UNIVERSITY OF GHANA

OVERCOMING THE RESOURCE CURSE: DOES RESOURCE GOVERNANCE MATTER?

BY

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DECLARATION

I do hereby declare that this thesis is the product of my own supervised research and has not been presented by anyone for any academic award in this or any other university. All references in the work have been duly acknowledged. I bear full responsibility for any shortcomings thereof.

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CERTIFICATION

I certify that this thesis was supervised in accordance with procedure laid down by the University.

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DEDICATION

I dedicate this work to my dear wife Mrs., Joyce Offeibea Owusu, my son Nhyira Nana-Kwame Owusu and my sweet daughter Maame-Yaa Owusu

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ABSTRACT

The relationship between natural resource-richness and economic growth and development has been a focus of discussion for decades but recent debate was started in the 1990s. There has not been agreement as to how natural resources are vital to economic growth. This paper re-examines two main aspects of resource curse and growth literature, the first has to do with the measurement of natural resource endowment and economic growth while the second one has to do with the institutional quality. We employed standard empirical growth model, both OLS and 2SLS estimators with cross sectional data average over the periods 2008-2012.

Our results reveal a direct positive link between natural resources endowment and economic growth, the positive association between resource and economic growth are strong in the natural resources rents per capita. In addition, our findings also indicate no evidence of negative effects of natural resources through the institutional quality. The possible implication to be drawn from this study is that countries should establish robust natural resource mechanism to cater for the uncertainties in this sector. Finally, government of resource endowed economies should have a special account where windfall gains from the resources sector can be deposited pending economic and social infrastructure.

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LIST OF ACRONYMS

2SLS-	Two Squares Least Square
EE-	Enabling Environment
FDI-	Foreign Direct Investment
GDP-	Gross Domestic Product
HIC-	High Income Countries OECD
HINC-	High Income Countries NON-OECD
ILS-	Institutional and Legal Setting
INF-	Inflation
INV-	Investment
IV-	Instrumental Variable
LI-	Low Income
LMI-	Lower Middle Income
MIN-	Natural Resource Abundance (natural resource rents per capita)
OLS-	Ordinary Least Squares
POP-	Population
PR-	Reporting Practices
REG1-	Sub-Sahara Africa
REG2-	South, East Asia & Pacific
REG3-	Middle East and North Africa
REG4-	Latin, North America & Caribbean
RGI-	Resource Governance Index
SQC-	Safeguards and Quality Control
TRD-	Trade Openness
UMI-	Upper Middle Income

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The relationship between natural resource-endowment, economic growth and development has been a focus of discussion for over two decades. The literature provides no clear guidance as to whether natural resource-endowment contributes positively to economic growth (Beland & Tiagi, 2009). For instance, Canada, the United States, New Zealand, Iceland and Norway are some of the countries that have benefitted from their resources. In these countries, natural resources endowment seems to have promoted economic development (Mehlum, Karl & Ragnar, 2006a).

In spite of this, the extant literature beginning from Sachs and Warner (1995) suggest that natural resource endowed economies experience lower economic growth compared to countries that are not blessed with natural resources. This situation has been referred to as the "resource curse". The slow growth of resource endowed economies has remained a puzzle in the development economics literature (World Bank, 1994). The presence of a natural resource curse is mystifying because economic theory suggests that human, physical capital and natural resources should contribute positively to economic growth (Beland & Tiagi, 2009). For example, growth losers, such as Nigeria, Zambia, Sierra Leone, Angola, Saudi Arabia and Venezuela, are all resource-endowed but seem to have experienced the resource curse. Though some countries seem to have experienced negative growth outcomes in spite of being endowed with natural resources, others like Korea, Taiwan, Hong Kong and Singapore are all resource-poor and have achieved massive economic growth. On average however, the literature seems to suggest that countries endowed with natural resources seem to exhibit lower growth outcomes (World Bank, 1994).

Several reasons have been attributed to why countries blessed with natural resources tend to exhibit slow or negative growth outcomes. For example, Aunt (1994b) and Sarraf & Jiwanji, (2001) argue that natural resource endowment tends to increase income inequality in a country. Furthermore, the literature suggests that natural resource endowment may bring about sustained conflict in a society (Collier & Hoffer, 2000; Rose, 2001). They argued that natural resource endowment generates a revenue basket that is worth dying for. This is because the government in power stands in a better position to use the revenue in the basket for their personal interest. Conflicts may arise because there is general feeling that the resources are taken from the region to the capital or through the damage to the environment in the local communities.

Wexler (2010) also argues that the resource curse occurs when trade openness and natural resource endowment together generate a governance problem. He argues that natural resource endowment promotes and prolongs internal conflicts among the citizens of a particular country. Whereas several studies have found evidence suggesting the existence of a resource curse, current studies have added an interesting dimension to the literature. According to Beland and Tiagi (2009) the slow growth experienced by resource endowed economies can be explained by the quality of institutions and governance in a country or due to lack of quality institutions and good governance. In other words, developing economies with huge deposits of natural resources are not destined to failure or poor economic growth if they exhibit characteristics of good governance and strong institutions (Beland & Tiagi 2009).

1.2 Statement of the Problem

There are considerable studies on the relationship between governance or institutions and economic growth. North (1990) argues that creating a good atmosphere that promotes

voluntary transactions, risk-taking and engaging in industrious actions in general, stimulate economic development. Goldsmith (2007) on the other hand posits that, the fundamental reasons why economies are inactive and fruitless can be numerous, and may include scarcity of capital, backward technology, unequal trading relationships, harsh climate, and lack of natural resources, remote location, anti-commercial cultures and poor human capital. Among all the factors that determine how countries can effectively transform their resources to achieve or overcome developmental challenges, is the quality of that country's governance factors.

North (1990, pg.110) again argued that "Third world countries are poor because the institutional constraints define a set of payoffs to political or economic activity that does not encourage productive activity". Acemoglu, Johnson and Robinson (2001) and Rodrik, Subramanian, and Trebbi (2004) emphasized the importance of governance and institutions on economic growth.

Sobel (2008) believes that economic institutions are beneficial to the attainment of economic development and therefore ignoring the significance of economic institutions is like operating economic interests in a space. In their recent work, Acemoglu and Robinson (2008) posit that institutions are the basic source of economic growth and therefore explain the differences in terms of the economic growth experienced by various countries. In addition, the differences in institutions that exist among economies basically explain the differences in human capital, technology and physical capital across countries and each and every one translate into economic growth.

Current studies on the resource curse have advocated the vital role of governance and institutions for the economies which are endowed with natural resource (Beland & Tiagi, 2009). For instance, Mehlum *et al.,* (2006) reveals that economies which are endowed with natural resource and strong institutions need not to be affected by a resource curse. Using Sachs and Warner's measure of natural resource endowment, they discovered that the presence of a natural resource curse depends on the quality of institutions. In economies with strong and quality institutions, natural resources are basically a "blessing" but for economies with feeble institutions natural resource endowment tends not to have a significant impact on economic growth.

In this study we re-examined two main aspects of the natural resource and growth literature. One has to do with the measurement of natural resource endowment. Recent papers mostly published over the last two decays use the Sachs and Warner (SW) measure or similar which measures natural resource endowment as primary exports scaled by GDP. We evaluate the strength of this measure and we propose natural resources rents per capita which in our option best capture a country's natural resource endowment.

Limi further posits that, for developing countries to achieve economic growth, it is incumbent on them to establish good governance (strong public voice with accountability, high government effectiveness, good regulation, and powerful anticorruption policies). In the same way, Larsen (2006) asserts that, one of the major factors that contributed to Norway's swift growth after the discovery of oil in 1969 was the efficient management and proper utilization of its oil revenues. Norway instituted effective political and economic institutions, social norms, and a strong judicial system. Notwithstanding the fact that numerous studies show that "institutions matter" for growth (e.g Acemoglu, Johnson & Robinson, 2001) the role of

institutions and governance has received little attention in the literature on resource endowment and economic growth.

Previous studies that have taken into consideration the role of institutions tend to use broad based and generic measures of the quality of a country's institutions. These measures include the EFW index from the Fraser Institute's Economic Freedom of the World (see Gwartney & Lawson, 2008) rule-of law index (see Sachs & Warner, 1995; Brunnschweiler, 2006) democracy index (see Kolstad, 2007), measures of institutions from Kaufamann, Kraay, & Mastruzzi, (2005) and indicators of institutions and country risk from the Political Risk Services Group.

The Resource Governance Index which we propose to use in this study is obtained from Revenue Watch Institute (RWI). This is a more precise and comprehensive estimate of economic institutions surrounding natural resources. The components of the index include the institutional and legal setting, reporting practices, safeguards and quality controls and enabling environment. Using this index will allow us to get a more precise estimate of the impact of institutions or governance on economic growth and how institutions or governance interact with natural resources. This study, adds to current literature in the sense that it employs a more specific measure of institutions (resource governance) and natural resource endowment (natural resource rent per capita) in studying the relation between natural resource endowment, institutions and economic growth.

1.3 Hypothesis development

Literature on the resource curse can be classified as an addition of the standard endogenous growth theory where natural resource-richness is seen to be one of the main drivers of economic growth (Béland & Tiagi, 2009). For instance Sachs and Warmer (1995) empirically examined the link between resource wealth and economic growth with the help of World Bank database indicators prompting a huge quantity of works in this area. Apart from Sachs and Warmer (1995) a lot of scholars have also confirmed the negative link between resources-richness and economic growth (Papyrakis & Gerlagh, 2004; Leite & Weidmann, 1999).

Furthermore, it is easily found in the natural resource literature that resource richness can simply be a curse for economic and social development instead of a blessing (Busse & Groning, 2011). One of the studies that has been carried out is the Saches and Wamer (1997), their argument was based on the revised set of independent variables such as natural resources (sum of exports primary agriculture, fuels and minerals) measured as resource exports to GDP, institutions (eg rule of law, corruption in government bureaucratic quality), trade openness, interaction between trade and income, growth of the economically active population etc found out that natural resources have a negative impact on economic growth. They further argued that upon all these factors enumerated above, weak institutions and poor economic policies and more importantly lack of openness to international market contributes immensely to the poor economic growth.

Nonetheless, Lederman and Maloney (2003) also examine the effect of trade structure, natural resource, export concentration, and intra industry trade on economic growth. They discovered that not only did the natural resources matters but depending on the type of data used, the results could change drastically. They used 65 nations of cross-country data in the years 1980-

1999, it was reported that net exports of natural resources per worker in the panel regressions have a positive and significant impact on economic growth but in the case of cross-sectional data, the results were positive but insignificant.

In using another set of models, that is the coefficients on exports of primary resources as a percentage of GDP; in the cross-sectional data, natural resource measure was negative and insignificant but was positive and not always significant in panel regressions (Lederman & Maloney, 2003). In distinction, export concentration (exports of natural resources as a share of total exports and a constructed export-concentration index using a 4-digit SITC) seem to give unfavorable outcome on growth in cross-sectional approach, while there is unclear evidence in the panel regressions. In effect Lederman and Maloney (2003) concluded that, depending on the type of models and selected variables used, the natural resource curse may be sustained as has been exhibited in the Sachs and Warmer paper where they used cross-sectional data. Thus in line with the empirical literature, we hypothesize that:

H_0 : Natural resource endowment has no relationship with economic growth

H_1: Natural resource endowment has a negative relationship with economic growth

Quite a lot of studies recently have emphasized the significance of good governance or institutional quality for economic growth (Acemoglu *et al*, 2001, La Porta, Lopex-de-Silanes & Vishny, 1999). Although in the resource curse hypothesis, the institutional channel has been cited as a potential source of economic development, it has also been mentioned as a possible cause of the curse (Mauro, 1995). Bulte, Damania, and Deacon (2005) argue that natural resource richness, more importantly mineral resources has an ambiguous effect on human development and a little negative indirect consequence on institutional quality. To the contrary, Limi (2007) posits that governance or institutions does not have a positive impact on

growth for a short period of time. He reveals this when he examined the latest cross-sectional data of 89 countries.

Mehlum *et al.*, (2005) on the other hand posit that the interaction between natural resource-richness and good governance or high quality institutions with an aggregate indicator as a measure produces two interesting result, that is positive growth effect, with direct negative growth effect resource curse seem to exist. In a qualitative perspective, economists in general support the argument that the existence of natural resource richness (eg mineral) promotes the corruption among those in authority and rent seeking attitudes or actions and its effects reduce the quality of governance and also negatively reduce the economic output or performance (Aunt, 2001, Norman, 2006 and Leite & Weidmann, 1999). In another case, it was discovered that natural resource endowment could possibly advance the negative effects of growth because of lack of institutions/governance, resource rents are spent on government consumption instead of expanding the investment and infrastructure base, particularly economies with low levels of savings (Atkinson & Hamilton,2003).

Glasser, La Porta, Lopez-de-Silane and Shleifer (2004,pg 285) seriously opposed the mainstream literature which tries to provide " evidence that institutions cause economic growth, as opposed to growth improving institutions, is non-existence". These may possibly be due to the fact that omitted variables biases may as well accounted for the positive association between good governance and high economic growth (Bardham, 2005). Beland and Tiagi (2009) argue that institutions are important for the growth of countries endowed with natural resources. They argued when they used primary exports scaled by GDP in 1970 as a proxy for natural resources abundance and their results supported the resource curse hypothesis. They also tested for the significance of the institutions when they interacted

(EFW) Frazer Institute's as a proxy of institutions with the natural resources. Their results show that institutions matter for economic growth while the interaction term gives the indication about the importance of quality of institutions in measuring the impact of resources on economic growth. On the contrary, Brunnschweiler (2007) in his work used a new measure of natural resource wealth (total natural capital per capita) and finds a positive link with economic growth over the period of 1970-2000, which is established when institutional quality was considered. This study also tested for the significance of the institutions when they interacted natural resource wealth with institutional quality and the study does not support the "resource curse" through institutional quality found in several other studies. Paradoxically, adding on interaction term tells that the positive growth effects diminish as institutional quality improves. This result hold both in Ordinary least squares (OLS) and Two Square Least Square (2SLS) estimations when the endogeneity of institutions was considered with the wide range of control variables from the growth empirics. Based on the inconclusive evidence above we therefore hypothesize

H_0: Countries with bad resource governance do not spur economic growth

H_2: Countries with good resource governance do experience economic growth

1.4 Research Purpose

The purpose of the study is to determine the impact of the resource governance index in overcoming the resource curse in the countries covered by the index.

1.5 Research Objectives

The objectives of this study are:

i. To examine the nature of natural resource endowment and resource governance

ii. To examine the linkage between natural resource abundance and economic growth.

iii. To examine the interaction between resource governance and natural resource abundance on growth.

1.6 Research Questions

Based on the research objectives above the following questions were asked:

i. What is the nature of natural resource endowment and resource governance?

ii. Is there a link between natural resource abundance and economic growth?

iii. What is the interaction between resource governance and natural resource abundance on growth?

1.7 Significance of the study

The significance of the study can be viewed along three strands: research, practice and policy. Many countries are confronted with ways of managing their natural resources so as to achieve greater economic growth. One it will serve as a source of reference for further work in this area and also it is the first time the resource governance is used to solve the problem of resource curse. Secondly, the study will provide guidelines to managers, practitioners, employees and organizations on the problems associated with natural resources and how to overcome it in order to achieve growth. Finally, the study will provide feedback to policy makers especially governments and the international community on how countries may best use their natural resources to the benefit of their citizens

1.8 Research limitations

The topic natural resource curse is vast and so the researcher decided that to use the resource governance index to find out it impacts on the economic growth of countries covered by the index. So all the countries which were not covered by the index would not be part of this

research. In addition, even though the resource governance index is novel, its coverage in terms of countries and time period is low.

1.9 Chapter Disposition

The first chapter comprises; research background, research problem, research purpose, objectives of the study, research questions, research significance, scope and limitation of research and the chapter synopsis/organization of research. Chapter two focuses on a review of relevant literature on the topic under review. Chapter three deals with the overview of the resource governance index and the nature of natural resource abundance whiles chapter four deals with the methodological approaches which highlights on, methodology, data processing and mode of analysis, variables and ethical considerations. Chapter five entails results, data presentation, analysis, and discussion of findings. Finally, chapter six comprises conclusions and recommendations. The references and appendices follow this chapter.

1.10 Conclusion

This chapter introduced the study. It presented the background to the study, problem, outlined the objectives of the study as well as the vivid comprehensive layout of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter would review the theoretical and possible empirical literatures that are related to the topic under review. Some of the areas that, the researcher will cover includes, scholarly definitions of resource curse, governance and economic growth, abundance natural resource and economic growth, and natural resource curse and governance.

2.1 Scholarly Definitions of Resource Curse

Resource curse has been defined generally as a situation whereby natural-resource-richness countries have the propensity to develop not as faster as compared to the resource scarce economies (Limi, 2007). One of the amazing features of current economic growth is that countries endowed in natural resources seem to grow slower than countries without huge deposits of natural resources (Sachs & Warner, 1997).

Wexler (2010) on the other hand explains resource curse as the occurrence of the combination of open market and large natural resource to generate a governance problem. Wexler (2010) went on to say that one particular problem with the resource curse is when the precious natural resource brings about, established and prolong internal conflict. Using the total output per capita as a test or gauge, Erling (2006) argues that resource curse is seen as an event or trend where resource endowed economies is likely to grow more slowly than the non resource endowed economies do. For example, Shaxson (2005) argues that natural resource is one of the factors that have contributed to civil war and oil has been arguably a contributing factor to the violence in the Niger Delta, in Cabinda in Angola, Congo-Brazzaville's civil wars of the 1990s and 2003 and 2004 coup and coup attempts in Sao Tome etc.

However, Murphy, Shleifer and Vishny (2000) disagree with the assertion above. They argue that natural resource endowed countries may possibly advance growth because been endowed could lead to massive investment which will promote the expansion of economic and social infrastructure and also improves the human capital capacity or development.

For instance resource rich countries like Australia, Finland and United States have attained higher development through the prudent use and efficient management of their natural resources, (De Ferranti, Perry, Lederman & Maloney, 2001). Furthermore, modern economic theories also made us to believe or stipulate that natural resource profit countries by facilitating their economic and political development.

2.2 Theoretical Background of the Resource Curse

There have been a lot of studies about how countries suffer "curse" instead of "blessing" from the natural resource at their disposal, such as oil, gas, mineral revenues. Aunt (2001a) puts it into two categories such as exogenous and endogenous. Under the exogenous he looked at it from three perspectives such as structuralist policies, Dutch disease and export based theory and two endogenous causes are unproductive investment, failure of the government policies, rent seeking and political economy. He further expanded it into the following disciplines- Dutch disease, crowding out effects, increasing the role of the state, long term decline in terms of trade and socio-cultural and political impacts. In another instance, Busse and Groning, (2011 p.2) also argues that the resource curse might occur due to the adverse "long-term trends in commodity prices, high price volatility for these goods, the crowding out of manufacturing, the incidence of civil war, Dutch disease effects, or poor institutions and bad governance".

Sala-i-Martin and Subramanian, (2003) believes that, in order to prescribe a medicine to cure a disease it is important to indentify the cause of it and it is of this opinion that natural resource endowed makes the country prone to the Dutch disease while (Lane & Tornel, 2005) argue that resource curse promotes rent-seeking since the resource produces rents which are sucked by leaders in authority. Sala-i-Martin *et al.,* (2003) further argue that natural resource possession increases economies chance of volatility of commodity prices, which is possible of damaging the growth of a country. However, Collier and Hoeffler (2005) on the other hand posit that governance, Dutch disease, conflict, excessive borrowing, inequality, volatility and lack of education are the channels at which resource curse effect economies. Based on what have reviewed above, it could be realized that, certain causes cut across what most of the scholars have said. For instance, long-term trends in commodity prices, high price volatility for goods, the crowding out of manufacturing, the incidence of civil war, Dutch disease effects, poor institutions or bad governance.

