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The Impact of Exports Diversification on Economic Growth: Evidence from Pakistan

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Abstract
The paper explores the impact of export diversification on the economic growth in Pakistan. Augmented Dickey Fuller unit root test Bound F test results, estimated long run coefficients and ARDL short run Error Correction Model (ECM-ARDL) results applied for the empirical estimation of the study. Gross domestic product per capita, export diversification, is stationary at first difference and real effective exchange rate and population density are stationary at level. Export, real effective exchange rate and population density positively effect on economic growth. Human capital formation is negatively affected on economic growth. The bound testing approach to Co integration is used during 1980 to 2015. This test suggests that in long run series of interest are linked together. In the mid of year equilibrium is fairly fast and restored. Government should increase discoveries because about foreign demand would lead to imitation and therefore increased local production for exports and higher growth. Government should therefore intervene by creating the right incentives for investment.

Keywords: exports, economic growth, Pakistan
JEL Codes: F1, O4

I. Introduction

Export diversification is the changing of a country export structure. This can be attained by changing the existing basket of commodities or by embellishing them through innovation and technology. It also implies that the number of export sector has increased. The role played by the diversification of exports on economic growth of a country has raised much debate recently in the economic field. The on-going debate is central to whether export diversification actually plays a role in the growth of the economy. Policy makers may use export diversification as a source of economic growth, in cases where the size of the domestic market is small and the existing export basket is concentrated in products that have inelastic demand diversification into non-traditional exports opens up new opportunities and new markets for firms. A country's export pattern is a good predictor of its future growth. They further stipulate that for a country to become rich, it needs to export "rich country" exports. This means that for developing countries to attain the income level of developed countries, they must diversify their exports from primary to manufactured goods which are largely considered as "rich country" exports. The contribution of export diversification to economic growth has therefore assumed a central stage in the development literature and has intrigued researchers over the past six decades. Lederman and Maloney (2003) identify export diversification as a promoter of economic growth in developing countries. Export diversification can be seen as a process of widening comparative advantage which is essential to economic growth. Countries like South Korea, Taiwan, Mauritius, Finland, China, and Chile are said to have attained high economic growth rates largely as a result of export diversification.

Diversification into new primary export products or manufactured goods is generally viewed as a positive development. Its benefits include higher and more stable export earnings, job creation and learning effects, and the development of new skills and infrastructure that would facilitate the development or discovery of new export products. Economic growth is solitary of the most important factors of economic welfare. The relationship between exports and economic growth is a common topic of debate, when economists try to explain the different stages of economic growth between countries. Exports of goods and services signify one of the most important causes of foreign exchange income that comfort the pressure on the balance of payments and generate service chances. The argument about the role of exports as one of the main deterministic factors of economic growth is not new. It drives back to the classical economic concepts by Adam Smith and David Ricardo, who argued that worldwide trade plays an important role in economic growth. The neoclassical approach highlights the importance of competitive advantages in international trade. Each country maximizes its well being through the activities which are the most efficient concerning resource and production factors shortage in of the economy. Over the past years, an increasingly larger role granted to exports in rising domestic demand, the growth of exports increases technological innovation covers the domestic and foreign demand and also increases the inflows of foreign exchange, which can essential to better volume use and economic growth. In developing world economists and politicians not only focus on trade liberalization, but also give pressure on the importance of export policy of change for the economic growth. Because exports diversification is considered as to increase economic development in developing countries through different ways:

- Reducing the export instability by decreasing the confidence on a small number of products which are subject difficulty of capacities and price variations.
- Concluded knowledge and technological spillover effect.
- Making countries less helpless to external shocks increasing productivity growth.
- Increased markets for their exports by replacing their exported products with positive price drifts products in the international market.
- Improvement of their technological capabilities.

While in recent eras, several developing countries have assumed structural improvements that were aimed to recover economic performance through export change. Consequently, it is important to analyze the effect of some reforms such as trade liberalization and economic addition on export diversification. In the recent time export diversification has been at the center of the debate about how developing countries can improve their economic performance and to achieve their higher level of development. At the same time there have been a number of investigating that proved the positive effect of diversification on economic development. But the works on a better understanding about the effect of specific reforms is not so lavish. There are a few papers, travelling pattern and factors affecting export diversification in developing economies which is the research interest of this study in deepness for Association of Southeast Asian Nations (ASEAN) and South Asian Association for Regional Cooperation (SAARC) region's economies. Early (1960) many researcher and policy maker had an interest in the relationship between export and

economic growth. The main purpose of the researcher was that they were interested to know about if there was an increase in export results more economic growth. The reason of economy growth export development and free entry and exit. With the world economy and Pakistan the fiscal year 2001-2002 is the most tough and competition year. The occasion of September 11 and December 13 and the persistence of the appalling lack condition affect the pace of economic recovery in Pakistan.

