

EFFECT OF NATURAL RESOURCES ON ECONOMIC GROWTH IN PAKISTAN: A TIME SERIES ANALYSIS



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ABSTRACT

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Objectives of present study are to examine the effect of natural resources and other macroeconomic factors (private investment, financial development, trade openness, inflation rate and labor force) on economic growth in Pakistan for the period 1972-2013. Employing the Autoregressive distributed lag (ARDL) bounds testing approach to cointegration, this study found positive and significant effect of natural resources on economic growth in the short run but in the long run it is negatively affected by natural resources. In the short run, private investment is positive and significant, while financial development and trade openness are negative. Furthermore, Labor force, private investment, financial development and inflation rate are positive and significant in the long run while trade openness is negative and significant. The analysis presented in this study is important for policy makers for effective resource conservation, fiscal and monetary policies as well as motivate to explore new natural resources for rising economic growth in Pakistan.

JEL Classification:

O13, O40, P28.

Contribution/ Originality: This paper's primary findings are the positive effects of natural resources on the economic growth in Pakistan. So policy makers should consider the research papers to investigate new energy resources for rising economic development in Pakistan. This study uses new estimation methodology of ARDL bounds testing approach to cointegration.

1. INTRODUCTION

Economic growth is referred to as the growth of the production at the full employment level over a definite time period. It has the power to improve poverty, create employment opportunity and enhance labor productivity¹. Natural resources are important for the growth of an economy. Natural resources are the useful raw materials that we acquire from the Earth that contains all characteristics of nature e.g., magnetic, gravitational etc. Human beings cannot make natural resources because they occur naturally. Natural resources are the valuable raw material that can be derived only from the earth and environment². They are important source of national wealth all over the world. Natural resource endowment is one of the essential pillars of good economic performance, infrastructure, economic development, and growth. Management of natural resources is helpful for enhancing national income and economic growth. If we need to get benefits from the natural resources, there is a need for technical education for the labor force that engages in exploitation and management of these resources. Another factor that affects natural resource management is policies, so policymakers must adopt a rational approach to mobilize them. Natural resources i.e., agriculture, energy, human capital and minerals prepare a country as a wealthy economy. Effective

management of natural resources is important to improve economic performance, infrastructure, economic development, and growth. Foreign exchange reserves also increase as a result of exploitation of natural resources.

Adam Smith and David Ricardo believed that the countries endowed with natural resources have authority over other countries. The connection among the economic growth and natural resources is debated among the researchers all over the world. This issue could not be settled among the economists if abundance of natural resources is a blessing or curse for an endowed country. Thus, the connection/link between the abundance of natural resources and economic growth is ambiguous; it could be either negative or positive. Nurkse (1953) and Rostow (1960) mentioned that natural resource abundance is considered a blessing for the country, which indicates that there is a positive relation between economic growth and natural resources. Auty (1994); Sachs and Warner (1995) examined negative linkage among economic growth and natural resources. This paradox is referred to as the “curse resources” and is also known as the “plenty paradox”. It indicates that abundance of natural resources in countries leads to less economic growth than those countries with scarce natural resources. The main reasons for this include, inter alia, lower human capital (Gylfason. & Zoega, 2001), lower investment (Corden, 1984) greater risk of civil war (Collier & Hoeffler, 2004) weaker institutions (Ross., 1999) and Dutch disease (initiated by increase in real exchange rate as revenue of natural resources arrives in the economy). Some studies (e.g. (Gylfason, Herbertsson, & Zoega, 1999; Gylfason. & Zoega, 2001; Kronenberg, 2004)) showed that abundance of natural capital is neither sufficient nor necessary for economic growth. Several studies (Brunnschweiler, 2008; Chambers & Guo, 2007; Coulibaly, 2013; Ibrahim-Shwilima, 2015) found that there is a positive correlation between economic growth and natural resources. Numerous researches have been conducted in case of Pakistan; such as Hye and Siddiqui (2010) concluded that there is a positive link between economic growth and natural resources. Different studies (e.g. (Auty, 1994; Coulibaly, 2013; Ortega & Gregorio, 2007; Papyrakis & Gerlagh, 2007)) have been carried out on natural resources and these studies showed that natural resources may have positive or negative effect on the economic growth. Natural resources are the important pillar for the growth of an economy.

Previous studies did not study the impact of natural resources on the economic growth along with other macroeconomic factors (rate of inflation, financial development, trade openness, labor force, and private investment) which are significant for Pakistan’s growth. The aim of this study is to examine the impact of natural resources along with macroeconomic factors like private investment, financial development, inflation rate, trade openness and labor force on the growth of an economy in short-run and long-run spanning the period from 1972 to 2013 in case of Pakistan. The growth of an economy is one of the important goals of macroeconomic policy. The significance of this study is to observe empirically the influence of natural resources on economic growth and explore how the important determinants of economic growth work. This study would be helpful for the government to formulate fiscal and monetary policies regarding economic growth in Pakistan. This study also offers new research possibilities for future researchers. Previous literature mainly focused on the impact of natural resources on economic growth in the panel data context. For example, Sachs and Warner (1995); Sachs. and Warner (1997); Gylfason. and Zoega (2001); Bond and Malik (2009) examined the relationship among the natural resource and economic growth on cross-countries. But in this study, I particularly consider Pakistan as a case study. Few works of literature are already available from the perspective of Pakistan e.g. Hye and Siddiqui (2010) and Malik., Chaudhry, and Hussain (2009). However, the rationale of this research is to measure the impact of natural resources along with macroeconomic factors, namely, private investment, financial development, consumer price index, trade openness and labor force on economic growth in case of Pakistan. This study also measures the short-run and long-run impact on economic growth.

1.1. Natural Resources and Economic Growth

Natural resource abundances are a significant component of good economic performance, infrastructure, economic development, and growth. It improves the living standard of society by improving economic growth. In the mid of 19th century, the British government was deeply dependent on coal. Jevons (1865) claimed that when the cost of coal increased, it weakened economic activity in the United Kingdom. Thereafter, coal was replaced by petroleum. United States economy has been using natural resources for defense since the cold war began. The linkage between natural resources and economic growth is debated among researchers all over the world. Some researchers such as Nurkse (1953) and Rostow (1960) argued that vast natural resources are considered a blessing for the country, which means that economic growth and natural resources have a positive relationship. In the 1990s, natural resources increased in Latin America that encouraged economic progress. Likewise, huge deposits of coal and ore were the main reason for the industrial revolution in Germany and Great Britain (Sachs & Warner, 1995).

On the other hand, natural resources appear as a curse or blessing for many countries (Auty, 1994; Rodriguez & Sachs, 1999; Ross, 2001). Sachs and Warner (1995) provided evidence for natural resources as a curse and found a negative relationship with economic growth in 97 countries. They also explored the significant impact of natural resources on investment, trade, corruption, schooling and economic growth indirectly. Sachs and Warner (1997) investigated the negative link between natural resources and economic growth in 95 countries. Billon (2001) provided evidence that economic growth was affected by natural resources through positive and negative channels. However, there are many countries like Switzerland, Japan, and South Korea that experienced high economic growth due to lack of natural resources. The Dutch disease hypothesis was examined by Corden (1984) who argued that the real exchange rate of the currency can rise through an increase in natural resources and the flow of exports of raw material. Regular booms of natural resources tend to increase the volatility of the real exchange rate (Gylfason et al., 1999). Economists consider natural resources as a source of income, and this income is divided into saving and capital. For instance, rent from resource may be used for health, telecommunication systems, educational programs, and infrastructure. Ortega and Gregorio (2007) presented that natural resources have a negative impact on growth rate. They also included a human capital variable to show its impact on economic growth for the period of 1970-1990 by using fixed effects and random effects modelling technique. They concluded that the impact of natural resources on income in countries with low levels of human capital was positive. They argued that this effect could be balanced through the accumulation of human capital and natural resources are not a curse. Malik et al. (2009) examined the connection among economic growth and natural resources in Pakistan for the period 1975-2006 by using the technique of ordinary least squares (OLS). Results showed that economic growth is negatively related to natural resources. Papyrakis and Gerlagh (2007) investigated the link among natural resources and economic growth in the United States for the period 1986-2000 by using ordinary least squares (OLS) techniques. Results showed that economic growth and natural resources are negatively related. Hye and Siddiqui (2010) examined the relation among natural resources and economic growth in Pakistan for the period of 197-2007 by employing Augmented Dickey Fuller (ADF) and Dicker Fuller Generalized Least Squares (DF-GLS). They found that in the long run, economic growth and natural resources are positively related and Dutch disease concept does not occur in Pakistan. The Dutch disease especially affected those countries that do not have their own currency like Greenland (its currency is Danish krone). James and Aadland (2011) explored the nexus between economic growth and natural resources in the United States for the period 1980-1995 by applying 2GLS (two-stage generalized least squares) methods. They concluded that natural resources and economic growth are negatively related. Coulibaly (2013) examined the relationship between the growth of an economy and natural resources in African countries for the period 1980-2012 by applying fixed effects and random effects. He concluded that economic growth, natural resources, and human capital are positively related in Sub-Saharan African countries in the long-run. Ibrahim-Shwilima (2015) analyzed the impact of non-renewable resources on economic growth in 145 countries for the period 1965-2010 by applying ordinary least squares (OLS) techniques. He concluded that non-

