Evaluating the Importance of Exports and Its Determinants in Economic Growth of Pakistan: An Empirical Analysis from ARDL Approach

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Abstract
Purpose: Different countries have different economic efficiency in production of commodities depending mostly on geographical location, technological development and availability of natural resources, capital and skilled labours, social setup, customs, some financial and economic priorities. Pakistan is a developing country frequently depending on export of primary and low value-added products. This research study endeavours to evaluate the importance of sectoral exports and its main determinants in economic growth of Pakistan.

Design/Methodology/Approach: This is an empirical study to evaluate the importance of exports and its determinants in economic growth of Pakistan using annual time series data for the period of 1972-2015. For that purpose growth model was developed and regressed by applying different analytical techniques that includes unit root test, Auto-Regressive Distributed Lag Model, ARDL bound testing, Wald test, ARDL co-integration and long form. In addition stability and diagnostic test were applied to check the reliability of results.

Major Findings: The empirical results obtained from regression analysis of the variables data illustrates constructive and noteworthy effect of exports, its determinants and other trade policy variables on economic growth of Pakistan.

Originality/Value: The study provides a guideline for developing countries and especially for Pakistan in order to bring considerable increase in exports and trade. Government of Pakistan needs to fetch improvements in socio, political and economic factors like infrastructure, technology, political and economic stability, improvements in quality and production, skilled, efficient and innovative manpower, proper access to world market, political stability, competitiveness, price and bargaining power in trade negotiations, considerable research and development to enhance exports growth that leads to significant contribution in economic activities of Pakistan.

Keywords: Economic Growth, Exports and it’s determinates, Auto-regressive Distributed Lag model approach, ARDL Co-integration and long form, Stability and Diagnostic Tests.
Background of the Study

Economic growth can easily be defined as “an increase in the ability of an economy to generate goods and services, from one time period to another”. GDP is usually gauges the level of economic strength of a country, and an indicator of living standard and quality of life of a country. GDP could be used accurately for comparison of productive competency of world nations, as the method of computing GDP is standardized from economy to economy. Year to year inflation adjustment of GDP provide flawless assessment of existing GDP dimensions with prior GDP ratios. By such means GDP can track economic growth or recession for long period of time.

Pakistan is considered to be a small economy on the map of international market as its GDP is US$ 246.88\textsuperscript{1} and share of Pakistan in international trade 0.18\textsuperscript{2} percent. An important obstacle in the development of Pakistan is inefficient utilization and exploitation of natural resources since its very beginning. The period of quantum growth and development was postponed due to deficient exportable surplus which was attributed to slow progression in production and manufacturing sector. With the exception of 1950-51 and 1972-73, Pakistan faces unfavourable balance of trade, entails that imports exceeds exports throughout the economic history of Pakistan. Although exports from Pakistan diminished by 43.18 percent in 1950’s; the monetary value of the products exported were 1343 million rupees. In 1958-1969 industries were nourished and pattern of trade and manufacturing was modified, this era can be relatively dedicated as phase of industrial and trade development in history of Pakistan. After the separation of Bangladesh in 1971; the shape and pattern of Pakistan’s foreign trade was changed to great extent due to considerable contribution of exports and foreign exchange reserves from East Pakistan.

In terms of nominal GDP Pakistan stands at 41th largest position in world economies, while according to purchasing power parity it is 26\textsuperscript{th} largest economy in world. Pakistan being 6\textsuperscript{th} densely populated country of world with population of over 190 million, with a nominal GDP per capita of $ 4,993, ranking the economy 133th in the world. Though, Pakistan's unacknowledged economy is approximated to be 36% of its overall financial system that is not considered part of whole GDP while conducting per capita income. Pakistan is one of the Next Eleven, which beside the BRICS, possibility to develop into one of the world's large economies in the 21st century. But long-lasting situation of war against terrorism, socio-political instability and severe inefficiencies in fundamental services like railway transportation and electric power generation created serious economic instability.

Pakistan's general economic output (GDP) has improved every years since 1951 depression. In spite of sustained growth in past, Pakistan's economy had been characterized as instable and susceptible to external and internal fluctuations. Yet, the economy proved to be unpredictably sturdy despite of numerous consecutive unfavourable trials occurred since 1998–2002. Like the Asian financial crisis; economic sanctions after nuclear explosion, which was quoted by Colin Powell as, Pakistan was "sanctioned to the eyeballs"; global recession of 2001–2002; a severe drought that was worst in Pakistan's history, remained for four years; sensitive acuity of danger due to military tensions with India, costing monetary and armed lose as around one million troops were on the border, and perception of imminent (perhaps nuclear) war; and most prominent post-9/11 military action by the name of War on terror in neighbouring Afghanistan, with a huge invasion of refugees from that country and huge military budgets for internal and external security.

\textsuperscript{1} Estimated of 2014 (Source: The Global Economy).
\textsuperscript{2} 2011 (Source: World Trade Organization (WTO) statistics).
all contributed towards adversities of economic activities both at macro and micro level in national and international markets.

Government of Pakistan has suggested significant economic reforms since 2000, and medium-term projection for exports creation and poverty diminution. Liberalization in the international textile trade has benefited Pakistan's exports, and free trade agreements are also anticipated to yield advantages in agriculture sector. Being large country, Pakistan anticipated to take significant benefits from economies of scale, and to swap China as the major textile manufacturer as China shift up the value-added chain. These industries play great role in Pakistan's comparative strength due to low labour costs.

This study will be great assistance for understanding the role of exports and its determinants in economic growth of Pakistan. Exports, trade and economic growth are interrelated phenomenon, increase in economic growth creates surplus output that leads to increase export earnings and thus that foreign exchange is utilized in purchasing imports. In short economic growth leads to higher trade earnings while at the same time foreign trade contribution improve economic growth and development. So this study highlights the main factors affecting these two crucial macro economic variables and their impact on each other as well. That’s why this study aims to empirically evaluate the importance of exports and its determinants in economic growth of Pakistan for the period of 1972-2015.

Being struggler in the race of the world economies Pakistan has to adopt liberalization police 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 exports 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.

