RESOURCE CURSE HYPOTHESIS AND THE ROLE OF UNEMPLOYMENT IN PAKISTAN

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CERTIFICATE

This is to certify that this thesis entitled: **"Resource Curse Hypothesis and the Role of Unemployment in Pakistan"** submitted by Ms. Amaila Rashid is accepted in its present form by the Department of Economics & Econometrics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Philosophy in Economics**.

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Abstract

The natural resources curse is frequently debated in economic development and growth literature. It is commonly believed that resource-abundant economies tend to grow more slowly than low resource endowment economies. Pakistan is an underdeveloping country and facing mounting debt and perennial imbalanced trade. Pakistan is blessed with numerous precious natural resources. The current study's research objective is to examine Pakistan's economic dependence on natural resources and assess high resource allocations' impact on economic growth. This study is also aimed to assess the existing Resource Curse theory in Pakistan critically. It is a common belief that natural resource-abundant countries have job opportunities, and unemployment is low in those countries. This study also investigates unemployment role in the presence of natural resources. ARDL is used to check the short and long-run relationship between Natural resources and economic growth. Time series data is used from 1984 to 2018. The results show that the resource curse hypothesis is proved in Pakistan's case, too, and the unemployment rate is also high despite having natural resources.

Key words: Natural Resources, Economic Growth, Resources Curse hypothesis, unemployment.

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Chapter 1

INTRODUCTION

Pakistan is considered one of the wealthiest countries in natural resources (Kishwar,2020) and exhibits Resource Curse characteristics. The country is poor economically, and its annual growth rate is 1.9%(Pakistan Economy Survey,2019). Pakistan is the fifth populous country in the World, and it ranked 154th position in the World in Human Development Index (U.N. Reports,2020). Pakistan has immense resources of gas, oil, coal Gemstones (Malkani,2020), which contributed to the GDP, But despite these resources, Pakistan is not making progress and remains a third world country(Irfan,2007). Pakistan highly depends on imports and does not pay concentration on its own resources (Ahmad et al.,2020). Pakistan is an agricultural country, and agriculture contributed 22 % to the overall GDP (Pakistan Economy Survey,2019). The agriculture side of Pakistan engages 42 % of the Labor force. It is well known believe that natural resources generate employment opportunities((MacKaye,1919). But the Pakistan's unemployment rate was 4.5% in 2019, and it is increasing annually. This shows that in Pakistan's case, Natural resources do not play a role in increasing employment opportunities. This study is thus focused on the role of unemployment in the presence of natural resources and its impact on economic growth. The literature on the role of unemployment with natural resources is not vast, and no study is done on Pakistan data to check the role of natural resources with unemployment.

Background

Natural resources exist; naturally, there is no involvement of humans. The natural resources are air, energy, gold, fossil fuel, oil, and mineral. Natural resources play a significant role in generating employment opportunities and increasing the nation's wealth. There are two types of natural resources. One is renewable natural resources, and the other is non-renewable natural resources. Renewable resources can be sustained or replaced like air, sunlight, soil. But the non-renewable resources cannot be sustained or replenished with the speed of consumption. Once it uses then, we cannot use it for further processes, like coal. If we use coal at one time, its quantity would be reduced for the next and not be used further.

Natural resources contribute an essential part to the survival of developing economies. Natural resources become the backbone of developing countries as most of the goods are produced from their natural resources. World Bank (2018) reports that countries with low-income levels are getting 50 per cent of their wealth from natural resources. Most of the developing countries are agriculture-based, and they contribute a high share in the primary products.

Developing countries face challenges regarding resource management because of two main reasons. One is the capital investment, such as human, financial, and social capital is the long-run economic growth phenomenon from natural capital. Secondly, developing country's exports are based on primary goods because these are agriculture-based countries, and if the price of these products fluctuate, it will become trouble and reduce the growth of the country (Grill&Yang,1988)

It is well believed that economic stabilization can be achieved through natural resources. If a country has vast natural resources, then it is assumed that its economic condition is strong compared to other countries with a low natural resources level. Neo-liberal economists considered natural resources as the primary and essential component of fast economic growth. The economic growth model elaborates that a state can prosper by exploiting natural resources (Rostow,1971). On the other hand, natural resources increase the nation's earnings, forming physical capital, therefore attaining its industrial development (Balassa, 1980). The study also mentioned that capital formation through natural resources enhances the demand for industrial products. In the open economy, natural resources increase a country's trade performance, leading to its economic growth (Krugman 1987).

But the views of economists changed after the contribution of Sachs and Warner (1995). Sach and warner (1995) proved that countries with rich natural resources nurture slowly as compared to those with fewer resources through regression analysis. This adverse association of economic growth and natural resources is called the Resource Curse Hypothesis. British economist Richard M Auty first used this term in 1993 (Auty,1993). However, Sach and Warner's (1995) work gets attention because they empirically proved their statement. After their work, most researchers' attention was devoted to this case, and the vast literature on this issue come into the debate.

Classical explain the resource curse hypothesis with the Dutch Disease term. The term Dutch Disease originated in the 1950s. It explains the adverse association between manufacturing natural resource products with economic growth—this term coined from the Netherlands' horrible experience. In the Netherlands, natural gas resources were discovered, and these resources, instead of increasing economic growth, became the reason for the decline in economic development. Then,

researchers introduced the model for Dutch disease. They stated that a new foundation of a country's natural resources tends to decline the national income (Corden and Neary,1982; van Wijnbergen,1984 & Corden,1984). The negative relationship was due to the surge in demand for labor and other things in the sector of non-traded goods. An increase in exports would appreciate the country's currency, and this will reduce the FDI of the country, and the growth of the country would go in decline. Later, the study of Krugman (1987), Matsuyama (1992), Wahba (1998), Gylfason et al. (1999), Torvik (2001), Sachs and Warner (2001), Matsen and Torvik (2005), Rajan & Subramanian (2011), Beine et al. (2012), van der Ploeg & Venables (2013), Cherif (2013), Dulger, et al. (2013), Raveh (2013) and Bjørnland et al. (2019) check the phenomenon by using different sample and establish the same negative relationship between natural resources and economic growth.

Research Question

- What is the contribution of natural resources in the country of Pakistan? Either it is a blessing or a Curse?
- Do the natural resources of Pakistan contribute to eliminating unemployment?

Research Problem

This specific study analyzes the relation between total rents of natural sources and economic growth in the case of Pakistan. The primary building blocks of a nation are natural resources. Natural resources include diamonds, coal, fossil fuels, wood, minerals, etc. It can be distributed to other countries and other areas to provide a stable economic system for improvement. Without each other, every country's economic growth will be completely bogged down. However,

natural resources use depends on the expertise and capacities of human resources, technologies, and budget availability. There is no real link to various overseas locations where an outstanding amount of wealth is derived from the earth, and human beings live in abject poverty. So vices are likely to sustain and slow down the fulfillment of the set dreams of the use without understanding the overall natural resources and economic boom within a region. There is a need to look at Pakistan's maximum natural assets and economic development due to this report.

Research Objective

- To measure the association between natural resources rents and the economic growth of Pakistan
- To measure the relationship between unemployment and natural resources and their influence on economic growth.

Research Gap

The first study conducted specifically on Pakistan data takes natural resources as the percentage of exports related to GDP (Hussain et al.,2009). They use time-series data, apply an OLS technique, and take inflation, trade openness, population growth, labor force, and exports related to the GDP variables. The study results show that there is a negative relationship between natural resources and economic growth.

The study was conducted on Pakistan by taking a political-economic view; this study checked the resource curse by taking the ethnic polarization concept (Hussain,2017). This study takes a rent-seeking model of the resource curse and checks the elite class's role in rent-seeking

behavior. This study uses a time horizon model to depict the results and find that natural resources and economic growth form a monotonic relationship.

Studies based on different Cross-sectional and Panel data approaches include Pakistan's data with other countries and analyze the role of natural resources and economic growth (Murshad 2007, Konte 2013, Hanan 2015, Bindi 2018, Vespighani et al.,2019 and Li et al.,2020). Now, this study takes the time-series data and the Total resource rents to measure natural resources. This study use models of Institutional quality, Human capital, and corruption to check the robustness of these models. In this, the ARDL method is applied. Further, this study also measures the natural resource rent impacts on employment opportunities of the country. To the author's knowledge, this unemployment relation with natural resources is not studied on Pakistan data before.

Research Significance

This study focuses on the relationship between natural resources available and the economic boom in Pakistan. At some point, a long duration of available natural resource rent was not proven adequately for the economic boom beyond a few. And natural sources, in general, have a significant effect on any country's boom. Volatility in charges was observed to no small degree due to the arena's big monetary crises. After learning about the total natural sources of rent and its relationship with any country's economy, policymakers consider policymakers in foreign locations to make recommendations and make essential economic growth choices. It is interesting because it will offer good facts for investors of character, establishments, government, and Pakistan's human beings.

Chapter 2

LITERATURE REVIEW

Sachs and Warner started the first empirical literature, and after that, many economists began paying attention to this. Initially, research was focused on the economic effects on natural resource connectivity. The main objective was to estimate whether there was a negative impact of natural resources on economic growth or not. Sachs and Warner (1995) found a negative relationship between economic growth and natural resources; after this, the resource curse hypothesis was generated. In this study, data of 97 developing countries' was taken from 1970 to 1989, and results interestingly showed a negative relationship. This study measured natural resources by calculating the exports of the country as a percentage of GDP. This study also discussed the backward and forward linkages and stated that these were the reasons for this negative association. This study also explained a high demand for manufacturing goods compared to the primary goods, and due to this higher demand, the price of manufacturing goods tends to be on a higher level.

Later on, Sachs and Warner (1997) further studied this hypothesis in the African countries and found the same result. In this study, the data from 1971 to 1989 was taken and based on an endogenous theoretical model. For further confirmation of this hypothesis, Sachs and Warner (2001) enhanced their work by using geographical variables and taking cross-sectional data and found the same negative association. The Dutch disease on the sample data of Iceland was analyzed, and this study tests three indicators of Dutch disease (Herbertsson et al., 2000). The first indicator was low secondary sector employment and production rate due to the real exchange rate. Second is the primary sector instability which leads to instability in the exchange rate and high

investment threshold. 3rd one is the primary and secondary sector salaries, which show combined effects on employment and production. This study shows that the primary exports show a positive link with secondary data in the short term and a negative link in the long term, and due to the increase in the primary sector's production and salaries, the exchange rate declined, and Dutch disease appeared in the labour market.