2.2.1 Dutch Diseases

The term Dutch disease talks about the appreciation of the Dutch currency as a result of finding huge deposits of gas which affected the Dutch industrial sector. This currency appreciation disturbed or decline the profitability of manufacturing and service exports because of the gas exports boom and also the total exports reduced in relation to GDP in the 1960s (Achille, 2009). Furthermore, he argued that the growth in the petroleum exports in the 1960s not only affected other exports but also decline other exports excessively and increases the problems of Dutch manufacturing.

Besides, Gylfason (2001) argues in principle that the Dutch disease as a matter of interest has been benefitting only one division partially at the expense of others which may also be

described not serious problem per se. In contrast, the disease have the tendencies of harming economy if there are unique characteristics about the reallocation of natural resource between divisions, for instance, "from high-tech service industries to low primary production" (page 14). Sachs (2007), on the other hand agrees with other scholars, for instance (Achille, 2009) who elucidated that the oil boom is a potential of persuading a reduction in a technologically most important area of a country with unfavorably effects for long-term development. He continued to argue that natural resource swing can turn into a true disease.

2.2.2 Insufficient Economic Diversification

Natural resource endowment create an extremely rigorous system of the economy and export income, which leads to economic susceptibility to exogenous upsets, resulting in slower development (De Ferranti & others, 2001). Natural resource division in general is capital-intensive and asset-specific. In this regard, the extraction of minerals involves the requirement of huge, robust, location-specific investments and once located, the assets are motionless. Furthermore, investments in this sector require facilities and equipment that are peculiar to particular mine and region, in other words depending on where the assets are located (Masten & Crocker, 1985; Joskow, 1987). In effect, natural resource-endowment growth promotes little positive externalities to both backwards and forward industries (Sachs & Warner, 1995) and for that matter learning-by-doing outcome is not likely in this sector.

2.2.3 Rent Seeking and Conflicts

One of the vital reasons for resource-endowment economy's slow growth is when concentration is paid to the significant of governance in promoting economic growth. That is, natural-richness advances the attitudes of discord and conflict among people who have an interest like politicians, developers, citizens and local tribes normally referred as taxpayers (Limi, 2007). The presence of huge rents has the tendency of stimulating rent-seeking

behavior and strengthens domestic conflicts (Sala-i-Martin & Subramanian, 2003, Sorli, Gleditisch, & Strand, 2005). Brabier, Damania and Le onard (2005) on the other hand empirically studied how stakeholder's activities impacted on the resource depletion through their lobbying process. Collier and Hoeffler (2005) also argue that economies endowed with natural resources are more likely to promote violent conflict. A well recognized model of political development for examine resource-richness economies indicates that factors such as concentration of government power of resources, high resource reliance and the government willingness to tax stakeholders (private business owners) all hinder the promotion of democracy and aggravate rebellion. In the end, natural resources hamper economic development (Shahnawaz & Nugent, 2004). The uniqueness of this sector is that because of high earnings from the resources, resource-endowed countries careless about the tax revenues and is moderately pressured on accountability issues.

In addition, because resources are immobile increases their susceptibility to rent-seeking. That is, fixed resources are difficult to move from other country to another because of difference in taxes and regulatory policies in each country. In effect, because these resources are immobile makes it easier or more likely to be greatly regulated and taxed and at the end increases the enticement for 'unproductive entrepreneurship' as defined by (Baumol, 1990). He argued that the degree at which people engages in either productive or unproductive, wealth-creating private enterprise, wealth relocation either through lawful and unlawful rent-seeking, rests on the rate of return of these two actions. In countries with high taxes and regulation, it would be more attractive to lobby or engage in corruption activities than to be in the industrious entrepreneurship in the personal segment.

2.2.4 Corruption and Undermined Political Institutions

One of the channels that are closely associated with resource rents is the corruption and undermined political institutions. Limi (2007) argues that resource rents not only promotes conflict but also instigates corruption among citizens and underperform political institutions. Leite and Weidmann (1995) on the other hand examined the effects of anticorruption policies, and revealed that with strong and effective monitoring may decrease steady-state shade price of capital, maximizing a higher economic growth rate during the convergence. Empirically, it has also be investigated that resource-richness countries are more or less corruption prone (Gylfason, 2001, 2006; Kronenberg, 2004).

For example, resources such as coca and diamonds which are traded on the black market are likely to promote corruption although economic benefits from these resources in their rural development is very low or minimal (Angrist & Kugler, 2005).

2.2.5 High Price Volatility for Goods

Humpreys, Sachs and Stiglitz (2007) explained some of the problems that are confronted with the abundance of natural resources. They describe the natural resources as possessions with outstanding volatility. Natural resources cost in the time past due to the unstable rates of extraction, and the type of contracts with multi-national companies. The concluding impacts arise from the multinational companies pressurizing the economies into the manner that increases income unevenness (Shaxson, 2005, Humpreys *et al.*, 2007). Volatility of natural resources has numerous adverse effects such as planning and making the development issues in the economy difficult, social expenses irregular and foreign investment suspicious.

Lederman and Maloney (2007) also posit that it is rather trade structure and missing export diversification that slows economic growth, but not natural resources. To experiment this theory, they re-examine Sachs and Warmer study with the addition of indicators for export attention and intra-industry trade. Their findings reveal that any slow growth on natural resources vanishes where some of the variables capturing export concentration are concluded.

2.3 Empirical Review

Under the empirical review we would look at the natural resource abundance and economic growth, institutions and economic growth and governance and natural resource.

2.3.1 Natural Resource Abundance and Economic Growth

Literature on the resource curse can be classified as an addition of the standard endogenous growth theory where natural resource-richness is seen to be one of the main drivers of economic growth (Béland & Tiagi, 2009). Studies on endogenous growth theory were provoked by the accessibility of cross-country data sets such as the Penn World Table (CICUP, 2009) and numerous studies such as World Bank indicators. The availability of data permitted scholars to investigate the elements of economic development and growth in more detail (Romer, 1994).

For instance Sachs and Warmer (1995) empirically examined the link between resource wealth and economic growth with the help of World Bank database indicators prompting a huge quantity of works or research in this quarter. Apart from Sachs and Warmer (1995) a lot of scholars have also confirmed the negative link between resources-richness and economic growth (Papyrakis & Gerlagh, 2004; Leite & Weidmann, 1999).

Béland and Tiagi (2009) on the other hand argue in their work, "Economic Freedom and Resource Curse, an Empirical Analysis" that, countries that are resource dependent especially on primary products exports tend to experience slow growth. In their work they use primary exports scaled by GDP in 1970 as a proxy for natural resource abundance and their results support the resource curse hypothesis. In order to test for the importance of institutions, they use Frazer Institute's EFW as an index for institutions and interacted the EFW with the natural resources. They reveal that when all other factors are controlled, both institutions and the interaction term are positive and statistically significant, meaning that institutions do matter for economic growth whiles the interaction term gives the indication about the importance of quality of institutions in measuring the impact of resources on economic growth.

There have been a series of argument by scholars as to how natural resource abundance can be defined. For instance, Saches and Warner (1995) talks about the reliance or hope on primary goods whiles (Wood & Berge, 1997) looks at it from the point of land area per capita with (Syrquin & Cheney, 1989) posit from the view point of population volume and export direction. On the other hand the output seems to agree to "…..different classification and definition….. and how it can be measured" (Aunt, 2001a, page 3). He also came out with differences between the rents gotten from "point" resources and rents from "diffuse" resources such as mining and peasant farming respectively. He further argued that after the mid 1970s, the growth decreased in many of the resource endowed economies which are mostly populated with the "point" resources that made them to experience the slow growth.

Furthermore, it is easily found in the natural resource literature that resource richness can simply be a curse for economic and social development instead of blessing expected (Busse & Groning, 2011). One of the studies that have been carried out is the Saches and Wamer

(1997), their argument was based on the revised set of independent variables such as natural resources (sum of exports primary agriculture, fuels and minerals) measured as resource exports to GDP, institutions (eg rule of law, corruption in government bureaucratic quality), trade openness, interaction between trade and income, growth of the economically active population etc found out that natural resources have a negative impact on economic growth. They further argued that upon all these factors enumerated above, weak institutions and poor economic policies and more importantly lack of openness to international market contributes immensely to the poor economic growth.

Sachs and Wamer again in 2001 did a follow up work, in this time round with 90 countries and cross-country data between the years 1970 to 1989 and also explored into detail and tested the omitted variables for the reasons why there exists a resource curse. Some of the variables that they used includes log of income per capita in 1970, trade policy, several new geographic variables (number of kilometers to the closet major port, the fraction of land area in the geographic tropics; and malaria index from 1996 etc). Still Saches and Wamer unveils that natural resources in fact have a negative significant effect on the growth over that time frame.

However, Ding and Field (2005) came out with a special conceptual approach; they tried to differentiate between resource dependence and resource abundance or endowment. For instance they argue that United States is endowed with resources but not resource dependent as in the case of Tanzania and Burundi who are resource dependent although they are not endowed.

In addition they criticized Saches and Warner (2005) based on the fact that, they measured resource dependence rather than resource abundance when they used primary resources as a

proportion of GDP or of total exports. Kunte, Kirk, Dixon and Clemens (1998) and Ding and Field (2005) collected data on 61 countries from 1970-1990 and came out with two models depending on the World Bank's estimates of natural resource capital which includes variables like agricultural land, pasture land, metals and minerals etc., the results from the first model which includes variables like initial GDP per capita, investment rate, trade openness, rule of law, and terms of trade, resource dependence and resource abundance which are un-familiar, Ding and Field (2005) posit that resource dependence has a negative impact on economic growth whiles resource abundance has a positive impact on economic growth.

They went on to estimate a growth model where variables which were considered as "endogenously determined" (natural resource dependence and human capital) as independent variables, they drawn conclusion that neither the resource abundance nor resource dependent have a positive impact on growth. More interesting and mind boggling is where Ding and Field (2005) used the same time frame and comparatively the same sample size as that of Saches and Warner (1995) and taking care of endogenous variables like resource dependence and human capital, the so called negative impact of natural resources was not supported.

Nonetheless, Lederman and Maloney (2003) also examine the effect of trade structure, natural resource, export concentration, and intra industry trade on economic growth. They discovered that not only did the natural resources matters but depending on the type of data used, the results could change drastically. They used 65 nations of cross-country data in the years 1980-1999, it was reported that net exports of natural resources per worker in the panel regressions have a positive and significant impact on economic growth but in the case of cross-sectional data, the results were positive but insignificant.

In using another set of models, that is the coefficients on exports of primary resources as a percentage of GDP; in the cross-sectional data, natural resource measure was negative and insignificant but was positive and not always significant in panel regressions (Lederman & Maloney, 2003). In distinction, export concentration (exports of natural resources as a share of total exports and a constructed export-concentration index using a 4-digit SITC) seem to give unfavorable outcome on growth in cross-sectional approach, whiles there is unclear evidence in the panel regressions. In effect Lederman and Maloney (2003) concluded that, depending on the type of models and selected variables used the natural resource curse may be sustained as have been exhibited in the Sachs and Warmer paper where they used cross-sectional data.

Rodriguez and Sachs (1999) also disagree with the assertion above and argue that the negative growth rates associated with the economies is as a result of depletion effect rather than natural resources abundance. They further said that developing economies exceed their steady state during resource increase, and their growth rate becomes negative after the initial increase in earnings. Therefore developing economies consumption of the revenues will eventually reduced and lead to zero. Saches and Warner (2005) in their empirical analysis support this negative finding exhibited by Rodriguez *et al.,* (1999). One significant thing about Rodriguez *et al.,* (1999) is that they were able to demonstrate that the negative growth rate occurs instantly after the resource abundance which is associated with positive growth rate at the initial state of resource boom.

Limi (2007) rather posits that there are other factors that impede resource abundance to economic growth. Such one of the factors is geographical characteristics, which is the inability of the countries to access the sea. Since naturally, natural resource are exported by

sea, so landlocked countries have exceedingly huge shipping costs. More importantly, almost one third of Sub-Sahara African countries are landlocked (Saches & Warner, 1997). In the work of Bloom, Canning and Sevilla (2003) they argue that access to the sea or coast has the greater and significant impact on national earnings and high air temperature has a harmful effect.

In the recent work of Boschini, Jan and Jesper (2007) their argument is that the cause of negative effect of natural resource on economic growth is as a result of the "Dutch Disease". Their crucial point in this model is that, gains from the resources either through the surge of prices in resources or finding new resources have the tendency to cripple the other aspects of the economy. For instance in the work of Matsuyama (1992), followed by Saches and Warner (1995), they argue that positive externalities exist in the manufacturing area only by-doing and learning. This clearly shows that, the bigger the resource division the lesser the positive externality affecting growth and development.

Boschini *et al.*, (2007), further contended that, this theory moves in hand with empirical finding in the sense that resource abundance economies tend to have slower growth as against resource poor countries but there are a number of issues that the theory did not addressed. One, its empirical basis is weak because numerous studies have indicated that resource endowed have not collapsed the existing of capital and labor in the manufacturing sector (Gelb, 1988). Secondly this theory says that natural resource on growth is negative; however this theory failed to look at economies view on how natural resources have affected their growth. Lastly, this theory was not able to tell us why Botswana and Norway have experience growth, while Sierra Leone and Ecuador are not doing so.

Moreover, Boyce and Emery (2010) raised a very pertinent issue that needs to be addressed. They argue in their paper that "Is a negative correlation between resource abundance and growth sufficient evidence that there is a ''resource curse?" that resource richness did not show any slow growth evidence. They employed panel data from US states in the period of 1970-2001. They started by adopting the cross-sectional growth models since that was what most of the researchers have been using in the resource curse literature. In another instance they used alternative sample period to estimate the resource richness but in this case they affirmed the work done by (Papyrakis & Gerlagh, 2007) that resource endowed economies did experience any slow growth signs of the curse. Again they measured income level, and income growth equations and it exhibited that little growth in resource endowed economies is not a measure of little income levels as they used panel data from the US states, which sharply contradict what other scholars have done.

In related development, Aunt (2001a) argued that "…… between 1960 and 1990, the per capita incomes of resource poor countries grew between two to three times faster than those of the resource abundant countries" (p.3). Aunt agrees that countries endowed with resources such as crops would normally grow slower than the manufacturing sector, since the disparity is bigger than anticipated and the weakest performers' are the minerals derived economies. Nonetheless, such studies were responsive to the times selected and there is evidence that prior to the 1970s resource-richness economies performed better than the non-resource countries (Aunt, 2001a).

In addition, it was also discovered that, oil price volatility was likely to disturb some of the results declared. For example, Aunt (2001a) argues that per capita GDP growth fell in the period between 1985-97 as expected. Also in the report of (BP,2000) the oil prices fall from

$42.70 to $20.04 in the year 1999 and where the oil is the major contributor of the GDP, it is shocking that the GDP per capita decreased. Papyrakis and Gerlagh (2003) argue that the slow growth of natural resource on growth is an irony. He continued to say that there have not been clear reasons why resource-richness economies experience slow growth. However, natural resources are likely to advance the income base of an economy such as rehabilitation and building of roads, improvement in the telecommunication systems, education and health and there are some of the countries, who have benefited from their resources even though there are few. For instance, the resource boom in Latin America and Ecuador helped them to experience remarkably growth in their economy and greater improvement in their per capita level respectively (Saches & Warner 1999a).

Further, Great Britain and Germany had industrial revolution due to the presence of huge deposits of coal and ore (Saches & Warner 1999a). Gylfason (2001a) also gave a vivid example of a country that have able to manage its natural resource well and in fact, had really been able to translate it into serious economic growth. Although Norway also experienced recession but they were able to defy all odds and exploited their resources well which benefited their country through development. He further argues that, they have a system that enables them to collect about 80% of their revenue from oil through taxes and invested in foreign countries securities so that the economy can absorb any shock that may come on their way such as income increases and equal distribution of oil revenue among generations. Gylfason (2001a) again posits that the abundance natural resource sector increases at the expense of other areas and the proceeds harms the human capital and also reduces the investment in education.

Finally a series of papers contradicting most of papers above explores more direct measures of mining production. Stijns (2005) posits that there is no correlation between fuel and mineral reserves and growth in 1970-1989. This result confirms earlier results find by Davis (1995) who elucidates that mineral dependent countries, proxy by share of minerals in exports and GDP, performed well as compared to other countries in the 1970s and 1980s. Across millions regressions done by Sala-i-Martin, Doppelhofer and Miller (2004), they gave an evidence that mining share in GDP is constantly positive.

Based on what we have reviewed so far one would be tempted to say that the resource curse is elusive. Because the cross-country econometric results is weak, with empirical results keep on changing depending on the proxies used for the abundance natural resource.

2.3.2 Institutions/Governance and Economic Growth

Quite a lot of studies recently have emphasized the significance of good governance or institutions quality for economic growth (Acemoglu *et al*, 2001, La Porta, Lopex-de-Silanes & Vishny, 1999). Although in the resource curse hypothesis, the institutional channel has been cited as a potential source of economic development, it has also been mentioned as a possible cause of the curse (Mauro, 1995). Bulte, Damania, and Deacon (2005) argue that natural resource richness, more importantly mineral resources has an ambiguous effect on human development and a little negative indirect consequences of institutional quality. To the contrary, Limi (2007) posits that governance or institutions does not have a positive impact on growth for a short period of time. He reveals this when he examined the latest cross-sectional data of 89 countries.

Mehlum *et al.*, (2005) on the other hand posit that the interaction between natural resource-richness and good governance or high quality institutions with an aggregate indicator as a measure produces two interesting result, that is positive growth effect, with direct negative growth effect resource curse seem to exist. In a qualitative perspective, economists in general support the argument that the existence of natural resource richness (eg mineral) promotes the corruption among those in authority and rent seeking attitudes or actions and its effects reduces the quality of governance and also negatively reduces the economic output or performance (Aunt, 2001, Norman, 2006 and Leite & Weidmann, 1999).

Robinson, Ragnar and Thireey (2006) came out with a political economy model which proposes that the quality of political institutions is a major determinate in the "resource boom". They further argue that economies with feeble institutions are potential to suffer from the resource curse whiles (Collier & Hoeffler, 2005) work also support the argument that been endowed with natural resources advances the chance of violent civil conflict. For example, in the case of Nigeria it was evident that "oil corrupt and excess corrupt men excessively" (Sala-i-Martin & Subramanian, 2003 p.10). They argue again that the curse only exists for mineral and more importantly oil richness but not agriculture products and food.

In another case, it was discovered that natural resource endowment could possibly advance the negative effects of growth because of lack of institutions/governance, resource rents are been spent on government consumption instead of expanding the investment and infrastructure base, particularly economies with low levels of savings (Atkinson & Hamilton,2003).

Stijns (2005), on the hand, posits that there are two sides of the cone, that is positive and negative effects of channels at which natural resource richness affect growth. He argues that land richness could possibly have negative effects of growth, including several measures of institutional quality, but mineral richness not been clear cut. In a different development, the presence of an institutions-to-growth has emerged to solve some of the problems of old and new growth theories which were not able to clarify why some of the countries have been able to experience massive economic growth in a midst of low income countries (Olson, 1996; Knack, 2003). With the discovery of these, the name of the game is conditional convergence based on institutions, implying that, fairly poor countries can experience increase economic growth if they accept good institutions.

Kaufmann and Kraay (2003), on the other hand agree that there is no uncertainty about the importance of per capita. They posit that there is a close association between per capita income and the quality of good governance across countries. But the opposite has always been a challenge in growth regressions. In this case, problems may emerge not because causality may run from income to institutions, but a lot of institutional parameters were at the end of the growth time (Dellepiane, 2006). It is just to say that the above paper (Kaufmann & Kraay, 2003) used a lot of approach including two-stage to lessen the reverse causation challenges (Knack, 2003).