**Literature Review**

Pakistan is facing a persistent trade deficit since its initiation because of poor economic performance and lake of infrastructural facilities. Exports of Pakistan consists of low value added and raw or semi-processed agricultural-products. In 1950-60 Pakistan adopted the policy of import substitution to stabilize and protect domestic industries and increase its share in manufactured products. National demand was shifted from foreign products to goods produced domestically through protecting industries from foreign competition. Consequently some important industrial units were developed due to these policies and economy observed phenomenal growth in 1960’s; in short at that time these policies proved to be instrumental in industrial establishment and development.

**Literature Review on the Causal relation between Exports and Economic Growth**

Many researchers and economist had investigated the causal relationship between exports and economic growth. Some of the empirical studies that found the causal relation of exports and growth and their methodology as well as main findings are discussed below. Jung and Marshall (1985) assessed the causal relationship between exports and economic growth for South East Asian Countries using panel data from 1950-1981 and the variables were regressed
through simple Ordinary Least Square (OLS) technique. The study obtained different results for some countries. In Indonesia exports brings increase in growth, whereas in Thailand growth leads to increase in exports. In case of Korea exports had negative effect on growth and caused low economic growth. Surprisingly, there were no causal relation seemed between international trade and economic growth in Philippine and Taiwan. The authors, supporting their results, argued that each country have different trade agreement, climate, resources, needs and requirements. Therefore the results were also varying from country to country.

Islam (1998) examined the causal relation between exports and economic growth for 15 Asian Countries\(^3\) using cross sectional analysis for the period of 1967-1991 applied error correction model. The study found that out of fifteen ten countries showed positive and significant causal relationship between exports and economic growth. Further, concluded that increase in exports also played a key role in raising productivity, employment, balance of payment (BOP), improving balance of trade (BOT), reducing budget deficit and maintaining the sustained economic growth.

Ahmed (2002) reviewed some of the empirical studies previously done on the causal relationship between exports and economic growth and critically analysed the methodologies used in earlier studies, i.e. Johansen Co-Integration, Granger Causality Test, Multi-Variate Error Correction Model (ECM), Structural Invariance Model, Vector Auto-Regressive (VAR) Model, Impulse Response Function, Exogeneity and Variance Decomposition Model. He examined methodological as well as empirical findings and concluded that empirical support of export-led-growth hypothesis is weaker and feeble both in developed and developing countries. Ahmed and Andy (1991) empirically investigated the causality between exports and economic growth for 47 African Countries. Ahmed and Harnhirun (1995) & Ahmed and Anorou (2000) estimated the causality between exports and economic growth empirically for \(^4\)ASEAN Countries. The long-run optimistic and momentous relation between exports and economic growth both for African and ASEAN Countries were found. Hatemi (2002) studied the causal relation between exports and economic growth for Japan using cross-sectional data from 1960-1999. The bootstrap stimulation techniques and augmented Granger-causality test were applied and the results found that exports had played a major and important role in growth of Japan’s economy.

Abbas (2012) determined the causal relationship between exports and economic growth for Pakistan using time series data for the period of 1975-2010. The Johansen co-integration, Vector Error Correction (VECM) model and Granger Causality test were applied and the results found the uni-directional relation between exports and economic growth but unable to clearly expressed that either there is short-run or long-run relation exits between exports and economic growth. Further, the study didn’t find export-led growth (ELG) hypothesis in case of Pakistan and found that growth cause increase in Pakistan’s exports. The study recommends that government should focus on production sector to endeavour the fetch increase in production to enhance long-run and steady growth in Pakistan’s economy.

**Literature Review regarding to Impact of exports on Economic Growth**

Both the theoretical and empirical literature strongly supports the positive and significant impact of exports on economic growth. Many researchers and economist had attempted to determine the

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\(^3\) The countries included in the analysis are Pakistan, Bangladesh, Fiji, Hong Kong, India, Indonesia, Japan, Malaysia, Nepal, Papua New Guinea, Philippines, Singapore, South Korea, Sri Lanka and Thailand.

\(^4\) Indonesia, Malaysia, Philippine, Singapore and Thailand.
impact of exports on economic growth of different countries using different types of data, period of analysis, methodology and analytical techniques. A brief overview of some past empirical studies on the impact of exports on economic growth is given below.

Yanikkaya (2003) examined the impact of trade liberalization on export, import, net export and economic growth, selecting 120 countries using panel data from 1970-1977. The variables were regressed through Generalized Method of Movement (GMM). The results revealed that these variables had significant with positive co-efficient sign indicating their foremost role in economic growth.


Ahmed (2000) investigated the response of Bangladesh’s exports towards its Trade Liberalization and Economic Growth. The results of the study found long-run relation among exports of goods, price of exported goods, exchange rate and trade liberalization having significant effect on the economic growth of Bangladesh for the period of 1994-19995. However, the study found short-run relation between supplies of exported goods and Bangladesh’s economic growth applying co-integration and Error Correction Model. Emeka, Fredrick and Peter (2012) studied the impact of export and foreign trade on Nigeria’s economy by developing the combination of multi-variant and bi-variant models of macroeconomic variables using time series data from 1970-2008 and found that both exports and foreign trade has encouraging effect on economic growth Nigeria.

**Econometric Model and Description of Data**

This research study observing the behaviour of embodied exports and its determinants in economic growth of Pakistan. The economy is assumed as open economy depending on exports of goods,

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5 Estonia, Latvia and Lithuania
that is why all other factors (Consumption, Investment, government expenditure etc) are taken as constant and focused on the impact of exports and its determinants in Pakistan’s economic growth. So, it is assumed that economic growth of Pakistan is dependent on exports, imports, world income and exchange rate.

For the empirical analysis of the role of exports and its determinants on economic growth of Pakistan, the econometric model for economic growth and exports growth was developed. The basic idea for development of theoretical and econometric model has been taken from the studies of Santos-Paulino and Thirlwall (2004), Wacziarg and Welch (2008) and Ju et. el. (2008).