Murshed (2007) conducted a cross-sectional approach and checked the natural resource curse's role in developing countries, including Pakistan. The results show that natural resource shows a negative influence on economic growth. This study stated that the negative relation is due to the implementing monetary policies and the country Pakistan heavily depends on Foreign Aid from the U.S, and its economic policies are not suitable for economic growth. Konte(2013) analyzed the influence of natural resources by checking the growth regime variable. This study stated that the blessing or curse depends on the growth regime of the economy which the country follows. This study illustrates the pandal data technique and takes 91 countries' data, including Pakistan. In this study, the data was taken from 1970 to 2005 and set two regime patterns in which one is democratic and the other is nondemocratic. The results show that the abundant resource countries in one regime show a positive link with growth, and in other regime show a negative link. Abdul Hanan(2015) uses a panel data approach and selects 170 countries, including Pakistan, and analyzes the resource curse. The results show that the resources are positively linked with economic growth and reject the resource curse hypothesis. This study concluded that the countries that were showing no growth are due to poor institutional quality. Another study was conducted with the perspective of political economy's role in natural resources, and this study takes the ethnic polarization for analysis(Hussain,2017). It also explains the role of the elite in rent-seeking

activities. The data is taken from 1984 to 2018, and the results show that institution quality plays an important role in developing financial growth.

Bindi(2018) conducted research on panel data and examined 58 countries' data, including Pakistan, from 1984 to 2014. In this study, he took oil and gas data for the measurement of natural resources. This study used the ARDL and CS-ARDL methods and found a positive relationship between natural resources and economic growth. Vespighani et al.(2019) researched the Panel data approach and took 95 countries' data, including Pakistan, from 1980 to 2017. This study also checks the role of trade openness in economic growth with oil-abundant countries. The study concluded that trade openness is the main factor of a resource curse. Countries that follow the policies of trade openness would avoid the possibility of the resource curse. Li et al. (2020) conducted research and chose 11 countries, including Pakistan. This study takes the data from 1990 to 2017 and checks the role of natural resources on financial development. This study used the new index for financial development and human capital and used the second-generation econometric technique. This study found a negative relationship between natural resources and economic development.

The first study specifically on Pakistan with Time series data was conducted in 2009, and this study uses the OLS estimation. This study used the data from 1976 to 2006, and the results show that economic growth has a negative relationship with natural resources (Hussain et al.,2009).In this study, the role of Institutional quality, corruption, and human capital is analyzed, and this study focuses on the literature of these models.

(2.1A) Role of Corruption in the Resource Curse Hypothesis

For the very first time, the relation of corruption with natural resources was studied by Leite and Weidmann (1999); their study area was Africa. This study shows that corruption had a drastic effect on economic growth. The countries with resources had vast opportunities for corruption, and due to this, natural resource-rich country growth was influenced severely, and their performance declined. This study suggested that the government should take anti-corruption measures and set up strong institutions to reduce corruption. A lobbying game is measured to check the role of corruption and economic growth (Damania & blute, 2003). In this game, the rent-seeking companies interact with a corrupt government and add democracy and authority measures. The results of this study support that corruption was the basis of the resource curse hypothesis.

The influence of corruption on oil products by using panel data was studied. This study also includes a new measurement of resource endowments to check the real influence (Aslaksen, 2007). The result shows that oil extraction and mineral income are badly affected by corruption. Due to this, the performance of oil products on GDP is low. This study also confirms the occurrence of the resource curse hypothesis. There are opportunities for corruption in resource-rich countries (Kolstad and Wiig, 2009).In this study, the researcher focused on transparency measurement to control corruption. This study suggests some policies and techniques required to transparent all the revenue data and utilized them properly to overcome corruption. Corruption in natural resources by checking the role of democratic institutions is further studied by Bhattacharyya and Hodler (2010). The panel data was taken from 124 countries, from the year 1980-2004. This study also used a game-theoretic model different from the previous game model (Damania and blute, 2003). This study shows that if democratic institution quality is low, the corruption will be increased, affecting the countries' economic growth with resources of nature.

The resources are not utilized properly, and revenues of these countries are lost in corruption, and due to this country's economic efficiency is affected badly (Halkos, 2010). The researcher took 79 countries' data from the year 2000-2006 and measures corruption by taking CPI as the proxy of corruption and applied an econometric technique to check the association between economic efficiency and corruption. The researcher used the DEA window analysis and some econometric panel data techniques. The results showed that countries with an outstanding Corruption level show less economic efficiency and show less development.

A micro-level study on corruption in natural resourceful countries is conducted (Vicente, 2010). In this, the researcher considered two islands for analyzing the connection. These two islands belong to West Africa, named Sao Tome and Principe and Cape Verde. Both countries have oil resources. The researcher conducts a household survey. The survey was designed uniquely and explored the personal histories of the person and analyzes the situation. Results show that corruption occurred in both countries' oil resources and its effects on its efficiency. The types of natural resources play a role in determining the resource curse. As the fuel resources, metal ores have a better chance of corruption, and due to this high level of corruption, natural resources become a curse. The forest resources are lower rent-seeking and have less chance of Corruption (Pendergast et al.,2011). This study takes 101 countries and takes the years 1998, 2000, 2002, and 2004, and a total of 362 observations are taken. The two-stage least square approach is used in this research with the FEVD method to obtain fitted Corruption and GDP control values. This study suggests that if corruption is controlled in these countries, then the resource curse problem will be solved.

Oil-producing countries also have a more chance of Corruption (Caselli and Michaels, 2013). In this study, they analyzed Brazil's oil municipalities. They realized that the oil municipal

were getting more revenues than the amount of investment in the country's developing infrastructure and other non-development processes. So, where is this revenue going? This revenue was gone in corruption as the money is not fully implemented, the country shows less growth than its resources. This study suggests that the municipal of oil should be given special rights to focus on where the government used oil revenues and either the revenues are fully utilized or not. Further, a Pakistani study is done to check corruption's role with natural resources and economic development. This study takes 43 members of OIC countries and takes panel time-series data from 1984 to 2016. In this study, the cross-sectional autoregressive distributed lag approach is used for the estimation of the data. The results conclude that corruption is the main culprit of low economic growth in resource-abundant countries. The study also reveals that resource abundance countries have more corruption opportunities than lower resource countries(Erum & Hussain,2009). Recent research of 2020 is conducted in pursuance to check the role of corruption with natural resources. This research is done on the data of Romania and Iceland. In this study, the forest sector of Romania and the Fisheries sector of Iceland is undertaken. This research is based on a comparative case study design, and it conducts 25 interviews of different stockholders and sampled them with the snowball method. The interview results show a perception of corrupt relations between the government and the resource sector(Gisladottir et al.,2020). This study suggests that if people hold these types of perceptions, then there is a need to take up anti-corruption policies to control resource mismanagement.

2.1B) Role of Institution in Resource Curse Hypothesis

Researchers take institutional quality as the primary determinant of low economic growth. Some of these studies are explained here to see the institutional quality in economic development with natural resources. If institutional quality is low, its economic efficiency gets affected

regardless of its rich natural resource. Auty (2001) gives two main reasons for the resource curse hypothesis. One is institution quality, and the second is rent-seeking behavior. If the country's institution performs well, then the country having rich natural resources will also perform well. Sala-i-Martin & Subramanian (2013) researched Nigeria and took data from the year 1970-1998. The results also confirmed that the institution quality matters a lot, and it has a nonlinear association. This study supported new leadership and new policies and suggests that policies must be implemented in the future. This study also proposed a solution to overcome this issue by giving the Nigerian people the right to have an equal share of the oil revenues. If institutions are poor, then the country would not escape from the resource curse hypothesis. (Isham et al., 2003). The natural resource curse and institution's relation in developing economic growth is further taken under consideration. The study also believes that if the country has weak institutions, it must bear the resource curse. If the state has strong and effective institution quality, resource-rich countries can grow by utilizing the natural resources (Collier and Hoeffer, 2005). The countries react differently with different types of institutions; if the country has a vital institution, its growth increases compared to countries with many resources (Mehlum et al.,2006). Research on U.S data from 1970-2000 was carried, and in this data, they did not support the negative association among the abundance of resource countries because the U.S. institutions were healthy and free from corruption. (Brunnschweiler, 2006).

The negative influence of natural resources does not survive if the sample size increases (Azreki and van der Ploeg, 2008). This study is done by taking cross-section variations in income per capita to check natural resources' effect. This study finds a direct negative influence on the institution's quality of income per capita. Further, this study finds that institution quality does not matter; if a country has a good institute, the state can face a resource curse. According to this study,

trade openness can avoid the resource curse. The oil and minerals do not slow the economic growth as other literature showed. The study claimed that the data that researchers used to check the long-term growth were misinterpreting. Previous researchers used the initial GDP. In this study, GDP per capita was taken. Their result shows that the oil and minerals revenue shows long-term economic growth (Alexeev & Conrad, 2009). So the good quality of institution matter a lot. If the institution performed well, they arranged the thing properly on time, and transparent data is available. The country having rich natural resources will show a positive effect on economic efficiency.

Countries with natural resources can boost their economies if their institutions have become strong(Bakwena et al.,2009). This paper suggests that governments should pay attention to institution quality like controlling corruption, managing bureaucracy, and maintaining law and order. This study also emphasizes the institution's quality of increasing investment opportunities. If institutions are strong, it shrinks the rent-seeking activities and gives security towards the properties and the properties' rights, which will increase the investment. A study takes 87 countries under consideration and handles the data of the year 1965 to 1990. This study takes primary exports of GDP as a resource abundance factor. This study also checks the policies of these economies for policy measurement. This study takes an annual increase in inflation as a proxy for the system. This study shows that the institution's quality is the main factor of low economic growth, but these economies' policies are the main factor of low economic growth (Yang, 2010). This study suggests that institution quality plays a role in the long term, but in a short period like 20 to 30 years, policies matter a lot, so there is a desire to improve its policies. The natural resource countries' contributions in the USA, Australia, Norway, and other countries performed very well with their natural resources and Middle Eastern countries; however, they are rich in natural resources but did not

perform well (Al-ubaydli, 2011). This study came to know that the institution of the USA, Australia, etc., were strong. Due to this, they showed a positive influence, and the other countries institution is low and delivers a negative relation because of institution suffering. If a country has a good institution, it will perform well.