renewable resources and economic growth are positively related, and there does not exist any strong evidence to consider resources a curse.

1.2. Private Investment and Economic Growth

Investment is the acquisition or creation of resources to be used in productive work. Investment is also a capital formation. It is an important factor for long-run growth of an economy as it improves the productivity level of an economy. Solow (1956) provided evidence that the development of the country is slow due to low investment in their markets.

During the 1980s, most of the developing countries were affected by the failure of gross investment rates. Most of the researchers argue that influence of private investment on economic growth is higher than public investment. Diminishing public sector investment is seen as a mode to cut fiscal deficits through the implementation of regulation programs in many developing countries. Public sector investment is a policy variable that is why most economists focus on private investment because it is more liable to broad economic analysis. Amanja and Morrissey (2006) analyzed the effects of investment and international trade on economic growth in Kenya for the period 1964-2002 by using ordinary least squares (OLS) techniques. They concluded that imports in GDP and share of both investments have strong beneficial effects on per capita income in Kenya. Sial, Hashmi, and Anwar (2010) analyzed the influence of private and public investment on the growth of an economy in Pakistan for the period 1973-2008 by applying the vector autoregressive approach (VAR). They showed empirically that private investment and economic growth are positively influenced in the short run and in the long run. Hashmi, Akram, and Hashmi (2012) analyzed the correlation between private, public investment and economic growth in Pakistan for the period 1973-2008 by employing VAR. They showed that private investment is negatively related to economic growth in the short run, however, in the long run, it is positively linked. Mustefa (2014) analyzed the link between private investment and economic growth in the long-run and short-run in Ethiopian economy for the period 1970-2011 by using cointegration tests and error correction model. He concluded that both investments have a positive and significant long-run link with economic growth. Ilegbinosa, Micheal, and Watson (2015) analyzed the effect of private and public investment on economic growth in Nigeria for the period 1970-2013 by using multiple regression and cointegration methods. They showed the positive effect of private investment on the growth of an economy.

1.3. Financial Development and Economic Growth

Huge volumes of literature are available on financial development and economic growth which support the argument that financial development promotes economic growth. Firms get loans from the banks for investment when they do not have any cash. More credit from the banks allows more investment, so the output is increased, resulting in an increased economic growth. This channel is called capital accumulation or quantitative channel. King and Levine (1993) showed strong long-run positive link between the growth of an economy and financial sector development. Jalil and MA (2008) explored the nexus between economic growth and financial development sector in China and Pakistan for the period 1960-2005 by using bound testing technique and cointegration. They concluded that financial development is positive and significant in the context of Pakistan. Credit to the private sector is positive but insignificant in the case of China. Financial development increases domestic investment by enhancing the confidence of investors over the financial system through which capital accumulation increases. Adamopoulos (2010) examined the nexus between economic growth and financial development in Ireland for the period 1965-2007 by employing Johansen cointegration and a vector error correction model (VECM). He showed that there is a positive nexus between financial development and economic growth in Ireland. Moreover, Hassan, Sanchez, and Yu (2011) analyzed the nexus between financial development and economic growth in 168 countries for the period 1980-2007 by using weighted least square regressions (WLS). They showed that financial

development and economic growth are positively related in developing countries. Campos, Karanasos, and Tan (2012) investigated the influence of financial development on economic growth in Argentina for the period 1896-2000 by autoregressive conditional heteroscedasticity (ARCH) estimation. They concluded that financial development positively affects economic growth in the long run whereas it is negatively linked to growth in short-run. Certain studies also pointed insignificant nexus among economic growth and financial development. Sunde (2013) discussed the nexus between economic growth and financial development in Namibia for the period 1990Q1 to 2011Q4 by using the cointegration framework. He found that financial sector development is insignificant for economic growth because the banking sector is too small for significant impact in Namibia. Asghar and Hussain (2014) analyzed the nexus between financial development and economic growth for the period 1978-2012 in developing countries. Results depicted that in the context of developing countries there is a long-run nexus between financial development and economic growth. Abida, Sghaier, and Zghidi (2015) analyzed the link between economic growth and financial development in Tunisia, Morocco, and Egypt for the period 1980-2012 by using the Generalized Method of Moment (GMM). They showed that there is a positive nexus between economic growth and financial development. Moreover, they argued that economic freedom is favourable to growth, but democracy may have a little negative effect.

1.4. Rate of Inflation and Economic Growth

Economists declare that there is inverse relation between economic growth and inflation. In 1970s, prices rose sharply and the unemployment also increased that collapsed Philips curve theory. Philips curve shows the negative relationship between unemployment and inflation in an economy. Under the AD-AS framework, inflation and economic growth show a positive link. Keynesian and Neo-Keynesian provide a model in which inflation is linked with growth. Monetarism reorganized the theory of quantity which highlights the significance of monetary growth in determining inflation. However, Neo-Classical and Endogenous growth; explain the effect of inflation through the influence of investment and capital accretion on growth. Later, researchers empirically show that inflation rate had significant adverse impact on economic growth. Friedman (1973) briefly explained the nexus between economic growth and rate of inflation. Traditionally, all possible mixtures have arisen: “inflation without and with development, no inflation without and with development”. Fischer (1993) examined negative link between inflation and economic growth. They claimed that efficient allocation of resources is affected by inflation through relative price changes. Malik and Chowdhury (2001) analysed the link among rate of inflation and economic growth of India, Pakistan, Bangladesh and Sri Lanka on annual data. They estimated that there is a positive nexus between GDP and inflation rate in the long-run in all countries by using co-integration and error correction models. Supportive the Structuralist view, their results also suggest that adequate inflation is helpful for growth and quicker economic growth assessment into inflation. Igbatayo and Agbada (2012) analyzed the nexus among saving, output, and inflation in Nigeria over the period 1970-2010 by using ordinary least square (OLS), Granger causality and Vector Autoregression (VAR). They found that over the 90% of the variations in Output were captured by the explanatory variables in ordinary least squares (OLS) and inflation tends to reduce Output. Granger causality test depicted that changes in inflation may not have stimulated nor properly responded to the growth of output in Nigeria for the period of this analysis. The results stated that output changes respond less to inflation change and more critically to Savings change. Enu, Attah-obeng, and Hagan (2013) examined the nexus between rate of inflation and growth in Ghana for the period 1980-2012 by using Ordinary Least Squares (OLS). They showed that growth and rate of inflation are negatively related in Ghana. They suggested the policymakers to formulate and implement those monetary, fiscal and physical policies that would continue to keep inflation rate down to enhance economic growth and stability. Rasool, Rashid, Raja, and Kausar (2014) analysed the nexus between inflation rate and growth in Pakistan’s economy for the period of 1972-73 to 2010-11 by using cointegration and error correction model (ECM). They concluded that inflation is negatively related with growth of economy in Pakistan and usual

inflation is adverse for the growth of GDP after a specific threshold level. Becker (2015) analysed the relationship between inflation rate and economic growth in United States for the period of 1999-2013. He found that inflation rate and economic growth are adversely linked in the long-run.

