Evaluating the Importance of Imports in International Trade of Pakistan: An Empirical Analysis from ARDL Approach

Gulzar Ali[1] and Zhaohua Li[2]

Abstract

The concentrated debate exists among the policy and academic circles on the importance of goods and services especially in developing countries. In one hand, imports can promotes foreign trade in developed and developing countries, while on the other hand it can increase access to modern technologies, capital goods, other necessary goods and services. In world economies, most of the world countries and especially developing countries are dependent on the imports of goods. This study is an empirical attempt to evaluate the role and importance of imports in foreign trade of Pakistan using annual time series data for the period of 1972-2015. In methodology of the study the Unit root test, Auto-regressive Distributed Lag model, Bound testing approach for long-run relation and ARDL co-integration method were applied as analytical techniques. The results obtained from regression analysis of the variables data shows the encouraging and considerable role of imports and its determinants in foreign trade of Pakistan.

Keywords: Foreign Trade, Imports, ARDL, Stability test

1. Background of the Study

In this era of rapid globalization, international trade is considered as one of the most important determinants of economic development after GDP. To make a strong stand among the fast growing economies it is indispensable to grab the advantages of trade globalization by increasing quantity and quality in total output of value added products. Pakistan is considering trade liberalization policy of WTO but still lacking the pre-requisites to meet the standards of international market. However since independence Pakistan has quite transformed its trade patterns but still hasn't done enough to escape the chronicle trade deficit throughout decades of economic transformation.

Almost every fiscal year Pakistan faces the issue of import financing due to huge differences in value of exports and imports. In 2007-08 exports worth 20.2billion dollars while imports were 35.1billion dollars, composing the ratio to just 58% means that at least 42 % of imports have been financed by other sources rather than export earnings. Pakistan's imports consist of mainly petroleum crude and products, palm oil, machinery, steel and iron, tea, and transport equipment. The major reason behind recent increase in imports value is extraordinary rise in oil and food prices. While on exports side, fluctuating world demand, political uncertainty, and the impact of periodic famine on its agricultural production greatly contributed to inconsistency of Pakistan's trade balance.

Imports of a nation are exports from the rest of the world. Exports by a country are imports for the rest of the international market. Economies import products which are unfeasible or inefficient to produce domestically in other words those products in which the country has comparative disadvantage. While export merchandize in which a country has comparative advantage in its production or have abundant resources to produce it.

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[1] PhD Scholar, School of Economics, Huazhong University of Science & Technology, Wuhan, Hubei, P.R China and Faculty Member, Islamia College University Peshawar, KPK, Pakistan, Email: gulzaricup@yahoo.com

[2] Professor, School of Economics, Huazhong University of Science & Technology, Wuhan, Hubei, P.R China.

Imports were considered to be expenditure of an economy's budget in post liberalization era but soon world economies realized the importance and value of imports in accomplishing the 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. Infrastructural and economic growth of developing economies greatly depends upon the imports of machinery and capital inflow from abroad. As most of traditional LDC's are labor intensive economies with inadequate capital therefore to exploit natural resources through labor force, LDC's intensely need to import capital and infrastructural inputs to establish and develop industrial base which is key determinant for development.

Pakistan being developing economy immensely import petroleum and machinery from other countries to drive and establish industrial base. A big share of imports constitutes of oil and petroleum products, heavy machinery, mechanical equipments, food items, iron and steel and basic inputs of industrial infrastructure.

In 2013 Pakistan was 56th largest importer with imports of $44.8billion. Imports increased from $43.3B in 2008 to $44.8B in 2013in past five years at an annual average rate of 0.7%. The main current imports were Refined Petroleum with ratio of 19.4% of the total imports of Pakistan, pursued by Crude Petroleum contributing 11.1% to total imports.[3]

In November, 2015 imports of Pakistan increased to 412688 PKR Million from 410184 PKR Million in October 2015. Average imports of Pakistan from 1957 to 2015 was 61540.46 PKR Million, attaining record of 469537 PKR Million in August of 2014 and a reaching to lowest 96 PKR Million in April of 1959.[4] The product space is a system linking commodities that are expected to be co-exported and can be utilized to forecast the growth of a country's export structure.

In 2013 Pakistan has an Economic Complexity Index (ECI) of -0.661 declaring it the 89th most complex economy of the world. Pakistan use to export 226 commodities with exposed comparative advantage (revealing that its contribution of global exports is greater than what would be anticipated from the dimension of its export economy and from the volume of a product's global market).

This study attempted to contribute to literature of Pakistan differently. Most of the researchers and economist focus on the importance of growth and exports, but as stated above that Pakistan since independence mostly remains dependent on imports. If deeply analyze most of the world countries and especially developing countries are focusing on the imports of goods and services. Therefore, this research study spotlights a different dimension and analyzing the role of imports in foreign trade of Pakistan.

2. Literature Review

A country's economic development and stand in the world economies can be fairly judge by its contribution in international trade, or it is worth saying that contribution in international trade is the indicator of an economy's performance and its level of fabrication. Based upon the volume of trade economies can be categorized among developed, developing and less developed countries, as foreign trade is locomotive for economic growth and development. Pakistan is one of the developing countries since its independence in August 14, 1947. Pakistan is an agriculture based economy struggling to make a stand among world economies besides fighting socio-economic, political, defense, natural disasters and financial issues. Pakistan's contribution in international trade is minimal therefore Pakistan is considered to be a small economy in global market and has negligible effects on overall

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[3] http://atlas.media.mit.edu/en/profile/country/pak/#Imports
[4] http://www.tradingeconomics.com/pakistan/imports

global economic situations and trends. Since establishment of Pakistan resources could not be utilized efficiently which proved to be a key deficiency in economic development throughout its history. This deficiency in exploitation of the resources led to lack of production surplus and thus low exports, this chronic situation leads the economy towards slow economic progression.