The quality of institutions in the Brazilian districts was further studied to check the effects (Van der Ploeg, 2011). The results supported the belief that a country with good institutions, control measures of corruption, and proper rules & regulations implement them to enjoy the fruit of its natural resources. A good institution is necessary for economic growth. The truthfulness of the belief that if the country has good institutions, they do not face the resource curse, another study is conducted and used different techniques to measure institution quality (Boschini et al. 2013). This study used another period and an extra time dimension by using pooled data. If taken various measures than good institution concept does not hold natural resources, exports are considered a primary product. It shows that good institutions matter. Still, if we take export in other measures, then the data shows the right institution is not the resource curse hypothesis. Cross-country estimation has analyzed the resource curse puzzle, in which 90 countries' data is undertaken from the year 1984 to 2005. In this study, threshold regression is used to check the institution's quality. This study also highlights the importance of institutions' good quality for obtaining the benefits of natural resources. The low institution will not benefit the economy in taking advantage of its resources. So economies must improve the quality of the institution(Sarmidi et al.,2014)

A provincial-based study is conducted in China, in which 28 provinces are undertaken, data was taken from 1990 to 2008. In this study, two types of resources are measured, a stock and a flow measure. Through the subjective measure of court confidence, it is taken as Institutional

quality and found theoretically and empirically their relation with resource and economic growth. In this study, institution quality emerged as a critical variable on a provincial level (Ji et al., 2014). Fifteen countries of Soviet Union countries are studied countries and took the data from 1996-2011. The study measures institution quality and trade openness's effects on the natural resource curse (Horváth & Zeynalov, 2014). The results show that the country with good institutions has not faced the resource curse, and countries having low institutions face the resource curse. This study suggests that policymakers should make policies to uplift the quality of institutions. Twenty countries panel data is taken to analyze this variable; the countries exporting mineral fuels are considered. (Belarbi et al.,2016). Results show that institution quality has a strong interaction with economic growth. If the country improves its intuitional quality, it will be able to benefit from natural resources. A study was conducted in Nigeria and took approximately 150 developing and developed countries to measure GDP determinants. This study focuses on checking the role of natural resources and their link with institution quality and the impacts on Nigeria. Nigeria is blessed with beneficial natural resources. This study results show that Institutional quality has major and specific effects on the country's GDP growth. Besides institutional quality, the role of corruption should be reduced, then the development of the country will increase with the help of natural resources (Raggl, 2017)

The quality of institutions and natural resources is either a curse or a blessing, and their role in boosting or stifling economic growth was studied. This study takes 68 countries having resource economies. The contribution criteria of resource economies in this paper are 10 % GDP and 25 % of exports. This study showed that resource economies performed well with good institutions' help and boosted their economy through natural resources (Kaznacheev, 2017). This study suggests that economies should improve their performance instead of fighting with curses

and diseases. A survey of Kazakhstanalso takes place to check the institution's role in natural resource abundance. This study focuses on 14 regions of the country, and the data was taken from the 2000-2010 years. The panel data technique is applied (Pelzman, 2018). The result shows that institution quality was not the exact measurements because institutions grow very slowly in a country. This paper states that commodity price volatility is the reason for the resource curse. In the African countries, a study used panel data and takes 44 states of Africa and takes data from 1996 to 2016. This study used natural resource rent as a percentage of GDP. For checking nonlinearity, endogeneity, heterogeneity, cross-sectional instrumental variable analysis was used. Panel smooth transition regression and system dynamic panel data are undertaken (Epo, 2019). The results of this study showed that different techniques give different results. The cross-sectional approach shows that the institution quality matters in determining the resource curse but dynamic panel data shows no effect of the institution in the resource curse.

2.1 c) Role of Human capital in the resource curse hypothesis

One more aspect is also studied in the literature of the resource curse. Human capital is also considered the main component of the natural resource curse. Following are some studies which take human capital variable in their sample data.

In this study, transition economies are taken as these economies are mostly agriculture-dependent, and in the agriculture sector, skills are required rather than education. But in the industrial sector, education is needed, so these economies do not pay attention to people's knowledge (Gylfason, 2000). This study's empirical results showed that school enrollment has a positive relationship with growth and negative relation with natural resources. In resource-abundant countries, the education level is low compared to low resource countries.

A study was conducted to check the role of Human capital with natural resources. This study takes 80 developing countries' data (Auty,1997). Cross-sectional data were used. This study also proves the existence of the resource curse. This study is between human capital decisions and the main transmission between natural resources; it means that it neither confirms nor refuses. According to this, human capital may or may not affect natural resources in increasing economic growth (Manning, 2004).

A negative relation of growth was found with the resource-abundant country. The study stated that this negative link is due to the shift of resources, which is beneficial for the natural resource sector's fast economic growth. This study emphasized that natural capital is the main component of economic growth; if the proper concentration is given to natural capital accumulation, the country can avoid the resource curse (Bravo-ortega et al., 2005). Empirical analysis demonstrates that there is a positive relationship between human capital and natural resource. The study of De Gregario (2005) also shows a negative link of resource abundance countries, and economic growth can be declined by increasing the human capital level. Finland's economy improved its economic growth by improving education quality (Dahlman et al. 2006). A cross-sectional and panel data study is conducted to test the resource curse hypothesis by taking different measurements (Lederman& Maloney,2007). The results also show that human capital can be a significant channel for measuring this relationship.

On Petroleum exporting countries, a study is conducted. This study performs both cross-section and panel data methods. The relationship of variables is checked through the cross-section method, and then through panel data, the proposed model is estimated. The data year is from 1970 to 2004. This study shows that natural resources damage economic growth in countries with a low level of economic growth. Countries with a high level of human capital offset the negative impact

of economic growth resources. Human capital is the main transmission of the resource curse (Behbudi et al., 2010). This study suggests that resource abundance country should improve their human capital like Canada and Norway. Natural resources can increase economic growth if other things also work perfectly, like human capital. A study also checks Oil-rich countries from the human capital perspective. The cross-sectional method is used, and the data is taken from 1980 to 2007. This study shows that the oil-rich country with a high level of human capital shows more economic growth than without human capital (Kurtz & Brooks,2011). This study suggests that oil-rich countries should also improve the human capital for benefitting more from oil resources.

A micro-level study is done on china to check the role of natural resources and human development. The information used in this contains two levels; in the first level, it used micro-level, and in the 2nd community-level information is used. First-level data is obtained from the CASEN 2009 survey. In this survey, the age group is taken among 14 to 64 years older people. 2nd level data is obtained from the SINIM (Paredes, 2013). This study also suggests the importance of Human capital in getting better results from Natural resources—the time-series data of 55 developing countries. The data set is taken from 1970 to 2011. The education index is used as human capital, and the health parameter is also taken as the human capital. The dynamic panel Cointegration technique is used. The results show that natural resource has a significant relationship between education and health. The education effect is better in those countries that have good institutions and strong human capital investment (Kim & Lin,2017). It suggests that governments should improve their standard of living, and through this, they can enjoy more economic growth with natural resources. A study is conducted on china to check the dependence of natural resources and human capital accumulation (Sun et al., 2018). 31 province's data is collected from the year 1999 to 2015. This study shows a negative relationship between these

components. This study also revealed that investment in education would reduce the crowding-out effect on natural resources. A low level of human capital is moved towards the resource curse hypothesis in the long term. This study suggests that the country should use natural resources to invest in education and improve human capital. The 29 countries of Africa are taken, and the data years are 2000 to 2005. Autoregressive distributive lag model estimation is used (Zallé, 2018). This study shows that if the country's human capital is strong, then natural resources can increase economic growth. There is a positive relationship between natural resources and human capital. This study suggests that African countries should invest in human capital and reduce the corruption level to benefit from natural resources. The United States data is taken from 1970 to 2015; the ARDL approach is used in this study. Results show that natural resources and human capital help increase economic growth. This theory suggests that the USA should attract more human capital and FDI to contribute to economic development (Nawaz et al., 2019). A recent study on china checks the human capital role with natural resources. The data is taken from 1987 to 2017. Mbk Cointegration analysis is used, then the Ardl bound test is applied. The results show the presence of a resource curse in China. Human capital and technical innovation help to increase financial development. So there is a need to improve the human capital more so that they help contribute to economic growth and minimize the resource curse (Shahbaz et al., 2020).

2.1 D)Role of Unemployment with Resources

Natural resources contribute to the development of the country. According to Okun law, if unemployment falls by 1 percent, then there will be an increase of 3 % in GDP (Altig et al.,1997). A study was conducted to analyze the role of natural resources on Youth unemployment in the 18 MENA country's data. This study took the data from 2000 to 2013 and applied the OLS approach. The results found that there is a positive relationship between unemployment and natural

resources. This study also stated that youth unemployment hurt more than the other age groups (Scherzer,2015).

Further, a study was conducted in which the importance of resource-dependent and financial development role in unemployment is studied. This study was carried out in Nigeria country data, and the data was taken from 1981 to 2013. This study applied the OLS and error correction approach and found that resource dependence and financial development worsen the unemployment rate (Ogbeide et al.,2016). The relationship between Natural resources rent and unemployment was studied on the OPEC and OAPEC. This study took the data from 1991 to 2016 and applied the PMG-ARDL model. The results show that in the short run, this relationship did not show any relation, but in the long term, these relations show a positive impact between Natural resources and economic growth (Fattah,2017).

Conclusion

From the above Literature review, we analyze the importance of three variables. Institutional quality, corruption, and Human capital. The hypothesis which is generated from the literature is.

H0= Pakistan has not affected with resource curse Hypothesis

H1= Pakistan is affected by the natural resource curse hypothesis.

CHAPTER 3

Data and Methodology

3.1) Introduction

In this chapter, the pattern and description of the methodology are under discussion. It is an important part of research because different methods will produce different results. So the methodology must be appropriate according to the required research. In the first section, the theoretical framework is discussed, and in the second section, the definition of the variables is explained for better understanding**.**