1.5. Trade Openness and Economic Growth

Theory of comparative advantage (Ricardo) and theory of relative factor endowments (Heckscher-Ohlin) are free trade theories in which countries gain from trade and increase their economic growth. Elimination of trade barriers are helpful to access the developed economies which get comparatively higher income. Economic growth of a country is linked to the international trade (Marshall, 1890). Sachs and Warner (1995) provided evidence that trade openness grew faster than those countries which are not opened. LDC (least developing countries) will engage in export of production through use of best economic strategies to convert unproductive domestic usage into limited natural resource. Khan and Qayyum (2007) analysed the nexus between trade and economic growth in Pakistan for the time 1961-2005 by employing bound testing approach of cointegration. They concluded that trade and economic growth are positively related in the short-run and long-run. Azam (2011) analyzed the relationship of exports in trade and economic growth in Pakistan for the period 1971-2009. Results showed that exports increasing the growth of an economy meaning they are positively related to each other by applying the Augmented Dickey-Fuller test and cointegration test. Arif and Ahmad (2012) analysed the link among economic growth and trade openness in long-run in Pakistan for the period 1972-2010. They concluded that there is a bi-directional positive significant link among trade openness and growth of an economy by employing cointegration analysis and error correction model. Umer (2014) mentioned the influence of economic growth and trade openness in Pakistan for the period 1960-2011 by using (ARDL) the autoregressive distributed lag approach. He also found that economic growth and trade openness are positively related. Saaed (2015) analysed the linkage among trade openness and growth along with financial development in Kuwait for the period 1977-2012 by using vector autoregressive (VAR) technique. They concluded that there is no cointegration vector among GDP, development of financial sector and trade openness in cointegration analysis.

1.6. Labor Force and Economic Growth

The employed labour force stands for the people who have skills and are employed. Extraordinary growth of physical capital, reproduction capacity of system and flexibility are affected by the quality changes in the developed countries' productive factors (Edvinsson & Malone, 1997). Under this situation, skilled labor took the positions as a factor, which limits the production output, long-run growth rate and acts as scarce in relation to the other resources. A larger labor force means that more creative workers and a whole population increase the possible size of domestic market. Neoclassical economics suggested that growth of implementation of scientific and technologically advanced achievements in economic activity promote the growth of skilled labour and lead to advancement of the labour force's educational level. Thus, recognition of the human development as a key factor for specification of the growth ratio of society's welfare became a hypothetical base for economic policies in developed countries. The economics considers labour productivity as the huge hurdle for the understanding of economic evolution. Paudel and Perera (2009) analysed the impact of trade openness and labor force on economic growth in Sri Lanka for the period of 1950-2006 by using cointegration test. They concluded that labor force, trade openness and economic growth are positively co-integrated in Sri Lanka. Tsani, Paroussos, Fragiadakis, Charalambidis, and Capros (2012) analysed the nexus between female labor force and growth of an economy in 160 south Mediterranean countries for the period of 1960 to 2008 by using Pooled ordinary least squares (OLS). They concluded that in the region, the lower female labour force may lead to little/less growth marginally and vice versa. Shahid (2014) investigated the short run and long-run nexus between the labor force, financial development and economic growth in Pakistan for the period 1980-2012 by applying Augmented Dicky Fuller and Phillip Perron

tests. He concluded that there is no relationship among them and vector error correction model indicated that economic growth has a negative insignificant relationship with this variable. Gross fixed capital formation has positive significant and labour force participation has negative significant relationship in short run.

2. THEORETICAL FRAMEWORK

In the light of economic growth literature, a theoretical framework is developed to investigate the influence of natural resources on economic growth in Pakistan. Different studies have been carried out on this issue and the majority of these studies presented both negative and positive influence of natural resources on economic growth in different countries. However, previous studies ignored the role of macroeconomic variables in examining the influence of natural resources on economic growth in the context of Pakistan. Different researchers have adopted different models for analyzing the effect of natural resources on economic growth. For example, Malik. et al. (2009) analyzed the nexus between natural resources and economic growth along with the rate of inflation, trade openness, investment, expenditure on health and education in Pakistan for the period of 1975-2006 by applying cointegration test. Their results showed that natural resources are negatively related to economic growth. Similarly, Bond and Malik (2009) examined the nexus between natural resource and private investment in 72 developing countries. The results showed that natural resources affect the share of private investment, and hence affect economic growth indirectly by applying fixed effects and random effects methods.

The theoretical link between economic growth, natural resources and other determinants of economic growth can be depicted in Figure 1. Figure 1 indicates that economic growth depends on natural resources and other macroeconomic variables. Macroeconomic variables include private investment, financial development, trade openness, the rate of inflation and labor force.

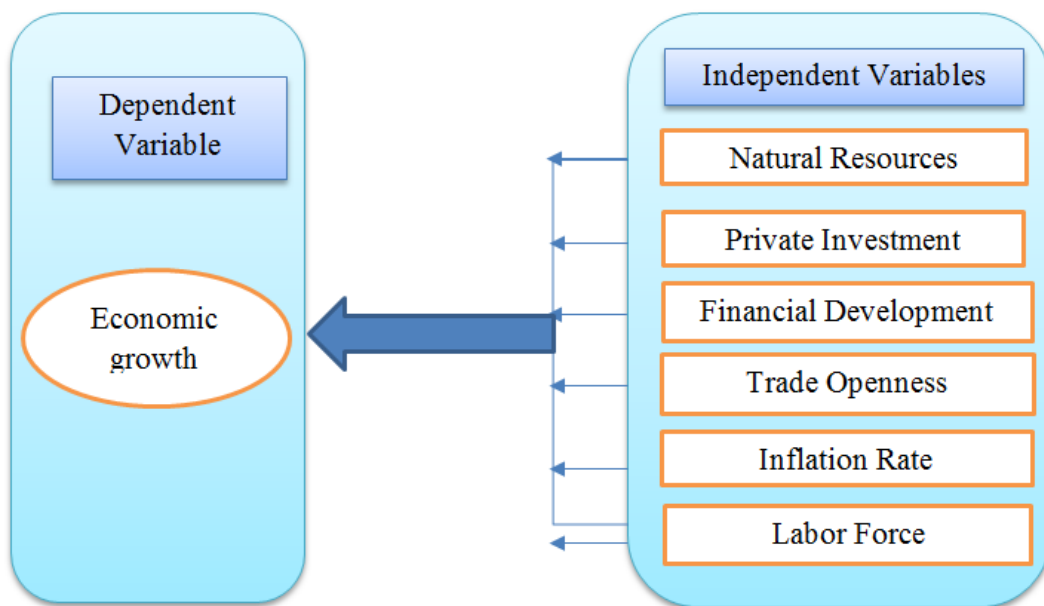


Figure-1. Nexus of natural resources and economic growth.