The imports of Pakistan are more than their exports since independence and thus trade balance is in negative. Despite limited literature this research study attempted to keenly observe the importance of imports in foreign trade of Pakistan empirically from 1972-2015.

Martinez-Zarzoso and Nowak-Lehmann (2003) examined the bilateral annual trade among the 19 countries. The study used panel data for the period of analysis from 1975 to 2002. The trade Gravity Model was applied in the methodology to find out the impact of bilateral trade on population growth rate, infrastructures and imports of these 19 countries. The study found that bigger population countries have greater imports as compared to small population countries.

Pakistan is heavily dependent on the imports petroleum products from different countries. The researchers and economist use different techniques to explore the importance of petroleum products in economic and foreign trade of Pakistan. Some of the important studies in this regard were of the (Qazi and Riaz, 2008; Kiani, 2011; Zaman et. al., 2011; Jawad, 2013 and Ahmed, 2013). In analytical techniques of these studies the Johansen co-integration for co-integrating analysis, Granger causality and Error Correction Modeling techniques were used.

Ahmad and Amjad (1998) observed that economy of Pakistan has too much dependency on the international trade and import of foreign goods. They used panel data in the study for the periods of 1984-85, 1988-89 and 1992-93. In the methodology they used the model "Constant Market Share" and regressed through Johnson Co-integration and Error Correction Model (ECM). They said that most of the exports of Pakistan are the raw materials and primary products; whereas imported goods are mainly the developmental and non-developmental goods. Further, they found that during the sixties and seventies, the contribution of export to GDP was very small proportion (5%), while that of import was much higher than export. In the policy recommendation, they suggested that Government of Pakistan should adopt liberal import policies, stabilization in price level and access to market for exportable goods.

Carmen and Pillar (2004) investigated the role of manufacturing sector on imports and reduction in unemployment for china. Data used was consisting of quarterly analysis of time series covering the period from 1979 to 2002. The dynamic econometric technique was applied. The study found that imports play a significant role in the GDP growth and also in providing the employment opportunities in China.

Alam, Salah-Uddin and Taufique (2009) attempted to analyze the relationship between imports and Bangladesh's economy. The annual panel data was used in the study covering the period of analysis from 1985 to 2003. In methodology of the study they used Gravity Model of Trade to determine the impact of imports on economic growth of Bangladesh with its eight (08) major trading partner's countries.[5] The study found deep relationship between imports and GDP of Bangladesh. The study also analyzed that imports didn't influence the domestic production severely, because most of the imported goods of Bangladesh consist on consumer goods not capital goods. Further, the study concluded that there is positive and significant impact was found between imports and population growth rate of Bangladesh. In the recommendation they suggested that government of Bangladesh

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[5] India, China, Singapore, Japan, Hong Kong, South Korea, USA and Malaysia.

need to not allow a lot of increase in the imports; as it may be harmful for Bangladesh's economy after crossing the certain limit.

Tabari and Haghight (2014) attempted to analyze the bilateral trade relationship between Iran and 45 Asian countries. The study was based on the panel data over the period of analysis for 2001 to 2011. In methodology of the study they used Trade Gravity Model and regressed with the help of Pooled Estimated Generalized Least Square (EGLS) based on Random effect and fixed Model. The results obtained from the regression analysis of the study revealed that bilateral trade flows of Iran have positively correlated with selected sample of 45 Asian countries for the study having positive and significant affect on the economic growth of Iran and also in increasing the Iran's exports and imports. Further, the study found that increase in real exchange rate has negative impact on the exports and positive on the imports of Iran. Due to the fluctuation in the exchange rate the exports of Iran decreases and its imports increases during the selected period of analysis of the study.

3. Econometric Model and Description of Data

This research study observing the behavior of embodied imports and its determinants in international (Foreign) trade of Pakistan. For this, the econometric model for the growth of international trade 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.

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, elasticity of world income and proportional price of goods in world countries assume as constant than the international trade equation are expressed as;

$$I.T_t = A(X_t)^{\alpha_1}(M_t)^{\alpha_2}(Y_t)^{\alpha_3}(ER_t)^{\alpha_4}$$ ………………… (3.1)

Here, small "t" represents the time period (time series), $I.T_t$ is the international trade, X_t is the exports, M_t is the Imports, Y_t is the World Income take as constant and ER_t is the exchange rate in time period "t".

In equation (3.1) α_1 is the price elasticity of demand for exporting goods , α_2 is the price elasticity of demand for Importing goods, α_3 is the Income elasticity of demand for both exports and imports goods and α_4 is the price elasticity of exports and imports from Country "i" to country "j". In other words α_4 is the price elasticity in relative currencies of both countries.