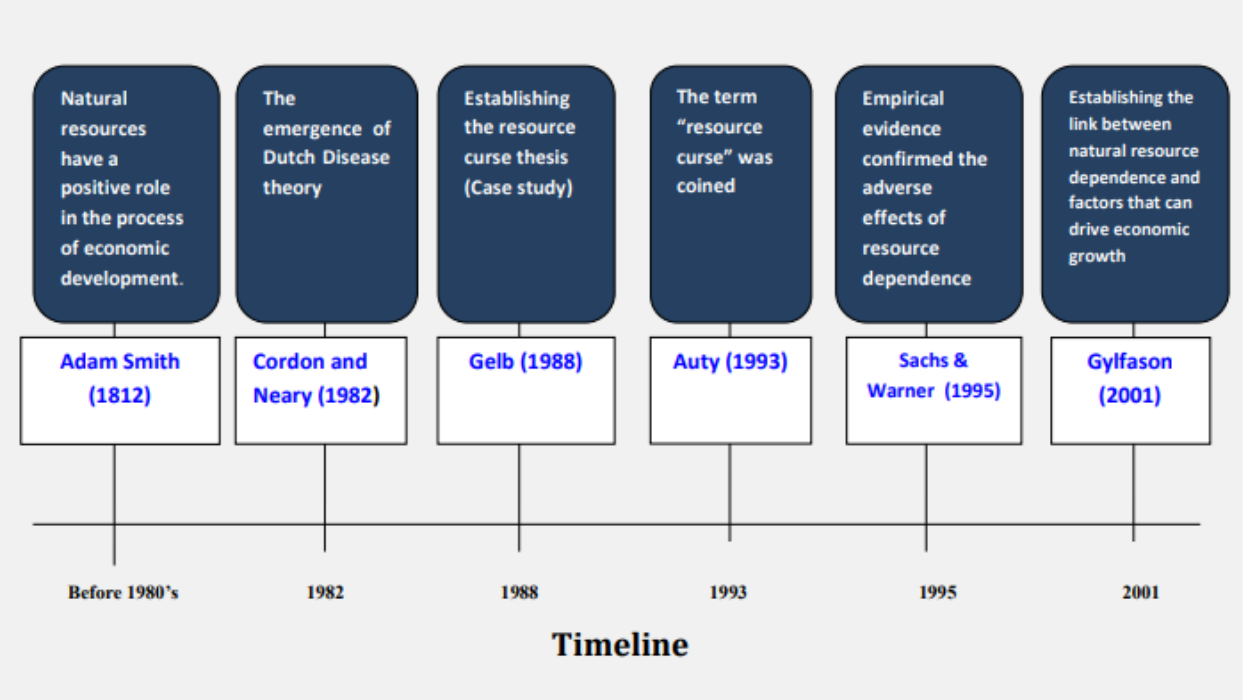
3.2) Theoretical Frame Work

Economic growth analysis is the heart of economics, and its roots started with the first findings of the economics concept. In the first book of Adam Smith, classical growth theory shows the relationship between economic growth and resources. According to this theory, economic growth is decreased with a decrease in the country's resources and vice versa. This theory leads us to believe that countries with rich natural resources have high economic growth potential. Many postwar economists supported this positive perspective of Adam smith. In 1961, an economist proposed five steps of growth towards the developed country (Rostow,1961). He considered natural resources as the primary source of a developing country to move towards developed countries. In the 1970s, Natural resources added in the neoclassical growth theory, and the

economist perceive that natural resources were the main determinant of national economic growth called the new Growth theory of sustainable development.

Lucas Bretschger presented a broad survey in his book "Growth Theory and sustainable development," in which he discusses the role of natural resources with economic growth theories. According to him, the natural resources increase the productivity of the country and helps in economic growth, but this process depletes the natural resources, and in the long run, the economic growth hurt when the country's natural resources depleted.

In 1977, the Netherland crisis originated the Dutch disease theory. According to this theory, the natural resources innovation decreased the other sector development and resulted in low economic growth. From these theories, the Resource curse hypothesis emerged and became a widely studied topic.



This Figure represents the evolution of the resource Curse hypothesis.

Description of Variables

In the natural resource curse, Economic growth and natural resource have a long-run relationship (Cavalcantie et al., 2011); some studies show that this long-run relationship is negative (Sachs and Warner, 1995), and some studies show positive relation (Alexeev and Conrad, 2009). Besides these theories of measuring economic growth and natural resource association, different other explanatory and control variables are used to robustness the relation.

Sachs and Warner (1995) and other studies measure natural resource abundance by taking a primary product of exports as a percentage to GDP, but by taking this, the countries which are giving importance to their primary products of exports would show a high level of growth regardless of having rich resources and same for the countries which are resource abundant but are not focusing on primary products, shows low growth. So this is not the correct measurement. Brunnschweiler (2008) suggested that taking total natural resource rent is a more appropriate way of measuring natural resources associated with economic growth. In total resource rent, both non-renewable like forests and renewable resources like oil, minerals, and gases are included. So in this study, we also take total resource rent for measuring the association between economic growth and natural resources. The previous research on Pakistan takes exports related to GDP as a measurement of the natural resources(Hussain et al.,2009)

Economic growth has a strong relation with investment; as the country's investment increased, economic growth will increase. Human capital also has a strong relation with economic

growth (Barro, 1996). So this study also takes these variables. In human capital investment, expenditure on education, GDP, and health expenditure will be calculated as a GDP percentage. The recent studies of Zalle (2018), Nawaz et al. (2019), and Shabaz et al. (2020) takes human capital variables to check the role of the natural resource.

It is also well believed that institutional quality is an essential factor in determining economic growth. In the absence of good quality institutions, natural resources cannot improve economic growth. That's why this study also examines this variable. The study of Ades and Tella (1999) confirms this proposition. Many other studies like Tornell and Lane (1999), Isham et al. (2003), Sala-i-Martin and Subramanian (2003), Collier and Hoeffer (2005), Brunnschweiler (2008), Mehlum et al. (2006), Azreki and van der Ploeg (2008), Van der Pleog (2011), Boschini (2013), Horvath and Zeynalov (2014) also confirms that quality of an institution is essential in explaining the economic growth with an abundance of natural resources. The recent studies of Kaznacheev (2017), Pelzman (2018), and Epo (2019) take institution quality as a primary determinant to analyze this impact.

The idea of corruption variable is taken from Leite and Weidmann 1999. The recent study of Erum & Hussain (2019) and Johanna Gisladottir (2020) consider corruption an essential variable in determining the relation. These two variables are played a vital role in the determination of this relationship. The recent studies on the Resource curse focused on institutional quality and corruption because these variables impact measuring country per year performance.

Theoretically, trade also plays an essential role in economic growth. Trade increased productivity by using new measures of production and by utilizing the resources of the country. The comparative advantage theory also emphasized that trade will increase when a country has

specialization in a specific sector. Trade openness and economic growth have a positive association, stated in the empirical literature (Barro, 1996). Hussain et al. (2009) take trade openness for measuring the impact of natural resources on economic growth.

Inflation also plays a significant role in economic growth. Neoclassical and Endogenous growth theory states that inflation affects investment level and capital accumulation; thus, its effect is necessary to measure economic growth. The studies of Orji et al. (2015) and Umair & Ullah (2013) use inflation to check this relationship.

In the first model, the study selects all these variables and runs the test, but the variables of inflation, population growth, trade openness shows insignificant results, and due to these variables, all the variables show insignificant relation, so this study in the first model omit these variables. Institution quality, Corruption, and human capital show significant results. These variables show a significant relationship in the 2nd model, so all these variables are undertaken in the 2nd model.

3.3) Variables definition

Following are the definitions of the Variables.

Gross Domestic Product (GDP)

For measuring economic growth, GDP will take into consideration. GDP is the total calculation of all the services and goods production of one year. For this study, the annual % of the rate of growth GDP per capita will be taken. GDP per capita means the division of GDP to population. It is calculated by the simple formula, current year of GDP per capita minus the previous year of GDP per capita divided by the previous year GDP per capita.

Total Natural Resource Rents

It is included as a natural resource measurement and measures the association between economic growth and natural resources. Total natural rents include the rents of oil, forests, minerals, coal, and natural gas. It is calculated by taking the difference between the good and the average cost to produce it. The unit of measure of goods price is the world price of specific goods and then subtracts the average costs of the product harvest action and extraction. These units are then multiplied with the physical quantities to determine each specific product's rents as a percentage of GDP.

Unemployment

Unemployment means the people who are willing to work but could not find work. It is calculated by analyzing the total population working minus the people above age 15 and excluding the people above 60. Unemployment played a role in economic growth. If unemployment is low, then the country's economic growth would be in better condition.

Inflation

It is the general increase in the price of the commodity from one year to another year. Inflation has effects on economic growth. People, by forecasting the inflation rate decide the investment and saving decisions. If investment increases, then economic growth starts increasing, and due to the country's investment capital, it would increase. It is calculated by analyzing the average change in the prices of consumers.

Trade openness

It is the trade policies among countries to restrict the trade among the countries or allowed the trade. Trade openness means trade is allowed both in exporting and importing. Trade has a very important effect on economic growth; if the country's trade policies are good, and the trade sector is vast, there is an opportunity for high growth. It is measured as the addition of the ratio of export, imports, and GDP.

Human Capital

It is defined as the economic worth of the worker's experience and expertise. It is an important measurement and has a strong relation with economic growth. Human capital would be improved by increasing education, training and providing a better life standard. If a country pays attention to its human capital, then the country's economic growth would increase. It is measured by calculating the total investment done on people's education, health, etc.

Foreign Direct Investment

It is the investment made by an individual or firm in another country and gets ownership right. FDI is the transfer of investment from other countries in the form of money and the transfer of technology, skills, and knowledge. FDI has immense importance as it contributes to economic growth. FDI also creates employment opportunities in the country.

Labor Force

It is described as the number of people who are employed. It is calculated by dividing the employed population by the non-employed people.

Institution quality

It measured the performance of the government. It has six indicators for measuring government performance, such as the Corruption parameter, civil liberties, the bureaucratic department's efficiency, country rules and regulations, and the policy-making predictability. By measuring these indicators, government performance annually is calculated.

Corruption

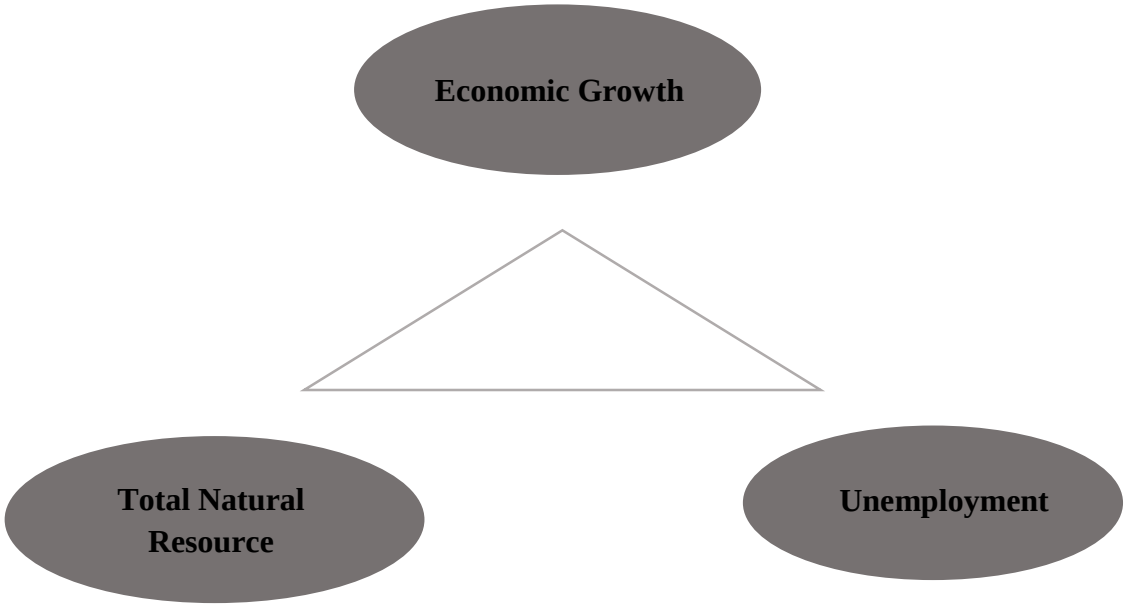
Corruption played a crucial role in analyzing the performance of the country. Corruption is measured by analyzing government sector performance. Corruption is defined as the use of country resources without any legalization.