However, Chong and Calderon (2000) using the same data with a more serious approach to causation, elucidated that there is a powerful indication of causation running in both cases, that is from growth to institutional quality and from institution to growth. Basing on non-sample information, it was evidenced that that there is a positive effect of income on the

quality of institutions and questioning the authenticity of the argument that governance is the ladder that only rich economies can afford to pay for.

Glasser, La Porta, Lopez-de-Silane and Shleifer (2004,pg 285) seriously opposed the mainstream literature which tries to provide " evidence that institutions cause economic growth, as opposed to growth improving institutions, is non-existence". These may possibly been to the fact that, omitted variables biases may as well accounted for the positive association between good governance and high economic growth (Bardham, 2005). Several scholars have examined, for instance the impacts of geography and institutional factors in determining both institutional and economic growth. Sachs (2001) discovers that geography measured in terms of weather condition and access to sea-trade plays a critical role in economic growth. However Acemoglu *et al.,* (2002) opposes this result and argue that colonial institutions are more importance than geography. Their result indicates the variations in domestic circumstances faced by European colonizers played all important and independent function in the discovery of institutions and its effects on long term growth.

The initial decades of researchers on governance and growth was destabilized due to the quality of data available. Usually, the Gastil indexes of political freedom and civil liberties as were widely used as proxy of countries institutional environment, numerous scholars also used objective indicators to measure the frequency of political violence (Dellepiane, 2006). All the above indicators as measurement strategies gave doubtful proxies of concepts such as, rule of law, contract enforcement or the security of property right, scholars required new, direct and well-organized indicators that or captures governance (Knack, 2002).

Furthermore, Siddi and Ahmed (2009) argue that institutions promote growth and development by lessing the potential risk of daily business, in other words, preventing the

activities that divert the resource and the same time preventing rent seeking activities and thus channeling resources in the direction of innovation. They further said that a nation free from diversion increases productive units which in effect are rewarded by the complete amount of their productive and individual components need not to devote resources to shunning the diversion. (Acemoglu *et al.*, 2001, 2002, 2005) also elucidate and re-emphasized the importance of good and quality institutions in the economic growth in the long run than the short run. Olson (1998), Měon & Weil (2006) find out evidence signifying that institutional indicators are robustly linked to total factor output.

The authors posit that better institutions and good governance are the panacea which will increase the productivity output. With view to casual impacts between economic development and institutions, scholarly works like (Olson et al., 1998, Kauffman, Kraay & Mastruzzi, 2005, pg 38) 'indicates that a better institutions leads to a higher income rather than causation being in the opposite direction. In addition Kauffmann *et al.*, (2005) argue that an increase in one standard deviation progress in governance/institutions is associated to two to three fold differences in per capita levels in the long run. Easton and Walker (1997) in using Fraser Institutes of Economic Freedom of the world as a measure of quality institutions argued that changes in the economic freedom have an important effect on the steady-state point of income after the level of education of the workers, when technology and investment are controlled for. De Hann and Sturm (2000) posited that positive and negative changes in economic freedom can possible lead to the changes in positive and negative rates of economic development. Again (Dawson, 1998, Gwartey, Randall, Holcombe & Robert, 2006) elucidated that economic freedom directly promotes economic growth by raising the efficiency which will help to transform inputs into output, and also have an indirect effect by supporting and promoting investment.

Dunconliagos and Ulubacoglu (2006) on the related development examined the studies on the effects of economic freedom on growth by using meta-analysis of 45 different papers published over the last ten years. They concluded that 'regardless of the sample of countries, the measure of economic freedom and the level of aggregation, there is a solid finding of a direct positive association between economic freedom and growth' (pg 19).

In addition they recognized that studies that have failed to include a measure of economic freedom in their study will give unsupported estimates of their indicators. Their outcome from this index of economic freedom made them to generalize that institutions/ governance are significant in the determination of economic prosperity and growth. This simply means that countries with sound economic institutions are able to prosper whether the economy is resource abundant or not.

2.3.3 Governance and Natural Resource

Ades and Di Tella (1999) analyze both empirically and theoretically the factors that promotes corruption and its effects on natural resource. With their measure of mineral exports and fuel in total exports, they examine whether the increase in the mineral exports will also increase in corruption levels or not and their base year used for the study was 1980 and 1990. With their cross-sectional analysis in 1980, they discover a close link between corruption and natural resource exports, while there is no collaboration or evidence in the 1990s both cross-sectional approach and short panel analysis. The work of Treisman (2000) supports the work of Ades and Di Tella (1999).

Furthermore, there was not any association between corruption and natural resource exports, when the extreme analysis was used for the 1990 period (Serra, 2006). However using the

instrumental variable approach with cross-sectional setting (Leite & Weildmann, 2002**)** unearth that, exports of oil and ores promote corruption. These opposing output may be explained by the periods at which both scholars used, whiles (Leite & Weidmann, 2002) use data for the 1970s and 1980s excluding 1990 which (Adei & Di Tella, 1999;Treisman, 2000; Serra, 2006) also used, their results compare with that of Sachs and Warner (1995) show that there is a close link with natural resource and corruption.

In addition, Sala-i-Martin and Subramanim (2003) analyze the effects of exports of fuel and minerals on several governance events. In their study they used cross-sectional instrumental variable method, where they discover that the exportation of natural resources have a negative effects on governance like, the rule of law, government effectiveness, corruption and political stability. Isham, Woolcock, Pritchett and Busby (2005) on the other hand examine the diverse methods of exports of natural resources and also distinguish between "point" resources and "diffuse" resources. In their work they said that point resources are resources that extracted from small geographic region can be moderately controlled at a lower cost like oil, minerals while diffuse resources are produced from a wider area and cannot be easily be manipulated by the government like food and agriculture goods.

Their cross-sectional analysis shows that point resources influences the governance measures negatively, such as rule of law, governance effectiveness, corruption and the regulatory framework (Isham *et al.,* 2005). Bulte *et al.,* (2005) adopted a methodology used by Isham *et al.,* (2005) and supported their findings that there is close association between point resources and governance measures such as rule of law and government effectiveness. In a similar vein, the discovery of oil in some of the countries for example, Sao Tome, reveals that there is a massive perception of corruption transversely in some of the public services, for instance,

customs, vote buying and education (Vicente, 2010). Notwithstanding the above statement Brunnschweiler *et al.,* (2008) disagree with the views expressed by scholars that natural resources endowment disturbs the governance and quality of institutions.

They elucidated that it is rather the opposite that works. In the work of Sachs & Warner (1995) they argue that it is bad institutions/ governance rather that cause the resource curse. In their work, bad governance receives a high score on their resource indicator, where their indicator is the ratio of natural resource exports to GDP. They finally concludes that the ratio of natural resource exports in their cross-sectional analysis reveals that they have a positive impact on government indicators such as government effectiveness and the rule of law (Sachs & Warner,1995). Alexeev *et al.,* (2009) supporting the works of Brunnschweiler *et al., (*2008) argue that they do not believe that natural resource has a negative impact on governance and growth.

Adei and Di Tella (1999) hypothesized that the presence of lofty rents in natural resource sections, in some of the countries, as a results of lack of market competition advances competition. Their periods were 1980-1983 and 1989-1990 and also used cross-sectional data with the countries ranging from 31-52 based on the type of model used. They looked at market organization ('both measured by a few indicators; share of imports as a percentage of GDP, fuels and minerals exports as a percentage of total exports and distance to the world's major exporters') and the level of rents. Their data on corruption was taken from Economist Intelligence Unit (EIU) and World Competitiveness Report (WCR). Exclusively they found that corruption was high in countries where local firms were secluded from competition, where there were barriers to trade, and the markets were dominated by only few firms with weak anti-trust laws. In the case of natural resource indicators, results from resource rents are

mixed up. For example using cross-sectional data in the periods of 1980s, Adei and Di Tella discovered that natural resource measured by fuel and mineral exports as a percentage of total trade exports amplify corruption as measured by the EIU. In effect, this effect vanishes when the 1990s data were used with the WCR data. In other words when panel data was used the coefficient on natural resource is statistically insignificant irrespective of the time period.

Notwithstanding the above assertion by Adei and Di Tella (1999), Barro (1999) analyzed the effects of natural resource, economic growth and other necessary factors on democracy (electoral rights and civil liberties). With the approach of panel data for over 70 countries from 1960-1995, he examined a seemingly unrelated regressions (SUR) model. He also examined the effects of two different measures on natural resources, oil reliance and the components of exports of primary goods as a percentage of total exports. In the end, he established that oil abundance has negative effects on democracy but in general natural resources does not have negative impact on democracy. In the same way, Ross (2001) raises pertinent questions about the effects of oil on democracy. (1) Does oil have an impact on democracy? (2) If yes, is the impact present in certain regions only? (That is, does it affect only the Middle East?) (3) Do other types of natural resource have the same impact on democracy? (4) Through what channels does oil and natural resources in general affect democracy? Ross employed pooled time-series data from 1971-1997 for 113 countries with the variables of oil abundance been export of mineral-based fuels (petroleum, natural gas and coal) percentage of GDP whiles mineral abundance such as ores and metal also as a percentage of GDP as well as non-food and food agriculture exports as a percentage of GDP. Ross (2001) again investigates the possible channels at which resources could stampede democratization. The first one was “rentier effect” (spending high to lessen the stress for democracy with low taxation) and the second one looks at the “repression effect” (rising inner

security to seize democratic pressures) and the last one was "modernization effect". In the case of "rentier effect", their measure was percentage of government revenue gathered through taxes, government consumption and activity in relation to GDP. Unlike the Barro (1999), Ross (2001) discovered that oil has negative effects on democracy. In addition, Ross again said that the negative effects are not limited to only Middle East and Sub-Sahara Africa. She also revealed that ores and metals not agriculture also hinder democratization.

Jensen and Wantcheken (2004) also examined the possibly channels through which resource impede democratization. These authors investigated this with the help of panel data from 1960-1995 for 46 Sub-Sahara Africa countries with fuel, metal and mineral exports as a percentage of merchandised exports. They again built a measure of natural resources from 1 to 4 where economies whose figure is less than 15% gets a mark of 1, above 25% to 50% gets a mark of 2, and also gets a mark of 3 for 75% and for those economies with figure over 75% gets a mark of 4. Furthermore, Jensen and Wantcheken looked at the effects of natural resources on activities like government spending and governance (with indicators like "voice and accountability, political stability and lack of violence, government effectiveness, regulatory framework, rule of law and control of corruption" from Kauffmann et al., 1999, 1999b). Besides, they established whether natural resources endowed economies that are new democracies are prone to become authoritarian. They revealed that natural resources lead to less democratic regimes, huge government spending and also weakens governance. Moreover, they also recognized that natural resource-richness economies normally move toward dictatorial. In another work done by Collier and Hoeffer (1998) which also look at the constituents of civil war. With data from 1960-1992 in 98 economies, they revealed that the effects of natural resources ('share of primary exports in GDP') is non-monotonic, of minor levels, whiles the ownership of natural resources promotes the length and chance of civil wars

of the superior levels. These authors elucidation is pertinent to many current conditions in Africa and elsewhere. They further said that the abundance of natural draws uprising and also increases economic capabilities of the government and therefore protect itself through military expenditures.

In a successive article, Collier and Hoffler (2005a) again examined the effects of natural resources on the risk of conflict by using the incidence of war as a measure. In this situation they used two models. The first model was natural resources (primary commodity exports as percentage of GDP) whiles the second model was the sum of resource rents as a percentage of GDP. However, both measures produce similar results whereas the coefficients are positive and significant for primary commodity as a percentage of GDP, resource rents were not.

To conclude, Acemoglu *et al.,* (2001) examined the impacts of current proceeds levels of their instrumented indicator for governance/institutions alongside those of natural-richness calculated by the country's percentage of the world nonfuel mineral funds and GDP per capita oil wealth. They discovered that there is no significant effect of natural resource-richness at all, supporting their observation that the quality of institutions only can explain the reasons why there are differences in the economic growth, and therefore questioning the resource curse hypothesis. It has been emerged from literature that development and growth impacts on natural resource-richness are quite unclear when governance is added to the analysis. In fact, the curse occurs when natural resource abundance combined with feeble institutions.

CHAPTER THREE

OVERVIEW OF THE RESOURCE GOVERNANCE INDEX AND THE NATURE OF NATURAL RESOURCE ABUNDANCE

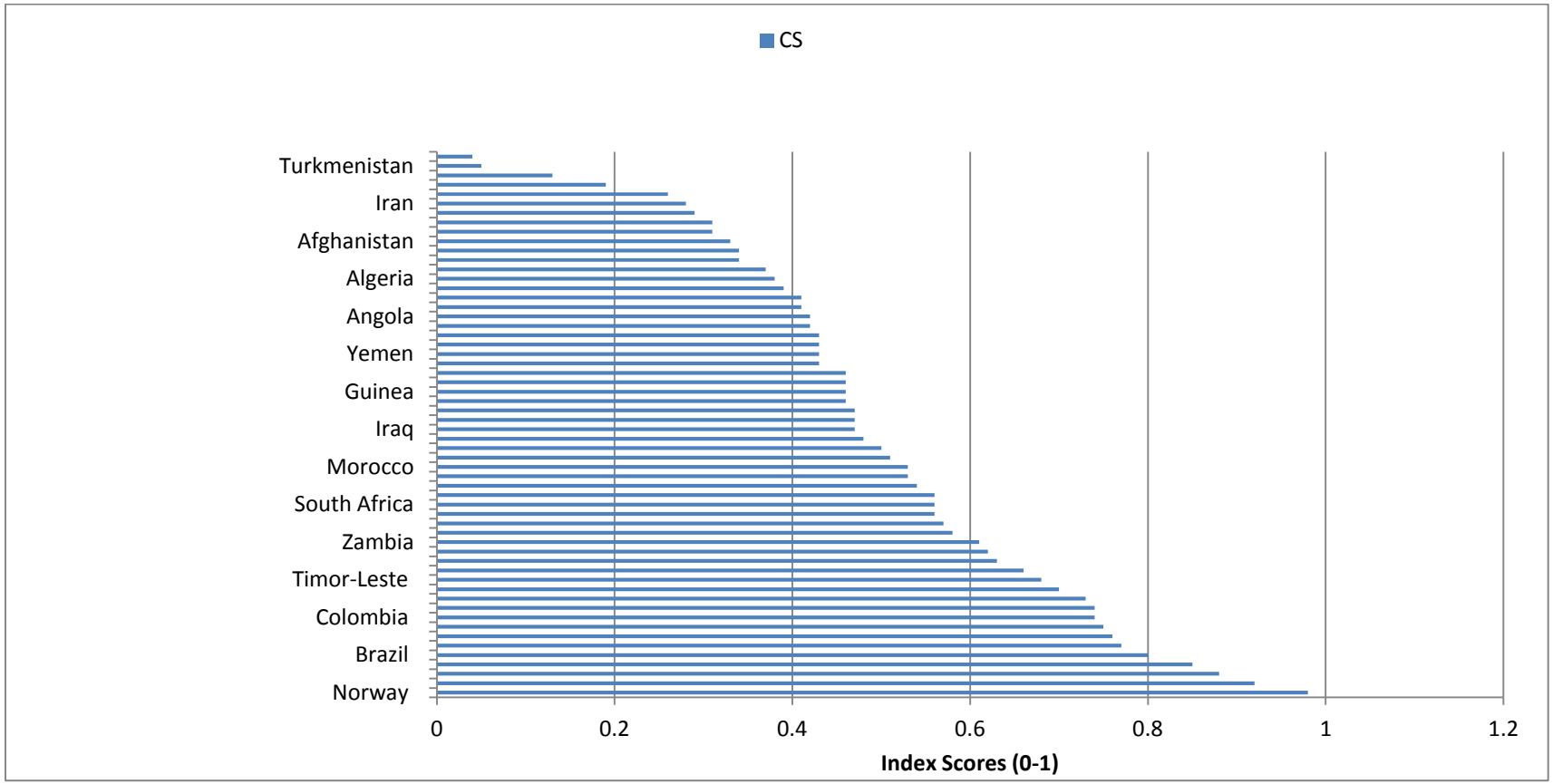
3.0 Introduction

This section provides an overview of the nature of resource governance and natural resource endowment.

3.1 Resource Governance Index

Resource Governance Index is an institutional index that measures the quality of governance in the oil, gas and the mining sector of fifty-eight countries. These economies produce about 85% of the world's petroleum, 80% of copper and 90% of diamonds. It is made up of four components, they are, institutional and legal setting, reporting practices, safeguards and quality control and enabling environment. The index is constructed based on a questionnaire administered to professionals in the extractive industry (RGI, 2013). The index shows that out of fifty-eight countries only eleven (that is less than 20%) have satisfactory standards of transparency and accountability. In the rest of the countries, the public find it difficult to assess information about the oil, gas and mining sector. Countries that show appreciation performances show signs of weaknesses in some of the sectors (RGI, 2013). Generally, there is a major shortfall of governance in most of the resource dependent economies that have about half a billion people living in poverty even though they are endowed with natural resources. Incidentally, some of the economies including emerging economies portrays that reasonable performance in resource governance is attainable (RGI, 2013). Find attached the sample countries used for the study at appendix.

Figure 3.1: Snapshot of resource governance index across the world (2013)



Source: Author's computation

3.1.1 The Components of the Resource Governance Index

The index is made up of four components namely, institutional and legal setting (ILS), Reporting Practices (PR), Safeguards and Quality Control (SQC) and Enabling Environment (EE). The institutional and legal setting consists of 20% of the composite score with ten indicators and sixteen questions. It measures the degree to which the laws, regulations and institutional arrangements facilitate transparency, accountability and fair competition. In the case of Reporting Practices, one hundred and twenty-two (122) questions were asked with twenty indicators. This component receives the highest score of 40%. This component measures the actual disclosure of information by government agencies. Because de facto disclosures are the best indicator of transparency. In addition, Safeguards and Quality Control measures the presence and quality of checks and oversight mechanisms that encourage integrity and guards against conflicts of interest. It receives 20% score of the overall score on the index with thirty five (35) questions asked (RGI, 2013). Finally, the enabling environment concentrates on the broader governance environment, based on more than thirty (30) external measures of accountability, government effectiveness, and rule of law, corruption and democracy.