To formulate the equation (3.1) to linear form, the logarithmic is taken on both side of the equation (3.1).

$$Ln(I.T_t) = Ln(A) + \alpha_1 Ln(X_t) + \alpha_2 Ln(M_t) + \alpha_3 Ln(Y_t) + \alpha_4 Ln(ER_t)$$ ……………… (3.2)

Now, by taking the derivative on both side of the equation (3.2), with respect to time "t" the growth rate in international trade with respect to exports, imports, world income and exchange rate be determine. The equation (3.2) will become as follows;

$$(\dot{I.T_t}/I.T_t) = (\dot{A}/A) + \alpha_1(\dot{X_t}/X_t) + \alpha_2(\dot{M_t}/M_t) + \alpha_3(\dot{Y_t}/Y_t) + \alpha_4(\dot{ER_t}/ER_t)$$ …….. (3.3)

In the econometric form for the empirical regression the equation (3.3) be articulated as

$$IT_t = \alpha_0 + \alpha_1 x_t + \alpha_2 m_t + \alpha_3 y_t + \alpha_4 er_t + \mu_t \quad\text{...............................} (3.4)$$

In the above equation (3.4), IT_t ($=I.T_t^*/I.T_t$), x_t ($=X_t^*/X_t$), m (M_t^*/M_t), y_t ($=Y_t^*/Y_t$) and er_t($= ER_t^*/ER_t$). α_0 ($=A^*/A$) and taken as constant i.e. technology, shocks etc. α_1 and α_2 are the price elasticity of demand for exports and Imports of goods, α_3 is the Income elasticity of demand for both exports and imports goods and α_4 is the price elasticity of trading goods in relative currencies for both the countries. μt 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, $\quad [E(\eta_i) = 0], [E(\eta_i)^2 = \sigma^2], [E(\eta_{i,}\eta_j) = 0]$

This process is known "White noise process".

Imports are one of the important factors for a country. A country cannot produce all the goods to meet and fulfill whole requirements as well as sufficient demand for its individuals. It will have to import various goods and commodities from other countries. There is no such country in world that cannot import goods. To intensely examine the role of imports and its determinants in international trade of Pakistan from its trading partners, the international trade (IT) is taken as the dependent variable and independent variables are 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^M), Dummy variable for Trade openness or Liberalization policy (TOP), terms of trade (TOT) and balance of trade (BOT). The theoretical model that expresses the relationship between dependent and independent variables can be written as;

IT = f (M, MFP, MHM, MPP, MTM, Magri, MOP, Y, ER, TRF^M, TOP, TOT, and BOT) .... (3.5)

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

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

The sign of the coefficient/ estimator are expected as;

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

3.2. Data Analysis

The data used in this study are the annual time series data, because quarterly and semi-annual data are not available for most of the variables included in the study in their desired form. The time periods of analysis are from 1972 to 2015. Prior to 1972, due to the conflicts of different policies and separation of East-Pakistan the data of the selected variables in this research study are unavailable in their purified and true form.

The data used in this study are obtained from Economic Surveys, Federal Bureau of Statistics, State Bank of Pakistan, Agriculture Development Bank of Pakistan (ZTBL), Cooperatives and Commercial Banks, International Financial Statistics (IFS), Pakistan Institute of Development Economics (PIDE), World Development Report (WDR), National

Accounts of Pakistan, Federal Board of Revenue (FBR) Pakistan, Custom House (Islamabad) Pakistan, World Development Index, World Bank, Trading Economics, World Economic data Indicator, Global Economy, Ministry of Finance Pakistan, Economic Affairs Division Pakistan, World Trade Organization (WTO) Statistics Database, from different surveys and reports.

4. Methodology, Results and Discussion

Most of the economist and researchers feel worries concerning the problem of unit root particularly in time series analysis. Therefore, they suggested pre-testing of data before regression analysis, to clearly examine that whether the data is free or suffered from unit root. As this research study too consist on time series data, therefore, before regression analysis the data was tested for unit root by applying Augmented Dicky-Fuller (ADF) test. The result of unit root test of (Imports Model) is given table (1).

Table: 1. Augmented Dickey–Fuller Unit Root Test Results

Variables	Acronyms	ADF Values		ADF Critical Values
		At Level	At 1st Difference	
International Trade	IT	-0.862485	-3.893708*	-2.9320
Imports	M	-2.427453**	-4.500075*	-2.9320
Imports of food products	MFP	-1.086570	-3.892350*	-2.9320
Imports of Heavy Machinery	MHM	-3.248487*	-4.289952*	-2.9320
Imports of petroleum products	MPP	-3.534812*	-4.973725*	-2.9320
Imports of textile and metals	MTM	-2.678600**	-5.073726*	-2.9320
Imports of agriculture products and chemicals	MAgri	-1.992232	-3.823919*	-2.9320
Imports of other goods	MOP	-2.159266	-6.724687*	-2.9320
Import duties	TRF^{M}	-1.520033	-4.141358*	-2.9320
World Income	Y	-2.698155**	-3.795314*	-2.9320
Trade Openness	TOP	-1.488565	-3.647880*	-2.9320
Terms of Trade	TOT	-0.820238	-5.071277*	-2.9320
Balance of Trade	BOT	-1.936422	-5.784582*	-2.9320

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

The ADF test is applied firstly on level and then at first difference on the whole variables to check the level of stationarity of the variables data included in the Model. The results revealed that some variables showed their stationary at I(0) while some at I(1), while the data didn't show any sever problem, outliers and spurious relation. The critical value for testing the hypothesis (Null[6] Hypothesis & Alternative[7] Hypothesis) of unit root is selected at 5% confidence level. The hypothesis is investigated by comparing critical value and ADF estimator's value of the variables. (Pesaran et. al., 2001) suggested Auto-Regressive

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[6] *The variable has unit root*

[7] *The variable hasn't unit root*

Distributed Lag (ARDL) approach when the variables data showed mixed stationarity {some variables at I(0) and some at I(1)}.