The situation of the economy in the country too was not so good. In the year 2001-2003 Pakistan's 3.1% growth in real GDP almost below three percentage points the boom period of the 1980s, which averaged 6.1% growth. The good performance resulted because of a combination of generally sound economic policies, in the process of work structural reforms and a benign international economic environment. Based on the act of half a decade of strong, stable supple and broad based economic growth it appears that Pakistan's economy will persist to be a high mean low different economy over the medium term. Pakistan has adopted export led growth plan during early 2000s, and opened its economy to international competition without achievement of significant competitiveness in any production sector. Pakistan's overall external account balance posted a surplus of US $ 2.12 billion during Jul-Apr 2014-15 against US $ 1.95 billion in the corresponding period last year due to marked improvement in the current account and substantial foreign exchange inflows. As per SBP data exports during the first ten months (July-April) of the current year stood at US$ 20,176 million against US $ 20,834 million during the corresponding period last year. (Survey 2014-15). Pakistan's exports have been stagnant for the last few years, wavering around US$ 24-25 billion. During July-April, 2014-15, exports stood at US$ 19,926 million against US$ 20,979 million during the corresponding period last year. Bangladesh's exports, for instance, surpassed the $30 billion last year and are set to hit the current year's target of $34.5 billion. According to a UN study covering a 30-year period (1980-2011), India's share of world exports improved from 0.43 percent to 1.7 percent; Bangladesh's from 0.04 percent to 0.14 percent; Malaysia's from 0.74 percent to 1.34 percent, and Thailand's from 0.37 percent to 1.35 percent. Pakistan's share, however, remained stagnant at 0.15 percent. (Survey 2014-15)

Pakistan's export base and markets are extremely narrow. Over 55 percent of its exports earning are contributed by the cotton group alone. The other three items, namely leather, artificial made ups and rice contribute about 14 percent of total exports. Unfortunately, the above four items are relatively low value added product. Pakistan has not made much progress in increasing the number of products. Pakistan is also yet to enter in high-tech exports. Similarly, in addition to diversification of products, new markets of our exports need to be explored in African countries, South America, the ASEAN region, Russia, Eastern Europe etc. Presently, our exports are concentrated too few markets in North America, European Union, and Middle East countries. As per Annual Plan 2014-15, Exports were targeted to grow by 5.8 percent to reach to US$ 27.0 billion. The target was set on account of momentum building in exports due to GSP Plus status, underlying assumption of improvement in energy situation and increase in trade with regional partners, etc. Export, due to the factors discussed in preceding paras, remained sluggish during the current fiscal year (July-April 2014-15) and amounted to US$ 19,921.5 million as against US$ 20,979.1 million, thereby showing a decline of 5.0 percent. Security problems, non-availability of utilities at competitive rates, competitiveness in the international markets are the major problems for the Pakistani exporters, Pakistan's textile exports that constitute more than 50 percent of the total exports is effectively stagnant at around US$13 billion for the past many years because industrialists are busy producing raw-materials or basic unfinished products that do not fetch desired margins. With over $19 billion in textile exports, Bangladesh and Pakistan's main competitor in the textile industry has already gone too far by investing in quality ready-made garments. After China, Bangladesh is the second biggest textile exporter as it has doubled its exports in the last 10 years, leaving both its traditional competitors Pakistan and India far behind in the competition.

Pakistan's exports over the 1970 to 2014 increased at a rate of 7.7 percent per annum. In the first half during the 1970s, however, the worldwide inflation and diversion of the inter - wing to international trade resulted in a rather high growth rate of 27.1 percent. During the second half of 1970s Pakistan's export growth were 10.6 percent. In the first half of 1980s Pakistan's exports hardly registered any growth, rising rate only at 1.7 percent per annum. During the second half of the 1980s, export growth rate rises to 11.6 percent per annum. During the first half of nineties exports were growing at an average rate of 6.4 percent per annum. This performance was due to better cotton crop during 1992-93 and 1994-95. After that during the late 1990s the performance of exports was adversely affected to an average growth rate of 3.0 percent per annum and that was due to the imposition of the sanctions. During 2000-01 to 2003-04, the export growth raised at the rate of 5.4 percent per annum. OECD economies are major trading partners of Pakistan. The exports from Pakistan to OECD increased from 4 billion rupees to 607.5 billion rupees during 1975-2012. During the same period, imports from Pakistan to OECD raised from 13 billion rupees to 591

billion rupees on an average 11.72 % per year growth rate. The OECD member countries contribute approximately 55 percent in Pakistan total exports (Economic Survey of Pakistan, 2012). OECD stands for the Organization for Economic Co-operation and Development, Today, under the umbrella of OECD there 34 countries, including a few major countries namely: Australia, Canada, France, Germany, Japan, Korea, Netherlands, New Zealand, Turkey, United Kingdom, and United States (OECD, 2012). Thereafter, many LDCs were forced to stimulate their export-led orientation, even more because most of them have to rely on multilateral organizations, to implement and adjust stabilization programs to improve their economic imbalances. Promoting exports would enable LDCs to improve imbalances in the external sector and at the same time assist them in their recovery.

In Pakistan, export-led economic policy has been put into practice in the second half of 1990s but with a limited success. Pakistan's export earnings remained stagnant around US 8-9 billion during the mid-1990s that constitute approximately 13% of the GDP. As far as its share in the total world trade remained consistently very poor, 0.2%. Growth rates of exports have been fluctuating year to year, 3% per year for past two decades. Pakistan is facing a number of economic, political and socioeconomic problems that hinder the export growth. Two major economic obstacles are lack of economic infrastructure, especially the power shortage and a very limited export base. So far no Government has been able to plan a long term power policy to cater the needs of industrial sector rather all have resorted to raise the power tariff forcing the export based industry less competitive in export markets. On the other hand Pakistan export base is very limited, based on cotton and cotton related textile industry that falls under the category of semi-finished items.