The demand for goods in 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 world countries and in international market. So, demand for goods in international market will be depending on world income, the elasticity of world income and proportional price of goods in world countries. Thus the relation between growth equation for GDP growth and exports growth is expressed as;

\[ GDP_t = A(X_t)^{\alpha_1} (M_t)^{\alpha_2} (Y_t)^{\alpha_3} (ER_t)^{\alpha_4} \]  

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 ER\(_t\) is the exchange rate (proportional price of goods in the world countries) 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 of 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).

\[ \ln(GDP_t) = \ln(A) + \alpha_1 \ln(X_t) + \alpha_2 \ln(M_t) + \alpha_3 \ln(Y_t) + \alpha_4 \ln(ER_t) \]  

Now, take the derivatives on both side of the equation (3.2) with respect to time “t”, to find out the growth rate in Pakistan’s GDP with respect to exports, imports, world income and exchange rate.

\[ (\dot{GDP_t} / GDP_t) = (A / A) + \alpha_1 (\dot{X_t} / X_t) + \alpha_2 (\dot{M_t} / M_t) + \alpha_3 (\dot{Y_t} / Y_t) + \alpha_4 (\dot{ER_t} / ER_t) \]  

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

\[ \text{gdp}_t = \alpha_0 + \alpha_1 x_t + \alpha_2 m_t + \alpha_3 y_t + \alpha_4 e_r + \mu \]  

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\(_t\)/A\(_t\)) 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”.

It is a fact that exports play an important role in growth of countries with highest potential of employment provision. The economic growths of countries in open economies are directly associated to expansion of export and it works as locomotive for economic growth. To meet the requirements of ongoing trends in international market and fashion an indispensable concentration must be paid to exports especially of developing countries. Besides tough competition from international market exports of Pakistan has the capability to make its stand in world market by furnishing the exports sector with latest technology and by exploring demand trends in different regions of the world market.

But now days it has become the most debated topic that in country either it is an export led growth or growth led export. However, the role of export is still very crucial in economies not only from fiscal but from monetary side too. To evaluate the importance of export, its determinants and other important trade policy variables on economic growth of Pakistan the regression model for GDP growth with respect to growth of exports and its imperative determinants is developed from the basic economic growth model (3.4).

For the empirical analysis of the role of export, its determinants and some other trade variables on Pakistan’s economic growth, the dependent variable is taken Economic Growth (GDP) and the independent variables are international trade (IT), exports (X), exports of primary commodities (XPC), exports of textile manufacturing sector (XTM), exports of other manufacturing sector (XOM), export of other commodities and goods (XO), world income (Y), exchange rate (ER), tariff imposition on export (TRF), Proxy variable for Trade openness or Liberalization policy (TOP), balance of trade (BOT) and terms of trade (TOT). The theoretical equation/model that expresses the relationship between Economic growth and regressors variables is articulates as;

$$GDP = f (IT, X, XPC, XTM, XOM, XO, Y, ER, TRF, TOP, BOT, and TOT) \ldots \ldots (3.5)$$

The econometric model of the above theoretical model (3.5) can be form as follows;

$$GDP_t = \alpha_0 + \alpha_1 IT_t + \alpha_2 X_t + \alpha_3 XPC_t + \alpha_4 XTM_t + \alpha_5 XOM_t + \alpha_6 XO_t + \alpha_7 Y_t + \alpha_8 ER_t + \alpha_9 TRF^x_t + \alpha_{10} TOP_t + \alpha_{11} BOT_t + \alpha_{12} TOT_t + \mu_t \ldots \ldots (3.6)$$

The sign of the coefficient/ estimator are expected as

$\alpha_1 > 0, \alpha_2 > 0, \alpha_3 > 0, \alpha_4 > 0, \alpha_5 > 0, \alpha_6 > 0, \alpha_7 > 0, \alpha_8 < 0, \alpha_9 < 0, \alpha_{10} > 0, \alpha_{11} > 0, \alpha_{12} < 0$

$^6$ Trade openness to GDP ratio and calculated as $[X+M/GDP]$. 
Data Analysis and Sources
The data used in this study consists of annual time series data because quarterly and semi-annual data are not available for most of the variables included in this study in their desired form. The time periods of analysis are from 1972-2015. Prior to 1972, due to the conflicts of different policies and separation of East-Pakistan the data for the selected variables in this research study are unavailable in their purified and true form.


Methodology, Results and Discussion (Regression Analysis of the Variables Data)
Prior to regression analysis of the model it is vital to find out the order of integration among the variables especially in case of time series data. If the data is co-integrated of order I(2), the F-stat results are not applicable nor any prominent regression method (Ouattara, 2004). That’s why, before going to regression analysis of variables the data used in this study for exports, its determinants and GDP of Pakistan as well as other supporting and policy variables were tested by Augmented Dicky-Fuller (ADF) unit root to find out the order of integration and level of stationarity of variables as well as any evidence of spurious relation that had remains one of main concern of the researchers. The results of the ADF test incorporated in table (1) shows that the variables are integrated of order I(0) and I(1) while none of the variables at I(2). Moreover, data also didn’t show any sign of spurious relation and outliers.

Table 1: Unit Root Test Results (Augmented Dickey–Fuller)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Acronyms</th>
<th>ADF Values (At Level)</th>
<th>ADF Values (At 1st Difference)</th>
<th>ADF Critical Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Growth</td>
<td>GDP</td>
<td>-2.007128</td>
<td>-4.632220*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>International Trade</td>
<td>IT</td>
<td>-2.445816**</td>
<td>-4.222351*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Exports</td>
<td>X</td>
<td>-3.087215*</td>
<td>-4.351679*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Exports of Primary Commodities</td>
<td>XPC</td>
<td>-2.528486**</td>
<td>-4.301104*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Exports of Textile Manufacturing Sector</td>
<td>XTM</td>
<td>-1.441125</td>
<td>-4.396435*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Exports of Other Manufacturing Sector</td>
<td>XOM</td>
<td>-0.959122</td>
<td>-4.928020*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Exports of Other Goods</td>
<td>XO</td>
<td>-2.935485*</td>
<td>-4.609289*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>World Income</td>
<td>Y</td>
<td>-2.698155**</td>
<td>-3.795314*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>ER</td>
<td>-1.488565</td>
<td>-3.647880*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Export Tariffs</td>
<td>TRF</td>
<td>-3.580181*</td>
<td>-4.989223*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Trade Openness</td>
<td>TOP</td>
<td>-0.820238</td>
<td>-5.071277*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Terms of Trade</td>
<td>TOT</td>
<td>-1.936422</td>
<td>-5.784582*</td>
<td>-2.9339</td>
</tr>
<tr>
<td>Balance of Trade</td>
<td>BOT</td>
<td>-4.858152*</td>
<td>-6.485582*</td>
<td>-2.9339</td>
</tr>
</tbody>
</table>