3.2 Defining Governance Deficit

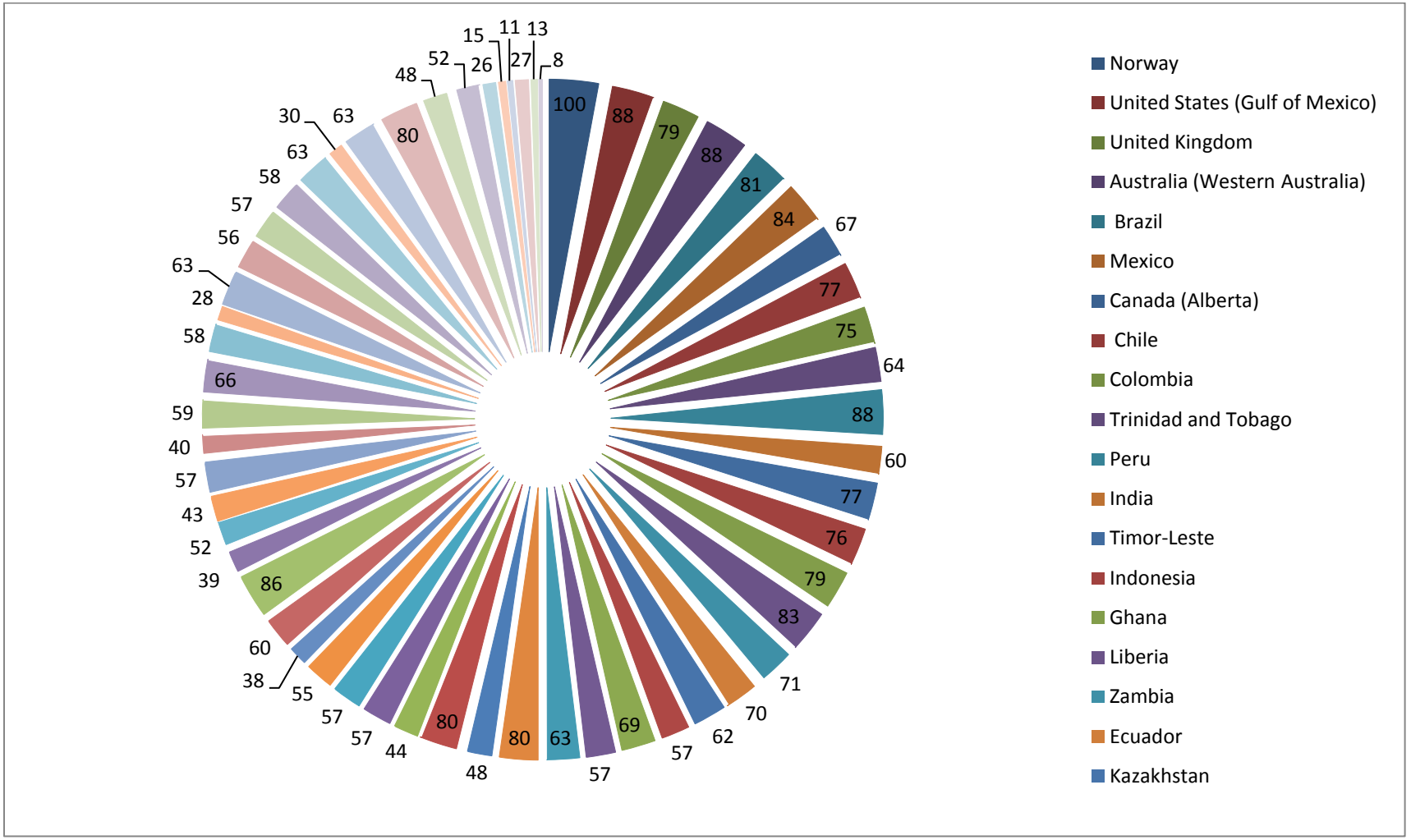
Each component may reveal specific governance shortcomings. The RGI variables measures how countries address realistic challenges affecting the components. Furthermore, these basic questions are asked in order to address the challenges. Is the correct legal and institutional structure in place to promote transparency and accountability? What measures are in place to encourage truthfulness and honesty? Is the whole institutional environment favorable to

accountable resource governance? Any changes in one of the components will affect the overall governance index (RGI, 2013).

3.2.1 Institutional and Legal Setting

ILS is a major issue in some of the countries because transparency, laws and systems that promotes truthfulness and honest are lacking. Thirty eight (38) countries in the index fall short of the freedom of information law for example countries such as Saudi Arabia and Angola do not have any reporting practices in the oil, gas and mining sector. Cameroon and Venezuela are part of the twenty (20) countries that sizable components of their resource revenue do not go through the national treasury. Thirty (30) out of fifty-eight (58) countries in the index have not yet signed up to the Extractive Industry Transparency Initiative even though experience from Mozambique shows us the way (RGI, 2013).

Figure 3.2 Snapshot of Institutional and Legal Setting across the World (2013)

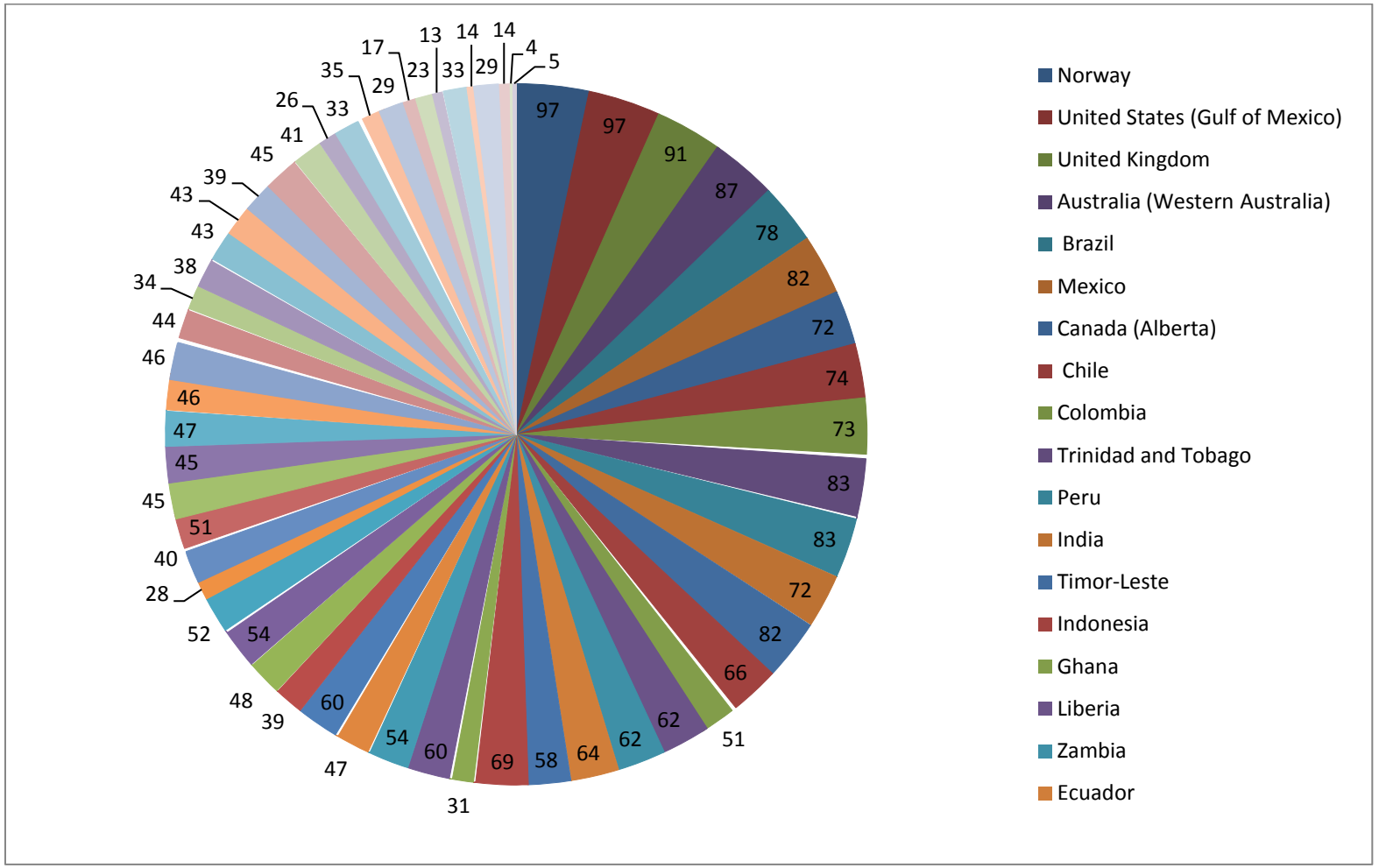


Source: Author's computation

3.2.2 Reporting Practices

Substantial numbers of countries bypass the provision to publish detailed information about the extractive sector dealings and payments. Twenty-one (21) countries fail to bring out information on primary sources such as taxes, profit shares and royalties. Afghanistan, Ghana and Guinea are part of the ten (10) countries that brings out information of their oil, gas and mineral contracts and licenses. Thirty countries (30) countries do not either publish or publish scanty information about licensing practices (RGI, 2013).

Figure 3.3: Snapshot of Reporting Practices across the World (2013)

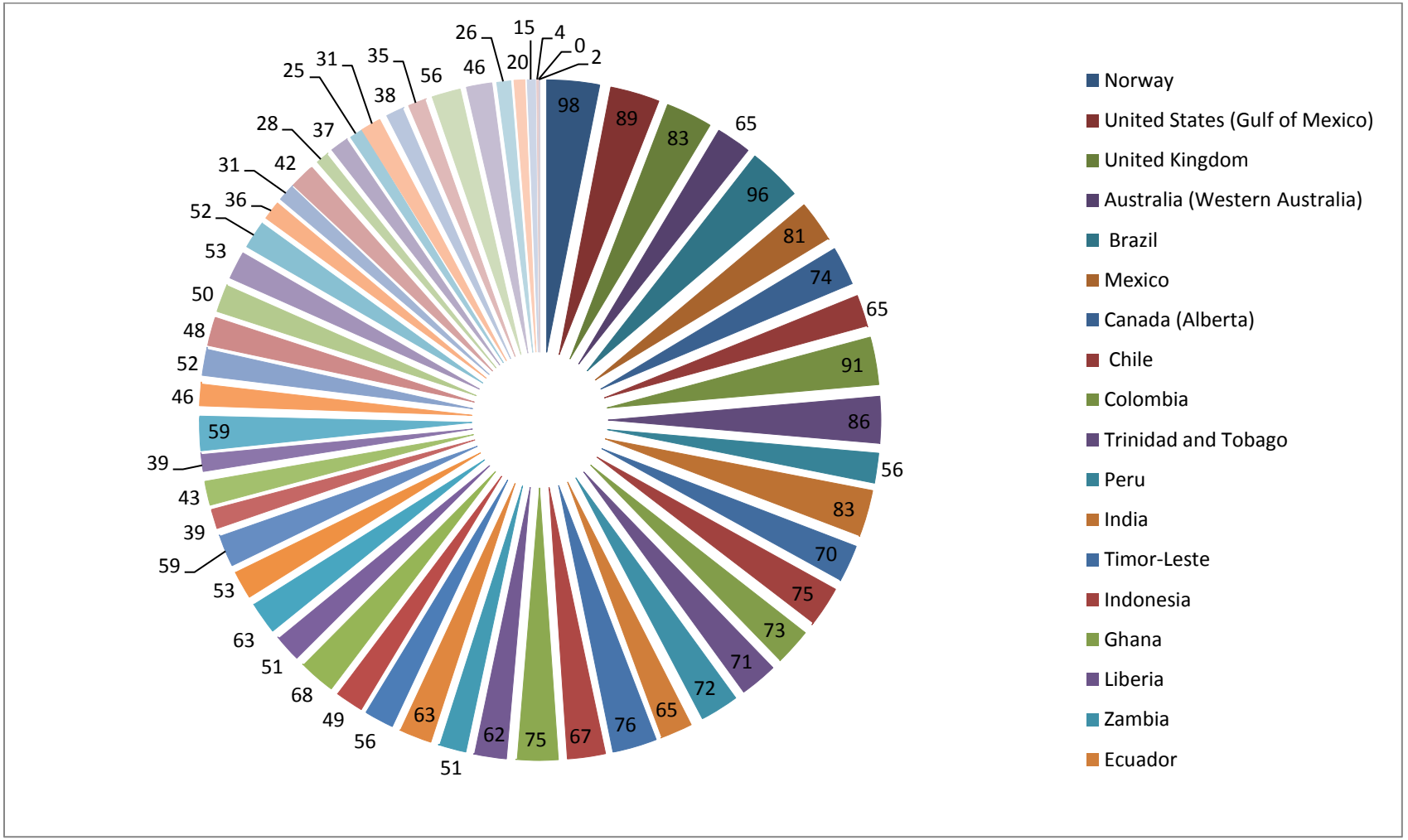


Source: Author's computation

3.2.2 Safeguards and Quality Control

Quite a sizable number of countries fail to implement measures to prevent conflicts of interest; preventing discretionary powers of authority and ensuring that information are disclosed on time. Peru and Saudi-Arabia are among the thirty eight countries that do not disclose audits of government finances for more than a year. In addition, thirty countries such as Botswana and Timor-Leste their parliament exerts little oversight of contracting and licensing processes while twenty nine countries with Chile and Sierra-Leone inclusive, the parliament have very partial oversight of resource revenue (RGI,2013).

Figure 3.4: Snapshot of Safeguards and Quality Control across the World (2013)

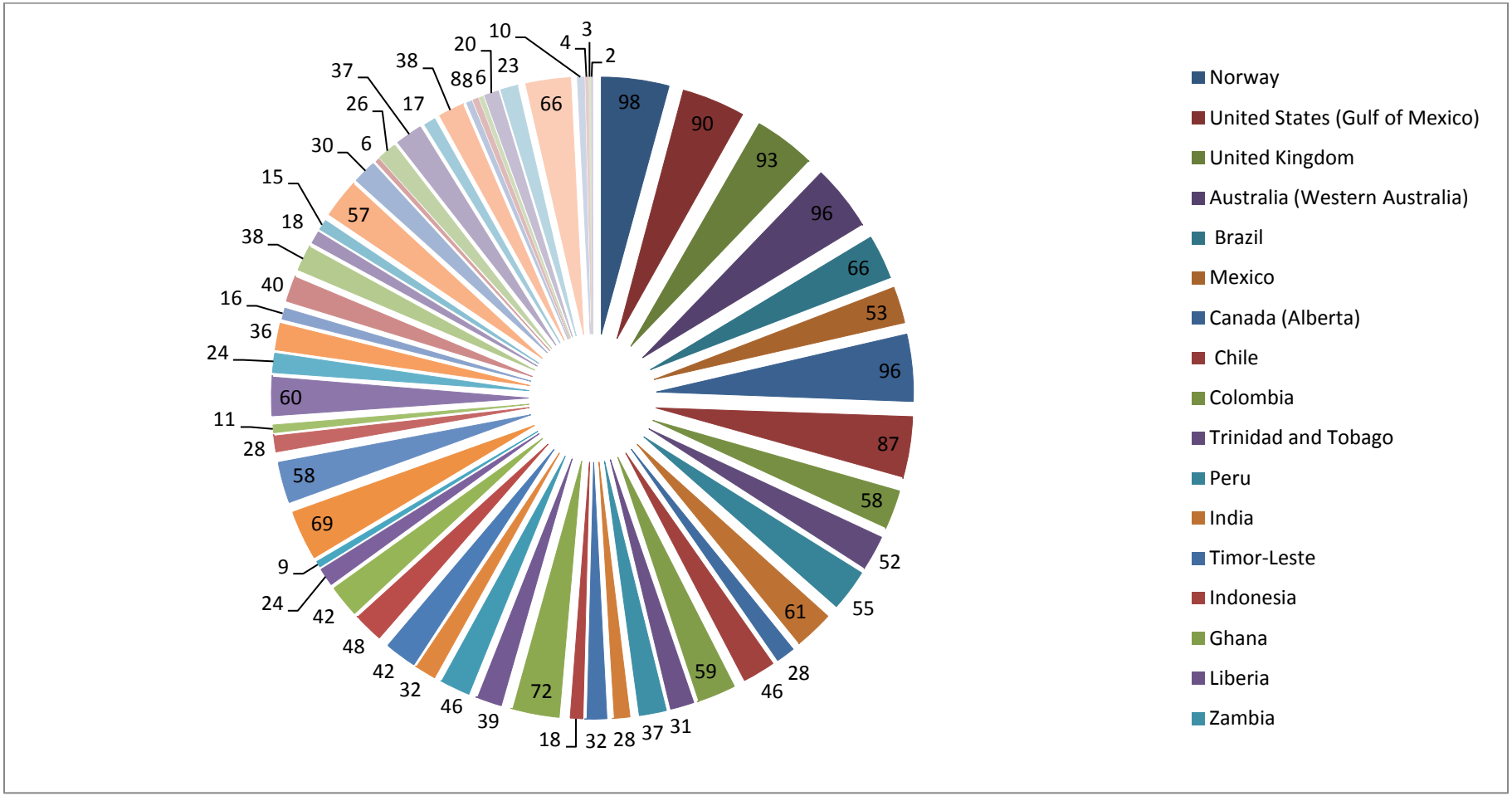


Source: Author's Computation

3.2.3 Enabling Environment

Thirty four countries out of fifty eight in the index perform poorly scoring below 40% in this component. They exhibit high levels of corruption, no or scant government effectiveness, ineffective democratic institutions and rule of law. Countries like Russia, Azerbaijan and Venezuela score relatively low due to improper records in broader natural resource governance sectors including civil and political liberties, corruption, and democratic accountability. Transparency in this sector is less expected to promote the ability of citizens to put the government on check or accountable. However, South Africa, Qatar, Botswana and Malaysia scores high in government effectiveness and control of corruption, but perform poorly in the other index components. To conclude, resource governance and transparency are the real issues that lag behind in the entire governance environment (RGI, 2013).

Figure 3.5: Snapshot of Enabling Environment across the World (2013)

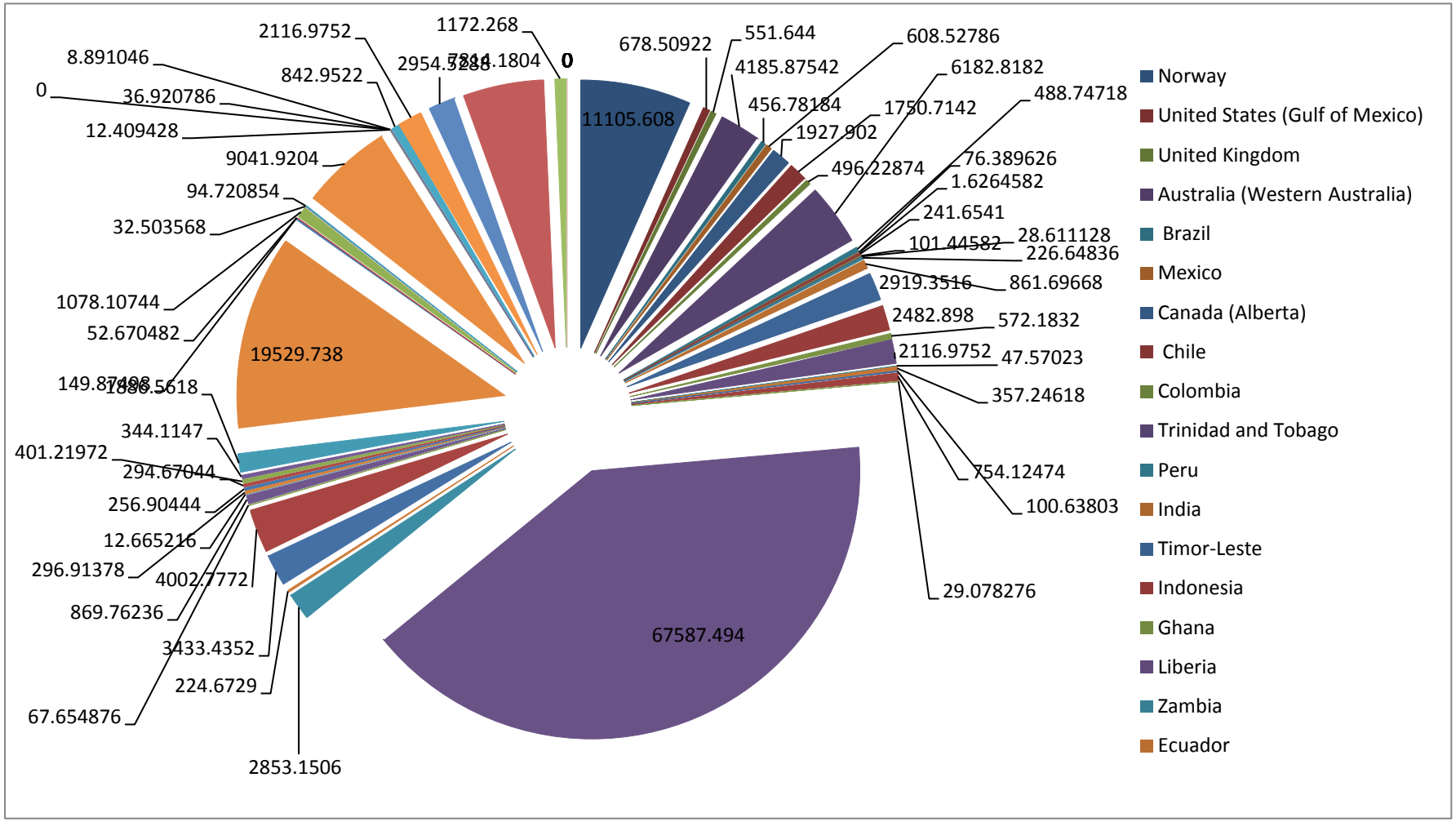


Source: Author's Computation

3.3 Natural Resource Abundance

Natural resource abundance in this paper is proxy by natural resource rents per capita. The natural resource rents per capita are ascertained by multiplying the total natural resource rents scaled by GDP to the real GDP. After that we divided the total natural resource by the total population of all the countries. Azerbaijan has the highest natural resource rents per capita. The following countries also have high natural resource rents per capita Kuwait, Norway, Saudi Arabia, Equatorial Guinea, Trinidad and Tobago, Australia, Gabon, Bahrain, Libya, Kazakhstan, Iraq, Venezuela, Russia, Qatar, Canada (Alberta), Angola and Chile. Myanmar is a country with a zero score whiles countries like Guinea, Congo (DRC), Philippines, Zimbabwe, Mozambique, Tanzania, Liberia, Sierra-Leone, Afghanistan, Cambodia, Timor-Leste and South Sudan also have low resource rents per capita (RGI, 2013).