II. Literature Review

Matadeen (2011) determined the relationship between exports diversification and economic growth for developing countries for the period 1980 to 2008. The study used Johansen Co integration, analysis and the Vector Error Correction Model (VECM) and also used variables such that per capita income or per capita GDP, investment or gross domestic capital formation, labor productivity and exports. Per capita income or per capita GDP is dependent variable and others are independent. This study shows that there is negative relationship between export concentration and economic growth. To increase the economic growth in a country, there is a need to promote exports of a country and to provide appropriate incentives about the market such as perfect information, promote entrepreneurship, improve technologies (innovation and discoveries) and also provide a competitive business environment to enhance the export diversification.

Rashid (2012) analyzed the effect of export instability on economic growth in (SAARC) region countries. This model used time series data from 1975 to 2004. The Johanson Co integration technique used for estimation. The main independent variations of this model are log of real GDP, log of real export of goods and services, log of real gross fixed capital formation, while the dependent variable is log of export instability index. The estimation results show that there are long run relationship exit between the dependent and independent variables. There is a need to liberalize foreign exchange and capital market to control the exports fluctuations. Market forces control for the determination of resource allocation.

Noreen and Mehmood (2014) explained trends and factor affecting export diversification in Essen and SAARC region: an empirical analysis. This model used time series data from 1986 to2012. Ordinary least squares co-integration used for estimations. The independent variable is foreign direct investment, domestic investment, competitiveness, financial sector development and institutional strength and dependent variables is exported diversification. The estimation results show there are positive significant relationship between dependent and independent variable. The finding result is ASEAN and SAARC regions to improve their international competitive strength to attract both domestic and foreign direct investment.

Mudenda et al. (2014) analyzed the role of export diversification in economic growth in South Africa. The study used annual time series data for the period 1980 to 2010. A Vector Error correction technique used for estimating the effect of export diversification and possible factor in economic growth. The main independent variation of this model is Normalized Hirschmann, Human Capital Formation, Real, Effective Exchange rate, Trade Openness and the dependent variable is Gross Domestic Product. The estimation result shows that there is a long run relationship between independent variable. Exports diversification and trade openness are positively related to economic growth while real effective exchange rate, capital formation and human capital have a negative relationship with economic growth.

Export diversification and economic growth in Sub-Saharan Africa by Hodey (2013). Some economies in Sub-Saharan Africa (SSA) have been associated low and volatile growth performance over the year. The study used panel data of forty two Sub-Saharan Africa countries for the period 1995 to 2010. GMM technique was used for estimation in this article. The variable used in this article, including Initial Real GDP per capita, human capital, physical capital, population, growth, Foreign, Direct Investment, Exports Diversification. Exports Diversification Squared, Regional Dummies and interacted variable of Exports Diversification with the Regional Dummies. The estimation results that a positive effect of exports diversification and economic growth. Aditya and Roy (2012) analyzed export diversification and economic growth evidence from cross country analysis. This paper analysis the export-growth relationship taking into accounts both diversification and nature of exports composition. This study used time series data for the period from 1965 to 2005. GMM technique was used estimation in this article. The impact of export diversification of income a dynamic framework by including a lagged dependent variable and GDP is the independent variable. These estimation results show that on exports, economic growth relationship has immense implications for growth.

Shihab et al., (2014) aims to examine the causal relationship between economic growth and exports in Jordan. This study used time series data during the period 2000 to 2012. Granger technique was used in this article in order to determine the direction of the relationship between two variable and a long term relationship estimated using Johansen Co integration test. The two economic variables in this article are the exports of good and services and the change in real gross domestic product at market prices. The estimation result shows that there is evidence of uni-directional causality between exports and economic growth and the direction of causality from economic to exports. This study provided support for growth-led exports in Jordan.

Ebrahim et al (2015) investigates the role of exports diversification of agriculture sector on economic growth in developed countries include France, Italy, Germany, Spain, Denmark, Hungary, Canada, USA, Japan and Australia. The study used Panel data for the period between 1991 to 2011.This estimation proposed three types of data panel. The first is the ordinary least squares with the grouped panel. The second and third is the time variables in the model of random effect, respectively. The independent variable of this model is the growth of gross domestic product and the independent variable is Exports diversification, Human capital index, labor force, physical CapitaLand the economy openness degree. The estimation result shows that for developing countries, exports diversity index of the agriculture sector has a positive and significant effect on economic growth.

This study investigates that can FDI promote export diversification and Sophistication of host countries? Dynamic panel system and GMM analysis by Iwamoto and Nabeshima (2012). By using time series data from 1980 to2007. The estimation results show that no statistically significant relationship between FDI and export diversification and positive and statistically significant correlation between FDI and export sophistication involving FDI is the dependent variable while exports diversification and sophistication of host countries as independent variable. Songwe and Winkler (2012) analyzed exports and export diversification in Sub-Saharan Africa a strategy for post-crisis growth. This model used time series data between 1995 to 2008. The dependent variable is GDP and the independent variable is exported and export diversification. Exports have a positive effect on both unconditional and conditional labor demand. Policy implications suggest that sub-Saharan Africa countries need to concentrate on improving productivity in areas where they have comparative advantages.