Chapter 4

Empirical Estimation

In this Research, Pakistan's time-series data from 1984 to 2018 is taken because of its availability. The data of the variables are taken from the World Bank and ICRG.In this study, the influence of Natural resources on economic growth and the unemployment role in natural resources is analyzed by creating two models. For this analysis, this study takes a Real Gross Domestic Product as a proxy variable for Economic Growth, and it is the dependent variable of the Ist model. For natural resource measurement, this study takes total natural resource rents as a GDP percentage and measures the link between economic growth and natural resources. Total natural resources income includes oil, natural gas, coal (soft & hard), minerals, and forest income as a percentage of GDP. Unemployment will take as a dependent variable in the second model. This study also takes some other control variables for checking the robustness of the link between unemployment with natural resources and economic growth. Control variables include Inflation, Investment, FDI, trade openness, total population, and total labor force.

The relationship between this is explained as if natural resources affect economic growth; the employment opportunities would also be affected. One of the facts is that the country rich in natural resources mainly ignores the industrial sector. Due to the lack of industrial development, the country will also bear the unemployment issue.



Types of Variables	Variables
Dependent variable	GDP, Unemployment
Independent variable	Total natural resource income, institution quality, corruption
Control Variables	Inflation, Investment, FDI, population growth, Labor force, and trade openness

The model of this study will be as follows

$$(\boldsymbol{Annual\ \%\ GDP}) = \boldsymbol{\beta 0} + \boldsymbol{\beta 1}(\boldsymbol{TNI\%GDP}) + \boldsymbol{\beta 2}(\boldsymbol{INV\%GDP}) + \boldsymbol{\beta 3}(\boldsymbol{INS}) + \boldsymbol{\beta 4}(\boldsymbol{Corr}) + \boldsymbol{\beta 5}(\boldsymbol{HCEE}) + \boldsymbol{\beta 6}(\boldsymbol{HCEH})\boldsymbol{\mu}$$

$$\boldsymbol{UN} = \boldsymbol{\beta 0} + \boldsymbol{\beta 1}(\boldsymbol{TNI\%GDP}) + \boldsymbol{\beta 2}(\boldsymbol{GDP}) + \boldsymbol{\beta 3}(\boldsymbol{FDI}) + \boldsymbol{\beta 4}(\boldsymbol{TO}) + \boldsymbol{\beta 5}(\boldsymbol{Inf}) + \boldsymbol{\beta 6}(\boldsymbol{Inv}) + \boldsymbol{\beta 7}(\boldsymbol{PG}) + \boldsymbol{\mu}$$

In this

GDP = Annual % of Real Gross Domestic Product

TNI =Total natural resource income

TO =Trade openness

INF =Inflation

INV = investment as a percentage of GDP

LF =Labor Force

PG =Population growth

UN = unemployment

FDI =Foreign Direct Investment

INS =Institution quality

CORR =Corruption

This study has two models. In the first model, we will analyze the influence of economic growth and natural resources. In the second model, we will check the association of unemployment with natural resources and economic development.

The researcher used cross-sectional techniques to measure the association between economic growth and natural resources, which is not an appropriate technique because the indices

used in analyzing the multi-country regression were mostly contained proxies of crude for work (Auty 2007A,2007B). Different countries adopt different reforms and different ways of measuring natural resources, so the accumulation of these economies and analyzing them together is not appropriate because of several economic conditions. The agglomeration of different countries' data would generate biases and create heterogeneity that will give wrong results (Beck and Kakz 1995).

In panel data of growth regression, there is also a great degree of cross-sectional heterogeneity (Black burne, 2007), which will give the wrong results. The research conclusion will be based on false observation. The panel data techniques like fixed and random effect and GMM are not suitable for analyzing growth measurements because they will contain a high degree of homogeneity (Chudik et al., 2017). A country's comparative analysis gives better results than the cross-section comparison. In this study, we used time-series data to analyze the resource curse in Pakistan (Auty 2007a, 2007b).

For analysis, firstly, a unit root test will be run to check the variables' stationarity. It is important because without running the unit root test, the result will come erroneously. Unit root tests will be performed through the Augmented Dickey-fuller test. It is the most common test to check the time series data stationarity. If the unit root is present in the data, then it means that the data is non-stationary. If the data is stationary at I0 or I1, then we use the Cointegration test. A cointegration test is used to check the relationship between the variables.

This study uses the ARDL Bound Cointegration because my unit root shows mixed results. Some variables are for I0, and some are I1. The ARDL is beneficial for small sample size, as this study has a small sample size of 34 years. The results have shown stability by applying the ARDL approach, so I proceed with this approach. The recent studies also use ARDL while integrating the

phenomenon of the resource curse hypothesis. The studies of Erum & Hussain (2019), Mulugeta (2020), Jilani et al. (2020), Elif (2013), Boluk (2015) use the ARDL approach in measuring natural resources impact. After Cointegration, the ARDL test is applied to check the long-run and short-run relationship. I can use the other approaches such as VAR, Engel Granger two-step procedure, simple regression, but I choose ARDL bound test as it is more convenient and suitable according to the study variables such as mixed results and no variable stationery at I2.

Chapter 5

Estimation results

In this study, there are two models for estimation. First, this study runs the 1st model, which is the following.

Ist Model

$$(\boldsymbol{Annual}\ \%\ \boldsymbol{GDP}) = \boldsymbol{\beta 0} + \boldsymbol{\beta 1}(\boldsymbol{TNI}\%\boldsymbol{GDP}) + \boldsymbol{\beta 2}(\boldsymbol{INV}\%\boldsymbol{GDP}) + \boldsymbol{\beta 3}(\boldsymbol{INS}) + \boldsymbol{\beta 4}(\boldsymbol{Corr}) + \boldsymbol{\beta 5}(\boldsymbol{HCEE}) + \boldsymbol{\beta 6}(\boldsymbol{HCEH})\boldsymbol{\mu}$$

5.1) Descriptive Analysis

First of all, take the log of the variables to reduce the value. Then a descriptive analysis of variables is checked. The results are in Table 1.

Table 1 Descriptive Analysis of the variables

	GDP	Total-Rent	Institutional Quality	Investment	Expenditure on Health	Expenditure on Education	Corruption
Mean	5.547523	1.514070	1.245066	7.328116	5.071537	4.965279	0.657109
Median	5.914265	1.317803	1.314952	7.330281	5.080191	5.053051	0.693147
Maximum	6.508158	2.840603	1.863947	7.525424	5.365148	5.308268	1.098612
Minimum	0.364366	0.647482	0.000000	7.098376	4.700480	4.304065	0.000000
Std. Dev.	1.154212	0.643482	0.319786	0.126430	0.149161	0.267892	0.194470
Skewness	-3.013809	0.501056	-1.665724	-0.082308	-0.427837	-1.016216	-0.812460
Kurtosis	13.82847	1.931053	8.624129	1.961955	2.942775	3.118418	6.269029
Jarque-Bera	204.7840	2.951954	58.75290	1.472849	0.980604	5.526404	18.32451
Probability	0.000000	0.228555	0.000000	0.478823	0.612441	0.063089	0.000105

This table exhibits that GDP has 5.547523 mean values with the 1.154212 standard deviations, and the total rent of the natural resources has 1.514070 mean values with the 0.643482 standard deviations. Likewise, the institution quality has 1.245066 average values with the 0.319786 std. Deviation and investment as the percentage to GDP have 7.328116 mean values with a standard deviation of 0.126430. Expenditure on health as a percentage to GDP shows the mean value is 5.071537, with the standard deviation value 0.149161, and the spending on education as a percentage to GDP has 4.965279 with 0.267892. The corruption variable has 0.657109 average values with 0.194470 standard deviations. All the variables exhibit that they are negatively skewed except the Total rent of natural resources. Kurtosis demonstrates that GDP, Institutional quality, and corruption shows Leptokurtic. Leptokurtic means that they have a high peak, or they have long-tailed. Other variables show Platykurtic means low tailed or lower the peak value. Then table 1 exhibits the Jarque-Bera test. This null test hypothesis is residuals are normal. By seeing the probability value, it shows that among all variables, GDP, Institutional quality, and Corruption are not generally distributed while others are distributed normally.

5.2) Unit Root testing

Unit Root testing is an essential process in estimating the data. After performing unit-roots, the estimator knows the right path of the approaches to use. It checks the data's stationarity and contains the data are on the same level or at first difference or shows the mixed result. If data shows the mixed results as in this study, then Johansen Cointegration is not used, and the best option is the ARDL approach, as this is used in the mixed data. For this Augmented Dickey-Fuller test is run. As Augmented dickey fuller test is widely used, and it handles complex data more easily. The results of this study data are in Table 2.

Table 2 Unit Root Test Results

	ADF at Level (p-value)	ADF at first difference (p-value)
Series	Prob.	Prob.
LGDP	0.0007	0.0000
TOTAL_RENT	0.4135	0.0007
LIQ	0.0001	0.0000
LINV	0.6399	0.0001
LEXPONHEALTH	0.0016	0.0000
LEXPONEDU	0.0813	0.0059
LCORR	0.1983	0.0000

LGDP and LEXPONHEALTH at a level have values less than 0.05 %. So these variables are stationary at level. The Values of LIQ, LINV, LCORR, and LEXPONEDU have values above 0.05 %; these are not stationary at a level and become stationary at the first level. This table shows that we have mixed results I0 and I1. Because of having mixed results, we now apply the ARDL approach. ARDL approach is best for mixed results.

5.3) Optimal Lag selection

It is necessary to choose the best optimal lag as it reduces the residual correlation. If the estimation chooses a high number of lags, it has standard errors in the coefficient estimates and increases forecast errors. If the lag length is below then the optimal level, it will create estimation bias. For optimal selection, VAR models become the standard way of measuring. Lutkephol (1993) explained that higher lag than the original became the reason for mean square and autocorrelation errors. If the optimal lag is not used, it also affects the Cointegration process (Johansen, 1991).

Table 3 Optimal Lag Selection

Lag	AIC	SC	HQ
0	-5.146108	-4.822304	-5.040556
1	-10.13462*	-7.544195*	-9.290209*

AIC: Akaike information criterion

SC: Schwarz information criterion

H.Q.: Hannan-Quinn information criterion

As Pesaran et al. (2001) describe the optimal level criteria as AIC, SC, and H.Q, this study's optimal lag is 1 showing the * sign.