To scrutinize the role of imports and its determinants in Foreign trade of Pakistan empirically, this study has taken international trade (IT) as dependent variable while 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^M), proxy variable for [8]Trade openness or Liberalization policy (TOP), terms of trade (TOT) and balance of trade (BOT) as an independent variables. The theoretical model that conveys the relationship between imports and its determinants in foreign trade of Pakistan can be expressed as;

IT = f (M, MFP, MHM, MPP, MTM, Magri, MOP, Y, ER, TRF^M, TOP, TOT, and BOT) …..(4.1)

The econometric model of the above equation (6.7) can be formed as follows;

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

The Regression model for ARDL technique to be regressed is in the form

$$IT_t = \beta_0 + \beta_1 M_t + \beta_2 MFP_t + \beta_3 MHM_t + \beta_4 MPP_t + \beta_5 MTM_t + \beta_6 MAgri_t + \beta_7 MOP_t$$

$$+ \beta_8 Y_t + \beta_9 ER_t + \beta_{10} TRF_t^M + \beta_{11} TOP_t + \beta_{12} TOT_t + \beta_{13} BOT_t + \sum_{t-1}^{t=n} \alpha_0 \Delta IT_{t-1} + \sum_{t-1}^{t=n} \beta_1 \Delta M_{t-1}$$

$$+ \sum_{t-1}^{t=n} \beta_2 \Delta MFP_{t-1} + \sum_{t-1}^{t=n} \beta_3 \Delta MHM_{t-1} + \sum_{t-1}^{t=n} \beta_4 \Delta MPP_{t-1} + \sum_{t-1}^{t=n} \beta_5 \Delta MTM_{t-1} + \sum_{t-1}^{t=n} \beta_6 \Delta MAgri_{t-1}$$

$$+ \sum_{t-1}^{t=n} \beta_7 \Delta MOP_{t-1} + \sum_{t-1}^{t=n} \beta_8 \Delta Y_{t-1} + \sum_{t-1}^{t=n} \beta_9 \Delta ER_{t-1} + \sum_{t-1}^{t=n} \beta_{10} \Delta TRF_{t-1}^M + \sum_{t-1}^{t=n} \beta_{11} \Delta TOP_{t-1}$$

$$+ \sum_{t-1}^{t=n} \beta_{12} \Delta TOT_{t-1} + \sum_{t-1}^{t=n} \beta_{13} \Delta BOT_{t-1} + \mu_t \dots\dots\dots\dots\dots\dots(4.3)$$

The above model is regressed through applying ARDL approach and the main results obtained from the regression analysis of Import and Foreign Trade model is built-in in table (2).

Table: 2. Regression Results of ARDL Approach (Imports and Foreign Trade of Pakistan Model)

Variables	Acronyms	Coefficient	Std. Error	t-Statistic	Prob.
Constant	C	-0.143669	0.224401	-2.640232*	0.0023
Imports	M	0.563889	0.218673	2.578679**	0.0210
Imports of food products	MFP	0.100709	0.055636	1.810112***	0.0852
Imports of Heavy	MHM	0.111050	0.050935	2.180226**	0.0456

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[8] Trade to GDP ratio {calculated as (X+M)/GDP}

Machinery					
Imports of petroleum products	MPP	0.221756	0.117305	1.890410***	0.0719
Imports of textile and metals	MTM	0.165764	0.082575	2.007418**	0.0329
Imports of agriculture products and chemicals	MAgri	0.203658	0.097273	2.093672***	0.0537
Imports of other goods	MOP	0.211810	0.061884	3.422716*	0.0038
Import duties	TRF^M	-0.216580	0.115456	-1.875852***	0.0763
World Income	Y	0.610539	0.157475	3.877034*	0.0009
Trade Openness	TOP	0.276534	0.683507	0.404581	0.6915
Terms of Trade	TOT	-0.145039	0.049258	-2.944470*	0.0077
Balance of Trade	BOT	0.183046	0.064071	2.856895**	0.0120
Error Correction Term	ECT	-0.283714	0.115172	-2.463378**	0.0263
R-squared		0.894721	Durbin-Watson stat		2.068737
Adjusted R-squared		0.892136	Prob(F-statistic)		0.000000

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

The performance of overall model is good as shown by Prob(F-statistic) value is (0.000000), Durbin-Watson value is (2.068737) very close to the desire value (2) showing negligible probability of auto-correlation. The R^2 value is (0.894721) showing goodness of fit of the model as well as explains eighty-nine percent of the variation between imports and foreign trade.

Both the Akaike Information criteria (AIC) Schwarz Information criteria (SIC) lag-length criteria were followed for the regression analysis of the model through ARDL approach. The automatic lag criteria option was followed during the ARDL regression analysis and the selected model pursue the lag-length criteria during the empirical regression results as (1, 1, 0, 1, 0, 1, 0, 1, 0, 0, 0, 0, 1, 0, 1). The results obtained from the study by applying analytical techniques are explained briefly one by one.