Export diversification and economic growth in Nigeria: An empirical test of a relationship using a ganger causality test by Olaleye et al (2013). The total export of Nigeria has been used independent variable and per capita income as the dependent variable. Time series data have been used in this model. Granger causality test applied in this model. The estimation results show that stationary variables are used to confirm the existence of a long run relationship between the variable. Alavina (2013) attempted to test the relationship of exports and economic growth in Iran. By using annual time series data for the period of 1976 to 2010 for Iran. Ordinary least squares (OLS) technique used in this model as analytical technique, and Johansen co-integration approach. The main independent variation of this model is Exports (EXP), Real Exchange Rate (RER), Inflation (INF) and dependent variable of this model is Gross Domestic Product (GDP). The result of the study shows that there is a positive and significant effect of exports, inflation and real exchange rate of economic growth.

Kareem (2014) analyzed export diversification and economic growth in Malaysia. Data were taken from 1980 to 2007. The Co integration and Granger causality test were applied to estimate. The results show the presence of a unique Co integration vector among the four variables. Consistent with previous studies, we found that export

diversification plays significant roles in economic growth in Malaysia. The non-linearity between export concentration and economic growth using dynamic panel estimation on a database from 1995 to 2010. Endogeneity and county specified fixed effect can be effectively solved using the two dynamic GMM estimators, first-difference (Arellano and bond 1991) and system (Arellano and Bover, 1995 Blundell and Bond, 1998). The result suggests that those countries which look for quality upgrade or heavily percent in the international market scenario will firstly better reap the benefits coming from the first diversification boosting all the process and, furthermore, obtaining higher final value of growth during the second phase characterized again by concentration. This paper empirically investigates the separate effects of vertical and horizontal export diversification on economic growth based on a panel data of 41 countries from Sub-Saharan Africa (SSA) and East Asia. Davidson and Mackinnon (1993) suggest an augmented regression test called Durbin-Wu-Hausmans (DWH test) test for endogeneity, which can easily be carried out for the residuals of each endogenous right-hand side variable, as a function of all exogenous variables. The empirical results confirmed that export diversification; 2009] The Impacts of Vertical and Horizontal Export Diversification on Growth (YOKOYAMA & ALEMU) 85 especially vertical diversification played a vital role to induce economic growth in the case of East Asia. East Asia's success was highly attributed by their huge investment in human capital through education and the high rate of physical capital accumulation mainly driven by foreign direct investment (FDI).

This paper examined the short and the long run relationship between economic growth, exports, real investments and labor force for Coˆte D'Ivoire. The study used time series data for the period 1961–97. Cointegration and error correction techniques were used for estimations. The results indicate that there is one long-run equilibrium relationship between the four variables, and the causal relationship flows from the growth in exports to the growth in GDP both in the short and long run, providing support for the export-led growth hypothesis. Afzal et al. (2009) worked at the causal nexus between economic growth export and external debt servicing (the case of Pakistan). In this study the vector error and augmented vector autoregressive methods are used. The time span of this study is 1970-71 to 2007-08. We analyzed that the exports led growth hypothesis is not valid in Pakistan, though the reverse of its exit in shape of growth driven exports

Herzer et.al (2004) worked on Export diversification, externalities and growth. The diversification led growth hypothesis is tested by using an augmented Cobb, Douglas production function on the basis of annual time series data from Chile. The estimation results suggest that exports diversification plays an important role in economic growth. Arailym (2011) worked on the effect of export diversification on country growth. In this study the sample of 88 country is used in the period of 1962-2009. In this study the Solow growth model used. The main conclusion of this study is that country, especially developing country do benefit from export diversification. Azam investigates the export and economic growth in Pakistan; an empirical analysis. The empirical investigation of the economic growth of Pakistan uses time series data for the time period between 1997 to 2009. In this study, co-relation matrix and augmented dickey fuller (ADF) were used. The aim of this study is to check the impact of export on foreign Direct Investment. The policy maker should increase the volume of export and the promote FDI.

Aleksandra and Pittiglio (2015) suggested that the export diversification and economic development dynamic spatial data analysis. The data were taken from the period 1992-2012. In the study spatial auto correlation test was used. The results of the spatial panel data were clear the spatial network effects which effect is to two effects one is direct effect and the second indirect effect these results are robust to the choice of the weight matrix. Xuefeng and Yasar (2016) analyzed the export market diversification and firm productivity. Data were taken from year 2000 to 2016. Guinea-Hirschman index, this entropy index, the Shannon-Waver index H, and the Herfindahl index was used for estimation. Cobb–Douglas production function was used in which output is a function of labor, capital, and material for each (two-digit) industry and by separately using a method suggested by Wooldridge (2009), which controls for the simultaneous issue that arises when estimating a production function. The results show that there is a U- shaped relationship between export market and firm productivity.