Critical Value of ADF is selected at 5% significance level. (*) & (**) shows rejection of Null Hypothesis at 5% & 10%.
The circumstances whilst that if variables data shows mixed stationary i.e. some at I(0) and some variables at I(1) then the recommended method for regression analysis of the variable data is Auto-regressive Distributed lag (ARDL) model. The foremost assistance of ARDL method is that there is no require to elucidate variables and it can regress the models either some variables are stationary at I(0) and several are at I(1). This method is also applicable either the model has small or large number of sample size. As the unit root test result of this study shows that some variables are stationary at I(0) and some are at I(1), therefore for regression of the variables data the ARDL model is applied.

The debate regarding to role of exports and its importance in economic growth put it as a deterministic factors. Not only theoretical literature but empirical studies also prolong the importance of exports in economic growth, development, foreign reserve, trade balance and employment opportunities. This research study too aiming to empirically scrutinize the role of exports and its determinates in Economic Growth of Pakistan taking Economic Growth (GDP) as dependent variable and the independent variables are international trade (IT), exports (X), exports of primary commodities (XPC), exports of textile manufacturing sector (XTM), exports of other manufacturing sector (XOM), export of other commodities and goods (XO), world income (Y), exchange rate (ER), tariff imposition on export (TRFx), Proxy variable for Trade openness or Liberalization policy (TOP) terms of trade (TOT) and balance of trade (BOT). The theoretical equation that expressed the relationship between Economic growth and the explanatory variables is uttered as;

\[ GDP = f (IT, X, XPC, XTM, XOM, XO, Y, ER, TRFx, TOP, TOT, and BOT) \]  

The econometric model of the above equation (4.1) can be formed as follows;

\[ GDP_t = \alpha_0 + \alpha_1 IT_t + \alpha_2 X_t + \alpha_3 XPC_t + \alpha_4 XTM_t + \alpha_5 XOM_t + \alpha_6 XO_t + \alpha_7 Y_t + \alpha_8 ER_t + \alpha_9 TRFx_t + \alpha_{10} TOP_t + \alpha_{11} BOT_t + \alpha_{12} TOT_t + \mu_t \]  

The ARDL regression model for the above econometric model can be given as;

\[ GDP_t = \alpha_0 + \alpha_1 IT_{t-1} + \alpha_2 X_{t-1} + \alpha_3 XPC_{t-1} + \alpha_4 XTM_{t-1} + \alpha_5 XOM_{t-1} + \alpha_6 XO_{t-1} + \alpha_7 Y_{t-1} + \alpha_8 ER_{t-1} + \alpha_9 TRFx_{t-1} + \alpha_{10} TOP_{t-1} + \alpha_{11} BOT_{t-1} + \sum_{i=1}^{l_{m}} \beta_i \Delta GDP_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta IT_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta X_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta XPC_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta XTM_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta XOM_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta XO_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta Y_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta ER_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta TRFx_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta TOP_{t-1} + \sum_{i=1}^{l_{m}} \alpha_i \Delta BOT_{t-1} + \mu_t \]  

The above econometric model (4.3) is regressed by applying ARDL approach through advanced econometric software (E-Views 9) and the main results are incorporated in table (2).
The impact and influence of exports and its importance in economic growth is redressed empirically using ARDL model as an analytical technique and the key variable results is incorporated in table (2). The significance of the overall model is tested from Prob. F-Statistic value, R-squared, Adjusted R-squares, Durbin-Watson and F-Stat value. The estimator significance is checked from t-stat and Prob.Values. The lag-Length and lag specification Criterion for the model is selected from Schwarz information (SIC) and Akaike information (AIC) Criteria. The optimal numbers of lag assuming by ARDL model for the ARDL regression analysis of the variables are (1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 0, 1).

It is a verity that international trade can play a constructive role in economic growth of countries. It not only earns a lum-sum profit through exports but also fulfills that requirement which a country can convene through imports. International trade also makes strong links among the countries. Keeping the imperative function of international trade in growth this study include it as independent variable to empirically endeavours the importance of international trade in economic growth of Pakistan. The results obtained from ARDL regression analysis reveals that international trade has optimistic and noteworthy impact on Pakistan’s economic growth (as the coefficient value is positive and highly significant). The theoretical as well as past empirical literature found an optimistic role of international trade in economic growth of Pakistan. The co-efficient value of international trade is (0.647925) showing that one percent increase in foreign trade may bring an increase of sixty-four percent in growth of Pakistan. The empirical result of this study for the role of international trade in economic growth is consistent with the studies of (Iqbal and Zahid, 1998; Fratianni, 2007; Gupta, 2008; Javed, et. al., 2011; Khiang, 2012; Khiyavi, et. al., 2013; Azeez, et. al., 2014).

Exports play a keen role in economic growth. Both empirical and theoretical literature strongly supports the momentous impact of exports and the researchers, economist and policy makers considered it “as engine of growth”. Those countries whose exports are greater, their growth also