Figure 3.6: Snapshot of countries and their resources rents per capita (2013)

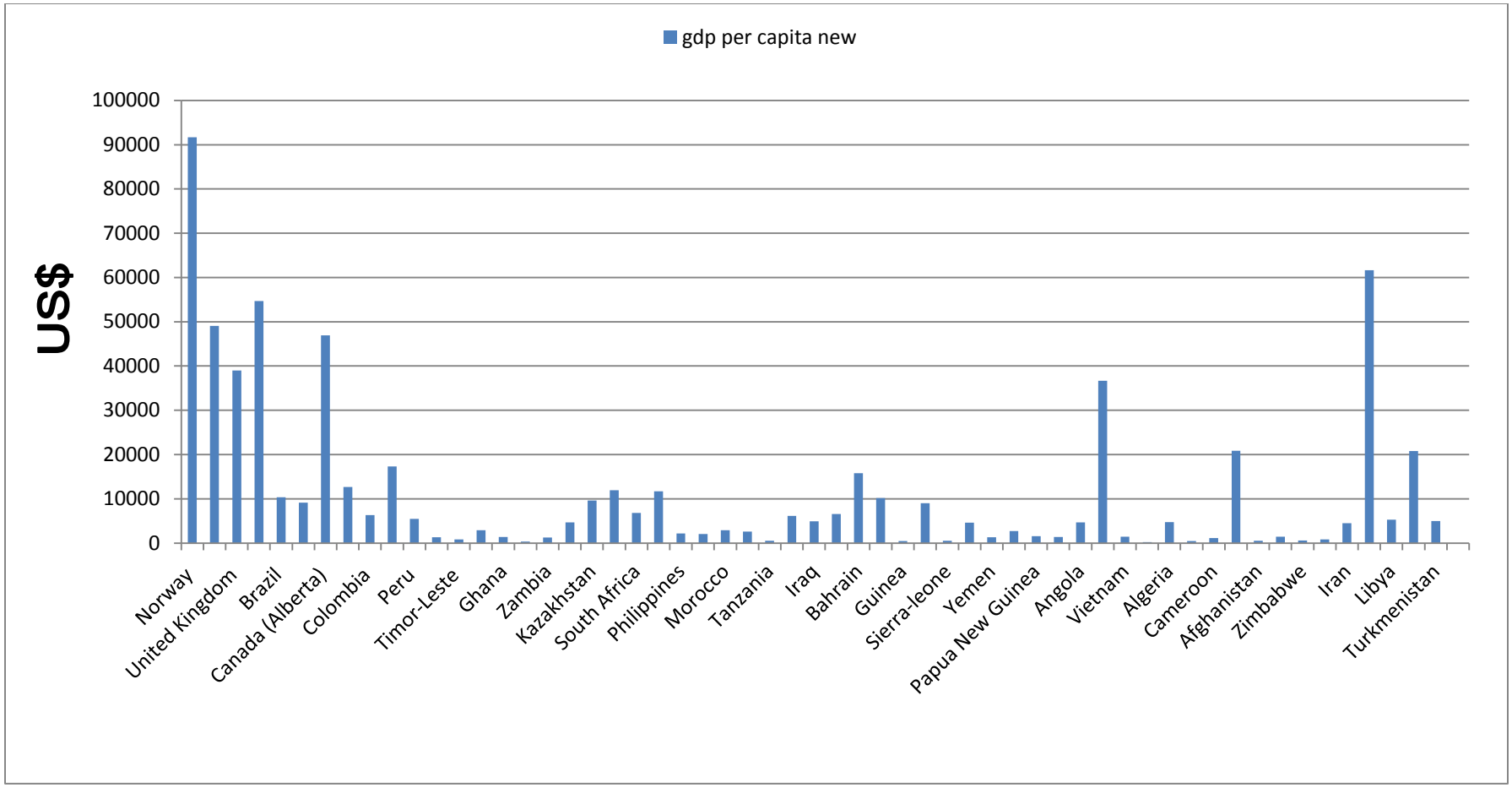


Source: Author's Computation

3.3.1 Real GDP per capita

GDP per capita is measured by total GDP divided by total population. It is considered as a measure of country's standard of living. Norway has the highest GDP per capita. Based on our sample, the following countries also have high levels of GDP, namely, Qatar, Australia, United States, Canada and United Kingdom. Congo (DR) had the lowest GDP per capita in our sample of countries. GDP per capita were also low in these countries, Timor-Leste, Cambodia, Zimbabwe, Afghanistan, Tanzania, Sierra-Leone, Mozambique, Guinea, Liberia and Myanmar (RGI, 2013).

Figure 3.7: Snapshot of graphical view of the real GDP per capita across the world (2008-2012)

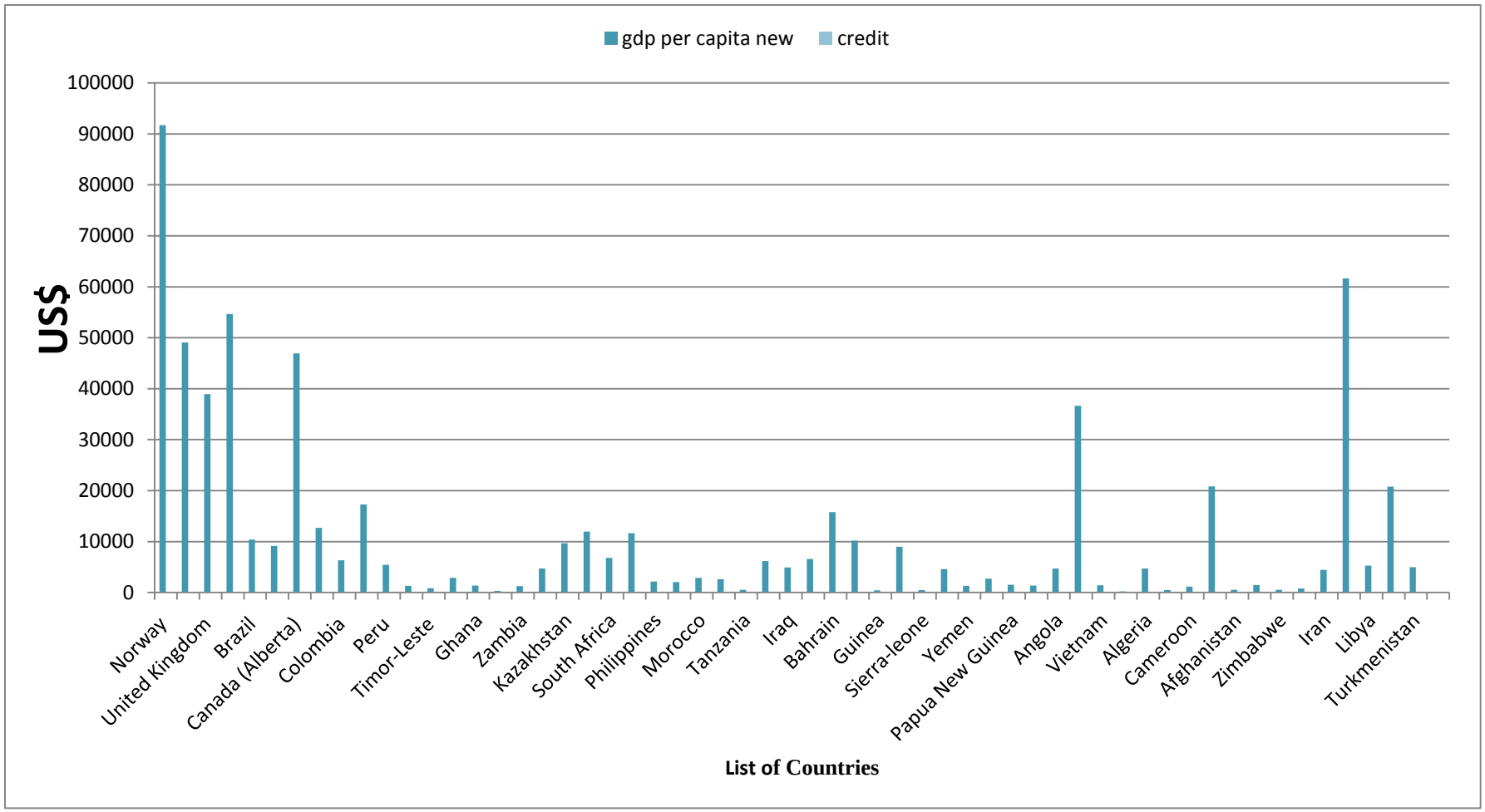


Source: Author's computation

3.3.2 Resource Governance index and GDP per Capita

Norway has the highest GDP per capita as well as the highest score on the RGI. Based on our sample, Qatar also has high GDP per capita but fall short on the resource governance index. Its score is 26% out of 100% and also fifty third (53$^{rd)}$ positions out of fifty-eight (58) countries. However these countries, specifically, United States of America, Canada, and United Kingdom also have high GDP per capita as well as high scores on RGI. Congo (DR) had the lowest GDP per capita in our sample with a low mark of 39% and forty-fourth (44th) positions on the index. GDP per capita are also low in these countries, Timor-Leste, Cambodia, Zimbabwe, Afghanistan, Tanzania, Sierra-Leone, Mozambique, Guinea and Myanmar also have a low score on the index as well.

Figure 3.8: Snapshot of GDP per capita and Resource Governance Index (2008-2012)

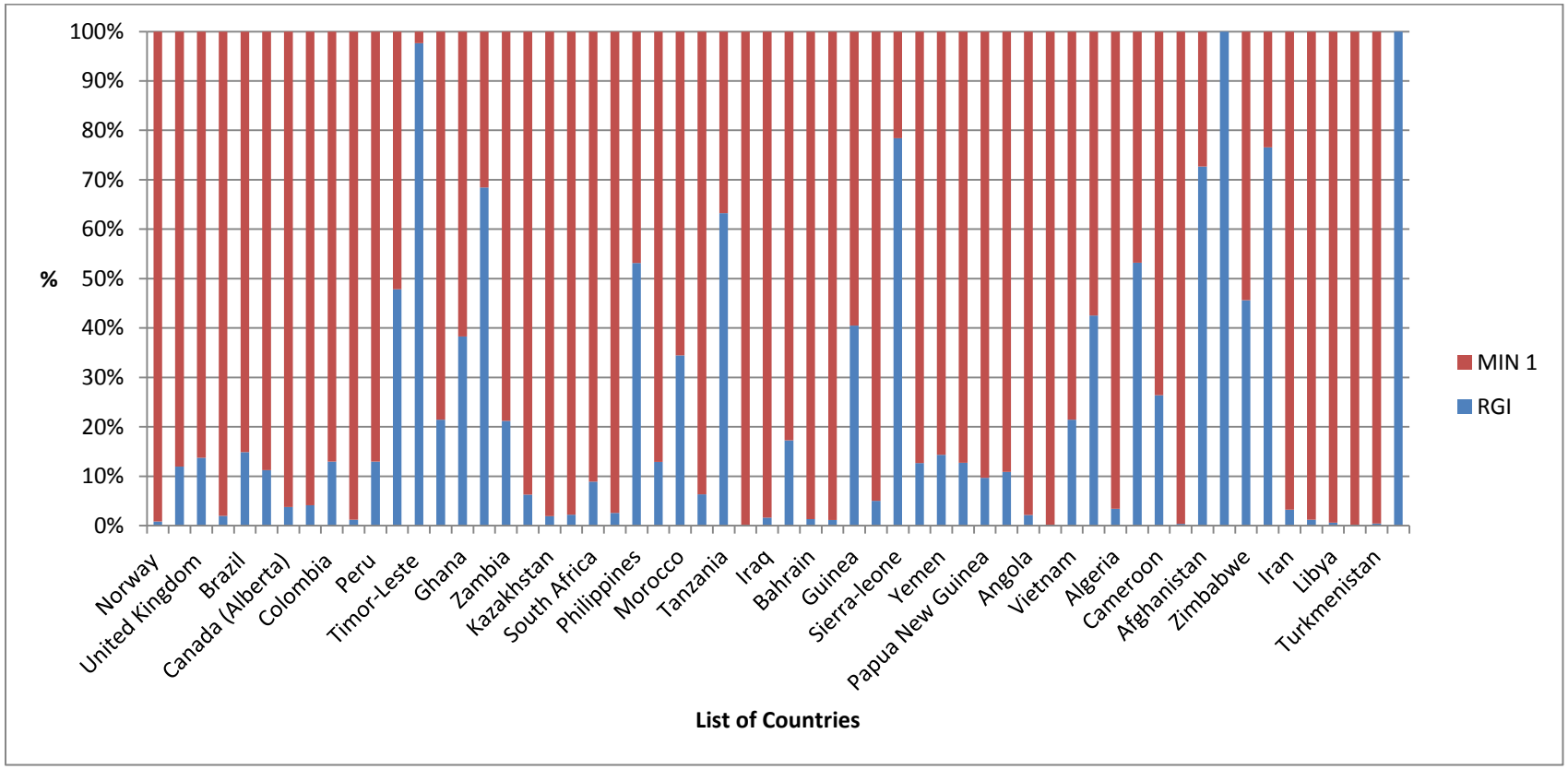


Source: Author's Computation

3.3.3 Natural Resource Rents per Capita and Resource Governance Index

Azerbaijan has the highest natural resource rents per capita but low score on the resource governance index. The following countries also have high natural resource rents per capita, in particular, Kuwait, Norway, Saudi Arabia, Equatorial Guinea, Trinidad and Tobago, Australia, Gabon, Bahrain, Libya, Kazakhstan, Iraq, Venezuela, Russia, Qatar, Canada, Angola and Chile with their scores on the index as follows 41%, 98%, 34%, 13%, 74%, 85%, 46%, 47%, 19%, 57%, 47%, 56%, 56%, 26%, 76%, 42%, 75% respectively. Myanmar is a country with a zero natural resource rents per capita and a score of 4% on the resource governance index.

Figure 3.9: Snapshot of Natural Resource Rents per Capita and resource governance index (2008-2012)

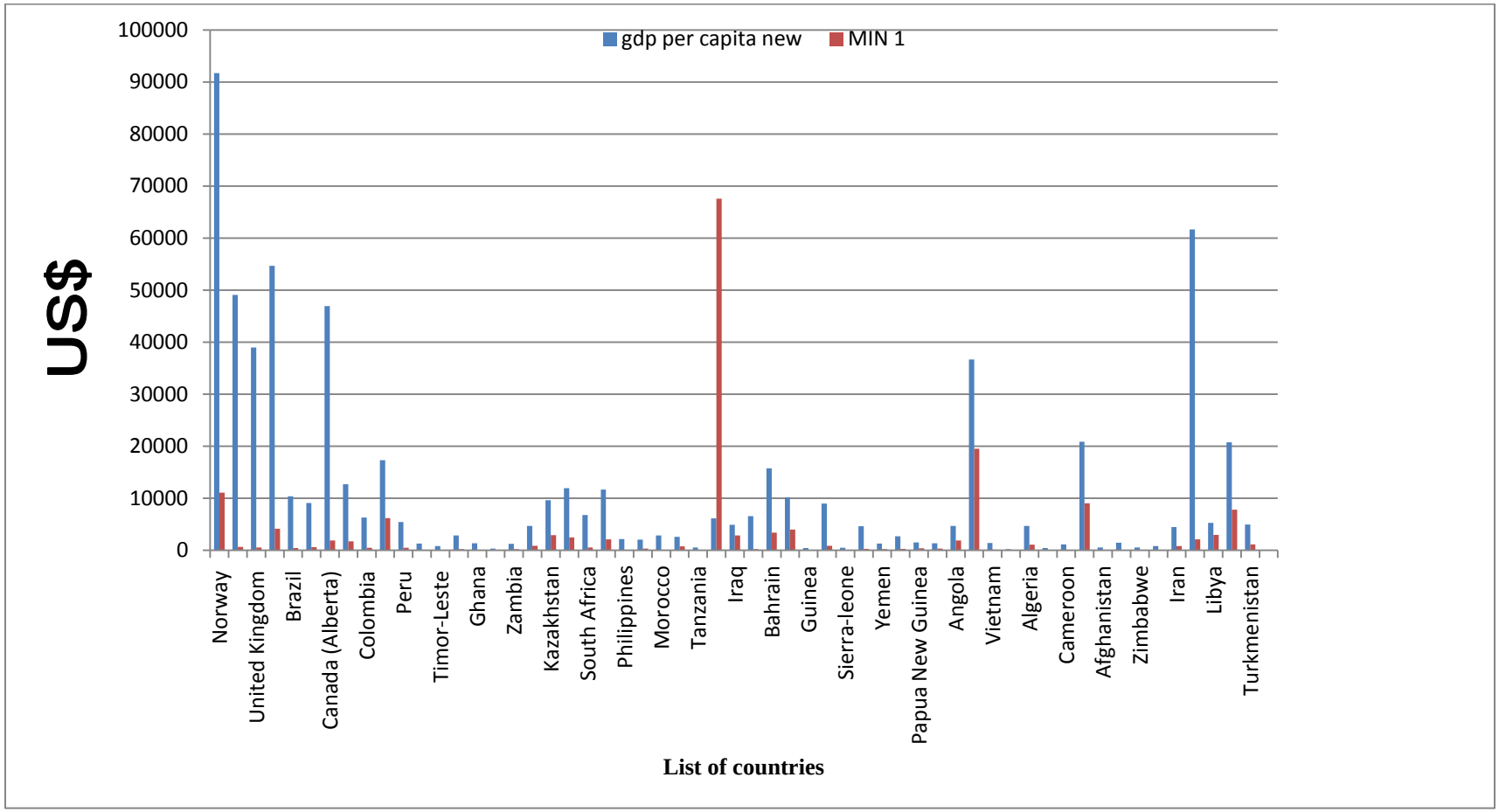


Source: Authors Computation

3.3.4 Natural Resource Rents per Capita and GDP Per Capita

Norway has the highest GDP per capita with a resource rents per capita of (US$ 11105.61) whiles Azerbaijan also have highest score of natural resource rents per capita with GDP per capita been (US$ 6144.318.) These countries Qatar, Australia, United States, United Kingdom, Canada also have high GDP per capita with moderate natural resource rents per capita. Congo (DR), Mozambique, Afghanistan, Vietnam, Nigeria, Sierra Leone has both low GDP per capita and natural resource rents per capita respectively.