Kurihara and Fukushima (2016) worked on Openness of the Economy Diversification Specialization and Economic Growth. The data from the Diversification Toolkit covers many countries, including lower income countries, and provides indicators on export product diversification up to 2010. Estimation was performed using panel least squared (OLS) and robust estimation method. Granger causality tests also were performed to check the relationship among variables, explanatory variable and dependent variable. The empirical results show that greater openness of the economy does not always mean the greatest economic growth in emerging and developing countries.

Saul and Saleem (2015) observed the exports growth nexus in Pakistan. They used the time series data from 1973 to 2013. The ARDL approach is employed to determine both the short run and the long run relationships and in addition the Granger causality test used. Short run and the long run inferences show that exports, human capital and capital formation have a significant and positive impact on GDP growth of Pakistan. The causality inferences show two ways causality between exports and GDP growth in the short run and the long run. Hague and sultan (2014) investigated Potential for Export Diversification in Saudi Arabia. They used the time series data from 1991 to 2012. The pound test has been used for estimation. The bound test analysis shows that most these products exhibit a long run co-integration relationship with the inflow of foreign direct investment and real effective exchange rate, and world gross domestic product. The police suggested that Saudi Arabia should promote to export non-mineral products and promote foreign direct investment inflows into these sectors.

Balavac and Pugh (2016) analyze the link between trade openness export diversification institutions and output volatility in transition countries. The time series data have been used for the time period from 1996 to 2010. They used to trade openness, export diversification and institutions as an independent variable. They used the theil index for estimation. Results suggest that diversification may not attenuate the output volatility effects of openness for transition countries already at medium or higher levels of diversification, but nonetheless may have this effect at lower levels of diversification

III. Theoretical Framework

Smith stated that the increasing specialization and division of labor, coupled with international exchange, would contribute to raise welfare and growth of a nation. Smith says international trade as a welfare-enhancing mechanism: the division of labor required people exchanging goods and services. Higher levels of trade would imply more specialization, division of labor and by these means, economic growth would be enhanced. Specialization is considered by Smith, both as a source of efficiency gains and continued technological progress, since it implies the development of new tools and mechanisms for undertaking the specialized tasks. When specialization is promoted, new gains from exchange could be expected, as countries exploit the gains from that specialization. More specialization, induced by free trade, would reinforce the economy's growth path. "International trade has a very positive effect on economic growth. A sudden shift in trade policy that opens up new trade provides an immediate gain in real per capita income, which, in turn, accelerates technological progress and increases the rate of economic growth permanently."

David Ricardo's two countries-two goods-one factor of production example, proposes gains from trade and specialization for the countries involved, even when one of the countries is more efficient in the production of both goods. The Ricardian model explains trade as a sort of "win-win situation", where the two countries engaged are benefited, despite of their differences in terms of technology or wages. International trade originates in international differences in the productivity of labor. The pattern of trade, being determined by comparative advantage, increases welfare in both nations by means of improvements in production and consumption efficiency. Specialization turns out to be beneficial for the countries involved. Wages and incomes are also better off, after a trade takes place.

Free trade was proposed by Smith and Ricardo as a route to achieve production efficiency at a global level. The Ricardian model, trade, welfare effect is considered from two different perspectives. The first one is associated with the rise in real wages for the workers in the two countries engaged in trade, as compared to their situation in autarky. A situation is depicted where, if both countries specialize in their comparative advantage goods and engages in free trade, then both countries could experience gains from trade. The second perspective is linked to the aggregate welfare effects of free trade, originated in increased production and consumption efficiency. Specialization and comparative advantage to allow countries to achieve higher levels of aggregate utility, implying a rise in their national welfare. Trade allows consumers to reach a higher indifference curve and hence, a higher welfare level, than under autarky. Producers and consumers are benefiting from free trade, since it increases the ranges of choice in both countries involved. World output can be augmented, if each country specializes in producing the good in which it has comparative advantage.

"In these circumstances the income distribution effects of trade will be small and there will be substantial extra gains from intra-industry trade. The result may be that despite the effects of trade on income distribution, everyone gains from trade." Estimation of country comparative advantage or disadvantage in commodities industries or sectors standard approach or methodology RCA index is employed. When there is no trade we use comparative advantage instead of relative prices. According to Ricardian theory when there is difference in technology between nation comparative advantages occurs. According to H-O theory factor price are different, but technology is

constant. Trade theory based on the difference between the factor prices. According to Balassa, 1965 trade pattern is more important rather than other ingredient including in comparative advantage. Trade explains revealed comparative advantage, which is practicable and common. Balance Index only concentrated on estimating comparative advantage of any country rather than focusing on determining its sources. Another change of RCA indices includes Normalized Revealed Comparative Advantage Index (NRCA) that provides comparison over time and space.
Liesner (1958) first time empirically studied RCA by following measures.

$$RCA1 = Xij / Xnj$$

Where Xij is the export of the country, I for j commodity or industry and n represents set of countries. The RCA Balassa index is expressed as follows

$$RCA2 \text{ (Balassa Index)} = Xij/ Xin \div Xwj/ Xwn$$

As the actual export flows 'reveal' the country is strong sector, it is also known as revealed comparative advantage.
Balassa index is a measure of comparative advantage at a point in time, it seems natural to use the difference between RCA indices at the beginning and the end of a period to measure the change of comparative advantage during the period. Vollarth also develop the three different indices for the measurement of comparative advantage. These indices are called Relative Trade Advantage (RTA) Revealed competitiveness (RC) and Relative Export Advantage (REA). The positive values obtained in theses indices indicate comparative advantage while negative values point out comparative disadvantage.