2.1. Empirical Model

We transform the above theoretical model into the empirical model for examining the effect of natural resources, private investment, trade openness, financial development, inflation and labor force on economic growth. Following Malik. et al. (2009) we specify the following empirical model:

$$\text{Economic growth} = \beta_0 + \beta_1 (\text{natural resources}) + \beta_2 (\text{private investment}) + \beta_3 (\text{financial development}) + \beta_4 (\text{trade openness}) + \beta_5 (\text{inflation}) + \beta_6 (\text{labor force}) + u \dots \dots \dots (4.1)$$

2.1.1. Model Specification

In Neo-classical production function, capital and labor are only the main factors for production. Equation 1 is nonlinear Cobb-Douglas of neo-classical production function.

$$Y = \delta f(K^\alpha L^\lambda) \quad (1)$$

Where Y is economic growth, L is employed labor force and K is physical Capital. The new growth theory stresses many other variables, like natural resources, private investment, financial development, inflation, and trade openness which may affect economic growth, besides capital and labor. Hence, we include these factors as well in Equation 2. Following Malik. et al. (2009) we specify the following model:

$$GDP = \delta(TNR)^\psi (PI)^\alpha (FD)^\beta (OPEN)^\phi (INF)^\pi (LF)^\lambda e^u \quad (2)$$

Where real GDP is used as the proxy of economic growth, TNR is total natural rents, PI is private investment, FD is financial development, INF is inflation rate, OPEN is trading openness, LF is labor force and e is an error term. Equation 2 can be rewritten as Equation 3 in form of logarithmic:

$$\begin{aligned} \ln GDP = \ln \delta + \psi \ln TNR + \alpha \ln PI + \beta \ln FD + \phi \ln OPEN \\ + \pi \ln INF + \lambda \ln LF + u \end{aligned} \quad (3)$$

After removing "Ln" for simplicity in Equation 4 the following form is obtained:

$$GDP_t = \beta_0 + \beta_1 TNR_t + \beta_2 PI_t + \beta_3 FD_t + \beta_5 OPEN_t + \beta_4 INF + \beta_6 LF_t + u \quad (4)$$

Where, u is error term and β 's are parameters.

3. VARIABLES DEFINITION

Mankiw, Romer, and Weil (1992) believed that there are numerous proxies used for Economic Growth such as GDP per capita and real GDP. Following the standard literature, we use real GDP as the proxy of Economic Growth. Natural resources are used as raw materials that originate from the earth and environment. Ortega and Gregorio (2007) presented that natural resources have a negative impact on its growth rate. Behbudi, Mamipour, and Karami (2010) investigated the negative impact of abundance of natural resources and human capital on the growth of an economy in two major groups of petroleum rich countries. James and Aadland (2011) explored the negative nexus between economic growth and natural resources in the United States. Hence, it can be hypothesized that natural resources have a significantly negative relationship with economic growth in Pakistan. Private investment is the acquisition of assets (land, buildings, machinery, and equipment) that is predictable to produce more income and appreciate in their value in the private sector. Levine and Renelt (1992) have mentioned that investment is the most important element in capital good of economic growth. Ilegbinosa et al. (2015) analyzed the positive effect of the private investment on economic growth in Nigeria for the period 1970-2013. So, it can be hypothesized that private investment has significantly positive effects over the economic growth in Pakistan. Firms get loans from the banks for investment in the when they run out of cash. More credit from the banks allows more investment and output, increasing the economic growth. The Financial sector is the combination of organization, instruments, and markets. Financial sector development in developing markets and countries is the share of private sector development policy to stimulate economic growth and reduce poverty. Jalil and MA (2008) explored the positive nexus between economic growth and financial sector development in China and Pakistan for the period 1960-2005. Hence, it can be hypothesized that financial sector development has significantly positive link with economic growth in Pakistan. In trade, numerous parties involve transferring the ownership of goods or services from one individual or country to another in exchange for other goods or services or for money by

adjustment of the medium of exchange. A country's economic growth is linked to international trade (Marshall, 1890). Umer (2014) indicated that there is a positive nexus between trade volume and economic growth in long-run in Pakistan for the period of 1960-2011 by employing Autoregressive Distributed lag approach. Saaed (2015) presented that there is a causal nexus between trade and economic growth in Kuwait for the period 1977-2012 by using a vector autoregressive (VAR) technique. Hence, it can be hypothesized that trade openness has significantly positive link with economic growth in Pakistan. The inflation rate is a continuous rise in the general price level of goods and services in an economy over time. Inflation is measured through consumer price index (CPI). Friedman (1973) and Fischer (1993) showed inverse linkage between rate of inflation and economic growth. Becker (2015) also investigated that there is an inverse relationship between inflation and economic growth in the United States for the period of 1999-2013. Hence, it can be hypothesized that the inflation rate has significantly negative link with economic growth in Pakistan. The employed labor force includes people having skills for the jobs and is employed. The extraordinary growth of physical capital, reproduction capacity of system and flexibility affect the quality changes in the developed countries productive factors (Edvinsson & Malone, 1997). Paudel and Perera (2009) analyzed the positive impact of trade openness and labor force on economic growth in Sri Lanka for the period of 1950-2006. Tsani et al. (2012) analyzed the positive nexus between female labor force and growth of an economy in 160 south Mediterranean countries for the period of 1960 to 2008. Hence, it can be hypothesized that labor force is positively linked with economic growth in Pakistan.

4. DATA AND METHODOLOGY

This study uses annual time series data of Pakistan from the period of 1974-2015 from WDI (2016). Economic growth, natural resources, private investment, financial development, trade openness, and labor force are in logarithmic form except for the inflation rate. The study uses Real output (current LCU) [in billion] as a proxy for economic growth. Similarly, total natural resources rents (%age of GDP) are being employed as a proxy for Natural resources. Gross fixed capital formation, private sector (%age of GDP) serve as a proxy for Private investment. Domestic credit to private sector (%age of GDP) is being used as a proxy for financial development. Consumer price index has been employed as a proxy for the Inflation rate. Moreover, trade openness is acting as a proxy for Trade (%age of GDP). Finally, number of persons engaged [in million] is employed in the study as a proxy for the Labor force.

4.1. Econometrics Methodology

Previous studies have employed traditional approaches such as multivariate co-integration technique of Johansen. (1991); Engle and Granger (1987) and Johansen and Juselius (1990) for estimation purpose. This study employed the ARDL (autoregressive distributed lag) bounds testing approach to co-integration developed by Pesaran, Shin, and Smith (2001) which is considered as more appropriate in case of the small sample.

4.1.2. Unit Root

In the time series data analysis, knowledge about the stationary and non-stationary is essential. Stationary means that data is taking constant mean and variance. However, in the case of non-stationary series, mean and variance are not constant. Moreover, shocks in stationary series are for a slight period of time but shocks in non-stationary series are everlasting in nature. A non-stationary series indicates that it has a unit root series, which will lead to spurious results. Hence, in order to estimate co-integration relation, each series must be stationary at an identical order. However, in the ARDL model, it is applicable and series are either $I(0)$ or $I(1)$ or the mixture of both. The Augmented Dickey-Fuller (ADF) tests are commonly used for investigation of the stationarity data. If the null hypothesis of ADF is rejected, it indicates that data is stationary. We employ the ADF test to investigate if

the data is stationary. Null hypothesis of Augmented Dickey-Fuller (ADF) unit root test is “non-stationary time series” and is rejected which indicates that time series is stationary and eligible for further analysis.

$$\Delta Y_t = \delta_1 + \delta_{2t} + \eta Y_{t-1} + \sum_{i=1}^k \phi_i \Delta Y_{t-i} + e_t \quad (5)$$

i = interval of time period, η = parameter, t-1 = first lag term, Δ = first difference operator, e = error term

4.1.3. Autoregressive Distributed Lag (ARDL) Approach

Numerous approaches are presented to examine the existence of a long-run equilibrium relationship among variables. The most traditional techniques including multivariate co-integration technique are those of Johansen (1991) Engle and Granger (1987) and Johansen and Juselius (1990). The main requirement of these techniques is that variables should be integrated at order one i.e. $I(1)$ and time series should be sufficiently larger. The main drawback of these techniques is that they are not appropriate for a small sample and also allow a low degree of freedom. These drawbacks are removed in the newly developed approach, namely autoregressive distributed lag (ARDL). This study employed the two-step cointegration ARDL approach proposed by the Bannerjee, Dolado, and Mestre (1998) and Pesaran and Shin (1998). The main advantage of this technique is that it is applicable to either series $I(0)$ or $I(1)$, or a mixture of both. However, the results acquired from ARDL method will give spurious results when the series is of order $I(2)$. Furthermore, it also appropriates for the small size of the sample. ARDL estimates both short run and long run dynamics simultaneously, which are not active under another co-integration approach.