Figure 3.10: Snapshot Natural Resource Rents per Capita and GDP Per Capita (2008-2012)



Source: Authors Computation

CHAPTER FOUR

RESEARCH METHODOLOGY

4.0 Introduction

This chapter deals with the procedure employed by the researcher to achieve the objectives of the study. The purpose is to state how the research has been carried out and how to provide evidence that the study has passed through the appropriate scientific method of investigation. This consists of topics and sub-topics such as introduction, the sources of data, and method of data collection. The data analysis procedure will also be presented here. In a related development, Malhotra and Birks, (2007), describe a research methodology as the procedural framework within which a research is conducted. The two basic methodological approaches to which different studies might naturally lead themselves are the qualitative and quantitative methods. Whilst qualitative research is more descriptive, quantitative research more often draws inferences based on statistical procedures and often makes use of graphs and figures in its analysis (Ghauri & Gronhaug, 2005). In this regard, quantitative data is used.

4.1 Sources of data

The dependent variable is the average growth rate of real GDP per capita from 2008 to 2012. The researcher took the average values in order to avoid or minimize measurement problems in view of short term economic fluctuations. The average growth rate of real GDP per capita data that is used for this study also comes from the World Bank's World Development Indicators.

For the purpose of this study, secondary data was obtained from the 2013, Resource Governance Index which is the measure of transparency and accountability in the oil, gas and mining sector. The index comprises of 58 countries, made up of developed and developing countries.

The data cover 12 low-income countries, 15 lower- middle income countries, 6 high income OECD countries, 17 upper middle income countries, and 8 high income non OECD countries.

In terms of regional distribution, the data comprises of 17 Sub-Sahara Africa, 13 South, East, Asia and Pacific, 11 Middle East and North Africa, 11 Latin, North America and Caribbillian countries and 6 Europe and Central Asia Countries.

All the macroeconomic data used for the study namely, population, investment, trade openness foreign direct investment, initial GDP per capita and inflation comes from World's Bank world development indicators

4.1.1 Characteristics of Sample Countries

1. **Angola**

Angola is the second-largest oil producer in sub-Saharan Africa and a major supplier to both the United States and China. It produced 1.8 million barrels a day in 2011 and generated $40 billion in oil and gas revenues. Other minerals, including diamonds, contribute significantly to the national economy. The extractive sector accounted for 46 percent of gross domestic product in 2010 and 79 percent of government revenues in 2011 (RGI, 2013).

2. **Botswana**

By volume, Botswana is the largest diamond producer in the world. Diamond mining fuels Botswana's economy (they contributed 70 percent to total exports in 2011), making it vulnerable to fluctuations in the global demand for luxury goods. Mineral resources also include copper, nickel, gold, and coal, and accounted for 9 percent of the country's total export earnings in 2011 (RGI, 2013).

3. Cameroon

Cameroon's oil production peaked in 1985 at 181,000 barrels/day and then steadily declined to 60,400 barrels/day in 2011. The government continues to be heavily dependent on the petroleum industry; oil and gas revenues accounted for 25 percent of government funding in 2011, and the extractive industries made up 53 percent of Cameroon's exports in 2010. The mining and natural gas sectors are expected to grow, thanks to substantial foreign investment and new wells coming online in 2013 (RGI, 2013).

4. Dr Congo

The DRC is the fourth-largest diamond producer in the world with huge deposits of copper, cobalt, and coltan, as well as diamonds, gold, tin, iron ore, oil and extractive sector contributes about 20% of GDP. In 2010, the DRC accounted for 51 percent of global cobalt production (RGI, 2013).

5. Equatorial Guinea

Equatorial Guinea is the third-largest oil producer in sub-Saharan Africa, supplying 304,000 barrels a day in 2011. Its 2010 oil and gas revenues were estimated at nearly $3 billion, accounting for 67 percent of government revenues and 47 percent of gross domestic product (GDP). While Equatorial Guinea's GDP per capita is similar to many highly developed countries, more than three-quarters of its population lives in poverty (RGI, 2013).

6. Gabon

The fifth-largest oil producer in Sub-Saharan Africa, Gabon is highly dependent on the petroleum industry, which contributed 64 percent of state revenues in 2010. The extractive sector accounted for 82 percent of exports in 2009 and 47 percent of gross domestic product in 2010 (RGI, 2013).

7. Ghana

Ghana is the second-largest gold producer in Africa. While it also produces bauxite and manganese, the gold industry contributes more than 90 percent of total mineral revenues. The extractive sector accounted for 56 percent of exports in 2011, up from 12 percent in 2010 due to oil discoveries. However, its overall contribution to state revenues is relatively small, leading the government to reform the mining fiscal regime in 2011 and oil production began in 2011 (RGI, 2013).

8. Guinea

Guinea claims almost half of the world's bauxite reserves, as well as significant deposits of iron ore, gold, and diamonds. Mining accounted for 17 percent of gross domestic product in 2010 and over half of exports. However, mismanagement and corruption have plagued the sector for decades, contributing to a depressed economy and widespread public mistrust. The government put forward a new Mining Code in September 2011 that includes provisions to combat corruption, protect the environment, and review all existing mining contracts (RGI, 2013).

9. Liberia

Liberia's rich mineral resources include diamonds, gold, and iron ore. The mining sector has been slow to recover after Liberia's civil war ended in 2003; the extractive industries generated only 2 percent of gross domestic product in 2010. Significant oil reserves were discovered in early 2012 (RGI, 2013).

10. Mozambique

Mozambique has considerable natural resources, but effective exploitation of its mineral and gas sectors did not begin until the civil war ended in 1992. The extractive industries still operate below their potential; the government received less than $40 million in revenues from petroleum and mining in 2009. The entry of large multinational companies has boosted the sector and gas

exports reached 107.4 billion cubic feet in 2010, when extractive products made up 74 percent of exports. Newly discovered gas reserves are estimated at 4.5 trillion cubic feet. Since gas contributes significantly more to the national economy than mining (RGI, 2013).

11. Nigeria

Nigeria is Africa's largest oil exporter, and the world's 10th largest oil producer, accounting for more than 2.2 million barrels a day in 2011. Oil revenues totaled $50.3 billion in 2011 and generated 70 percent of government revenues. Nigeria's hydrocarbons sector is at a crossroads as the current administration attempts to pass the controversial Petroleum Industry Bill (RGI, 2013).

12. Sierra Leone

Sierra Leone's mining sector has made a significant recovery since the 11-year civil war ended in 2002. The country produced more than 400,000 carats of diamonds in 2010, making it the world's 10th-largest producer and accounting for nearly half of the nation's total exports. Offshore oil reserves were discovered in 2009 and the economy is highly dependent on diamond revenues (RGI, 2013).

13. South Africa

South Africa is the continent's largest gold producer and ranks fifth in the world in diamond production. Along with a wide range of industrial minerals, it produced 200 tons of gold and 2.4 million carats of diamonds in 2009. The extractive sector accounted for 46 percent of exports in 2011. The nationalization of mines in South Africa, seen by some activists as a way to distribute the country's wealth more fairly, has been controversial. The first state-owned company, the African Exploration Mining and Finance Corporation, was established in 2011 (RGI, 2013).

14. South Sudan

The division of Sudan in 2011 placed three quarters of the country's oil in an independent South Sudan, while the infrastructure required exporting the oil remains in the north. South Sudan is

the most oil-dependent country in the world. Before a disagreement with the north led to an oil shutdown in January 2012, South Sudan produced half a million barrels a day, accounting for 98 percent of government revenues and about 80 percent of gross domestic product. Oil is its only significant export. The National Legislative Assembly passed a Petroleum Law in April 2012 and now is considering a Petroleum Revenue Management bill. Oil production began again in April 2013 (RGI, 2013).

15. Tanzania

Mining accounts for about 5 percent of Tanzania's gross domestic product and a third of exports. In 2011 the value of mineral exports reached $2.1 billion, more than 95 percent of which came from six gold mines. Tanzania also produces copper, silver, diamonds, natural gas and mineral exports increasing nearly eight-fold between 2005 and 2010 (RGI, 2013).

16. Zambia

Zambia is the sixth-largest producer of copper in the world and the fifth-largest producer of cobalt. The extractive industries, led by the copper sector, accounted for 27 percent of gross domestic product and 87 percent of exports in 2010. Zambia's economy has seen strong growth in recent years, but poverty rates remain high (RGI, 2013).

17. Zimbabwe

One of the poorest countries in the world, Zimbabwe depended on the extractive industries for 36 percent of export earnings in 2010. After the violently contested 2008 presidential election, a power-sharing agreement divided key government ministries between President Robert Mugabe's Zimbabwe African National Union-Patriotic Front (ZANU-PF) and the opposition Movement for Democratic Change (MDC). As a result, the political climate surrounding Zimbabwe's extractive sector is characterized by hostility, mistrust, and lack of transparency (RGI, 2013).

18. Afghanistan

After decades of conflict, Afghanistan has no industrial-scale mining; minerals make up less than one percent of exports. However, in 2010 the U.S. Geological Survey announced large discoveries of iron, copper, and lithium with estimated values ranging from $1 trillion to $3 trillion. If used effectively, mining revenues could play an important role in Afghanistan's economic development (RGI, 2013).

19. Azerbaijan

Azerbaijan's proven crude oil reserves are estimated at 7 billion barrels, mainly located offshore in the Caspian Sea. It produces 1 million barrels of oil a day and exported 240 billion cubic feet of natural gas in 2010. The state is heavily dependent on the extractive industries; in 2011 oil and gas income made up 74 percent of government revenue, 95 percent of exports, and 47 percent of gross domestic product (RGI, 2013).

20. India

India has considerable resource wealth, including large coal, iron, and petroleum reserves. Oil has replaced coal as the nation's most valuable commodity, yet India's strong economic growth and expanding population make it a net oil importer. While the extractive sector as a whole produced 22 percent of merchandise exports in 2011, petroleum products made up almost half of the country's imports (RGI, 2013).

21. Kazakhstan

With vast natural resources, including 30 billion barrels of oil reserves and 85 trillion cubic feet of natural gas, Kazakhstan is an increasingly important player in global energy markets. The government relied on hydrocarbons for 39 percent of its revenues in 2010. Kazakhstan exports more than 1.2 million barrels of oil per day and is the world's largest uranium producer; together

the mining and petroleum industries accounted for 33 percent of gross domestic product in 2010 and 82 percent of exports in 2009 (RGI, 2013).

22. Mongolia

Mongolia has significant copper, gold, coal, molybdenum, fluorspar, uranium, tin, and tungsten deposits. Minerals accounted for 46 percent of gross domestic product in 2010 and 80 percent of exports in 2007. The economy grew 18 percent in 2011, largely on the strength of commodity exports to China and other nearby countries (RGI, 2013).

23. Russia

Russia has been producing and exporting oil and gas at maximum capacity for the past decade. It is consistently the world's largest producer and exporter of natural gas, and competes with Saudi Arabia to be the world's top oil producer. The petroleum sector employs less than 3 percent of the working population, but contributed 28 percent of Russia's budgetary revenue in 2010. As a whole, Russia's petroleum and mining industries made up 22 percent of gross domestic product (GDP) and 64 percent of merchandise exports in 2011 (RGI, 2013).

24. Turkmenistan

Turkmenistan has the fifth-largest natural gas reserves in the world, estimated at 265 trillion cubic feet. It exported 879 billion cubic feet in 2011. Unlimited presidential powers and the government's total control over civil society make it nearly impossible to assess the role of oil and gas in Turkmenistan's economy; the extractive sector as a whole is credited with generating 44 percent of gross domestic product in 2010 (RGI, 2013).

25. Bolivia

The Bolivian government has historically depended on the mining industry for much of its funding, but revenues from petroleum have become even more important in recent years. The extractive industries as a whole made up 29 percent of government revenues, 82 percent of

exports and 18 percent of gross domestic product in 2011. Bolivia became a natural gas exporter in the 1990s and is now the third-largest producer in South America. It also produces zinc, tin, silver, gold, and lead (RGI, 2013).

26. Brazil

Brazil was the world's 12th-largest oil producer in 2011 and the second-largest in Latin America. Recent discoveries of vast offshore pre-salt oil resources have the potential to make Brazil the world's fifth-largest producer by 2020. The country also has proven natural gas reserves of 15 trillion cubic feet, and produced 850 billion cubic feet in 2011. It has a growing mining industry and is a major exporter of iron ore, aluminum, bauxite, and other industrial metals. While Brazil consumes all of its natural gas and most of its current oil production, the extractive industries still account for 30 percent of exports (RGI, 2013).

27. Chile

Chile is the largest copper producer in the world, with 5.5 million tons produced in 2010. Mineral exports accounted for nearly two thirds of total exports and forty percent of gross domestic product in 2011 (RGI, 2013).

28. Colombia

The extractive sector accounted for 69 percent of Colombia's exports in 2011. The petroleum industry is particularly important; it generated 4 percent of total government revenue in 2011 and is the focus of this assessment. However, over the last decade interest in Colombia's coal, nickel, gold, and other mineral resources has grown. Tax incentives and market reforms have created attractive conditions for foreign direct investment (RGI, 2013).

29. Ecuador

Ecuador's economy is highly dependent on the extractive industries, which made up 20 percent of gross domestic product in 2011 and 58 percent of exports. Recent reforms to the Hydrocarbon

Law required foreign companies to renegotiate their arrangements with the government. Nevertheless, Ecuador remains the fifth-largest petroleum producer in Central and South America (RGI, 2013).

30. Mexico

Oil production has been the most important extractive activity in Mexico since the 1970s, and petroleum generated 33 percent of government income and 20 percent of exports in 2011. While Mexico remains one of the top producers in the world, oil exports have declined as fields are depleted and domestic consumption rises (RGI, 2013).

31. Peru

Peru is a major mineral producer, particularly of gold and copper. The extractive industries generated 11 percent of gross domestic product and 64 percent of exports in 2011 with the mining sector playing an important role in the economy. Peru privatized its state-owned mining companies in 1991, and the industry since has attracted considerable investment (RGI, 2013).

32. Trinidad And Tobago

Trinidad and Tobago is the Caribbean's leading petroleum producer, with oil and gas generating 44 percent of government revenues in 2011. In recent years it has become a major exporter of liquefied natural gas. The extractive sector as a whole accounted for 37 percent of gross domestic product and 66 percent of exports in 2010 (RGI, 2013).

33. Venezuela

Venezuela has the second-largest oil reserves in the world. The country is highly dependent on petroleum revenues, which the government relies on for an estimated 45 percent of its income. The extractive industries accounted for 95 percent of exports and 20 percent of gross domestic product in 2010 (RGI, 2013).

34. Algeria

Algeria produced 2 million barrels of oil per day in 2011 and is the sixth-largest natural gas exporter in the world. Hydrocarbons have long been the backbone of Algeria's economy, accounting for 70 percent of state revenues, 25 percent of gross domestic product and 97 percent of total exports in 2011 (RGI, 2013).

35. Bahrain

Petroleum and mining make up a fifth of Bahrain's gross domestic product. The state is increasingly dependent on the petroleum industry; extractive revenues accounted for 91 percent of government revenue in 2011, up from 76 percent in 2005. Extractive exports represented 76 percent of total exports in 2011. Unlike other Gulf States, Bahrain exports refined petroleum products rather than crude oil. The national oil company refines Bahraini and Saudi crude, much of it for export to India and other Asian markets (RGI, 2013).

36. Egypt

Egypt is the largest non-OPEC oil producer in Africa, with crude oil production at 711,500 barrels a day in 2011. It is also the continent's second-largest natural gas producer, supplying 2.2 trillion cubic feet in 2010. The petroleum industry accounted for 10 percent of government revenues in 2011 and 38 percent of exports. The political unrest in 2011 did not significantly affect foreign investment in the petroleum industry and Egypt's revolution has not yet resulted in regulatory changes (RGI, 2013).

37. Iran

Iran is the second-largest oil producer in OPEC after Saudi Arabia, producing 4.2 million barrels a day in 2011. Oil and gas production accounted for 50 percent of government revenues and 74 percent of exports in 2010. Iran's petroleum industry is generally regarded as complex and non-

transparent. International sanctions impose significant external restrictions on the industry, which nonetheless generated 32 percent of gross domestic product in 2009 (RGI, 2013).

38. Iraq

Iraq has 115 billion barrels of proven oil reserves, the fifth-largest in the world. The economy is highly dependent on oil production, which was estimated at 2.6 million barrels a day in 2011 and accounted for 97 percent of government revenues. The petroleum industry generated 70 percent of gross domestic product in 2010 and is the source of nearly all of Iraq's export income. In July 2012 the semiautonomous region of Kurdistan began exporting crude oil, despite the central government's claim to sole authority over crude exports (RGI, 2013).

39. Kuwait

Kuwait has the fifth-largest oil reserves in the world. It is the third-largest oil producer in the Arab world, providing considerable wealth to a population of less than 3 million. In 2009, petroleum accounted for 43 percent of gross domestic product and 93 percent of exports. In 2010 the sector generated 83 percent of government revenue (RGI, 2013).

40. Libya

Libya's oil reserves are estimated at 47 billion barrels, the largest in Africa and the ninth-largest in the world. It produced 1.8 million barrels a day in 2010, but civil war in 2011 caused production and exports to drop by more than two-thirds. Libya is heavily dependent on oil, in 2010 hydrocarbon receipts accounted for 91 percent of government income (RGI, 2013).

41. Morocco

Morocco is the world's largest phosphate exporter and holds three-quarters of global phosphate reserves. Other natural resources include copper and silver, and the extractive sector as a whole accounted for 13 percent of total exports in 2010 (RGI, 2013).

42. Qatar

Qatar's oil and gas resources accounted for 28 percent of gross domestic product, 73 percent of export earnings, and 53 percent of government revenues in 2009. Hydrocarbons have given Qatar the highest per capita income in the world. With a population of less than 2 million and the world's third-largest proven gas reserves, Qatar looks forward to continued prosperity. Despite attempts to improve transparency, the Qatari government's management of the petroleum industry remains opaque (RGI, 2013).

43. Saudi Arabia

Saudi Arabia is the world's largest petroleum producer and exporter, oil and gas made up 90 percent of government income and 88 percent of exports in 2010. Foreign companies participate in oil extraction only in the Neutral Zone bordering Kuwait and in the development of Saudi Arabia's extensive natural gas reserves. Oil production and sales are dominated by Saudi Aramco, a state-owned company that produces 95 percent of Saudi oil. Because of Saudi Aramco's outsize role in the economy (RGI, 2013).

44. Yemen

Yemen's economy is highly dependent on petroleum. In 2010, oil and gas made up 63 percent of government revenues. However, oil production has declined steadily; in 2011. Yemen produced 228,000 barrels a day, a 24 percent drop from 2010. Seeking to diversify the economy, the government has worked to attract foreign investment in the natural gas sector. Yemen began exporting liquefied natural gas in 2009, partially offsetting the decline in oil revenues (RGI, 2013).

45. Australia

Australia has extensive reserves of coal, iron, copper, gold, natural gas, and uranium. The extractive industries make up a large and growing segment of the national economy, accounting

for 10 percent of gross domestic product in 2010. The country's largest state, Western Australia, also has the largest mining industry, producing 58 percent of Australia's mineral and energy exports. In 2011, mining and hydrocarbon royalties made up 20 percent of Western Australia's government revenue (RGI, 2013).