The behavior of imports in international trade is tricky and confusing that may leads to gratuitous hatred to contribution of imports to foreign trade of a country. However, imports are the goods and services that can gain by a country from international trade that can't be produced domestically or that can accessible at a cheaper price. Imported goods also create competition for the domestic goods that not only leads to an improvement in quality of domestic goods but also provide sufficient choices to consumer. Most of the developing countries have dominantly dependent on the imports of goods and services. Pakistan is also intensely dependent on the imports of goods and except several years their imports are higher than exports since independence. Therefore, this study aims to empirically evaluate the role of imports in foreign trade of Pakistan. The ARDL regression results integrated in table (2) found hefty positive and significant role of imports in Pakistan's foreign trade as expected and revealed that one percent increase in total imports will bring an increase of forty-six percent in overall trade of Pakistan. The real statistics of 2014-15[9] also shows that the share of imports in foreign trade of Pakistan is fifty-eight percent approximately. The empirical results of this study and real facts and figures of statistical data of Pakistan is very close to

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[9] *Economic Survey of Pakistan 2014-15*

each other. The results of this study for the impact and role of imports are consistent with past studies of (Musleh-Ud Din, 2004; (Shirazi and Manap, 2004; Alam, Khan and Salah-ud-din, 2010; Dilawar et. al., 2012; Hussain, 2012; Velnampy and Achchuthan, 2013; (Khan et. al., 2014 and Saeed and Hussain; 2015).

Pakistan is a developing country facing rapid growth in population, therefore it's hard to fulfill entire requirements of their individuals. In order to meet the food requirements of their citizen, Pakistan imports a number of food items from other countries. This study empirically examines the share and impact of imports of food items in foreign trade of Pakistan. The regression results obtained from ARDL analysis shows that the co-efficient value of imports of food items is significant and positive as expected. The results integrated in table (2) reveals that one percent increase in imports of food items may bring an increase of ten percent in international trade of Pakistan. The real data, facts and figures of Pakistan also showing that during 2014-15[10] the share and value of imports of food items in total imports remained approximately eleven percent. 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; Qiang, 2010; Buzby and Robert, 2010 and Islam, 2013).

Manufacturing sector plays a crucial role in growth and development of any country. Developed countries have abundant of capital stock and known as capital intensive countries. Whereas, developing countries have shortage of capital and mostly have labor intensive countries. The capital gap among developed and developing countries generates larger breach in economic growth of developed and developing countries. To offset this gap most of the developing countries imports capital goods from developed countries to enhance rapid growth and development. Pakistan too, imports heavy machineries and capital goods aiming to make manufacturing sector more brawny and effective to play leading role in growth and development as well as in foreign trade of the country. This research study attempts to empirically examine the role of imports of capital and heavy machinery goods in foreign trade of Pakistan. The study found significant and encouraging role of capital goods imports in Pakistan's international trade and the ARDL regression results incorporated in table (2) shows that one percent increase in imports of capital goods may fetch to boost of approximately an eleven percent in overall foreign trade of Pakistan. According to Economic Survey of Pakistan 2014-15, the share of imports of capital goods in overall imports during 2014-15 is about thirteen percent, while eleven percent during 2013-14. 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 and Mutreja et. al., 2014) had also found noteworthy and foremost role of imports of capital goods in foreign trade for different countries.

The world economies after experiencing global financial crises once again continue to prolong the recuperation process of their restrained and uneven promptness process of their economy. However, this recovery process accompanied some new challenges for the world economies including downfalls in the oil prices especially in 2014-15[11] and expected in 2015-16[12] too. The gap between the demand and supply of oil imports effects the price of Petroleum products that lethargic the growth of many countries. Though, still import of petroleum products plays an important role in the foreign trade of large number of world countries and especially of developing countries. Pakistan also imports petroleum products from different countries and fulfills eighty (80) percent of their demand by importing and twenty (20) percent from domestic production of petroleum products. This study empirically

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[10] *Imports of Food items are US $ 4,205.4Million, while total imports are US $ 37,763.1 Million. (Source: Economic Survey of Pakistan 2014-15).*

[11] *Economic Survey of Pakistan 2014-15.*

[12] *Economic Survey of Pakistan 2014-15.*

attempts to investigate the role of imports of petroleum products in foreign trade of Pakistan as included it an explanatory variable. The results obtained from regression analysis of the variables data found affirmative and considerable role of imports of petroleum products in Pakistan's foreign trade and the results integrated in table (2) reveals that one percent increase in imports of Pakistan may raise the overall foreign trade up to approximately twenty-two percent. The facts and figure in Economic Survey of Pakistan and Bureau of Statistics of Pakistan shows that the share of imports of petroleum products is twenty-six percent in 2014-15 and was thirty-two percent during 2013-14. The result of this study on the role of imports of petroleum products in growth and in foreign trade is consistent with earlier studies of (Al-Moneef, 2006; Bedi-uz-Zaman et. al., 2011; Baghebo, 2012; (Jawad, 2012; Baghebo and Atima, 2013; Kiani, 2013; Nazir and Qayyum, 2014 and Usman et. al., 2015).