5.4) Bounds Test

Bounds test is used to check the long-run relationship between the variables. If Cointegration exists in the variables, then it makeable to proceed with ARDL. In the Bound test, the F-statistic value is under consideration. If this value is greater than the upper bond (I1), then the Null hypothesis is rejected, which is the variables that have no Cointegration. If the F-statistic value is lower than the lower bound I0, then the null hypothesis is accepted. F-test considers some

data points, independent variables, and their order and the size of the sample, and the trend or intercept (Boutabba, 2014). Table 4 exhibits the bound test results.

Table 4 Bounds Test

.

Test Statistic	Value	No of Lags	Conclusion
F-statistic	5.473003	1	Cointegrated

The upper bounds values are 2.8, 2.08, 3.35, and 3.69 at 10, 5, 2.5, and 1 %, respectively. These values are smaller than the f-statistic, so we reject the null hypothesis: no Cointegration exists.

5.5) ARDL short-run and long-run estimates.

If variables show Cointegration, then the ARDL short-run and long-run relationship are evaluated. This test checks the relationship of the variables with the dependent variables.

A) Long Run Estimation

Table 5 shows the results of the long-run relationship

Table 5 Long Run Estimation Results

Long Run Coefficients of ARDL(1,0,1,1,0,1,0)

Dependent variable is LGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOTAL_RENT	-0.339839	0.157811	-2.153454	0.0437
LIQ	2.253999	0.354972	0.669397	0.0105
LEXPONHEALTH	-2.061011	0.627533	-3.284307	0.0037
LEXPONEDU	1.201911	0.386015	3.113642	0.0055
LCORR	-0.826390	0.443956	-1.146383	0.0262
LINV	1.054618	0.873649	-1.207142	0.0415
C	20.127803	0.651982	2.326381	0.0306

These results indicate that the total rent of Natural resources negatively relates to the GDP, which means that if natural resources rent increases 1%, it will decrease the 0.025% of GDP. The Probability value is below 5% significance, so it shows the relation with the GDP. This study results are in line with the studies of Sach and warner (1995, 1997, 2001) and Auty (1999, 2001, 2003).On the data of Pakistan, there is a clear sign of the resource curse hypothesis.

The I.Q. results show a positive relationship with the GDP. If the country has a good institution, then economic growth will also increase. Sala-i-Martin and Subramanian (2013), Isham

et al. (2003), Mehlum et al.(2006), Collier & Hoeffer (2005), and Sala-i-Martin and Subramanian (2013 studies also show a positive link of institution quality with economic growth.

Corruption shows a negative sign, so it means that corruption has a negative link with GDP. If corruption increase in the country, then the country's growth declined. Leite and Weidmann (1999), Halkos (2010), Vicente(2010), Erum & Hussain(2019) studies also found a positive link between corruption with GDP.

Investment also shows a positive relationship with the GDP. An increase in investment will also increase the growth of the country. Almsafir et al. (2015) and Gylfason& Zoega (2006) also found a positive relationship with the GDP.

Human capital also has a positive role in the GDP. Human capital shows education, life expectancy, and the standard of living. If the country's Human capital Index is high, then it increases the economic growth of Pakistan. Kurtz et al. (2011) and Kim & Lin (2017)also found that human capital has a positive role in GDP.

B) Short Run estimation

Table 6 indicates the short-run results. In short, the total rent also has a negative relation with GDP as in long Run and Corruption also has a negative connection has in long-run relation. So in the short run, the resource curse is also clearly seen. The results are displayed in the table.

Table 6 Short Run Estimation Results

Short Run Coefficients of ARDL (1, 0, 1, 1, 0, 1, 0)

Dependent Variable LGDP

Variable	Coefficient	Std.Error	t-Statistic	Prob.
D(TOTAL_RENT)	-0.554951	0.273179	-2.031456	0.0557
D(LIQ)	0.873038	0.476196	4.804668	0.0000
D(LEXPONHEALTH)	-0.706856	0.695285	-1.016641	0.0321
D(LEXPONEDU)	0.634855	0.544191	3.004193	0.0070
D(LCORR)	-0.816424	0.929204	-3.577535	0.0000
D(LINV)	0.090609	0.242387	0.373820	0.0432
CointEq(-1)	-0.754875	0.087483	-8.628840	0.0000

In the short-run, the Total natural resources rent also show a negative relationship. Other variables also show the same relation with GDP as in the Long run.

5.6) Diagnostic Tests

Now check the data either with any type of disease like heteroscedasticity, serial correlation, and structural break.

A) Cusum Test

For checking structural breaks in the data and the stability of the data, cusum test is applied.

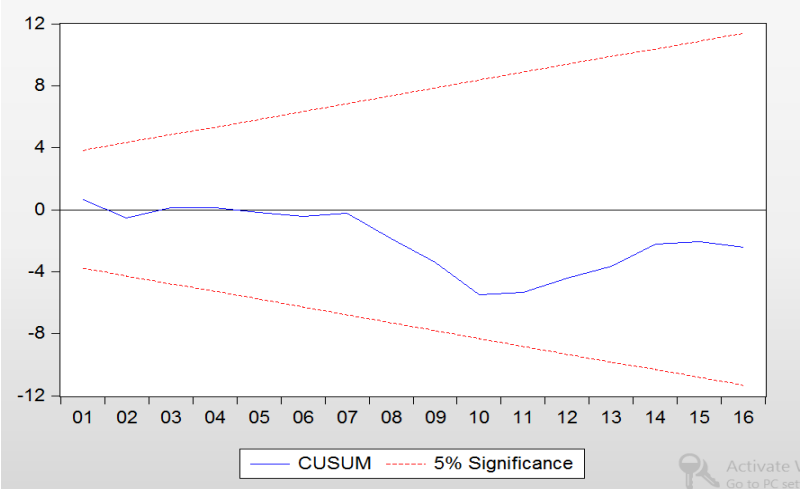


Figure 1 Representation of CUSUM Test

This figure represents that the data is stable; it has no structural breaks as in this line is not touched with the critical lines, and we accept the null hypothesis. The null hypothesis of the CUSUM test is, there is stability.

Cusum Square Test

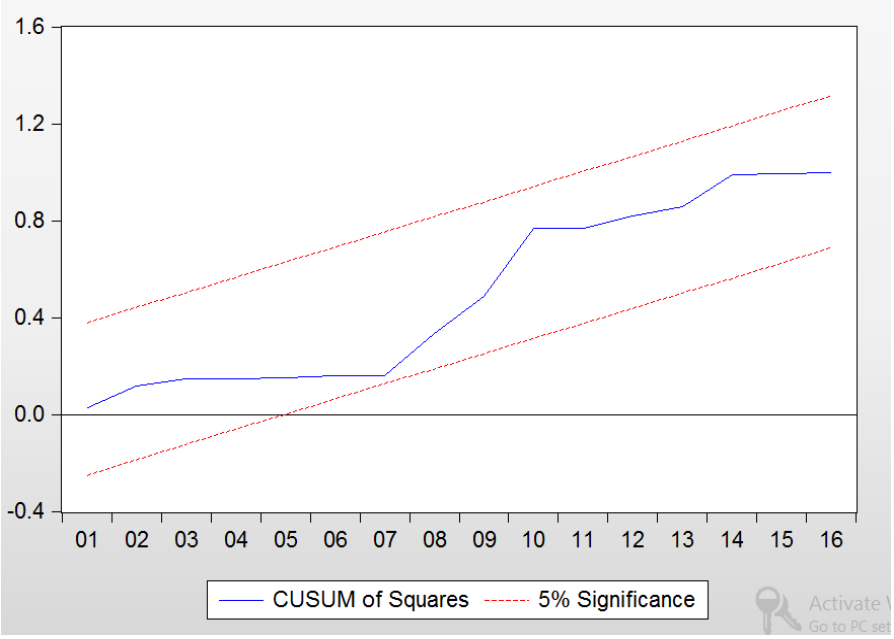


Figure 2 Representation of CUSUM Square result

This figure also shows the stability of the data as it accepts the null hypothesis.

B)Serial Correlation

Serial Correlation problem usually occurred in the data of time series. It is a problem of correlation between one period of time with another period. Its leading causes are creating biasedness in the data, and due to its presence, the untrusted hypothesis occurred. The t-statistic value shows more significant results than the actual ones. The following are the results of checking serial correlation.

Serial Correlation	0.6720

Table 7 Represents the result of serial correlation

So this value is above 0.05, so we accept the hypothesis that is there is no Correlation. So the data is free from the autocorrelation error.

B) Heteroskedasticity Test

This test is applied through Breush-Pegan-Godfrey. It occurred due to the variable's unequal variability in its values of a range of another variable. The following are the results of the test.

Table 8 Represent the Heteroskedasticity

Heteroskedasticity	0.9708

2nd Model

In this model, unemployment is the dependent variable, and here the relationship of unemployment is checked with total natural resources and economic growth. The model is following.

$$UN = \beta 0 + \beta 1(TNI\%GDP) + \beta 2(GDP) + \beta 3(FDI) + \beta 4(TO) + \beta 5(Inf) + \beta 6(Inv) + \beta 7(PG) + \mu$$

First of all, a descriptive analysis of the variables is checked. Table 9 represents the result of the descriptive analysis of the variable.

5.7) Descriptive Analysis of 2nd Model

Table 9 Descriptive Analysis of the variables

	LUNEMP	LGDP	TOTAL_RENT	LTO	LINF	LINV	LPG	LFDI
Mean	1.061679	1.401003	1.514070	3.503376	1.966704	2.794553	0.944958	-0.228631
Median	1.378766	1.554168	1.317803	3.506566	2.059783	2.798744	0.973578	-0.368394
Maximum	2.057963	2.041986	2.840603	3.661238	3.009937	3.035962	1.205015	1.299735
Minimum	-0.922057	0.014293	0.647482	3.231051	0.927954	2.572612	0.734443	-1.724892
Std. Dev.	0.913566	0.506625	0.643482	0.107107	0.532408	0.124488	0.152391	0.670071
Skewness	-0.963694	-0.921610	0.501056	-0.848401	-0.308974	0.009409	0.090026	0.477442
Kurtosis	2.664588	3.291775	1.931053	3.374790	2.125473	2.049038	1.638435	3.258012
Jarque-Bera	5.262570	4.788569	2.951954	4.151957	1.576653	1.243939	2.593633	1.345262
Probability	0.071986	0.091238	0.228555	0.125434	0.454605	0.536886	0.273401	0.510364

This table indicates that unemployment has an average value of 1.061679, with a standard deviation of 0.913566 and a GDP of 1.401003 average values with 0.506625 standard deviations. Total rent has the 1.514070 mean values with the 0.643482 standard deviations. Unemployment,

GDP, trade openness, and inflation are negatively skewed, and all others are rightly skewed. All the variables have platykurtic means small tail or lower peak values. Jarque Bera's tests show that all variables are above the 5 % significance level. It means the null hypothesis is accepted, which is residual is normal. Descriptive analysis shows that the variables are normal.