46. Canada

The extractive industries play a large and growing role in Canada's economy. Petroleum and minerals made up 38 percent of merchandise exports in 2011, up from 28 percent in 2005. The province of Alberta is Canada's largest oil and gas producing region and contains 96 percent of the country's petroleum reserves. After Saudi Arabia and Venezuela, Alberta has the third-largest proven oil deposits in the world, mostly in the form of difficult-to-tap oil sands. Under Canada's federal system, natural resources are governed at the provincial level, although the federal government retains certain responsibilities, such as collecting corporate income tax from oil companies (RGI, 2013).

47. Norway

Norway is one of the world's major oil and gas exporters; the extractive industries as a whole accounted for 74 percent of exports and 30 percent of government revenues in 2011. The state regulates the sector effectively and has created a competitive environment for operating companies, which include Statoil, a partially state-owned company, as well as private enterprises (RGI, 2013).

48. United Kingdom

The United Kingdom is the European Union's largest oil producer and second-largest producer of natural gas. A highly diversified economy means the government relied on the petroleum industry for just 2 percent of its budget in 2011. While domestic consumption has remained

relatively constant in recent years, production has declined, leaving the U.K. a net importer of both oil and gas (RGI, 2013).

49. United States

With a federal system and multiple regulatory agencies, the legal and fiscal arrangements governing petroleum and mineral resources in the United States are complex. For this reason, the RGI has focused on petroleum extraction in the Gulf of Mexico, where 23 percent of U.S. crude oil is produced. The region is of special concern following the 2010 BP oil spill, which exposed critical gaps in federal government oversight (RGI, 2013).

50. Cambodia

Cambodia's underdeveloped oil and mineral reserves currently account for only a small fraction of government revenues and less than one percent of exports. International mining companies have started exploration projects, but no large-scale extraction is expected before 2015. Similarly, despite the discovery of petroleum reserves, Cambodia's oil and gas potential remains untapped. While the government's priority is to attract private investment in the extractive industries, civil society groups have called for greater focus on sustainable natural resource management and good governance (RGI, 2013).

51. China

Recent analysis of global energy and mineral markets has focused on China's role as an importer of resources, often overlooking the exploitation of its own considerable mineral and petroleum reserves. The extractive sector accounted for 8 percent of gross domestic product in 2010, when China produced 3.2 billion tons of coal—more than 40 percent of global production. In 2011 China was the sixth-largest producer of crude oil, at 4.1 million barrels a day, and the ninth-largest producer of natural gas, at 9.9 billion cubic feet a day (RGI, 2013).

52. Indonesia

Indonesia has significant natural gas reserves and is a major producer of liquefied natural gas, but declining production and rising domestic consumption have made it a net importer of oil. At the same time, the country's mining industry has expanded. Indonesia supplies 20 percent of the world's tin and has considerable copper, nickel, gold, and coal resources. Petroleum and minerals together made up 42 percent of exports in 2011. The petroleum sector, which is measured in this assessment, accounted for 18 percent of government revenues in 2011 (RGI, 2013).

53. Papua New Guinea

Petroleum, copper, gold, and other minerals made up 32 percent of gross domestic product in 2010, with oil and gas accounting for 23 percent of government revenues. Papua New Guinea's estimated 8 trillion cubic feet of natural gas reserves have the potential to dramatically increase national income, and gas exports are expected to begin in 2014. The country's mining industry has a troubled history, with decades of poor management leading to severe environmental damage and social upheaval. The RGI assesses the mining sector (RGI, 2013).

54. Philippines

The Philippines produced 11 percent of the world's nickel in 2010. The country's rich natural resources also include major copper deposits, chromium, gold, and silver; minerals made up 8 percent of merchandise exports in 2011. However, with low royalty rates and an ineffective fiscal system, the government receives only a small share of this resource wealth. In July 2012 the government announced it would stop issuing mining licenses while it revised the sector's legal framework (RGI, 2013).

55. Malaysia

Malaysia is one of Southeast Asia's primary oil and gas producers, and was world's third-largest exporter of liquefied natural gas in 2010. The petroleum sector generated 14 percent of

government revenue and represented 10 percent of gross domestic product and 20 percent of exports in 2011 (RGI, 2013).

56. Myanmar

Myanmar's natural resources include gems, industrial minerals, oil, and offshore natural gas reserves estimated at 10 trillion cubic feet. The extractive sector accounted for 39 percent of exports in 2010, yet despite its mineral wealth, Myanmar is one of the least developed nations in the world. Its extractive industries are infamously opaque. In the April 2012 elections, the main opposition party won seats in the parliament, a development that could lead to improved transparency (RGI, 2013).

57. Vietnam

Vietnam has considerable oil reserves and was the sixth-largest oil producer in the Asia-Pacific region in 2011. However, production has declined in recent years and the country is now a net oil importer. Petroleum accounted for 14 percent of government income in 2009, down from 24 percent in 2004, the result of a significant drop in revenue. Vietnam also has an estimated 24.7 trillion cubic feet of natural gas reserves (RGI, 2013).

58. Timor-Leste

Oil wealth funded much of Timor-Leste's reconstruction after its bloody struggle for independence from Indonesia ended in 2006, with petroleum receipts responsible for 94 percent of government revenues in 2011. Limits on government withdrawals from the national Petroleum Fund have helped make Timor-Leste's budget surplus as a percent of gross domestic product the largest in the world (RGI, 2013).

4.2 Multiple linear regression models

The researcher adopted the standard empirical growth literature (for example, Mankiw, Romer, and Weil, 1992; Barro and Sala-i-Martin, 1995; and Barro, 1997) and uses the following linear

growth regression model to examine or understand the relationship between natural resource wealth, growth and governance. In other words these linear growth models will serve as the framework for this research work.

4.2.1 Regression Models

$$g_i=\alpha_0+\alpha_1 MIN_i+\alpha_2 RGI_i+\alpha_3 MINxRGI_i+\alpha_4 POP_i+\alpha_5 INV_i+\alpha_6 TRD_i+\alpha_7 GDP_0+\alpha_8 INF_i+\alpha_9 HIC_i+\alpha_{10} LI_i +\alpha_{11} HINC_i+\alpha_{12} UMI_i+\alpha_{13} REG_i+\varepsilon_i \quad \text{.....(1)}$$

4.2.2 Main Variables for the Study

Economic Growth (g_i)

The g_i is the real GDP per capita average between 2008-2012. This is the dependent variable of our model. The average growth rate of real GDP per capita data used for this study comes from the World Bank's World Development Indicators. The researcher took the average values in order to avoid or minimize measurement problems in view of short term economic fluctuations.

Total Natural Resource Rents per Capita (MIN)

MIN is a proxy of natural resource abundance and it is measured as a total natural resource rents per capita average over the periods 2008-2012. It is calculated as the total natural resources scaled by GDP multiplied by the value of real GDP per capita and then divide the answer by the total population of the countries. Natural resources rents per capita is computed as

$$MIN = \left(\frac{\left(\frac{NRR}{GDP}\right) * RGDP}{POP} \right) \quad \text{... ... ... 2}$$

Where NRR is the total natural resource rents scaled by GDP, $RGDP$ is the real GDP per capita, pop is the total population of a country in this index. The MIN data used for this research comes from the World Bank's World Development Indicators. Economic growth theory says that abundance natural resources have a positive correlation with growth but empirical study by

Sachs and Warner (1995) argues that countries endowed with natural resources mostly experience lower economic growth as compared with less endowed economies. We expect negative relationship between natural resources rents per capita and economic growth.

Resource Governance Index (RGI)

RGI is a resource governance index for 2013.The data for this index comes from Revenue Watch Institute based in New York of United States of America. This variable is importance to us because we want to know how governance impacts on economic growth. Scholars are of different opinion as to how, the expected sign should be. Limi (2007) found a negative relationship between governance and economic growth while Beland and Tiagi (2009) also found a positive link between governance and economic growth. The expected sign for this variable cannot be predicted because of differences in opinion.

Interaction between Natural Resource Rents Per Capita and Resource Governance Index (*MINxRGI*)

MINxRGI is the interaction between natural resource rents per capita and the resource governance. This variable is important because we want to find whether natural resource endowment and governance influence economic growth. Beland and Tiagi (2009) discovered positive relationship between the interaction term and economic growth. We expect a positive sign from this variable.

4.2.3 Determination of the resource curse

In order to assess whether there is a resource curse in this equation, the coefficient of α_1, α_2 and α_3 are analyzed. If the coefficient $\alpha_1 < 0$, this means that when all other factors are controlled for, resource abundance in a country is link to a slow economic growth. In other

words, then it means that there is a resource curse. In addition, if $\alpha_2 > 0$ then it means governance/institution is associated with positive economic growth, meaning good governance promotes greater or higher economic growth (Beland & Tiagi, 2009). To conclude, if $\alpha_3 > 0$ then the coefficient of the interaction term that is mineral abundance and good governance/institutions leads to higher economic growth, if not, then the interaction term does not lead to economic growth (Beland & Tiagi, 2009).

4.3 Justifications of the control variables

Apart from our main variables of interest, there are other variables that have shown to influence economic growth. These variables include initial GDP per capita (GDP_O), population (pop), trade openness (TRD), investment (INV), inflation (INF), foreign direct investment (FDI), regional dummies and income level dummies.

Initial GDP per Capita

The data for Initial GDP per capita comes from World Bank World's Development Indicators. This variable is measured by dividing the real GDP values by the total population of all the countries in the index. Again this variable enables us to explain for a likely convergence or conditional convergence effect. In a situation whereby the coefficient of this variable is negative, then one can conclude that the conditional convergence hypothesis is upheld (Beland & Tiagi, 2007). In another instance, the neoclassical growth models says that the levels of income of underdeveloped economies will be likely to congregate (catch up) with the income levels of developed economies if countries share similar characteristics or parameters such as preferences and technology (Beland & Tiagi, 2007). Furthermore, underdeveloped economies should develop faster than developed economies that are nearer to the steady-state point of the economy. One of the factors following this convergence is the diminishing returns to capital (Barro, 1991).

In view of the fact that, developing economies rates of capital to labor is low, they have the propensity to grow at a higher rate with boast in capital (Barro, 1991). Beland and Tiagi (2007) found a negative relationship between initial GDP per capita and economic growth. We expect a negative sign for this variable.

Investment (INV)

The next explanatory variable is the gross capital formation proxy as investment (INV) average over the periods between 2008-2012. It is defined as the net additions of capital stock such as equipment, buildings and other intermediate goods. The source of data for this variable is the World Bank World's Development Indicators. We included this variable in our equation because we want to assess its impact on economic growth. From the neoclassical growth model, it predicts that investment in capital is potential to increase output/productivity of employment and generate development. To economic growth, it is incumbent on countries to increase their level of investment which in itself can propel lower cost of transacting business (Beland & Tiagi, 2009). Beland and Tiagi (2009) found a positive relationship between investment and growth. We expect a positive sign.

Population (POP)

Population (pop) talks about the total number of people living in a particular geographical area (Busse & Gorning, 2011). It is also use to represent the size of a country and the data for this variable is taken from World Bank World's development indicators average over the periods between 2008-2012. Economic growth theory says that rapid population growth rate have a negative consequences on growth. As argued by Beland and Tiagi (2009), an increase in or huge population growth can possibly be detrimental to economic growth. Ukpolo (2002) also argues

that uncontrolled population growth is recipe for disaster since it will affect economies negatively through certain factors such as capital formation, savings rates, natural resources and environment. We expect a negative relationship between population and economic growth.

Trade Openness (TRD)

Trade openness (TRD) is defined as the removal of barriers or reduction of restrictions on the exchange of goods between economies freely. It is being measured as the ratio of total trade to GDP average over 2008-2012.The data for this variable is taken from World Bank World's Development indicators. This variable is important because we want to find out the impact of trade liberalization on growth. Economic growth theory says that trade liberalization promotes economic growth. Limi (2007) found a positive association between trade and economic growth. We expect a positive sign for this variable.

Inflation (INF)

Inflation (INF) is the persistence increase in price of general goods and services. Inflation is measured as the consumer price index scaled by GDP average over the periods 2008-2012. We had this data for this variable from World Bank World's Development Indicators. Economic growth theory says that the higher inflation rate the lower economic growth. Bittencourt (2012) used a dataset over the periods between 1970 to 2007 with the help time-series analysis and he finds that inflation has a detrimental effect on growth. We hypothesize a negative sign for this variable.

Foreign Direct Investment (FDI)

Foreign Direct Investment (FDI) is defined as the cross-broader investment by national of one economy with the aim of gaining a lasting investment interest in company of national in another

country. In this work FDI is measured as the net inflows average over the periods 2008-2012. The data used for this variable is gotten from World Bank World's Development Indicators. This variable is of importance because economic growth theory says that an increase in FDI will lead to an increase in the economic growth. Aitkin and Harrison (1999) said that there is no clear cut as whether FDI impacts on economic growth positively or negatively. They argued that some of the studies found a positive association between FDI and economic growth while others also found a negative association. We expect a positive sign.

Regional and Income Levels Dummy

HIC, HICN, UMI, LMI, LI, are the income levels dummies, measuring if the country is High Income OECD (HIC), High Income NON OECD (HICN), Upper Middle Income (UMI), Lower Middle Income (LMI), or Low Income (LI). REG1, REG2, REG3, REG4, REG5 are regional dummies, if the country is Sub-Sahara Africa (REG1), South, East Asia & Pacific(REG2), Middle East & North Africa(REG3), Latin, North America & Caribillian (REG4), Europe & Central Asia(REG5). For example, if Sub-Sahara Africa (REG1) takes a value of one (1) then the rest of the regional dummy will be zero (0) and vice-versa. The same method is applied to all the regional dummy like, South, East Asia & Pacific (REG2), Middle East & North Africa(REG3), Latin, North America & Caribillian (REG4), Europe & Central Asia(REG5). In the income level dummy, whenever an income country takes one (1), the rest of the other income level would be zero (0). The inclusion of regional and income group dummies is expected to reduce the measurement errors or problems associated in cross-sectional country analysis (Limi, 2007).

4.3.1 Data presentation and analysis

The data that gathered is quantitative in nature and Stata, is used in analyzing the data.

4.4 Econometrics issues

One important issue about this equation is how to deal with the biases caused by measurement errors and endogeneity. In this work growth is likely to be influenced by governance and natural resources extraction, as well as resource exploitation and governance which could be probable be decided scientifically by the stage of economic growth (Limi, 2007). In order to deal with the issue of endogeneity, we use Two Stage Least Squares (2SLS) estimator. We adopted this approach because we hypothesize a bi-causal relationship between RGI and real GDP per capita. The instrumental variable (IV) estimator helps us deal with potential omitted variables and measurement errors. Therefore the IV estimator helps us to efficiently estimate the coefficients of the potential endogenous variable which can be either caused by simultaneous causality, measurement error or omitted variables. Ability to find valid instruments in empirical application is very cumbersome. Various recent works provide leads on possible instruments for institutions or governance.

To correct for this possible bias, we instrument for governance or institutions. In other words we use a variable that is correlated with governance or institutions and uncorrelated with the economic growth. We then use the two-stage least squares (2SLS). In the 2SLS we perform two regressions, the first stage deals with modeling the endogenous variable (governance) as a function of other variables that might influence institutional quality or governance and more significantly an instrumental variable is part of the equation. For the second stage equation, the dependent variable (growth) is regressed on the other variables and the instrument. The 2SLS equation presented below.

First stage: $$RGI = \alpha_0 + \alpha_1(IV_{1i}) + \alpha_2(IV_{2i}) + \alpha_3(IV_{3i}) + \alpha_4(X_{4i}) + \varepsilon_i \text{.....(3)}$$

Second stage: $$g_i = \alpha_0 + \alpha_1 MIN_i + \alpha_2 RGI_i + \alpha_3 MINxRGI_i + \alpha_4 X_i + \varepsilon_i \text{.....(4)}$$

IV in these equations refers to the three instrumental variables used in our regression to correct the endogeneity bias prevailing in the OLS equation and the IV'S are population who are Muslims, Ethno-linguistic fractionalization and legal origin. X_4 is a vector of natural resource rents per capita, interaction between natural resource rents per capita and RGI, population growth rate, initial GDP per capita, investment, inflation, trade openness, foreign direct investment, HIC, LI, HINC UMI and REG1. Equation 4 is the same as that of equation 1.

The first instrument looks at the percentage of population who are Muslims. La Porta, Lopex-de-Silanes, Shleifer & Vishny (1999) posit that governance or institutions begin to decline when the percentage of Muslims who lives in a particular economy increases. We select this variable in the sense that cultural theory made us to understand that predominately Muslims countries are less efficient because bureaucracies in these economies started from religious lines and they rely less on the sovereign.

Our second instrument, '"ethno-linguistic fractionalization," is a measure of ethnic diversity in a country, in other words, it is based on language. Specifically, it assumes when you select two people randomly all of them will not belong to the same linguistic group (Béland & Tiagi, 2009). We rely on Easterly and Levine's (1997) to select this instrument, their argument is that, ethnic diversity leads to poor public-policy options and hence to weaker institutions. On the other hand, this argument is more directly applicable to developing countries.

The last instrument is legalorigin15 which we expect it to be negative. The reason is that the quality of institutions becomes poorer when a more interventionist legal system like French civil law or common law is included.

4.4.1 Over identification test

We perform over identification test to check the validity of our instrument. This test assumes that one of the variables, say; ethno-linguistic fractionalization is purely exogenous and check the exogeneity of the other variable such as legal origin (Acemoglu et al 2001). Acemoglu *et al* (2001) further argue that this test would not necessary lead to the rejection of instruments if they are invalid and then we should be cautious with the interpretation of the results. Once the p-values of this test is insignificant then it gives us confidence that our instruments are valid and can be relied upon. In addition, the correlation test was also used to test the relevance of the IV'S instrument.

CHAPTER FIVE

EMPIRICAL FINDINGS AND DISCUSSION

5.0 Introduction

This chapter presents the findings from the study and analyses them vis-à-vis the objectives. The first section summarizes the variables employed to shed light on the nature of data used. This is however presented in two parts. The next section presents the correlation analysis to determine whether the variables being tested are fit to be included in the analysis. The third section discusses the regression analysis of the study and determines whether there is resource curse or not. The concluding section of the chapter gives a summary of the chapter.

5.1 Descriptive Statistics

This section gives the descriptive summary statistics of the dataset used for the analysis and this includes a description of dependent and the independent variables used for the study.

Table 5.1 shows a description of the dependent and independent variables.

Variable

Variable	Obs	Mean	Std. Dev	Min	Max
2008-2012	58	8.1858	1.8272	0	11.4263
MIN	58	2876.244	9251.441	0	67587.49
RGI	58	0.5066	0.2031	0.04	0.98
POP	58	0.0205	0.0161	0.0020068	0.1152
GDPo	58	10200.33	17674.96	0	83556.25
INV	58	0.2455	0.1077	0	0.5369
INF	55	0.1204	0.8446	-4.148936	1.0189
TRD	58	0.7793	-0.4222	0	1.0189
FDI	58	0.0539	0.0768	-0.0158893	0.4858
HIN	58	0.1034	0.3072	0	1
HINC	58	0.1379	0.3478	0	1
UMI	58	0.3103	0.4667	0	1
LMI	58	0.2759	0.4509	0	1
LI	58	0.1896	0.3955	0	1
REG1	58	0 .2931	0.4592	0	1
REG2	58	0.2241	0.4207	0	1
REG3	58	0.1897	0.3955	0	1
REG4	58	0.1897	0 .3955	0	1
REG5	58	0.1034	0 .3072	0	1

The table represents descriptive statistics. MIN=Total natural resources rents scaled by GDP. RGI=resources governance index scaled between 0 and 1. POP=population growth rate. GDPo=Initial GDP per capita. INV=Gross Capital Formation scaled by GDP. Inflation= Inflation is measured by Consumer Price Index. TRD=Trade openness. HIC=High Income OECD measured as a dummy variable. HICN=High Income Non OECD measured as a dummy variable. UMI= Upper Middle Income measured as a dummy variable. LMI=Lower Middle Income measured as a dummy variable. LI=Low Income measured as a dummy variable. RED1=Sub-Sahara Africa measured as a dummy variable. RED2= South, East Asia & Pacific measured as a dummy variable. RED3=Middle East & North Africa measured as a dummy variable. RED4=Latin, North America & Caribilian measured as a dummy variable. RED5=Europe & Central Asia measured as a dummy variable.