Textile manufacturing sector of Pakistan has conventionally persistent a satisfactory performance and reasonably contributing to economic growth. However, from several decades this sector facing sever challenge of high cost and low returns. Besides a fact that textile sector of Pakistan contributed an about sixty percent to total exports of Pakistan, a lot of materials and capital were also needed for this sector for enhance production and contribution to growth that are imported from other countries. This research study attempts to explore the role of imports of textile sector production in foreign trade of Pakistan empirically from 1972-2015, found significant and positive effect of imports of textile manufacturing in Pakistan's international trade. The results obtained from ARDL regression analysis of variables reveals that one percent increase in imports of textile manufacturing sector related goods can contribute sixteen percent to overall foreign trade of Pakistan. The share of textile manufacturing sector shrinks 7.1 percent during 2014-15 from previous year and remained approximately Sixteen[13] percent during 2014-15. The earlier studies of (Malik, 2000; Pan, Somwaru, and Tuan, 2004; Zaman and Hassan, 2009; Khan and Khan, 2010; Alam, 2011; Islam et. al., 2013 and Khaliji et. al., 2013) had also found significant and positive role of textile manufacturing sector products in foreign trade of different countries.

Agriculture sector plays dominant role in growth and foreign trade of developing countries and most of the developing countries wholly or partially depend on agriculture sector. Agriculture sector of Pakistan too, playing a dominant role in foreign trade of Pakistan since independence. From several past decades, this sector experiences downward trend and its growth ranges an average of approximately twenty-percent. In order to make this sector more efficient, the government of Pakistan imports many agriculture related goods from other countries containing fertilizer manufactured , agri chemicals, insecticides , plastic material , medicinal products , hybrid seeds, fertilizers and pesticides. That's why this study includes imports of agri-related products as an independent variable to empirically assess the role of imports agriculture products in foreign trade of Pakistan. The regression results found significant and positive effect of imports agri-products in international trade of Pakistan as shown in table (2) revealing that one percent increase in imports of agriculture related product may bring an increase of twenty percent in overall foreign trade of Pakistan. The empirical finding of this research study for the impact of imports agriculture products in Pakistan's foreign trade is consistent with the past studies of (Dorosh and Valdes, 1990; Akhtar, 1999; Dorosh and Salam, 2008; Mahmood and Akmal, 2010; Sharif et. al., 2010; and Faridi, 2012).

Pakistan is a developing country and faced huge disasters as well as other financial shocks in last two decades that broke down the persistent growth of economy and foreign trade. The production growth of Pakistan was severely affected due to energy crises and results in increase in imports of Pakistan. This study includes a variable of imports of other

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[13] *Economic Survey of Pakistan 2014-15*

goods to empirically examine their role in foreign trade of Pakistan, found positive and significant effect in Pakistan's foreign trade. The result shows that one percent increase in imports of other goods may bring twenty-one percent boost in foreign trade of Pakistan. The real facts and figures showing that share of other items in total imports during 2014-15 is about twenty-five percent recorded from Economic Survey of Pakistan and Bureau of Statistics of Pakistan.

It is believed that world income effect the international trade trough production and distribution of goods. Production requires varieties of resources i.e. capital, labor, raw materials etc. as the developed countries have abundant of resources over developing countries, that's why the trade of developing countries wholly or partially dependent on developed countries. This research study attempts to examine the role of world income in foreign trade of Pakistan empirically. The ARDL regression results of this study indicates positive and significant outcome of world income in Pakistan's foreign trade as indicated in table (2). The result of this study for the role of world income in foreign trade of Pakistan is consistent with the studies of (Acemoglu and Ventura, 2002; Basco and Mestieri, 2014; Antras, 2014; and Johnson, 2014).

The role of exchange rate is very decisive in international trade. Those countries that have more production as well as exports they favor devaluation in their currencies to make their real exchange rate low to gain from foreign trade. Decrease in exchange rate has two possible effects. On one hand it increases the exports but on the other it also makes the value of imported goods expensive and results deficit in the net trade. Pakistan consistently facing devaluating in their exchange rate in terms of US dollar (US $) from last two decades that's not only have an adverse effect on the foreign trade but also increase debt burden on Pakistan. This study attempts to explore the role of exchange rate in foreign trade of Pakistan empirically. The results indicates negative relation between exchange rate and foreign trade of Pakistan reveals that one percent appreciation in foreign exchange rate will make the imported goods expensive that leads to a decrease of approximately forty-three percent in foreign trade of Pakistan. The result of this study for exchange rate is consistent with the studies of (Bahmani-Oskooee, 2001; Gomes and Paz, 2005; Kemal, 2005; Wai-mum, Yuen-ling and Tan, 2008; Edward, 2010; Shawa and Shen, 2013).

Pakistan being one of the naissance and dawn members of General Agreement on Tariffs and Trade (GATT) Treaty since their establishment, greatly appreciate transparent, open and rules-based multilateral trading arrangement. Pakistan performs most of its trade on the basis of Most Favorite Nations (MFN). Though, it was considered that the present trading system undergone through numerous modifications that negatively affect trade opportunities for developing countries. In Pakistan tariff has been one of the keen policy tools to control investment decision and resource allocation through influencing relative prices and productivity. This research study aiming to emphasize the role of imports tariffs empirically in foreign trade of Pakistan. Both theoretical and empirical studies examined the negative relation between tariffs and foreign trade. The empirical results of ARDL regression of study too found inverse relation between import tariffs and international trade of Pakistan. The results incorporated in table (2) divulge that one percent increase in imports tariffs may shrink the imports leading to fall of an about twenty-one percent in foreign trade of Pakistan. The result of this study is consistent with the earlier studies of (Ismail and Wijnbergen, 1993; Li, 2005; Maa and Lu, 2011; Sinha, 2014).