The ARDL model can be expressed as:

$$\begin{aligned} \Delta GDP_t = & \delta_0 + \delta_1 GDP_{t-1} + \delta_2 TNR_{t-1} + \delta_3 PI_{t-1} + \delta_4 FD_{t-1} + \delta_5 INF_{t-1} + \delta_6 OPEN_{t-1} + \delta_7 LF_{t-1} \\ & + \sum_{i=1}^n \gamma_{1i} \Delta GDP_{t-i} + \sum_{i=0}^n \gamma_{2i} \Delta TNR_{t-i} + \sum_{i=0}^n \gamma_{3i} \Delta PI_{t-i} + \sum_{i=0}^n \gamma_{4i} \Delta FD_{t-i} + \sum_{i=0}^n \gamma_{5i} \Delta INF_{t-i} \\ & + \sum_{i=0}^n \gamma_{6i} \Delta OPEN_{t-i} + \sum_{i=0}^n \gamma_{7i} \Delta LF_{t-i} + \mu_t \end{aligned} \quad (6)$$

Where, μ_t is error term at time (t), Δ is difference operator, n is optimal lag length, δ 's represents the long run parameters and γ 's are the short run dynamic parameters.

Equation 6 can be estimated in two steps. Firstly, we estimate Equation 6 by OLS and test for cointegration, Null and alternative hypothesis are given below:

$$H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0 \text{ (no Co-integration).}$$

$$H_1: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq \delta_7 \neq 0 \text{ (Co-integration).}$$

The F-statistics is used to test the null hypothesis of co-integration in term of bound tests, therefore, the estimated value of F-Stats is equated with the critical values given by Pesaran et al. (2001). The F-statistics is equated with upper and lower bound critical values. The null hypothesis of no co-integration is rejected if the F-statistic exceeds the upper bound critical value. When the calculated F-statistic lies below the lower critical bound value, the hypothesis of no co-integration is accepted.

Secondly, in the Equation 6 parameters linked with differenced variables capture the short run effects. Coefficient associated to one period lagged level of GDP can be treated as adjustment parameter Bannerjee et al. (1998).

5. RESULTS

5.1. Unit Root Tests

The bounds test of co-integration is constructed on the assumption that the variables included in the empirical analysis must be either I (1) or I (0) or both, but no variable is integrated of order two, i.e. I (2). Therefore, test for stationarity of the variables is constructed by using the ADF unit root test before applying the bounds test of co-integration. The results obtained from the ADF test are reported in Table 1 which indicate that trade openness (OPEN) and inflation rate (INF) are stationary at levels i.e. I(0) while gross domestic product (GDP), natural resources (TNR), private investment (PI), financial development (FD), and labor force (LF) are integrated of I (1) i.e. first difference and no variable is integrated of order two i.e. I (2). Therefore, these mixed results of the unit root test validate the use of ARDL bounds test of co-integration.

Table-1. Results of ADF test.

Variables	Constant/trend	ADF-level	ADF-1 st Diff	Decision
GDPN	Constant	-1.71(1)	-6.05(0)*	I(1)
TNR	Constant	-2.39(1)	-7.87(0)*	I(1)
PI	Constant	-2.78(1)	-5.37(0)*	I(1)
FD	Constant	-0.96(1)	-6.02(0)*	I(1)
OPEN	Constant	-2.99(0)**	-7.40(0)*	I(0)
INF	Constant	-4.47(0)***	-6.88(0)*	I(0)
LF	Constant	-0.79(1)	-6.50(0)*	I(1)

Note: At constant MacKinnon (1996) critical values is -3.58, -2.93 and -2.60 at 1%, 5% and 10% respectively.

*, ** and *** indicates their significant level at 1%, 5% and 10% respectively.

5.2. Autoregressive Distributive Lags (ARDL) Estimation

Before the use of the bounds test of co-integration, we must choose the appropriate lag length for unrestricted error correction model (UECM) specified in Equation 5. This study uses SBC to determine appropriate lag length because SBC is more appropriate in case of the small sample.

Table-2. ARDL model results.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.373*	0.257	5.340	0.000
Δ GDPN _{t-1}	-0.414*	0.080	-5.154	0.000
Δ TNR _{t-1}	0.040***	0.020	1.974	0.059
Δ PI _t	0.419*	0.051	8.294	0.000
Δ FD _{t-1}	-0.209*	0.045	-4.639	0.000
Δ OPEN _t	-0.133*	0.042	-3.162	0.004
DUMPOL	0.025*	0.008	2.978	0.006
GDPN _{t-1}	-0.349*	0.055	-6.320	0.000
TNR _{t-1}	-0.031***	0.016	-1.916	0.066
PI _{t-1}	0.286*	0.052	5.471	0.000
OPEN _{t-1}	-0.155*	0.046	-3.347	0.002
FD _{t-1}	0.065*	0.023	2.799	0.009
INF _{t-1}	0.005*	0.001	4.568	0.000
LF _{t-1}	0.397*	0.114	3.478	0.002
R-squared	0.855	F-statistic		12.287
Adjusted R-squared	0.786	Prob(F-statistic)		0.000
S.E. of regression	0.022	Durbin-Watson stat		2.116

Note: * and *** indicates their significant level at 1% and 10% respectively.

Based on the SBC, we select the appropriate lag length of order one. To examine the long run relationship among economic growth and natural resources, private investment, financial development, inflation rate, trade openness, and labor force, we have estimated the ARDL model in the form of unrestricted error correction model (UECM). To capture the impact of political instability on the economic growth, we included dummy variable

DUMPOL. So, we put 1 for the military regime from 1975-1986 and 1997-2006. Value zero is depicted for a democratic regime. The results of the ARDL estimation are reported in Table 2.

In unrestricted error correction model (UECM), differential variables are showing short-run relationships, while lagged level variables show long-run relationships. Following general-to-specific methodology, we eliminated all insignificant differenced variables. The most data are congruent and parsimonious estimation results are reported in Table 2. Differential of the lag coefficient of real GDP is -0.41, which is negative and significant. The reasons could be that past growth-oriented policies are ineffective in Pakistan.

In the short run, the estimated coefficient value of natural resources (TNR) lagged by one year exerts a positive effect on the GDP growth. The estimated coefficient of this variable is 0.04, which indicate that a 1% upgradation (increase) in natural resources leads to an increase in economic growth by 0.04 percent in the short run. The reasons could be that the increase in raw materials due to natural resource abundance raises the production level in the economy and growth. Upgradation and exploration of resources raise the growth of an economy. Philippot (2010) reported that natural resource abundance has a positive effect on economic growth in transition economies. The estimated elasticity of private investment (PI) is 0.42, which indicates that a 1% change in private investment leads to an increase in economic growth by 0.42 percent in the short run. Hashmi et al. (2012) reported that private investment has a positive influence on economic growth in Pakistan. The estimated coefficient of financial development (FD) proxied by the price sector credit relative to GDP lagged by one year is -0.21, which indicates that 1% change in financial development (private sector credit) leads to decrease in economic growth in the short-run. Ayadi, Arbak, Ben-Naceur, and Groen (2013) mentioned that financial development is negatively related with growth of an economy. In the short run, the estimated coefficient of trade openness (OPEN) is -0.13 in the short run, which indicates that 1 % change in trade openness leads to a decline in economic growth. Parikh and Stirbu (2004) reported that there is a negative relationship between trade and economic growth.

Estimated R-square is 0.855406 which suggests that 86% of the variation in the dependent variable is explained by the independent variable. P-value of F-Statistics is significant at 1% which indicates that variables are jointly significant. Durbin-Watson stats is 2.115791, which is close to 2 and there is no evidence of serial correlation.