5.8) Unit Roots of 2nd Model

Adf test is used to check the unit-roots**.**

Table 10 Unit roots result

Series	ADF at level Prob.	Adf at 1st diff Prob.
LUNEMP	0.4001	0.0004
LGDP	0.0084	0.0000
TOTAL_RENT	0.4135	0.0007
LINF	0.2416	0.0000
LINV	0.5179	0.0001
LPG	0.6120	0.0491
LFDI	0.0407	0.0001
LTO	0.6799	0.0000

In this, LGDP and LFDI are stationary at a level as their values are less than 0.05%. Other variables become stationary at their first difference. This model is also showing mixed I0 and I1 variables.

5.9) Optimal Lag Selection of 2nd Model

After unit-roots, now check the optimal selection, and its result is in the following table.

Table 10 Optimal lag selection

Lag	AIC	SC	HQ
0	0.456516	0.822950	0.577979
1	-6.818157*	-3.520251*	-5.724994*

It shows that the optimal lag is 1 for this model.

5.10) Bounds test of 2nd model

The bounds test shows a long-run relationship as the f-statistic value is greater than the I1 bound.

Table 11 Bounds test results

F-Statistics	No Of Lags
4.557246	1

The I1 values are 2.89, 3.21, 3.51, and 3.9, respectively. So it is concluded that these variables have a long-run relationship.

5.11) Long Run and Short Run estimation.

Table 12 Long Run Estimation Results

Long Run Coefficients of ARDL(1,0,0,0,0,0, 0,0)

Dependent variable is LUNEMP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	-0.635818	0.840987	-1.756038	0.0457
TOTAL_RENT	-0.487982	0.241765	-2.018420	0.0554
LINF	0.915864	0.950015	-2.964052	0.0345
LINV	-0.677127	0.421726	0.105443	0.9169
LPG	-0.468175	0.562537	-1.180415	0.0249
LFDI	-0.831580	0.342997	1.363800	0.0185
LTO	0.308057	0.153089	1.441064	0.0163
C	-19.57463	0.779996	-2.789937	0.0437

This table shows that the GDP has a negative relation to unemployment. It means if the GDP increase, unemployment decreases. Calmfors & Holmlund (2000), Kreishan(2011), and Hussain et al. (2010) also found a negative link between unemployment and economic growth.

Total rent shows a negative relation; if natural resource rent increases, unemployment will decrease. These results are also similar to Scherzer (2015), Ogbeide et al.(2016) and contradict Fattah (2017); this study found a positive relationship between natural resources and economic growth.

Inflation has a positive relation with unemployment. It means that if inflation is high, unemployment is also high. Orji et al. (2015) and Umair & Ullah (2013) found a positive link between inflation and unemployment.

The result shows that investment and unemployment have a negative relationship. It means if the investment in the country increases, then the unemployment level of the country decrease. These results are similar to the study of Kamran et al. (2014).

Population Growth has a negative relation with Unemployment. If the population increases, then unemployment decreases. The results are similar to the study of Aqil et al.(2014) and contradict Arslan& Zaman (2014), as their study found a positive relationship between population growth and unemployment.

FDI has a negative relationship with unemployment. If Foreign direct Investment increase in the country, it will decrease the unemployment in the country. These results are similar to Zeb et al. (2014) and Sarwar (2008).

Trade openness has a positive relationship with unemployment. If there is freedom in trade, then it will reduce unemployment. These results are similar to Shahid (2014) and contradict Cheema& Atta (2014) as this study found a negative relationship between trade openness and unemployment.

Table 13 Short-run coefficients

Short Run Coefficient of ARDL (1, 0, 0, 0, 0, 0, 0, 0,)

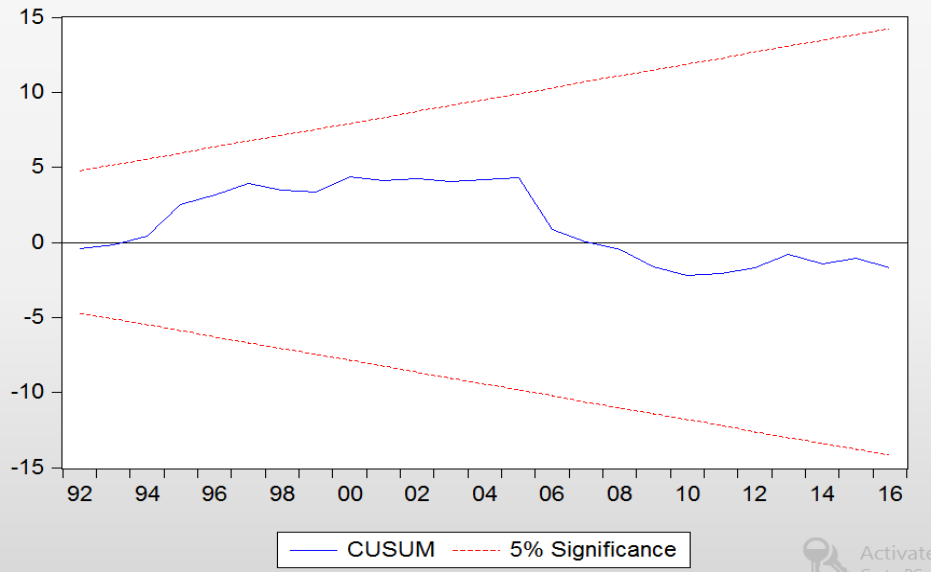
Dependent variable is LUNEMP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP)	-0.115047	0.153643	-1.748796	0.0416
D(TOTAL_RENT)	-0.496233	0.240839	-2.060434	0.0508
D(LINF)	-0.214383	0.207649	-1.032431	0.0316
D(LINV)	1.302559	0.817282	0.716762	0.4607
D(LPG)	-0.611406	0.500118	-1.246947	0.0220
D(LFDI)	-0.503059	0.195409	-2.574391	0.0170
D(LTO)	0.140425	0.227249	2.558915	0.0175
CointEq(-1)	-0.287862	0.080170	-3.590630	0.0015

In the Short run, the same relationship is found as in long terms.

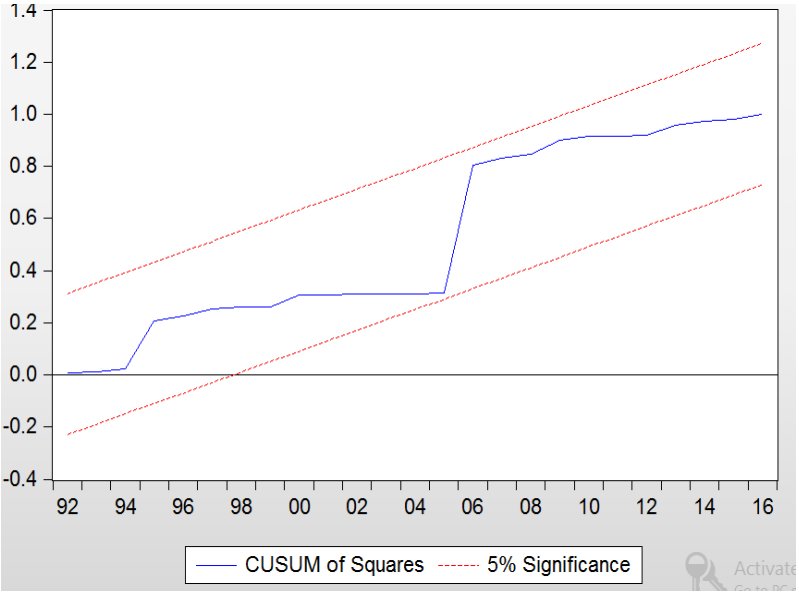
5.12) Diagnostic tests of Model 2

A) CUSUM Test



As the line does not cross the critical lines. So we accept the null hypothesis.

Cusum of square



The Null hypothesis is accepted, and there is stability**.**

B) SERIAL correlation

Serial correlation	0.3229

It is above 0.05 value, so the null hypothesis is accepted, which is no serial correlation.

C) Heteroskedasticity

Heteroskedasticity	0.1035

Its value is also above the 5% significance level, so we accept the hypothesis that there is no heteroskedasticity.

Results Conclusion

Our results show that the resource curse hypothesis is holding in Pakistan. The thesis's first objective is fulfilled, and we found natural resources as a curse for Pakistan as found by Hussain et al. (2009). This curse is due to low expenditure on Human capital, high corruption, and poor institution quality. The data shows the importance of these variables in achieving high economic growth. Without these, the economy could not achieve high growth. Strong institution's quality is required for economic growth, as proposed by the study of Nasir et al. (2014). Pakistan's institutions are not healthy (Nation,2020), and they are not utilizing natural resources properly. The corruption level is high in Pakistan. In 2019, Pakistan was on the 120th number in corruption among 180 countries. These results are an accurate picture of the Pakistan economy. Our second objective is to find a relationship between unemployment and natural resources, and the results

show that unemployment has a negative relation with natural resources, as found by Scherzer (2015) and Ogbeide et al.(2016). But Pakistan's unemployment rate is 4.5% (Pakistan Economic Survey,2019), which is increasing annually. So it is found that natural resources are good for the country if the country has strong institution quality, low level of corruption, and high Human Capital Index.

Chapter 6

Discussion and Conclusion

There is an intense debate on the importance of natural resources and economic growth in the past couple of decades. Some studies found that the relation of natural resources with economic growth is negative(Sach &warner,1995, Hussain et al.,2009). It means that the country with high natural resources exhibits low economic growth than those with a low natural resource capacity. This process is termed as Resource Curse hypothesis. The first study which finds this negative relation is of Sach and Warner in 1995. After this, several studies were conducted to check this hypothesis. Most studies confirm the hypothesis of the resource curse (Auty 1997,2001). Only a few studies show the results of no resource curse, and these were mainly the studies of developed countries that have strong Institution quality and free from corruption disease (Brunnschweiler, 2006).

This research is done to check the pursuance of this matter in Pakistan and comprises two research questions. This study reviews the relation of economic growth and natural resources on Pakistan's data and checks the role of unemployment in natural resources. Two econometric models are made to check these, and these models are according to the previous studies model with addition and omission of the variables. This study checks the role of institution quality, corruption, and human development because the latest research on other countries shows that these parameters played a high role in determining the resource curse.