Trade openness is strongly encouraged by theoretical literature and considered an important element for rapid development and growth, whereas empirical research shows great volatility of trade openness. The empirical studies had mixed finding and some of the past studies didn't found any significant role of trade openness. Regardless of a well-embracing theoretical literature of trade openness, there is still obvious consensus exists on the role of

trade liberalization. The empirical results obtained from ARDL regression analysis of variables data also didn't found any momentous role of trade openness in foreign trade of Pakistan. The past studies of (Jin, 2003; Greenaway et. al., 2002; Amir and Javed, 2005; Freund and Bolaky, 2008; Umer, 2014) didn't found any affirmative and considerable role of trade openness and their empirical results are consistent with the current study.

The balance of trade is the concern issue for most of the developing countries and frequently they facing huge deficit in their trade balance. The main cause of inadequate encouraging trade balance is the poor trade strategies and production performance of the developing countries. Like other developing countries the trade balance situation of Pakistan is also not satisfactory and persistently facing deficit in trade account. This research study includes trade balance as an explanatory variable to examine their role in foreign trade of Pakistan. The ARDL regression results found significant and positive impact of trade balance on international trade of Pakistan as expected and indicating that one percent improvement in trade balance resolves the progress of eighteen percent in foreign trade of Pakistan. The current research study found consistent results for the role of trade balance in foreign trade of Pakistan with the studies of (Egwaikhide, 1999; Akhtar and Malik, 2000; Sugema, 2005; mbayani, 2006; Peter and Sarah, 2006; nienga, 2010; Levant, 2011; Saadullar and Ismail, 2012; Shawa and Shen, 2013; and Abbas, 2013).

The role and effect of terms of trade in international trade is highly debated especially in those countries that are deeply reliant to imports. In general terms of trade are measured by dividing the price of exports to imports or simply the ratio of export price to import price. As the imports of Pakistan are higher than an import, that's why, this study aims to explore the role of terms of trade in foreign trade of Pakistan. The ARDL regression results obtained from regression analysis of the variables data found negative and noteworthy role of terms of trade in foreign trade of Pakistan as expected. The results integrated in table (2) reveals that one percent appreciation in terms of trade will shrink the foreign trade of Pakistan by fourteen percent. The empirical results for terms of trade and its possible impact on Pakistan's foreign trade of this study is consistent with the earlier studies of (Broda and Tille, 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; Kalumbu and Sheefeni, 2014).

The error correction term (ECT) value is negative and significant that supports adjustability of the model used in this study towards the equilibrium at a speed of twenty-eight percent as indicated in table (2). The co-efficient value of the lagged foreign trade is significant and positive indicating that previous year trade has momentous effect on current year foreign trade of Pakistan. The estimator value of constant term is also significant and negative showing that technology has considerably influence the international trade of Pakistan.

a.   ARDL Co-integration, Long form and Bound Testing Approach

The Bound Testing Approach, Wald test, ARDL co-integration and long-form tests are also applied to find out co-integrating vector and long-run relation among the variables of model.

The result of co-integration equation given in table (3) shows that there is strong co-integration among the variables as the co-efficient value of the co-integration vector is significant and negative.

Table: 3.ARDL Co-integration Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(M)	0.587870	0.116932	5.027430*	0.0000
D(MFP)	0.100709	0.062548	1.610112	0.1282
D(MHM)	0.021427	0.050929	0.420729	0.6799
D(MPP)	0.092256	0.049245	1.873410*	0.0719
D(MTM)	0.013611	0.059441	0.228980	0.8220
D(MAGRI)	0.203658	0.097273	2.093672*	0.0537
D(MOP)	0.211810	0.061884	3.422716*	0.0000
D(Y)	0.416382	0.171059	2.434135*	0.0279
D(ER)	-0.214685	0.083589	-2.568322*	0.0377
D(TRFM)	0.356891	0.269231	1.325590	0.1492
D(TOP)	-0.216535	0.179578	-1.204581	0.1615
D(BOT)	0.212401	0.068463	3.102377*	0.0000
D(ECT)	0.109381	0.046865	2.333935	0.0339
CointEq(-1)	-0.695844	0.153619	-4.529656*	0.0001

(*****) shows co-integrating variables.

The results of ARDL co-integration test incorporated in table (3) indicate that there are seven strong co-integration variables that are strongly co-integrated with foreign trade of Pakistan. The value of co-integration equation is highly significant and negative that symbols the strong co-integration between the dependent variables and independent variables within the model.

Further, the results given in table (4) of bound testing approach for long form relation and co-integration showing the rejection of [14]null hypothesis indicates that long-run relation exist between foreign trade, imports and its determinants in case of Pakistan. The hypothesis for the long-run relation was tested by comparing critical value Pesaran F-statistics test and ARDL long-run co-efficient value stumble from the regression analysis of Bound Testing Approach and incorporated in table (4).

Table: 4. Results of Bounds Test *(Null Hypothesis: No long-run relationships exist)*

Bounds Test Value		Critical Value Bounds	
Test Statistic	Value	I(0) Bound	I(1) Bound
F-statistic	5.111841*	4.85	4.41

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

Though the results of bound test clearly shows the long run relation between the variables included in the model. To confirm the long relation this study applied Wald test and the result is integrated in table (5).