5.2.1. Diagnostic tests for ARDL

The estimated model is tested by applying a series of diagnostic tests and the results are reported in Table 3. The Lagrange Multiplier (LM) is 0.1601 with P-value is 0.6923, which indicates no problem of serial correlation. To check for Heteroskedasticity, we employed Autoregressive Conditional Heteroskedasticity (ARCH) test which indicates no problem of Heteroskedasticity as the F-stat is 0.8039 with p-value of 0.3756 that is insignificant, hence indicates the absence of ARCH effect in the model. The Jarque-Bera test specifies that the residuals are normally distributed under its F-stats value 7.0753 with p-value 0.0290. We employed Ramsey RESET test to see whether the model is correctly specified or not. The result indicates that the model is well specified.

Table-3. Results for diagnostic tests for ARDL.

Diagnostic test	F-Statistics	P-value
Serial Correlation (LM Test)	0.1601	0.6923
Heteroskedasticity (ARCH Test)	0.8039	0.3756
Normality Test (Jarque-Bera)	7.0753	0.0290
Model Specification (Ramsey RESET)	0.4764	0.4962

5.2.2. Stability Test for ARDL

For the stability of estimated ARDL model, we applying cumulative sum (CUSUM) and CUSUM squared tests, which indicate the stability of model as depicted in Figure 2 and Figure 3 respectively.

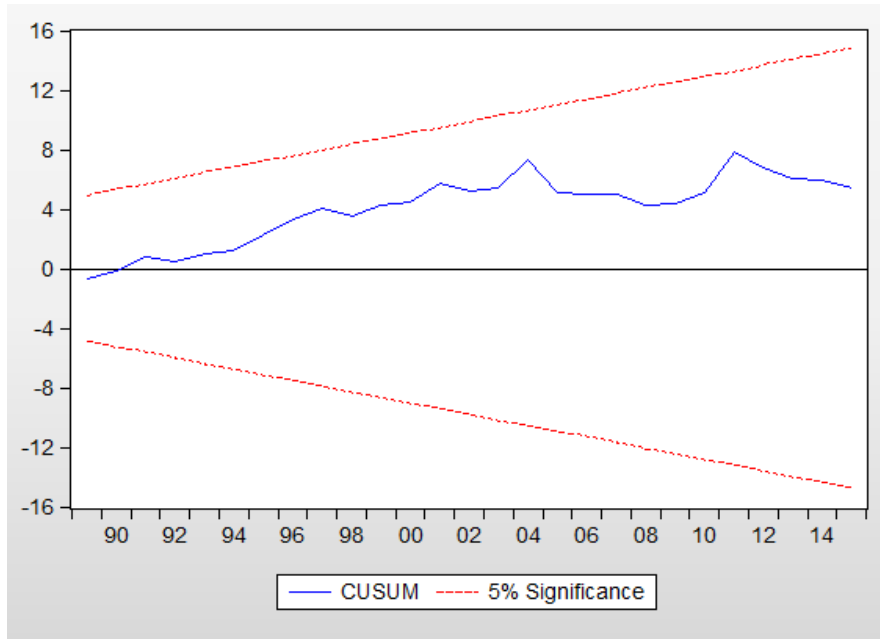


Figure-2. CUSUM test for stability of ARDL

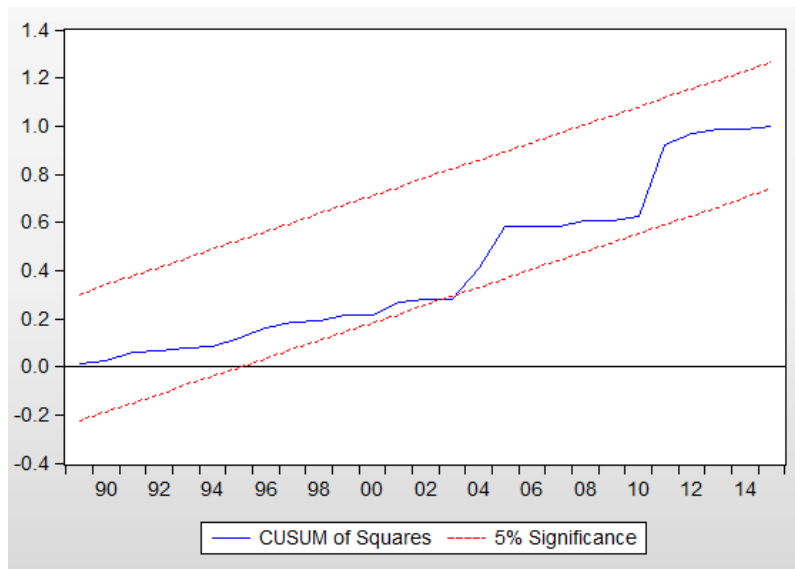


Figure-3. CUSUM of Squared test for stability of ARDL.

5.3. Co-Integration Test

To investigate the cointegration relationship between the variables (GDP, TNR, PI, FD, INF, OPEN and LF), we apply zero restriction on one lagged level variables. The calculated F-statistics is 12.58879 which is greater than upper bounds value I (1) critical value (i.e. 3.99) at 1% significance level, tabulated by Pesaran et al. (2001) table CI (ii). Therefore, the null hypothesis of no cointegration is rejected, thus we conclude that there is a long run relationship between economic growth, total natural resources, private investment, financial development, inflation rate, trade openness, and labor force. To calculate the long run coefficients, we normalized the estimated coefficient of the lagged level variables by dividing the estimated coefficient of lagged GDP (assuming a steady-state situation, i.e., that all other coefficients of differenced variables are assumed to be zero) and hence, long run coefficients are obtained. The normalized long run growth model is specified by Equation 7

$$\text{GDP} = -3.93 + 0.09 \text{ TNR}^{***} - 0.82 \text{ PI}^* - 0.19 \text{ FD}^{***} + 0.44 \text{ OPEN}^{**} - 0.02 \text{ INF}^* - 1.14 \text{ LF}^* \quad (7)$$

The results presented in normalized Equation 7 indicate that 1% change in the natural resources leads to an increase in economic growth (GDP) by 0.09%. This indicates that natural resources have a positive and significant impact on economic growth in the long run in Pakistan. When the exploration of natural resources increases, increasing availability of raw materials for the production, this will increase the employment level and economic growth in Pakistan. Exports are also increased through natural resource abundance, which will increase economic growth under the export-led growth hypothesis (ELGH). Results are consistent with past studies, for instance, Hye and Siddiqui (2010); Coulibaly (2013) reported that there is a positive nexus between economic growth and natural resources in the long run in Pakistan.

Similarly, the estimated coefficient of private investment (PI) is negative and significant in the long run which indicates that economic growth decreases by 0.82 percent with a 1% increase in private investment. The reason could be that as the government wants to finance their capital spending through borrowing from the banking system, it increases interest rate which in turn, increase the cost of capital. Due to this, sufficient funds are not available for the private sectors, which in turn, create crowding out effect and decline the private investment (Tyson, 2001). Government investment also influences private investment negatively, because when private and government sectors compete for little amount of capital, it increases the cost of financing for private investment, therefore the accessibility of credit for private sector decreases, leading to crowding out effect. Private investment is negative in Pakistan due to tight monetary policy since 2014 and power crisis since 2000. Our results are consistent with Mohey-ud-din and Siddiqui (2014) who reported that private investment has a negative impact on economic growth (GDP) in South Asian countries including Bangladesh, India, Nepal, Pakistan, and Sri Lanka. The estimated coefficient of financial development (FD) is significant and negative in the long-run which indicates that a one percent change in the level of financial development leads to decreased economic growth by 0.19 percent. The reason could be that most of the commercial banks advance loans to leaders and relatives of most popular political parties, hence when the government period/that particular regime ends, the borrowers do not pay back their loans, declining the output and growth in Pakistan. These results are consistent with past studies i.e. Asghar and Hussain (2014) who reported that there is a negative linkage between the development of financial and economic growth in the context of developing countries.