The results show that Pakistan is also facing the Resource Curse. Pakistan is blessed with natural resources. But the GDP growth rate is low. The GDP in 2019 was 1.9 % (World Bank,2020). The Pakistan unemployment rate was 4.45 % in 2019, and it is increased by 0.37 % from 2018 (World Bank,2020). The unemployment rate in Pakistan is continuously growing year by year. Despite having resources, the economy is not growing. Mehlum(2006) and Leite (1999) suggested that low growth is due to low institution quality and high corruption. Pakistan stood at 120th rank among 180 countries, according to the 2019 report of ICRG. Institution quality data shows that the country has low institution quality. There is no attention towards human development; only 2.3 % of GDP is spent on education and 3.2% on health. HDI shows the country's living standard, Pakistan's HDI is too low, and it stood at 154 among the 189 countries according to the UN Human Development Index ranking 2020.

This research realized that if a country has low institution quality and high corruption, and low HDI level, it also faces massive unemployment despite having natural resources. Natural resources played a part in generating employment opportunities. But when the resources are not fully utilized, and its revenues go into corruption, the country's employment opportunities would reduce instead of increase.

Recommendation

It is suggested that Pakistan should improve its institution quality, control corruption, and properly explore its natural resources. The Government makes strict laws against corrupt persons and probes the institutions, and eradicates Pakistan's institutions' corruption. Everyone should be accountable for their business activities. Pakistan has numerous precious resources that are still undiscovered; Government should pay attention to these unexplored resources. Due to Pakistan's

political instability, no proper policy is implemented to explore its resources. The Government should also focus on recycling the resources as high utilization of resources would lead to a shortage. The Government should also focus on Human development as it is essential for economic growth. The Government should provide free primary education to the children who are not enrolled in schools because of a lack of sources. Women comprise 49 % of the population; the government should focus on girls' education and make opportunities for them to increase technological knowledge to be capable of doing advanced work.

Limitation

The study's empirical and theoretical findings showed that Pakistan is incurring low economic growth despite having natural resources. This study takes 34 years of data due to its unavailability; the research becomes better if the sample size increases. This study in the first model used only one control variable; control variables also impact economic growth, and more control variables would be used. The study uses only three models of the resource curse, and there are more models of the resource curse, which have also influence economic growth.

Conclusion

Natural resources are considered the main component of development and employment generation activities. But in 1995, after the research of Sachs and Warner, this view is changed as the study shows a negative relationship between natural resources and economic growth(Sach and Warner,1995). According to this study, the country with abundant resources shows less economic growth than countries with a low level of resources. This hypothesis is called the Resource Curse hypothesis. This research got attention, and after this, many investigations were taken place to check this view. Some studies supported the concept of the resource curse hypothesis, and some

contradict this concept. The results depend on the techniques and proxies used in the study, so the main and important part is choosing the appropriate procedure.

This research investigates the resource curse's hypothesis in Pakistan and checks the role of unemployment in Pakistan, which has vast natural resources reserves. This research takes total rents of natural resources from World Development Index as a proxy of Natural resources. In this study, the time-series data is used from 1984 to 2016 to examine the resource curse hypothesis and the unemployment role with the natural resources. This Study has two models. This study runs an augmented Dickey-Fuller test for analyzing unit root, and the results show mixed I0 and I1, so this study further goes for the ARDL approach. Bounds test is applied for finding the Cointegration level. The result shows Cointegration among the variables. Then through ARDL short and long-run relationship is checked. This study uses Eviews for running the tests. The Results show that the Sach and Warner (1995) research of resource curse is holding in Pakistan's country. Total natural rents have a significant and negative relation with the GDP. It means if total natural rents increase, then GDP growth would decrease. It is usually happened due to Institutional quality and high corruption rate as Pakistan is facing these issues. The other model explained the role of Unemployment; this shows that with having natural resources, the country's unemployment level is increased. Due to the resource curse hypothesis, economic growth is low, and the country cannot provide job opportunities.

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APPENDIX

1) Major Natural Resources of Pakistan

Details of the Natural resources of Pakistan are following.

1.1) Mineral Resources

The Mining Industry is run by Pakistan Mineral Development Corporation (1974); they are responsible for developing its resources. Baluchistan is considered the richest mineral resource province. Some coal deposits are now also found in Sindh. Gems are mostly found in Khyber Pakhtunkhwa. Almost 52 minerals are currently mined and processed here.

1) Coal

It is an important natural resource; its other name is Black Gold. It is the most plentiful fossil fuel in the world. According to the IEA report, about 42 % of the total coal is used in power generation. With the Blessing of ALLAH, Pakistan has a huge potential of coal in its earth. Pakistan is the 11th largest coal country and has 185.6 billion tons of coal resources (GSP) (BGR, 2019). It would generate approximately 100,000MW electricity for about three decades (NEPRA, 2014). The coal resources are found in all provinces of Pakistan and also in Azad Kashmir.

Despite huge coal resources, Pakistan yet imports coal. Australia, India, China, and the USA used 80, 53, 78, and 50 %, respectively, from their country's total coal reserves (IEA 2015), but in Pakistan, only 0.1 % of total electricity was produced from the coal sources (HDIP 2014). The total contribution of coal to GDP is 0.053 in 2017 (World Bank, 2017). Till now, the highest

contribution of Coal in GDP is 0.153 in the year 2008, and the lowest is 0.026 (The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium report of World Bank).

2) Natural Gas

Natural gas is the main fossil fuel of Pakistan. Pakistan utilized natural gas in energy-producing. Approximately 48.3 % of energy production is carried through natural gas (PES, 2018). The first resource of gas was found in 1953 in Sui, the area of Baluchistan, and it's the largest resource of gas in Pakistan. The initial reserve of gas in Sui was 0.31 Tcm. The 559 Km gas transmission line was used for extracting gas from Sui to Karachi. Pakistan gas industry developed forges, and in the year of 1960, all the lines were complete and in a function. The most developed system of a country is the gas industry (Malik and Maqbool, 2017). In 2016, 83.2 Mtoe energy supply was recorded with a 7.6 % annual growth rate (BP 2017). Pakistan's position is 29th for its gas reserves, and it contributes 0.2 % of total world reserves (BP 2017). If Pakistan wants to increase its reserve, more attention is needed towards the gas industry.

In Pakistan, the gas fields are in all provinces, and the major share of gas supply is Sindh, which supplies 64 % of the total gas, and Punjab, KP, and Baluchistan share 3%, 9%, and 17 %, respectively (OGRA 2017b). The total global natural gas production is 3.551 Tcm, with 0.3 % annual growth in 2016(BP 2017). The gas pipelines provide 0.113 Bcm/D gato more than 8.4 million consumers for their consumption (PES, 2017). Usage of Gas, especially in the transport sector, increased too much as petrol prices increased day by day (OGRA 2017a). Compressed

Natural Gas, Liquefied Petroleum Gas (LPG), and Liquefied Natural Gas are the different natural gas types used in previous years increased tremendously. According to PES 2017, Pakistan becomes the world-leading CNG user and more than 3 million natural gas vehicles on the roads. And due to this, Pakistan faces a gas shortage as no new and significant work was done by the Government to increase the potential of natural gas. But Pakistan has gas reserves not explored by the Government due to their interests (Murtazashvili, 2016).

3) Crude Oil

When Pakistan came into being, four oil fields such as DHULLIAN, JOYA, KHAUR, MAIR, and BALKASSAR. After that, four new areas have been discovered at KARSAL, TUT, SARANG, and MAYAL. These all are in the Potwar Plateau. OIL traces are present in different regions, and more fields are exploring foreign companies' help. The total oil rent percentage of GDP is 0.30 in 2017. The highest contribution of oil rent was in 1990 and its 1.11 percent of the GDP and the lowest value till now is in the year 1972 and its only 0.02 % of the GDP ("The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium" (World Bank, 2011).

4) Copper and Gold

Pakistan also has resources of Copper and Gold. Reko Dig mountain contains the largest reserves of copper in Pakistan and contains a large amount of Gold. Copper contributes to the exporting sector. Saindak is also called the copper city as it contains copper minerals in its soil. This city also has Gold reserves. Pakistan has many copper and gold reserves, which are still unexplored.

5) Other Minerals

Pakistan also has other useful minerals such as zinc, platinum, uranium, Lead, etc. Iron is also the main contributing element of the economy, and it's found in many areas of Sindh and Baluchistan. The salt mine of Pakistan is the world's 2nd largest mine. Besides this, Pakistan has found many precious gems and stones like ruby, emerald, etc., which have too much worth in the whole world.

1.2) Forest Resources of Pakistan

Pakistan's forest-covered area is low as compared to the world. Pakistan has only 5 % of the country's total area (Government of Pakistan, 2010), and the global average coverage recommendation is 30.3 % (FAO, 2007). But the forests of Pakistan are rich with resources. In 1990 and 2010, rapid deforestation occurred; almost 170,684 hectares of forest have been cut (Qamer et al., 2016). Due to the increasing population in Pakistan, the deforestation process is spreading rapidly. More area affected by deforestation is Khyber-Pakhtunkhwa and Gilgit Baltistan (National Forest Policy, 2015). Pakistan has many endangered species, whose worth is high all over the world.

1.3) Land Resources of Pakistan

The total area of Pakistan is 881,913 square Kilometer, including Azad Jammu Kashmir and Gilgit Baltistan. Pakistan has the 2nd highest mountain range, K2. Pakistan is endowed with beautiful areas that are fascinating and capturing tourism. Tourism also helps in the growing

economy, and it is the source of northern areas people. Islamabad is the 2nd beautiful capital of the world.

1) Agriculture

Pakistan is an agriculture-based country, and agriculture contributes 22.85 % to GDP, and this sector absorbs almost 42.3 % of the labor force (Economic survey, 2018). Cotton and Wheat is the main crop of Pakistan. Pakistan's total agriculture area is 36844 ha (FAO, 2018), and it was 35730 in 1961. So there is no significant increase in agricultural land. The maximum value of agricultural land is 385,090 in 1982, and the minimum value is 352,060 in 1990 (FAO, 2018). As a percentage of land, the agricultural land was 47.79 % in 2016, and its highest value was 49.95 in 1982, and the minimum value is 45.67 in 1990 (FAO, 2018)

2) Livestock

Livestock resources of Pakistan also have significant importance. It involves almost 8 million families' livelihoods. It contributes 11.1 % to GDP. Pakistan is ranked 4th in camel market contribution and milk production (Economic Survey, 2018). The main animals are Camel, goat, and buffaloes. Livestock engaged women of rural areas and became the source of their earning. Eggs also played a vital role in people's health, and its sale gives profit to Pakistan's economy. Livestock also helps in the industrial sector by providing raw products.

3) Fisheries

Fisheries played an essential role in the economy. It also contributes to export income. Fish have many nutrients that are useful for the health of the people. It contributes 0.4 % to GDP growth. The total production of fisheries estimated is 482000m tons, including marine and inland waters (Economic Survey, 2018). Fisheries engaged many coastal populations in earning their livelihood.