<table>
<thead>
<tr>
<th>Variables</th>
<th>Acronyms</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>C</td>
<td>-0.238661</td>
<td>0.550365</td>
<td>-0.433642</td>
<td>0.6707</td>
</tr>
<tr>
<td>International Trade</td>
<td>IT</td>
<td>0.647925</td>
<td>0.122579</td>
<td>5.285744*</td>
<td>0.0000</td>
</tr>
<tr>
<td>Exports</td>
<td>X</td>
<td>0.489497</td>
<td>0.090794</td>
<td>5.391286*</td>
<td>0.0000</td>
</tr>
<tr>
<td>Exports of Primary Commodities</td>
<td>XPC</td>
<td>0.249779</td>
<td>0.120059</td>
<td>2.080468**</td>
<td>0.0369</td>
</tr>
<tr>
<td>Exports of Textile Manufacturing Sector</td>
<td>XTM</td>
<td>0.378492</td>
<td>0.103544</td>
<td>3.655355*</td>
<td>0.0023</td>
</tr>
<tr>
<td>Exports of Other Manufacturing Sector</td>
<td>XOM</td>
<td>0.248272</td>
<td>0.082675</td>
<td>3.002984*</td>
<td>0.0042</td>
</tr>
<tr>
<td>Exports of Other goods</td>
<td>XO</td>
<td>0.125813</td>
<td>0.049308</td>
<td>2.590453**</td>
<td>0.0205</td>
</tr>
<tr>
<td>World Income</td>
<td>Y</td>
<td>0.469481</td>
<td>0.181235</td>
<td>2.590453**</td>
<td>0.0205</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>ER</td>
<td>-0.386044</td>
<td>0.136120</td>
<td>-2.836050**</td>
<td>0.0125</td>
</tr>
<tr>
<td>Export Tariffs</td>
<td>TRF</td>
<td>-0.419071</td>
<td>0.179293</td>
<td>-2.337349**</td>
<td>0.0158</td>
</tr>
<tr>
<td>Trade Openness</td>
<td>TOP</td>
<td>0.355346</td>
<td>0.205566</td>
<td>1.728621</td>
<td>0.1044</td>
</tr>
<tr>
<td>Terms of Trade</td>
<td>TOT</td>
<td>-0.225434</td>
<td>0.099754</td>
<td>-2.525983**</td>
<td>0.0248</td>
</tr>
<tr>
<td>Balance of Trade</td>
<td>BOT</td>
<td>0.456952</td>
<td>0.086780</td>
<td>5.265585*</td>
<td>0.0000</td>
</tr>
<tr>
<td>Error Correction Term</td>
<td>ECT</td>
<td>-0.211810</td>
<td>0.061884</td>
<td>-3.422716*</td>
<td>0.0038</td>
</tr>
</tbody>
</table>

R-squared 0.939746 Durbin-Watson stat 2.071632

Adjusted R-squared 0.929357 Prob(F-statistic) 0.000000

(*) and (**) showing significance at 1% & 5% respectively.
grows at a rapid rate (USA, China, Japan, Germany, France etc). Pakistan is a developing country having fewer exports. The theoretical and financial statistics shows an upward trend in exports of Pakistan leads to constructive role to growth. This study aims to empirically assess the outcome of exports and found considerable and encouraging role of exports in economic growth of Pakistan. The results incorporated in table (2) demonstrate that the co-efficient value of exports presume through regression analysis of ARDL approach is (0.489497) elucidate that one percent increase in exports can bring an approximately forty-nine percent increase in economic growth of Pakistan. The result of this study for the impact of exports in growth is consistent with earlier studies of (Shirazi and Manap, 2004; Afzal, 2005; Khan and Sattar, 2010; Zada, et. al., 2011; Hameed, et. al., 2012; Saleem and Sial, 2015).

Due to lack of capital and industrial structure the exports of developing and under-developed mainly consists on agriculture and primary goods. Pakistan also reliant on the exports of primary and agriculture products since independence and it plays a fundamental role in economic growth accounted for more than fifty-percent contribution before 1960’s. Increased in production of agriculture and primary products not only ensure the food security in a country but also contributed significantly to the growth and foreign trade of the country. In order to make agriculture sector more effective to sustain high economic growth, to accomplish food necessities, reduction in poverty and make it more profitable, policy makers and government authorities needs to ensure constructive social, political and economic frame work for this sector. The primary objective of including exports of primary commodities as an explanatory variable in this study is to empirically observe the effect of exports of agri and primary products in economic growth of Pakistan. The results obtained from ARDL regression analysis of the model found positive and significant effect of exports of primary products on Pakistan’s economic growth as expected. The results integrated in table (2) shows that one percent increase in exports of primary products will bring an increase of approximately twenty-four percent in economic growth of Pakistan. The empirical result for exports of agri and primary products is strongly backed by theoretical studies and past literature including the studies of (Levin and Raut, 1997; Islam, 1998; Dawson, 2005; Kwa and Bassoume, 2007; Nadeem, 2007; Sanjuan-Lopez and Dawson, 2010; Faridi, 2012; Gilani, 2015). The real statistics of Pakistan’s economy also shows that the contribution of agriculture and primary products accounted twenty-one percent to growth during 2014-15. The small gap between real and empirical statistics of this study shows that there exists a chance of improvements in exports and contribution agriculture sector and primary products to economic growth of Pakistan.

Textile manufacturing sector is one of the important sector of Pakistan’s economy that considerably contributes to growth and development. Textile sector of Pakistan experiences different policies framework and goes through many trade policy reforms that leads to momentous contribution of this sector to Pakistan’s economic growth since independence. This study attempts to empirically examine the contribution of textile sector exports in economic growth of Pakistan. The results integrated in table (2) reveals that the co-efficient value (0.378492) of textile exports is significant and positive as expected illustrate that one percent increase in export of textile manufacturing sector may bring an increase of thirty-seven percent in economic growth of Pakistan. The empirical result regarding the contribution of textile sector exports to Pakistan’s growth is consistent with the past studies of (Tariq and Najeeb, 1995; Afia, 2004; Ahmad, 2010; Wang, 2013; Ahmad and Kalim, 2014) and annual report of APTMA (1995–96).

8 All Pakistan Textile Mills Association
Manufacturing sector performs crucial role in growth and development of the economies. That country whose manufacturing production is high did rapid growth in their economies and adopts a dominant role in foreign trade. Most of the empirical studies had found strong correlation between export of manufacturing sector and economic growth. This study endeavours to empirically scrutinize the role of export of manufacturing sector in economic growth of Pakistan, found statistically significant and optimistic. The results integrated in table (2) indicates that one percent increase in exports of manufacturing sector can considerably contribute up to twenty-four percent in Pakistan’s economic growth. The real statistics of Pakistan economy shows approximately twenty percent contribution of manufacturing sector to economic growth in 2014-15. The empirical results of this research study is reliable with the studies of (Abu-Qarn and Suleiman, 2001; Alam, 2003; Akbar and Fatima, 2003; Cuaresma and Worz, 2005; Herzer, et. al., 2005; Kurt and Terzi, 2007; Parida and Sahoo, 2007; Kilavuz and Topcu, 2012). Pakistan also exports some other goods that appreciably contribute to Pakistan’s economic growth. These items contain petroleum products, chemical, pharmaceutical products, knitwear, bed wear and etc. This study attempts to include exports of other items as explanatory variables to empirically assess their contribution in economic growth of Pakistan since 1972. The results obtained from ARDL regression analysis of the study integrated in table (2) found statistically significant contribution of exports of other goods in economic growth of Pakistan and reveals that one percent increase in export of other items can bring an increase of approximately thirteen percent in overall growth Pakistan.