The coefficient of trade openness (OPEN) is positively and significantly related to economic growth in the long-run, which indicates that a 1% change in the trade openness leads to 0.44 percent increase in the economic growth. As exports increase by reducing trade barriers, this would increase economic growth under the export-led growth hypothesis (ELGH). Export-led growth hypothesis (ELGH) suggested that rise in exports is the main element of economic growth. These results are consistent with the past studies of Khan. and Qayyum (2007) and Umer (2014) who mentioned that there is a long-run positive nexus trade openness and economic growth (GDP) in Pakistan. Edwards (1998) mentioned that open economies grow more quickly than those with trade barriers.

Inflation rate (INF) coefficient is negative and significantly related to economic growth in the long-run, which indicates that one percent change in the inflation rate leads to a 0.02 percent decrease in economic growth in Pakistan. With rise in inflation, purchasing power of currency decreases, thus discouraging investment and saving, resulting in decreased productivity. The net effect of all this will ultimately decrease the economic growth in the long-run. In the case of fixed exchange rates, one country is affected by other country's hyperinflation. It makes the exports expensive and affects the balance of trade. Macro instability also affects the business cycle. Significant negative link of inflation rate with economic growth is consistent with Malik and Chowdhury (2001) who reported that inflation rate is negatively related with economic growth in long-run in Pakistan, India, Sri Lanka, and Bangladesh. In addition, Rasool et al. (2014) and Becker (2015) also mentioned that there is an inverse correlation between the rate of inflation and economic growth in Pakistan and the United States..

The estimated coefficient of the labor force is negative and significant in the long-run which indicates that economic growth decreases by 1.13 percent with a 1 percent change in labor force. The main reason accounting for

this could be that the high proportion of old and child labor force, unskilled labor and disguised unemployment depresses economic growth.

Finally, the estimated coefficient of error correction terms based on unrestricted error correction model specified in Equation 6 is significant with the negative expected sign which suggests that about -0.32 i.e., 32% of past periods inconsistencies are eliminated to achieve the long-run equilibrium. Significant as well as the negativity of this term also confirms that long run co-integration and its estimated term suggests that disequilibrium from the equilibrium of long-run is adjusted by 32% each year in such a manner that after 3 and half years, this disequilibrium will be removed and economy will go back to the equilibrium. The error correction term is highly significant that certifies the existence of established relation among different factors/variables taken into account in long run (Bannerjee et al., 1998).

6. CONCLUSION

This research examined the nexus of economic growth with natural resources, private investment, trade openness, labor force, inflation rate, and financial development in Pakistan for the period 1974 to 2015 in the long run and short run. For the empirical estimation, we employed ARDL methodology to co-integration techniques to investigate the nexus. To check the stationarity of the variables, we applied the ADF unit root test, which identified mixed results. These results of ADF test validate the use of ARDL technique to co-integration. We used 1 lag for estimation of the empirical model by following the SBC lags selection criterion. The ARDL model was estimated by imposing zero restriction on the model. Long run co-integration in variables is confirmed by rejection of no co-integration hypothesis. Normalized equation identified that in the long run, natural resources have a negative correlation with economic growth. These findings are consistent with the natural resource curse hypothesis. Trade openness also negatively affects economic growth in the long run. While private investment, financial development, inflation rate, and labor force have positive link with the growth of an economy in long run. Differenced/differentiated variables explain the dynamics of the short run in unrestricted estimated model, which implies that differential of the lag coefficient of economic growth is negative. The lag of differential of natural resources and differential of private investment is positively related to the differential of GDP. On the other hand, the differential lag of financial development and differential of trade openness are negatively related to the differential of GDP.

6.1. Policy Implications

- Empirical results of this study reveal that there is a positive relationship between economic growth and natural resources in the short run, while negative nexus between them in the short run. Therefore, there is a need to upgrade and develop natural resources and reduce dependency on external resources.
- There is need to further stimulate private investment through the provision of capital funds and reduce the cost of borrowing. Furthermore, financial institutions may ensure that funds are directed to those entrepreneurs who have engaged in innovative ideas and advanced technologies.
- There is a need to take appropriate measures to further deepen the domestic financial sector through the improvement in financial rules and supervision, the efficient allocation of capital and performance-based loans.
- Authorities must focus on increasing the share of exports as compared to imports to further reduce trade deficit.
- Appropriate measures are needed to control hyperinflation. Policymakers must focus on increasing the level of output by improving supply, in order to shrink the prices of goods and services so as to increase economic growth.

- Finally, the government should further upgrade labor skills through investment in education and human capital.

Abundance of natural resources can make this country a better, resourceful and wealthy economy. Pakistan is poised to have an important place in the world as an established, growing, developing and wealthy nation and this can only be possible if the aforementioned challenges are addressed and overcome immediately.

6.2. Limitation and Further Research

The present study uses only one indicator for natural resources. This study also employs some macroeconomic factors with natural resources but many other factors remain unexplored. Moreover, different methodologies may be used on it and also the sample size can be increased.

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REFERENCES

- Abida, Z., Sghaier, I. M., & Zghidi, N. (2015). Financial development and economic growth: Evidence from North African Countries. *Economic Alternatives*, 2(1), 17–33.
- Adamopoulos, A. (2010). Financial development and economic growth an empirical analysis for Ireland. *International Journal of Economic Sciences and Applied Research*, 3(1), 75–88.
- Amanja, D. M., & Morrissey, O. (2006). Foreign aid, investment and economic growth in Kenya: A time series approach (No. 06/05). CREDIT Research Paper.
- Arif, A., & Ahmad, H. (2012). Impact of trade openness on output growth: Co integration and Error correction model approach. *International Journal of Economics and Financial Issues*, 2(4), 379–385.
- Asghar, N., & Hussain, Z. (2014). Financial development, trade openness and economic growth in developing countries recent evidence from panel data. *Pakistan Economic and Social Review*, 52(2), 99–126.
- Auty, R., M. (1994). Industrial policy reform in six large newly industrializing countries: The Resource Curse Thesis. *World Development*, 22(1), 11–26.
- Ayadi, R., Arbak, E., Ben-Naceur, S., & Groen, W. P. D. (2013). Financial development, bank efficiency and economic growth across the mediterranean (pp. 219–233). MEDPRO Technical Report 30.
- Azam, M. (2011). Exports and economic growth in Pakistan: An empirical analysis. *Journal of Managerial Sciences*, 5(2), 159–166.
- Bannerjee, A., Dolado, J., & Mestre, R. (1998). Error-correction mechanism tests for cointegration in single-equation framework. *Journal of Time Series Analysis*, 19(3), 267–283.
- Becker, N. E. (2015). Inflation volatility and economic growth: A disaggregated analysis (pp. 1–40). North Carolina: Duke University.
- Behbudi, D., Mamipour, S., & Karami, A. (2010). Natural resource abundance, human capital and economic growth in the petroleum exporting countries. *Journal of Economic Development*, 35(3), 81–102.
- Billon, P. L. (2001). The political ecology of war: Natural resources and armed conflicts. *Political Geography*, 20(5), 561–584.
- Bond, S. R., & Malik, A. (2009). Natural resources, export structure and investment. *Oxford Economic Papers*, 61(4), 675–702. Available at: <https://doi.org/10.1093/oep/gpp025>.
- Brunnschweiler, C. N. (2008). Cursing the blessings? Natural resource abundance, institutions, and economic growth. *World Development*, 36(3), 399–419.
- Campos, N. F., Karanasos, M. G., & Tan, B. (2012). Two to tangle: Financial development, political instability and economic growth in Argentina. *Journal of Banking and Finance*, 36(1), 290–304.
- Chambers, D., & Guo, J. (2007). Natural resources and economic growth: Theory and evidence. Department of Economics, University of California.

