Income	<b>Y</b>	<b>-2.698155**</b>	<b>-3.795314*</b>	<b>-2.9320</b>
Trade Openness	<b>TOP</b>	<b>-1.488565</b>	<b>-3.647880*</b>	<b>-2.9320</b>
Terms of Trade	<b>TOT</b>	<b>-0.820238</b>	<b>-5.071277*</b>	<b>-2.9320</b>
Balance of Trade	<b>BOT</b>	<b>-1.936422</b>	<b>-5.784582*</b>	<b>-2.9320</b>

Critical Value of ADF is selected at 5% significance level. (\*) & (\*\*) shows rejection of Null Hypothesis at 5% & 10%.

**Table: 6.2. Regression Results of ARDL Approach (For Imports and Economic Growth of Pakistan Model)**

<b>Variables</b>	<b>Acronyms</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
Constant	<b>C</b>	<b>-0.265680</b>	<b>0.382174</b>	<b>-0.382172</b>	<b>0.5002</b>
International Trade	<b>IT</b>	<b>0.421436</b>	<b>0.186132</b>	<b>2.264170**</b>	<b>0.0429</b>
Imports	<b>M</b>	<b>0.289262</b>	<b>0.123527</b>	<b>2.341688**</b>	<b>0.0373</b>
Imports of food products	<b>MFP</b>	<b>0.171612</b>	<b>0.092105</b>	<b>1.863207***</b>	<b>0.0871</b>
Imports of Heavy Machinery	<b>MHM</b>	<b>0.270449</b>	<b>0.103574</b>	<b>2.611172**</b>	<b>0.0228</b>
Imports of petroleum products	<b>MPP</b>	<b>0.141266</b>	<b>0.041881</b>	<b>3.373012*</b>	<b>0.0000</b>
Imports of textile and metals	<b>MTM</b>	<b>0.144079</b>	<b>0.078014</b>	<b>1.846816***</b>	<b>0.0885</b>
Imports of agriculture products and chemicals	<b>MAgri</b>	<b>0.205869</b>	<b>0.115350</b>	<b>1.784733***</b>	<b>0.0931</b>
Imports of other goods	<b>MOP</b>	<b>0.155571</b>	<b>0.076515</b>	<b>2.033304***</b>	<b>0.0648</b>
Import duties	<b>TRF<sup>M</sup></b>	<b>-0.320343</b>	<b>0.165159</b>	<b>1.939593***</b>	<b>0.0690</b>
World Income	<b>Y</b>	<b>0.123230</b>	<b>0.036510</b>	<b>3.375232*</b>	<b>0.0002</b>
Trade Openness	<b>TOP</b>	<b>0.216498</b>	<b>0.860090</b>	<b>0.251716</b>	<b>0.8055</b>
Exchange Rate	<b>ER</b>	<b>-0.261337</b>	<b>0.142623</b>	<b>-1.832355***</b>	<b>0.0842</b>
Terms of Trade	<b>TOT</b>	<b>-0.125361</b>	<b>0.057451</b>	<b>-2.182036**</b>	<b>0.0423</b>
Balance of Trade	<b>BOT</b>	<b>0.132919</b>	<b>0.062996</b>	<b>2.109949***</b>	<b>0.0565</b>

Error Correction Term	ECT	-0.427216	0.210480	-2.029722**	0.0323
R-squared	0.899860		Durbin-Watson stat		2.104536
Adjusted R-squared	0.899581		Prob(F-statistic)		0.000000

(\*), (\*\*), (\*\*\*) showing significance at 1%, 5% & 10% respectively.

**Table: 6.3. Breusch-Godfrey Serial Correlation LM & Breusch-Pagan-Godfrey Heteroskedasticity Tests**

Results of Serial Correlation LM Test				Results of Heteroskedasticity			
F-statistic	0.176170	Prob. F(1,14)	0.6828	F-statistic	0.889541	Prob. F(24,12)	0.6134
Obs*R-squared	0.583230	Prob. Chi-Square(1)	0.4450	Obs*R-squared	23.68625	Prob. Chi-Square(24)	0.4797

**Table: 6.4. Ramsey RESET Stability Test**

	Value	df	Probability
t-statistic	1.226159	14	0.3147
F-statistic	3.876506	(1, 14)	0.3147

**Table: 6.5. ARDL Bounds Test (Null Hypothesis: No long-run relationships exist)**

Bounds Test Value		Critical Value Bounds	
Test Statistic	Value	I0 Bound	I1 Bound
F-statistic	17.46518*	4.35	3.69

Critical Value is selected at 5% significance level. (\*) Shows rejection of null hypothesis

**Table: 6.6. ARDL Co-integrating Test**

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)	-0.193116	0.084619	-2.282167	0.0338