World income has playing leading role in economic growth of the countries. The world countries can demand for exports of goods that are proportional to their income and that leads to increase growth of exporting and trading countries. Though there is limited empirical literature exists on the impact of world income on economic growth. This research study endeavours to explore the role of world income on exports foremost to economic growth of Pakistan. The results found affirmative and momentous impact of world income on Pakistan’s economic growth as expected concludes that one percent increase in world income can increase the demand for exports that may raise the economic growth of Pakistan up to forty-six percent as incorporated in table (2). The earlier studies of (Hassan and Khan, 1994; Kumar, 1998; Thirlwall and Lopez, 2004) had also found noteworthy optimistic effect of world income on the economic growth of different countries. It is expected that fluctuation in income elasticity’s as well as difference in trade patterns, supply and demand for goods creates worldly trends in exchange rate. It is also believed that depreciation in currencies of world leading exporting and swift growing countries effectively bring rapid increase in exports augmented to growth. That’s why superior exporting countries frequently devalue their currencies aiming that world countries prefers their exports. Theoretical as well as a vast number of empirical studies supports the negative relation of exchange rate and economic growth. This study aims to empirically examine the role of exchange rate on exports leads to economic growth of Pakistan. The results obtained from ARDL regression analysis indicate significant negative impact of exchange rate on Pakistan’s economic growth. The results integrated in table (2) reveals that one percent decrease/devalues in exchange rate may bring an increase of thirty-eight percent in economic growth of Pakistan. The empirical result of this study for the relation between exchange rate and Pakistan’s economic growth is consistent to the studies of (Elbadawi, 1997; Bahmani-Oskooee, 2001; Bleaney and Greenaway, 2001; Gomes and Paz, 2005; Bouoiyour and Rey, 2005; Shahbaz, et. al., 2011; Shawa and Shen, 2013; Tabari and Haghigh, 2014).
Though tariffs is the source of revenue for government but increase in exports tariffs/duties can shrink exports of goods that inversely effect the growth of that country. Sequentially to gain much from international trade and exports, the government of Pakistan has taken a number of measure steps to decrease exports tariffs aiming to bring an effective increase in exports lead to growth. Empirical as well as theoretical studies sustain an inverse relation between export tariffs and economic growth describing that rise in exports duties transform decline in growth of the economy. The empirical results incorporated in table (2) obtained from ARDL regression analysis shows that one percent decrease/devalue in exports tariffs may effectively add to growth of Pakistan up to forty-one percent via rising an exports of Pakistan. The result of this study attains for exports tariffs and economic growth of Pakistan is consistent with the earlier studies of (Bertola and Faini, 1991; Shun-Fa, 2011; Kahnamoui, 2013; Isakova, et. al., 2013).

Openness of trade is one of the apparent characteristics of economic growth and definitely an important determinant to its defining distinctiveness. That’s why many researchers had attempted to evaluate the effects and importance of trade openness in foreign trade and in economic growth of different countries. The theoretical literature greatly support the positive and encouraging contribution and effect of trade openness on economic growth while the empirical results found mixed relation between of trade openness and economic growth. This research study using proxy variable for trade liberalization attempts to evaluate the impact of trade openness on Pakistan’s economic growth and found insignificant co-efficient value of trade openness. The insignificant co-efficient value of trade openness in table (2) indicates that trade liberalization hasn’t any effect on economic growth of Pakistan empirically and theoretical literature also has ambiguous contribution of trade liberalization in case of Pakistan. Many researchers had concluded that exports of Pakistan didn’t grow significantly and still Pakistan has facing trade deficit since independence. Some earlier empirical studies of (Vamvakidis, 2000; Rodrik and Rodriguez, 2001; Rodrik, et. al., 2004; Sarkar, 2007) also didn’t found any significant impact of trade liberalization on economic growth of different countries.

The impact of trade balance is very vital on economic growth. The distinguishing feature of trade balance that it can affect the growth diversely both through exports and imports. Those countries whose exports are excess than imports have surplus in their balance of trade and considered fast growing economies. But unfortunately the trade balance of Pakistan persistently experienced deficit except few years that summit that Pakistan has excess of imports over exports. This study attempts to empirically examine the impact of trade balance on economic growth of Pakistan and the regression results of this study has found positive and significant value of trade balance co-efficient as shown in table (2) indicating that one percent improvement in trade balance canister support of forty-five percent to Pakistan’s economic growth. The empirical results of this study for trade balance is consistent to the findings of (Bahmani-Oskooe, 2001; Santos-Paulino and Thirlwall, 2004; Shafaeddin, 2005; Parikh, 2006; Duasa, 2007; Ju, et. al., 2008; Mohammad, 2010; Yasmin, 2012).

Many researchers and economist had found the profound impact of terms of trade on economic growth for different countries. Due to rapid changes in trade policies and globalization terms of trade became centre part element for policy makers. There is also large gap exists among the values of currencies, exchange of goods and amount of trading commodities among the developed and developing countries that increase the importance of terms of trade and became the core issue for researchers. It is believed that terms of trade have influential impact on investment too that indirectly affect the trade and growth of the economies. This study attempts to examine the role of
terms of trade on economic growth Pakistan empirically including terms of trade as an instrumental variable. The study found significant negative effect of terms of trade on the economic growth of Pakistan. The ARDL results incorporated in table (2) indicates that one percent change in terms of trade may bring change of approximately twenty-two percent in economic growth in inverse/opposite way. The result of this study for terms of trade is consistent with the studies of (Mendoza, 1997; Ghirmay, et. al., 1999; Bleaney and Greenaway, 2001; Kose, 2002; Blattman, et. al., 2003; Broda and Tille, 2003; Hadass and Williamson, 2003; Fatima, 2010).