III.I. Data Source and Methodology

The aim of this paper is to test the impact of export on economic growth of Pakistan. For this exploration purpose, we have taken economic growth as a dependent variable and export diversification, population density; human capital formation and real effective exchange rate are the independent variables. In this study used the time series data over the period 1980-2015. The data of different variables are collected from different sources. World development indicator, Economy watch and Federal Reserve Economic data are the major source.

III.II. Model Specification

Following the methodologies of Ali (2011), Ali and Chani (2013), Mehmood et al., (2013), Siddiqi et al., (204) and Ali and Naeem (2017), the general model is
Y= per capita GDP, export, investment, human capital formation, real effective exchange rate
The specific form of our model is

$$Y_g = \alpha_0 + \alpha_1 \exp(d) + \alpha_2 hum + \alpha_3 p(d) + \alpha_4 reer + \mu \ldots\ldots (1)$$

- Y= PC (GDP)
- Exp(d)= Export diversification
- P (d) =population density
- Reer= Real effective exchange rate
- Hum=human capital formation
- μ = error term

III.III. Export Diversification

Exports are a component of aggregate demand (AD). Rising exports will help increase AD and cause higher economic growth. Growth in exports can also have a knock on effect to related 'service industries'. Export growth is important because of its effect on internal trade and economic stability. Even more, the rate of economic growth and the distribution of income and wealth in a country are closely related to export growth. "Export is a function of international trade whereby goods produced in one country are shipped to another country for future sale or trade. The sale of such goods adds to the producing nation's gross output. Exports in Pakistan increased 5.6 percent year-on-year to 184497 PKR Million in November from 183660 PKR Million in October of 2016. Exports in Pakistan averaged 38421.87 PKR Million from 1957 until 2016, reaching an all-time high of 275483 PKR Million.

III.IV. Real Effective Exchange Rate

The real effective exchange rate (REER) is the weighted average of a country's currency relative to an index or basket of other major currencies, adjusted for the effects of inflation. The real effective exchange rate in Pakistan

was last measured at 109.78 in 2014, according to the World Bank. Real effective exchange rate is the nominal effective exchange rate, a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of cost.

III.V. Per Capita GDP

Per capita GDP is a measure of the total output of a country that takes gross domestic product (GDP) and divides it by the number of people in the country. The Gross Domestic Product per capita in Pakistan was the last recorded at 1152.14 US dollars in 2015. The GDP per Capita in Pakistan is equivalent to 9 percent of the world's average. A rise in per capita GDP signals growth in the economy and tends to reflect an increase in productivity.

III.VI. Human capital formation

Human capital refers to the productive qualities that activate the labor force. The production qualities are education, health and skills of the labor force. Expenditure on education and training are called human capital formation. It is a process by which educated, skilled and trained person is increased in a country. Accordingly, human capital formation is the act of act of increasing the productive qualities of the labor force by providing more education and by increasing skill, health and nutrition level.

IV. Empirical Results and Discussion

This data covering the sample period, which uses for analysis, is taken from World Development Indicators (World Bank, 2014). Therefore, we start our analysis by observing the descriptive statistic of each variable.

Table-1- Descriptive Statistic

	GDPPC	HUM	REER	EXPORTS	P_DENSITY
Mean	636.3087	2.499636	124.3556	3.365894	170.4705
Median	489.5720	2.566760	112.0803	3.337655	171.0261
Maximum	1428.989	3.022300	228.9779	3.857119	236.2788
Minimum	303.4340	1.837820	93.71730	2.816056	103.7571
Jarque-Bera	6.615203	1.891717	17.07167	2.667565	2.157981
Probability	0.036604	0.388346	0.000196	0.263479	0.339938

The mean value of GDPPC is 636.3087, mean value of HUM that is independent variable is 2.499636 mean value of REER is 124.3556, EXPORTS mean is 3.365894, and the last variable is POPULATION DENSITY mean is 170.4705. Second table tells the median of all variable. The median value of dependent variable GDPPC is 489.5720, median of HUM is 2.566760, a median value of REER is 112.0803, a median value of EXPORTS is 3.337655, a median value of POPULATION DENSITY is 171.0261. Third the tables show the maximum value of variables. The maximum value of GDPPC is 1428989, maximum value of HUM is 3.022300, maximum value of REER is 228.9779, maximum value of EXPORTS is 3.85119, maximum value of population density is 236.2788. The next table gives the minimum value of variables. The minimum value of GDPPC is 303.4340, minimum value of HUM is 1.837820, minimum value of REER is 93.71730, minimum value of EXPORTS is 2.816056, minimum value of POPULATION DENSITY is 103.7571. Jarque-Bera test use to check the normality in variables and normality criteria is if the p-value greater than α , (α =0.05) which shows that data is normally distributed. The probability of JB for (0.36604) shows that this variable is not normally distributed. The probability of human capital formation(0.388346) shows that this variable is normally distributed because p-value is greater than α . The probability of real effective exchange rate (0.000196) and the probability of exports (0.0263479) which shows that this variable is not normally distributed. The probability of population density is 0.339938. Which shows that variable is not normally distributed.