Table: 5. Wald Test for Long-Run Relation
(Null Hypothesis:
$C(2)=C(4)=C(5)=C(7)=C(8)=C(10)=C(11)=C(13)=C(14)=C(15)=C(16)=C(17)=C(18)=0$)

Test Statistic	Value	Probability
F-statistic	1505.730*	0.0000
Chi-square	19574.49*	0.0000

(*****) shows the rejection of Null hypothesis.

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[14] *Null Hypothesis is $\beta_1= \beta_2= \beta_3= \beta_4= \beta_5= \beta_6= \beta_7= \beta_8= \beta_9= \beta_{10}= \beta_{11}= 0$, and (Alternative Hypothesis , $\beta_1\neq0$, $\beta_2\neq0$, $\beta_3\neq0$, $\beta_4\neq0$, $\beta_5\neq0$, $\beta_6\neq0$, $\beta_7\neq0$, $\beta_8\neq0$, $\beta_9\neq0$, $\beta_{10}\neq0$, $\beta_{11}\neq0$*

The results of Wald test integrated in table (5) shows that the variables included in the model strongly related to each other and effectively contribute to foreign trade of Pakistan in the long run. Further, the ARDL long form test was applied to find out the estimator value of long form co-efficient as well as behavior of all the variables in long run.

Table: 6.ARDL Long form Co-efficient Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M	0.576455	0.132691	4.344341*	0.0000
MFP	0.059386	0.035740	1.661596	0.1173
MHM	0.078118	0.038915	2.007399*	0.0631
MPP	0..490342	0.132141	3.710770*	0.0021
MTM	0.235900	0.084543	2.790291*	0.0137
MAGRI	0.120092	0.063655	1.886602*	0.0787
MOP	0.096223	0.039784	2.418640*	0.0288
Y	0.386925	0.130246	2.970720*	0.0095
ER	-0.412549	0.249765	-1.651745	0.1194
TRFM	-0.305061	0.081179	-3.757027*	0.0019
TOP	-0.217023	0.153742	-1.411597	0.2685
BOT	0.202714	0.053733	3.772628*	0.0000
ECT	0.011960	0.023750	0.503576	0.6219
C	0.247182	0.190326	1.298729	0.2136
R-squared	0.94715		Durbin-Watson stat	2.138490
Adjusted R-squared	0.941334		Prob(F-statistic)	0.000000

(*) shows significant long-run relation between Pakistan's foreign trade and independent variables.

The results of long form co-efficient integrated in table (6) shows that imports, imports of Heavy Machinery, Imports of petroleum products, imports of textile sector, imports of agriculture products and their chemicals, imports of other goods, world income, tariff imposition on imports (TRF^M) and balance of trade have significant positive estimator values indicating the long-run significant relation and impact on foreign trade of Pakistan. The empirical results don't show any long-run relation between foreign trade of Pakistan, trade openness and exchange rate. Further, the ECT is also insignificant that mean that the model is adjustable in the short but doesn't in the long run if disturb from smooth and sustain equilibrium.

4.3. Diagnostic and Stability Analysis of the Model

To ensure the sensitivity, reliability and righteousness of model, different stability and diagnostic tests were applied to check the problem of serial and Auto-correlation, Hetro-skedasticity and specification error and biasness in ARDL regression analysis of variables data included in the model. The results of the Stability analyses are given below.

For Serial Correlation the Breusch-Godfrey LM Test was applied and the results integrated in table (7) didn't show any sign of auto-correlation and spurious relation. Further, from the results of this test it is concluded that the error term is independent from each other of the corresponding year.

Table: 7. Breusch-Godfrey Serial Correlation LM Test Result

Test Statistic	Value	Probability
F-statistic	0.415473*	0.6660
Chi-square	1.635382*	0.4419

(*) shows the rejection of Null hypothesis

The model were also checked for Heteroskedasticity by applying Breusch-Pagan-Godfrey Test and the results incorporated in table (8) reveals that variables of the model are Homoskedastic confirming that the variance is constant.

Table: 8. Breusch-Pagan-Godfrey Heteroskedasticity Test Result

Test Statistic	Value	Probability
F-statistic	1.264599*	0.3254
Obs*R-squared	22.59783*	0.3090
Scaled explained SS	12.851048*	0.2372

(*) shows the rejection of Null hypothesis

The Ramsey RESET test is applied to check the stability of the test. The regression results of this test integrated in table (9) illustrating that the model is stable and normal.

Table: 9 Ramsey RESET Stability Test Result

Test Statistic	Value	Probability
t-statistic	1.403446*	0.4128
F-statistic	2.158344*	0.4128

(*) shows the rejection of Null hypothesis.

5. Conclusion

To sustain the steady and rapid economic growth and to accelerate the growth developing countries needs to reforms their imports policies, needs structural reforms, improvement in productivity, new investments and up- gradation in technologies. The economic performance of Pakistan is improving significantly in all sectors of the economies, but still needs a lot of goods and capitals from other countries to continue.

This study attempted to evaluate the importance of imports and it's determinates in foreign trade of Pakistan. The empirical analysis of this study as well as the real statistics both shows a dominant role of imports in foreign trade of Pakistan. The study also apply stability and normality test to check the reliability of the model and found that the model is stable and reliable.

Pakistan has an intensive potentials to grows and play an influential role in world trade. The government needs to create favorable environment for the different economic activities and investment. This will help in improving the socio-economic activities, job opportunities and in development of infrastructures in Pakistan.

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