The co-efficient value of ECT is significant and negative as indicated in table (2) illustrating that export and growth model of Pakistan will return back to its original and stability position at a rate of twenty-one percent (speed of adjustment) if disrupted from its path. The co-efficient value of constant term is negative and insignificant while the lag value of GDP is significant and positive that means that previous year growth playing an influential role in current year growth in case of Pakistan.

**ARDL Co-integration, Long form and Bound Testing Approach**

The researchers and policy makers mostly interested in long run relation and co-integration among the variables especially in the long run. Therefore, we applied ARDL co-integration and bound testing approach to find out the co-integration and long run relation between exports, its determinants and economic growth of Pakistan.

Firstly we applied ARDL co-integration test to check that either the variables included in the model are co-integrated with each other or not. The results of co-integration test are integrated in table (3).

**Table 3: ARDL Co-integration Test Results**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(IT)</td>
<td>0.528235</td>
<td>0.229739</td>
<td>2.299281*</td>
<td>0.0235</td>
</tr>
<tr>
<td>D(X)</td>
<td>0.243936</td>
<td>0.098677</td>
<td>2.472264*</td>
<td>0.0156</td>
</tr>
<tr>
<td>D(XPC)</td>
<td>0.184977</td>
<td>0.088911</td>
<td>2.080468*</td>
<td>0.0569</td>
</tr>
<tr>
<td>D(XTM)</td>
<td>0.276471</td>
<td>0.124046</td>
<td>2.228772*</td>
<td>0.0415</td>
</tr>
<tr>
<td>D(XOM)</td>
<td>0.175645</td>
<td>0.073441</td>
<td>2.391622*</td>
<td>0.0303</td>
</tr>
<tr>
<td>D(Y)</td>
<td>0.545010</td>
<td>0.201165</td>
<td>2.709262*</td>
<td>0.0162</td>
</tr>
<tr>
<td>D(ER)</td>
<td>-0.269108</td>
<td>0.077259</td>
<td>-3.483156*</td>
<td>0.0033</td>
</tr>
<tr>
<td>D(TRFX)</td>
<td>-0.134563</td>
<td>0.091465</td>
<td>-1.470880</td>
<td>0.3445</td>
</tr>
<tr>
<td>D(TOP)</td>
<td>-0.407565</td>
<td>0.299364</td>
<td>1.361438</td>
<td>0.2136</td>
</tr>
<tr>
<td>D(BOT)</td>
<td>0.257364</td>
<td>0.123875</td>
<td>2.077597*</td>
<td>0.0602</td>
</tr>
<tr>
<td>D(TOT)</td>
<td>0.225434</td>
<td>0.251603</td>
<td>0.895989</td>
<td>0.6248</td>
</tr>
<tr>
<td>CointEq(-1)</td>
<td>0.473981</td>
<td>0.166283</td>
<td>2.850452*</td>
<td>0.0122</td>
</tr>
</tbody>
</table>

(*) shows co-integrating variables

The ARDL co-integration test results signify that the variables of model are strongly co-integrating with each other as the co-efficient value of the estimator is significant and negative. Further, the results of co-integration test incorporated in table (3) indicates that there is significant co-integration between international trade, exports, exports of primary commodities, exports of textile manufacturing sector, exports of other manufacturing sector, export of other commodities and goods, world income, exchange rate, balance of trade and Pakistan’s economic growth. The study didn’t found any co-integration between economic growth of Pakistan, tariff imposition on export, Trade openness and terms of trade.
After analysing the co-integration for the long-run relation among the exports, its determinants, other trade policy variables included in this study and economic growth of Pakistan the ARDL bound testing approach is applied. The Null Hypothesis is $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = \alpha_8 = \alpha_9 = \alpha_{10} = \alpha_{11} = 0$. In contrast the Alternative Hypothesis is $\alpha_1 \neq 0$, $\alpha_2 \neq 0$, $\alpha_3 \neq 0$, $\alpha_4 \neq 0$, $\alpha_5 \neq 0$, $\alpha_6 \neq 0$, $\alpha_7 \neq 0$, $\alpha_8 \neq 0$, $\alpha_9 \neq 0$, $\alpha_{10} \neq 0$, $\alpha_{11} \neq 0$. The alternative hypothesis showing the long-run relation included in model, whereas, null hypothesis showing short-run relation. Results in table (4) designate the rejection of null hypothesis as the F-stat value is higher than the upper bound value of bound testing approach. The hypothesis was tested by comparing the F-statistics value and Pesaran critical value (Pesaran, et. al., 2001).

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

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Bounds Test Value</th>
<th>Critical Value Bounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>19.58410*</td>
<td>I(0) Bound 5.73</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I(1) Bound 5.77</td>
</tr>
</tbody>
</table>

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

To confirm the long run relation between variables included in the model the Wald test is applied. The results of Wald test integrated in table (5) verifies the results of bound testing approach and confirms that long run relation exists between exports, its determinants and economic growth of Pakistan for the period of 1972-2015.

Table 5: Wald Test for Long-Run Relation (Null Hypothesis: $C(2)=C(4)=C(6)=C(7)=C(9)=C(11)=C(15)=C(17)=C(19)=C(21)=C(23)=0$)

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>4.008709*</td>
<td>0.0066</td>
</tr>
<tr>
<td>Chi-square</td>
<td>48.10451*</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

(*) shows the rejection of Null hypothesis

After finding the long run relation between the dependent and independent variables of this study, the ARDL long form test is applied to know the long run behaviour of each variable included in the study. The result of long form co-efficient test is integrated in below table (6).