- Collier, P., & Hoeffler, A. (2004). Greed and grievance in civil wars. *Oxford Economic Papers*, 56(4), 563-595.
- Corden, W. M. (1984). Booming sector and Dutch disease economics: Survey and consolidation. *Oxford Economic Papers*, 36(3), 359-380.
- Colubaly, I. (2013). Long term economic impact of the natural resources and human capital on the growth rate (pp. 1-37). Research Papers, Paper, 399.
- Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital*. London: Piatkus.
- Edwards, S. (1998). Openness, productivity and growth: What do we really know? *The Economic Journal*, 108(447), 383-398. Available at: <https://doi.org/10.1111/1468-0297.00293>.
- Engle, R. F., & Granger, C. W. J. (1987). Cointegration and error correction representation: Estimation and testing. *Econometrica: Journal of the Econometric Society*, 55(1), 251-276.
- Enu, P., Attah-obeng, P., & Hagan, E. (2013). The Relationship between GDP growth rate and inflationary rate in Ghana: An elementary statistical approach. *Academic Research International*, 4(5), 310-318.
- Fischer, S. (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics*, 32(3), 485-512.
- Friedman, M. (1973). *Money and economic development*. Toronto: Lexington Books.
- Gylfason, T., Herbertsson, T. T., & Zoega, G. (1999). A mixed blessing: natural resources and economic growth. *Macroeconomic Dynamics*, 3(2), 204-225.
- Gylfason, T., & Zoega, G. (2001). *Natural resources and economic growth: The role of investment CEPR Discussion Paper No. 2743*. London: Center for Economic Policy Research.
- Hashmi, M. H., Akram, W., & Hashmi, A. A. (2012). Role of investment in the course of economic growth. *International Journal of Academic Research in Economics and Management Sciences*, 1(5), 48-61.
- Hassan, M. K., Sanchez, B., & Yu, J. S. (2011). Financial development and economic growth: New evidence from panel data. *The Quarterly Review of Economics and Finance*, 51(1), 88-104.
- Hye, Q. M., & Siddiqui, M. M. (2010). Economic growth and management of natural resources in the case of Pakistan. *European Journal of Economics, Finance and Administrative Sciences*, 22.
- Ibrahim-Shwilima, A. J. (2015). Economic growth and non-renewable resources: An empirical investigation. WINPEC Working Paper, 1416.
- Igbatayo, S., & Agbada, A. O. (2012). Inflation, savings and output in Nigeria: A VAR approach. *Journal of Emerging Trends in Economics and Management Sciences*, 3(5), 447-453.
- Ilegbino, I. A., Micheal, A., & Watson, S. I. (2015). Domestic investment and economic growth in Nigeria from 1970-2013: An econometric analysis. *Canadian Social Science*, 11(6), 70-79.
- Jalil, A., & MA, Y. (2008). Financial development and economic growth: Time Series Evidence from Pakistan and China. *Journal of Economic Cooperation*, 29(2), 29-68.
- James, A., & Aadland, D. (2011). The curse of natural resources: An empirical investigation of US counties. *Resource and Energy Economics*, 33(2), 440-453.
- Jevons, S., W. (1865). *The coal question* (2nd ed.). London: Macmillan and Company.
- Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration- with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.
- Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica*, 59, 1551-1580.
- Khan, M. A., & Qayyum, A. (2007). Trade liberalization, financial development and economic growth. Pakistan Institute of Development Economics Working Paper, 19.
- King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics*, 108(3), 717-737.
- Kronenberg, T. (2004). The curse of natural resources in the transition economies. *Economics of Transition*, 12(2), 399-426.

- Levine, R., & Renelt, D. (1992). A sensitivity analysis of cross-country growth regressions. *American Economic Review*, 82(4), 942-963.
- MacKinnon, J. G. (1996). Numerical distribution functions for unit root and cointegration tests. *Journal of Applied Econometrics*, 11(6), 601-618.
- Malik, G., & Chowdhury, A. (2001). Inflation and economic growth: Evidence from four South Asian countries. *Asia-Pacific Development Journal*, 8(1), 123-135.
- Malik, S., Chaudhry, I. S., & Hussain, S. (2009). Natural resource abundance and economic growth in Pakistan. *European Journal of Economics, Finance and Administrative Sciences*, 15, 1450-2887.
- Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, 107(2), 407-437.
- Marshall, A. (1890). *Principles of economics*, by Alfred Marshall. London: Macmillan and Company.
- Mohey-ud-din, G., & Siddiqi, M. W. (2014). GDP fluctuations and private investment: A macro panel analysis of selected South Asian countries. *Pakistan Journal of Commerce and Social Sciences*, 8(2), 485-501.
- Mustefa, S. (2014). *Private investment and economic growth evidence from Ethiopia*. Mekelle University, Ethiopia, Unpublished Work.
- Nurkse, R. (1953). *Problems of capital formation in underdeveloped countries*. New York: Cambridge University Press.
- Ortega, B. C., & Gregorio, J. D. (2007). The relative richness of the poor? *Natural Resources, Human Capital and Economic Growth*, 71-99.
- Papayrakis, E., & Gerlagh, R. (2007). Resource abundance and economic growth in the United States. *European Economic Review*, 51(4), 1011-1039.
- Parikh, A., & Stirbu, C. (2004). Relationship between trade liberalisation, economic growth and trade balance: An econometric investigation. HWWA Discussion Paper, 282, Hamburg Institute of International Economics, Hamburg, 1-50.
- Paudel, R. C., & Perera, N. (2009). Foreign debt, trade openness, labor force and economic growth: Evidence from Sri Lanka. *The ICFAI Journal of Applied Economics*, 8(1), 57-64.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289-326.
- Pesaran, M. H., & Shin, Y. (1998). An autoregressive distributed lag modelling approach to cointegration analysis. *Econometric Society Monographs*, 31, 371-413. Available at: <https://doi.org/10.1017/cbo9781139052221.011>.
- Philippot, L. (2010). Natural resources and economic development in transition economies (pp. 1-22): Near Clermont University.
- Rasool, S. A., Rashid, M., Raja, M. U., & Kausar, J. (2014). Inflation and economic growth : Empirical Evidence from Pakistan. *Journal Asian Dev. Stud*, 3(3), 99-107.
- Rodriguez, F., & Sachs, J., D. (1999). Why do resource-abundant economies grow more slowly? *Journal of Economic Growth*, 4(3), 277-303.
- Ross, M. L. (2001). Does oil hinder democracy? *World Politics*, 53, 325-361.
- Ross, M. L. (1999). The political economy of the resource curse. *World Politics*, 51, 297-322.
- Rostow, W., W. (1960). *The stages of economic growth: A non-communist Manifesto*. Cambridge, UK: Cambridge University Press.
- Saaed, A. A. J. (2015). The causal relationship among trade openness, financial development and economic growth: Evidence from Kuwait. *Journal of Emerging Issues in Economics, Finance and Banking*, 4(1), 1385-1413.
- Sachs, J., & Warner, A. (1995). Economic convergence and economic policies. *Brookings Papers on Economic Activity*, 5039.
- Sachs, J. D., & Warner, A. M. (1997). Fundamental sources of long-run growth. *American Economic Review*, 87(2), 184-188.
- Shahid, M. (2014). Impact of labour force participation on economic growth in Pakistan. *Journal of Economics and Sustainable Development*, 5(11), 89-94.
- Sial, M. H., Hashmi, M. H., & Anwar, S. (2010). Role of investment in the course of economic growth in Pakistan. *World Academy of Science, Engineering and Technology*, 66, 160-164.
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, 70(1), 65-94.

- Sunde, T. (2013). Financial development and economic growth: Empirical Evidence From Namibia (1990Q1-2011Q4). *Journal of Emerging Issues in Economics, Finance and Banking*, 1(1), 52-65.
- Tsani, S., Paroussos, L., Fragiadakis, C., Charalambidis, I., & Capros, P. (2012). Female labour force participation and economic development in Southern Mediterranean Countries : What scenarios for 2030? MEDPRO, 19.
- Tyson, L. A. (2001). Confusion about the deficit. *New York Times*.
- Umer, F. (2014). Impact of trade openness on economic growth of Pakistan: An ARDL approach. *Journal of Business & Economic Policy*, 1(1), 39-59.
- WDI. (2016). World development indicators 2016. Retrieved from: <https://databank.worldbank.org/source/world-development-indicators>.

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