The results of the study show that there is a mixed order of integration, so this is a suitable condition for applying ARDL test.

Table-2-Augemnted Dickey-Fuller Unit Root Test

Variable	Level		First difference		Order of integration
	Intercept	Trend and Intercept	Intercept	Trend and Intercept	
GDP PC	2.456540	-0.278531	-4.243704	-5.414771***	I(1)

p-Density	-3.806191***	-3.556437*	-1.609355	-2.920423	I(0)
REER	-2.080848*	0.442446	-5.368390***	-7.687421***	I(0)
EXP(D)	-1.184627	-1.247387	-0.582439	-4.614899***	I(1)
HUM	-3.704073***	-4.044761	-5.792174***	-5.329887***	I(0)

The table shows that calculated F-statistics value lie within the boundary limits at the 2.5 % level of significance. Therefore, these results are inclusive and from the result of error correction model we will decide about the existence of the Co integration. It depicts that there is exists Co integration relationship among the variables. After determination of Co integration among the variables, the long run relationship is determined and long run coefficients are estimated. The findings are relevant to the study of Aram.

Table-3-Bound test procedure

Test Statistic	Value	K
F-statistic	8.138796	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.50%	3.25	4.49
1%	3.74	5.06

Our estimation results show that human capital formation has a positive relationship with economic growth. It has a positive sign with its coefficient 427.740892 T-statistic value is more than 2 that represents the impact of human capital formation is significant on economic growth. The results predicted that 1-unit increase in human capital formation there will be 427.740892units increase in economic growth. Next variable that we have used in our model is education, real effective exchange rate. Our estimation results suggested that they have a negative relationship with economic growth. It has a negative sign with its coefficient -63.177863. The T - statistic value is less than 2 so Edu real effective exchange rate has insignificant impact. Results also found that 1unit increase in will bring -63.177863 units decrease in economic growth. Next variable that we have used in our model is exported diversification. Export diversification has a positive impact on economic growth. In our results export coefficient has positive sign which means there is positive relationship between exports and economic growth. The coefficient value of export diversification is 169.903643 shows a direct relationship between exports and economic growth. A T - statistic value greater than 2 that shows exports has significant impact on economic growth. More technically if exports increase by 1 unit, then economic growth will be increased by 169.903643 units. Our estimation results show that Population density has a positive relationship with economic growth. It has a positive sign with its coefficient 3.840397. T-statistic value is greater than 2 that represents the impact of population is significant on economic growth. The results predicted that 1unit increase in population density there will be 3.840397 units increased in economic growth.

Table-4-Short Run Result

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPPC(-1))	1.279695	0.499133	2.563836	0.0373
D(GDPPC(-2))	0.618012	0.445758	1.386431	0.2082
D(GDPPC(-3))	0.604436	0.32474	1.861288	0.105
D(HUM)	13.66997	63.04916	0.216814	0.8345
D(HUM(-1))	-116.046	42.43706	-2.73455	0.0291
D(HUM(-2))	48.22756	50.32551	0.958312	0.3698
D(REER)	4.854657	2.951965	1.644551	0.1441
D(REER(-1))	-1.74396	3.255958	-0.53562	0.6088
D(REER(-2))	-3.95977	2.83058	-1.39892	0.2045
D(EXPORTS)	104.5189	100.155	1.043571	0.3314
D(EXPORTS(-1))	-124.902	75.55207	-1.65319	0.1423
D(EXPORTS(-2))	-105.09	87.47362	-1.20139	0.2687

D(EXPORTS(-3))	140.2249	72.87492	1.924187	0.0957
D(P_DENSITY)	-1937.83	673.5836	-2.87689	0.0238
D(P_DENSITY(-1))	8297.983	2706.745	3.065669	0.0182
D(P_DENSITY(-2))	-5400.69	1753.376	-3.08017	0.0178
D(P_DENSITY(-3))	1377.024	470.0228	2.929696	0.022
CointEq(-1)	-1.73047	0.543276	-3.18525	0.0154

The independent variable is human capital formation to have a negative impact on economic growth and the coefficient value is -7.058740 and human capital formation creates negative impact on growth. Because when human capital formation increases, it decreases the economic growth. The human capital formation result is insignificant because t-stat value is less than the 2 and probability value is 0.00460. The real effective exchange rate has a positive impact on economic growth and the coefficient value is 363.895160. Real effective exchange rate result is significant because t-site value is more than 2 and the probability value is 0.000. According to hypothesis exports have a positive impact on economic growth and the coefficient value is 121.640984. Because exports create positive impact on growth. Because when exports increases, it increases the economic growth. Exports result is significant because t-stat value is less than the 2 and probability value is 0.2639. The population density has negative, positive impact on economic growth and the coefficient value is 0.000 and population density creates positive impact on growth. Because when population density increases, it increases the economic growth. The population density result is significant because t-stat value is less than the 2 and probability value is 0.03. And after taking the lag value results changed that show negative impact on economic growth. The dependent variable of gross domestic product per capita has a positive impact on economic growth and the coefficient value is 2.193487 and gross domestic product per capita creates negative impact on growth. Because when gross domestic product per capita increases, it decreases the economic growth. Gross domestic product per capita result is significant because t-stat value is more than the 2 and probability value is 0.0032.