Table 6: ARDL Long form Co-efficient Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT</td>
<td>0.634517</td>
<td>0.218572</td>
<td>2.903009*</td>
<td>0.0109</td>
</tr>
<tr>
<td>X</td>
<td>0.284315</td>
<td>0.096812</td>
<td>2.936746*</td>
<td>0.0102</td>
</tr>
<tr>
<td>XPC</td>
<td>0.302644</td>
<td>0.145435</td>
<td>2.080952*</td>
<td>0.0366</td>
</tr>
<tr>
<td>XTM</td>
<td>0.376249</td>
<td>0.137056</td>
<td>2.745221*</td>
<td>0.0143</td>
</tr>
<tr>
<td>XOM</td>
<td>0.364308</td>
<td>0.152542</td>
<td>2.388253*</td>
<td>0.0305</td>
</tr>
<tr>
<td>XO</td>
<td>0.154653</td>
<td>0.079176</td>
<td>1.944891*</td>
<td>0.0638</td>
</tr>
<tr>
<td>Y</td>
<td>0.473587</td>
<td>0.095891</td>
<td>4.938814*</td>
<td>0.0002</td>
</tr>
<tr>
<td>ER</td>
<td>-0.357568</td>
<td>0.169479</td>
<td>-2.109807*</td>
<td>0.0340</td>
</tr>
<tr>
<td>TRFX</td>
<td>-0.182728</td>
<td>0.170978</td>
<td>-1.068727</td>
<td>0.4521</td>
</tr>
<tr>
<td>TOP</td>
<td>-0.112685</td>
<td>0.080623</td>
<td>-1.397675</td>
<td>0.5635</td>
</tr>
<tr>
<td>BOT</td>
<td>0.393215</td>
<td>0.124693</td>
<td>3.153458*</td>
<td>0.0089</td>
</tr>
<tr>
<td>TOT</td>
<td>-0.247561</td>
<td>0.225998</td>
<td>-1.095416</td>
<td>0.6252</td>
</tr>
<tr>
<td>C</td>
<td>0.352580</td>
<td>0.244856</td>
<td>1.439950</td>
<td>0.4662</td>
</tr>
</tbody>
</table>

(*) shows Long run significant relationship between Dependent & Independent Variables
The results of long form co-efficient test incorporated in table (6) indicate that international trade, exports, exports of primary commodities, exports of textile manufacturing sector, exports of other manufacturing sector, export of other commodities and goods, world income, exchange rate, balance of trade significantly contributing to economic growth of Pakistan. However, the study doesn’t found any significant impact of Trade openness and terms of trade on economic growth of Pakistan.

**Diagnostic and Stability Analysis of Model**

In order to check the robustness, goodness and credibility of the model different stability and diagnostic tests were applied. The serial correlation and spurious relation has remains main concerns of researchers in times series research. For detecting the Serial Correlation the Breusch-Godfrey Serial Correlation LM was applied. The results of the test integrated in bellow table (7) don’t found any significant occurrence of auto-correlation, serial correlation and spurious relation.

**Table 7: Breusch-Godfrey Serial Correlation LM Test Results**

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>0.502528*</td>
<td>0.6417</td>
</tr>
<tr>
<td>Chi-square</td>
<td>1.413014*</td>
<td>0.4413</td>
</tr>
</tbody>
</table>

(*) shows the rejection of Null hypothesis

Though there is negligible chance of Heteroskedasticity in time series data but still we applied Breusch-Pagan-Godfrey Heteroskedasticity test to check the variance among the variables and removes worries regarding to Heteroskedasticity.

**Table 8: Breusch-Pagan-Godfrey Heteroskedasticity Test Results**

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>0.797254*</td>
<td>0.6960</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>21.45185*</td>
<td>0.5535</td>
</tr>
</tbody>
</table>

(*) shows the rejection of Null hypothesis

The results of Breusch-Pagan-Godfrey Heteroskedasticity test integrated in table (8) shows that variance among the variables are normally distributed and thus rejects the chance of Heteroskedasticity in the model.

For the specification biasness and stability analysis the Ramsey RESET test is applied and the results incorporated in table (9) indicate that the model is stable. Further the results shows that variables included in the model are appropriate and don’t contain any irrelevant variable.

**Table: 9. Ramsey RESET Stability Test Results**

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-statistic</td>
<td>0.248442*</td>
<td>0.3715</td>
</tr>
<tr>
<td>F-statistic</td>
<td>0.384302*</td>
<td>0.3715</td>
</tr>
</tbody>
</table>

(*) shows the rejection of Null hypothesis

**Conclusion**

The exports and its possible effect on economic growth had gained considerable importance with the preamble of liberalization and trade openness policies in developing countries thorough out the
The study used time series data covering the period of analysis from 1972-2015. In methodology of the study the growth models exports, its determinants and other policy variables on economic growth of Pakistan were empirically analysed. Most of the findings were strongly supports by earlier literature and real facts and figures (issued by government of Pakistan in various issues of economic survey).

In analytical techniques various techniques were applied. Firstly, the data used in this study were pre-tested by applying Augmented Dicky-Fuller (ADF) unit root test to check the stationarity, unit root, spurious relation and order if integration in the data. For the regression analysis of the variables the Auto-Regressive Distributed Lag (ARDL) model was applied for the regression analysis of the variables data. Further, the ARDL bound testing approach for finding the relation among the variables was applied. To check the stability, sensitivity, goodness and robustness of the models, different diagnostic and stability tests were applied. For auto-correlation and Heteroskedasticity the Breusch-Godfrey Serial Correlation LM Test and Breusch-Pagan-Godfrey Heteroskedasticity were applied. For model specification and stability the Ramsey RESET test was applied. The ARDL co-integration test was applied to find out the co-integrating vector among the variables.

To evaluate the impact of exports and its determinants on economic growth of Pakistan, this study empirically analyse the impact of international trade, exports, exports of primary commodities, exports of textile manufacturing sector, export of other manufacturing sector, export of other commodities and goods, world income, exchange rate, tariff imposition on export, Dummy variable for Trade openness or Liberalization policy, terms of trade and balance of trade. The results obtained from the regression analysis of the study revealed that trade openness remains insignificant, international trade, exports and its determinants had affirmative and significant while exchange rate, exports duties and terms of trade have significant negative impact on economic growth of Pakistan.

The main failure of export growth in Pakistan depends on certain socio-political and economic factors e.g. advanced infrastructure, encouraging geo-political and world condition, nonviolent law and order situation, political stability, competitiveness, efficient manpower, price and bargaining power in trade negotiations, and considerable research and development expenditure, etc. The possibility of improving exports growth by handling aforementioned determinants and situation efficiently in a developing economy like Pakistan is almost unattainable. 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. It is also observed that government of Pakistan could not utilized their resources 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.

References


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