Table-5- Long Run Results

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
HUM	1.963589	75.13869	0.026133	0.9799
REER	3.984771	0.994626	4.0063	0.0051
EXPORTS	208.9813	34.02866	6.141333	0.0005
P_DENSITY	-5.62191	0.801884	-7.01088	0.0002
C	1167.671	397.3077	2.93896	0.0217

Table-6-Breusch-Godfrey Serial Correlation LM Test.

F-statistic	1.79595	Prob.(2,5)	0.2583
Obs*R-Squared	12.5417	Prob chi-square(2)	0.0019

Breusch-Godfrey Serial Correlation LM test estimate that the p-value of F-statistic is 0.2583 which is greater than 5% level of significance, then we will accept the null hypothesis and we can say that there is no serial correlation.

Table-7-Heteroskedasticity Test: ARCH.

F-statistic	1.7955950	Prob.F(1,27)	0.8720
Obs*R-squared	0.28401	Prob chi square(1)	0.8662

The results of ARCH test of Heteroskedasticity. According to this test, the p-value of the F - statistic is 0.7932, which is greater than 5% level of significance and shows that there is no Heteroskedasticity.

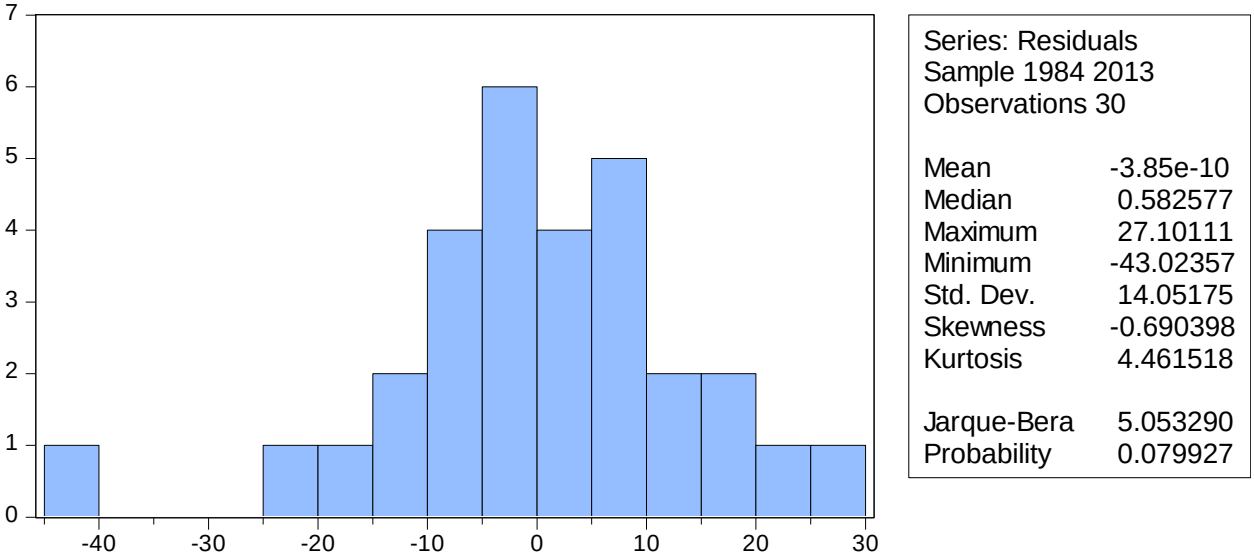

Table interpret, though plotting of histogram to check the stability. This figure shows that the mean value is -3.85e-10 and average variation is 14.05175 and through Jarque-Bera value (5.053290) use to check the normality and p-value (0.079927) which is not less than 5% level of significance, which shows that, our model is not normally distributed.

V. Conclusion and Suggestions

The study is based on the impact of export diversification on the economic growth in Pakistan. The empirical analysis has been prepared for 42-year data have the GDP (PC) as a dependent variable and export diversification, human capital formation, real effective exchange rate, population density as independent variables. Econometric techniques Augmented Dickey Fuller unit root test Bound F test results, estimated long run coefficients and ARDL short run Error Correction Model (ECM-ARDL) results applied for the empirical estimation of the study. Gross domestic product per capita, export diversification, is stationary at first difference and real effective exchange rate and population density are stationary at level. Export, real effective exchange rate and population density positively effect on economic growth. Human capital formation is negatively affected on economic growth. The bound testing approach to Co integration is used during 1980 to 2015. This test suggests that in long run series of interest are linked together. To ensure that domestic resources are channeled to their most productive uses, a modern incentive framework needs to be elaborated (Brent net al, 2007). The interaction between trade policies, tax, investment promotion and labor market policies have to be examined so that the right business environment and the right incentives are created to encourage existing and potential investors to increase the export diversity

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