We present descriptive statistics which cover the periods 2008-2012. The descriptive statistics reveals that between 2008-2012 the natural resources rent per capita gives us a mean of US$ 2876.244. This means that majority of the countries in our sample had US$ 2876.244 as rents per capita between 2008-2012. The population growth of 2% appears to be on the higher side for the period under review, probably it may be influenced by the underdeveloped countries in the index. The resource governance index (RGI) registers a mean of 0.5065. The RGI assigns a numerical score to each country with a satisfactory mark ranging from (.71-1.0). So the mean score of 0.5065517 shows that most of the countries in the index have unsatisfactory resource governance. The Gross Capital Formation scaled by GDP which representing (INV) registers a mean of 24% for the period over 2008-2012 suggesting that the countries under this study investment in fixed assets were 24% of its GDP but they can still do better. In addition the mean level of trade openness is 77.9% suggesting that the resource endowed countries under this index is quite high in terms of trade liberalization.

5.2 Correlation Analysis

The correlation matrix in table 5.1 gives an indication of the relation between real GDP per capita and the independent variables. It is evident from the table that there is a high correlation among the variables GDP per capita and initial GDP per capita of about (0.7700). It was expected because they are all about GDP so there is a possibility that they would correlate. In addition, there is also a partial correlation of (-0.6083) between inflation and GDP per capita, meaning that there is a link between inflation and log GDP per capita negatively. Furthermore it is apparent from the table that there is also a partial correlation between variables Initial GDP per capita and high income countries of about (0.6835). Additionally, variables like low income countries and log GDP also have a partial correlations of (-0.6545). Generally, it can therefore be concluded from the table that not all the variables highly correlated amongst each other to affect

the results. In other words the correlations amongst the variables are relatively low and hence, the problem of multi-co linearity is non-existent which therefore allows for all the variables to be included in the model.

Table 5.2 Correlation Matrix

	Log GDP per capita	MIN	RGI	POP	GDPo	INV	TRD	INF	FDI	HIN	HINC	UMI	LMI	LI	REG1	REG2	REG3	REG4	REG5
Log GDP per capita	1																		
MIN	0.2334	1																	
RGI	0.3584	-0.0252	1																
POP	0.0114	0.0301	-0.2906	1															
GDPo	0.7700	0.1515	0.3799	0.2927	1														
INV	-0.014	-0.096	-0.1471	-0.0683	-0.0554	1													
TRD	-0.0754	0.0645	-0.1371	0.1438	-0.0222	0.2034	1												
INF	-0.6083	-0.0524	-0.3439	-0.0062	-0.488	-0.0113	0.1155	1											
FDI	-0.5929	-0.161	-0.0202	0.0174	-0.3703	-0.0134	0.1667	0.4144	1										
HIN	0.5443	0.0144	0.5908	-0.2066	0.6835	-0.1027	-0.1761	-0.4376	-0.2760	1									
HINC	0.4420	0.1665	-0.1695	0.3889	0.3313	-0.0522	0.3463	-0.1928	-0.2934	-0.1359	1								
UMI	0.1958	0.1438	-0.0329	-0.2333	-0.1816	0.1405	-0.1733	-0.0142	-0.0773	-0.2279	-0.2683	1							
LMI	-0.3380	-0.1706	0.0393	-0.0177	-0.2988	0.0425	-0.0075	0.0496	0.0746	-0.2097	-0.1350	-0.4140	1						
LI	-0.6545	-0.1384	-0.3260	0.1239	-0.273	-0.1898	0.0561	0.4322	0.4707	-0.1643	-0.1935	-0.3245	-0.2986	1					
REG1	-0.4764	-0.1363	-0.2166	0.2049	-0.2758	-0.1260	0.1801	0.3726	0.3566	-0.2187	-0.0379	-0.1863	0.0263	0.4614	1				
REG2	-0.1903	-0.1341	-0.0524	-0.1547	-0.1709	0.2521	0.0002	-0.0327	0.0419	-0.0468	-0.2150	-0.1818	0.3158	0.0564	-0.3461	1			
REG3	0.1982	0.0470	-0.3020	0.3452	0.1611	-0.0060	-0.0904	-0.1097	-0.2700	-0.1643	0.3167	0.0557	-0.0034	-0.2340	-0.3115	-0.2600	1		
REG4	0.3138	-0.0795	0.5042	-0.2649	0.1109	-0.138	-0.111	-0.2154	-0.1366	0.2689	-0.0660	0.2459	-0.2002	-0.2340	-0.3115	-0.2600	-0.2340	1	
REG5	0.3045	0.4188	0.1352	-0.1987	0.2959	0.0285	-0.0101	-0.0935	-0.0669	0.2564	0.0283	0.1393	-0.2097	-0.1643	-0.2187	-0.1826	-0.1643	-0.1643	1

Source: Author's estimates. Notes: The dependent variable is the log of real GDP per capita as a measure of economic growth. All standard errors are in parentheses; significance at ***p<.001, **p<.05, *p<.10. the main variables of interest are Total natural resources rents per capita, RGI=resources governance index scaled between 0 and 1. POP=population growth rate. GDPo=Initial GDP per capita. INV=Gross Capital Formation scaled by GDP. Inflation= INF is measured by Consumer Price Index. TRD=Trade openness. HIC=High Income OECD measured as a dummy variable. HICN=High Income Non OECD measured as a dummy variable. UMI= Upper Middle Income measured as a dummy variable. LMI=Lower Middle Income measured as a dummy variable. LI=Low Income measured as a dummy variable. RED1=Sub-Sahara Africa measured as a dummy variable. RED2= South, East Asia & Pacific measured as a dummy variable. RED3=Middle East & North Africa measured as a dummy variable. RED4=Latin, North America & Caribbean measured as a dummy variable. RED5=Europe & Central Asia measured as a dummy variable.

5.3 Empirical results / Regression results

Now we present the results and discuss the findings from the empirical estimations. Table 5.3 provides the results of the Ordinary Least Squares (OLS) regressions. In this study we estimate three models. The reason is that we wanted to find out how various variables will influence growth. The regression results are presented in Table 5.3. In Table 5.3, we use the natural resource rents as the measure of natural-resource abundance. It also shows the results for three regressions, each model/column adding more controls.

Table 5.3: Natural Resource Endowment, Resource Governance and Economic Growth

	Model 1	**Model 2**	**Model 3**
	Coeff.	**Coeff.**	**Coeff.**
MIN	0.0000*	0.0000*	0.0001*
	(0.0000)	(0.0000)	(0.0000)
RGI		2.7113***	-0.0030
		(0.9469)	(0.3617)
MIN X RGI			-0.0001*
			(0.0001)
POP			-0.1053**
			(0.0408)
Initial GDP per capita			-0.0000***
			(5.86e-06)
INV			-0.1882
			(0.4316)
INF			-0.1169*
			(0.0608)
TRD			0.0366
			(0.4316)
HIC			1.6133***
			(0.1932)
LI			-1.0589***
			(0.1441)
HINC			1.4194***
			(0.2978)
UMI			1.1313***
			(0.1130)
REG1			-0.1784*
			(0.1054)
Constant	8.2385	8.2385	7.8940
	(0.0204)***	(0.2042)***	(0.3103)***
Test Statistics			
Prob>F	0.0834	0.0050	0.0000
R-squared	0.0545	0.1811	0.9721
Observations	56	56	53

Source: Author's estimates. Notes: The dependent variable is the log of real GDP per capita as a measure of economic growth. All standard errors are in parentheses; significance at ***p<.001, **p<.05, *p<.10. the main variables of interest are Total natural resources rents per capita, RGI=resources governance index scaled between 0 and 1. POP=population growth rate. GDPo=Initial GDP per capita. INV=Gross Capital Formation scaled by GDP. Inflation= INF is measured by Consumer Price Index. TRD=Trade openness. HIC=High Income OECD measured as a dummy variable. HICN=High Income Non OECD measured as a dummy variable. UMI= Upper Middle Income measured as a dummy variable. LMI=Lower Middle Income measured as a dummy variable. LI=Low Income measured as a dummy variable. RED1=Sub-Sahara Africa measured as a dummy variable. RED2= South, East Asia & Pacific measured as a dummy variable. RED3=Middle East & North Africa measured as a dummy variable. RED4=Latin, North America & Caribbean measured as a dummy variable. RED5=Europe & Central Asia measured as a dummy variable.

For example, column 1 in Table 5.3 uses only natural resources rents to predict growth, while column 2 adds the impact of the level resource governance index on growth. Column 3 is the regression for the model presented above with additional controls (trade openness, initial GDP per capita, variation in population, inflation, investment and some regional and income levels dummy variables respectively). In addition we added the term for the interaction between resource abundance and the level of resource governance or institutions. The interaction term captures the link between resource abundance and resource governance and economic growth. Note that a positive interaction term suggests that higher levels of good governance or institutions decreases the resource curse and eventually turns the resource curse into blessing.

5.3.1 Ordinary least squares (OLS) regression/hypothesis one

First, the coefficient of natural-resource abundance tends to be positive in the first model. In the second model when the governance is controlled for, the coefficient of natural-resource rents is still positive. In the case of model three when the interactive term of resource endowment and government is included, the coefficients of natural resource rents still appear to be positive. For several models, those coefficients are statistically significant.

This results or evidence supports the results found by (Lederman and Maloney, 2003, Brunnschweiler, 2007). They argue that when the proxies for natural resources are correctly measured, the natural resource curse would not be supported. This study shows that there is no evidence to support that when one uses a more clear-cut measurement of natural resource abundance, (i.e natural resources rents per capita) the slow grow effect of natural resources is not supported. Brunnschweiler (2007), used subsoil wealth per capita, averaged over 1994–2000 and

discovers that natural resources are blessing to an economy rather than curse. However, this result contradicts results found by some of the scholars such as (Sachs & Warner, 1995, Béland & Tiagi, 2009) etc. and also does not support the resource curse hypothesis. (Sachs & Warner, 1995, Béland & Tiagi, 2009) find a negative association of natural resources abundance and economic growth as a result of inaccurate measurement of natural resources. The use of primary products divided by GDP or total exports seems to be questionable proxy of natural resources and makes the results less reliable (Kerabegovic, 2009).

To examine the role of institutions in this model, we use the Revenue Watch Institute's RGI as a proxy for institutions. The regression result indicates that institutions do matter for economic growth. The coefficient on RGI is positive in model 2 and highly significant at the level of 1%. This results support the empirical evidence revealed by (Béland & Tiagi, 2009, Acemoglu *et al*, 2001). These scholars argue that institutions do matter in achieving economic growth. But in the model 3 when all the control variables are controlled for including the interaction term, the RGI or institutions gives quite an interesting result.

The coefficient of RGI is negative and insignificant. This evidence is consistent with what Limi (2007) found when he said "the effects of governance are not statistically significant". This is not necessarily contradictory to certain expectations of the international donor community. It means that governance is less likely to matter for growth over the very short horizon of a few years, as modeled in this paper. More convincing evidence might be derived from very long-term regressions", (pg 681).

5.3.2 OLS estimation with interaction term/ hypothesis two

An issue which normally occurs is how natural resources abundance and resource governance or institutions could interact. Even though we could realize that the natural resources may have a positive growth impacts, the evidence might probably be by the resource endowed economies with strong institutions or governance. To examine this issue further, we added an interaction term between natural resource abundance and resource governance in the equation. Furthermore, we discover that the coefficients of natural resource maintained its signs and significant and that of the resource governance index signs changes and also insignificant in the model three. In the case of the interaction term, the coefficient seems to be negative and significant as well, which gives indication that governance or institutions quality increases when the positive growth effects reduces. This result also contradicts our hypothesis that countries with good governance do experience positive economic growth.

It can therefore be argued that abundance natural resource improves economic growth rates in economies with low levels of governance or institutional quality. The stronger the institutions, the slower the positive growth effects from natural resources. Our evidence confirms the findings of (Brunnschweiler, 2007). He elucidates that the positive growth effects reduces as the institutional quality improves and also be possible that resource endowment has improved economic growth more in countries with low levels of good governance. In other words, countries with high levels of institutional quality experience lower levels of positive growth externalities of natural resource endowment.

In the case of the control variables, we find strong evidence suggesting that the higher the population growth the lower growth rate. That is, the coefficient is negative and significant. The

initial GDP per capita enters the OLS regression model positively and highly significant at a 1% level. This means that the conditional convergence hypothesis is not upheld. The effect of inflation is significant and negative at 10% level in our empirical model. This means that the higher the inflation rate the lower economic growth effect. Once inflation is high, it reduces the growth a particular country is expected to experience.

The coefficients of trade openness are positive supporting conventional argument promoting trade liberalization, even though the variable is insignificant. One could argue that the results might be influenced by a particular income group or regional group and so therefore, we included the dummy variables representing income group and regional group. The coefficient of High Income OECD variable is positive and significant at a level of 1% whiles that of the High Income Non-OECD variable is also positive and significant at a level of 1%.

In the of case of Low Income dummy variable, the coefficient is negative and significant, indicating that the lower the growth experienced by low income countries in the study, the higher the economic growth. The Upper Middle Income dummy variable also enters this regression equation as positive and significant implying that the higher the economic growth the higher the Upper Middle Income countries when all other regional income group are zero. We only controlled for the Sub-Sahara Africa as a regional dummy in the model. The coefficient is negative and significant. This clearly tells us that the countries in this study which are classified as Sub-Sahara Countries experience lower economic growth as compared to non Sub-Sahara countries.

5.4a Robustness Checks

First Stage: - Natural Resource Endowment, Institutions and economic growth

	First stage	
Table5.4a	Coefficient	Standard Error
MIN	-0.0002*	(0.00001)
MINxRGI	0.0002**	(0.0001)
POP	-1.6964	(2.0362)
GDPo	2.22e-07	(2.82e-06)
INV	-0.1009	(0.1957)
Inflation (log)	-0.0113	(0.0271)
TRD	-0.0577	(0.0493)
FDI	0.1184	(0.0851)
HIC	0.2503	(0.1940)
LI	-0.0459	(0.0679)
HINC	0.1456	(0.1522)
UMI	0.0525	(0.0611)
REG1	-0.0367	(0.0549)
Muslim80	-0.0013*	(0.0007)
Ethno-Linguistic fractionalization	-0.1196	(0.0960)
Legalorigin15	-0.0727**	(0.0282)
Constant	0.8596***	(0.1322)

Source: Author's estimates. Notes: The dependent variable is the log of real GDP per capita as a measure of economic growth. All standard errors are in parentheses; significance at ***p<.001, **p<.05, *p<.10. the main variables of interest are Total natural resources rents per capita, RGI=resources governance index scaled between 0 and 1. POP=population growth rate. GDPo=Initial GDP per capita. INV=Gross Capital Formation scaled by GDP. Inflation= Inflation (log) is measured by Consumer Price Index. TRD=Trade openness. HIC=High Income OECD measured as a dummy variable. HICN=High Income Non OECD measured as a dummy variable. UMI= Upper Middle Income measured as a dummy variable. LMI=Lower Middle Income measured as a dummy variable. LI=Low Income measured as a dummy variable. RED1=Sub-Sahara Africa measured as a dummy variable.

Second stage

Table 5.4b	Coefficient.	Standard Error
MIN	0.0010***	(0.0003)
RGI	2.0091***	(0.7507)
MINxRGI	- 0.0012***	(0.0003)
POP	-0.0674	(0.0496)
GDPo	0.0000***	(6.23e-06)
INV	0.2359	(0.4344)
Inflation (log)	-0.1426***	(0.0538)
TRD	0.1014	(0.1193)
FDI	-0.5183**	(0.2175)
HIN	-0.1955	(0.5262)
LI	-0.7402***	(0.1599)
HINC	0.3355	(0.3890)
UMI	0.6701***	(0.1468)
REG1	-0.1766*	(0.0921)
Constant	6.7624***	(0.4813)
Observations	42	
Sargan statistic (over identification test of all instruments)	0.2155	

Source: Author's estimates. Notes: The dependent variable is the log of real GDP per capita as a measure of economic growth. All standard errors are in parentheses; significance at ***p<.001, **p<.05, *p<.10. the main variables of interest are Total natural resources rents per capita, RGI=resources governance index scaled between 0 and 1. POP=population growth rate. GDPo=Initial GDP per capita. INV=Gross Capital Formation scaled by GDP. Inflation= Inflation (log) is measured by Consumer Price Index. TRD=Trade openness. HIC=High Income OECD measured as a dummy variable. HICN=High Income Non OECD measured as a dummy variable. UMI= Upper Middle Income measured as a dummy variable. LMI=Lower Middle Income measured as a dummy variable. LI=Low Income measured as a dummy variable. RED1=Sub-Sahara Africa measured as a dummy variable. RED2= South, East Asia & Pacific measured as a dummy variable. RED3=Middle East & North Africa measured as a dummy variable. RED4=Latin, North America & Caribbean measured as a dummy variable. RED5=Europe & Central Asia measured as a dummy variable.

The number of observations for the 2SLS reduced to 42 instead of 58. It is because the Ethno-Linguistic fractionalization variables that made the observations to reduce. Some of the countries do not have data and also it is mostly applied to African countries. The first stage outputs from the 2SLS are in the top panel of Table 5.4a. For this regression, the instruments used have passed the test of relevance. The coefficient of population who belongs to Muslims is negative and significant. This result is consistent with what La Porta *et al.,* (1999) found. They argue that the quality of governance declines with the increase in percentages of Muslims. Their argument is

premised on cultural theory that says that both Muslims and Catholics are more interventionist who supported state power and therefore are less reliable because bureaucracies that existed in the religious ranks makes it less reliant on the sovereign.

The coefficient of Ethno-Linguistic fractionalization is negative but insignificant. We are not surprised of the sign because Easterly and Levine's (1997) study indicates that ethnic diversity promotes poor public policy options and hence affect institutions. The coefficient of legalorigin15 is negative and significant. The negative sign clearly tells us that the quality of institutions becomes poorer when a more interventionist legal system like French civil law or common law is included. The results from the second stage of 2SLS presented in table 5b supports and re-emphasized the earlier results found in the OLS regression. In the second stage, the coefficient of the resource abundance is positive and significant at a level of 1% and supports the results of (Brunnschweiler, 2007). On the contrary, they do not support the resource curse hypotheses found by other scholars like Limi (2007). This means that increase in natural resources rents seems to increase economic growth.

The resource governance index or quality of institutions enters the regression equation as positive and significant, implying that the quality of institutions matter in this paper even after instrumenting for governance or institutions. In other words the increase of quality of institutions will increase the economic growth. The interaction term between natural resources abundance and governance or institutions is still negative and significant at a level of 1% which is stronger than that of the OLS regression even though the signs are the same. For the control variables,

initial GDP per capita maintains its sign as exhibited in the OLS regression, but with the population growth rate the sign changes but this time round it is not significant.

The coefficient of inflation is negative and significant which is not surprised to us. In fact we expect the sign to be negative and significant. This results indicates that the higher the inflation the lower the economic growth outcome. We again introduce another control variable called Foreign Direct Investment (FDI). FDI enters this equation as negative and significant, indicating that the higher the FDI inflows tend to lower economic growth.

5.4.1 Over identification test

We perform over identification test to check the validity of our instruments. This test assumes that one of the variables, say; ethno-linguistic fractionalization is purely exogenous and checks the exogeneity of the other variable such as legal origin (Acemoglu et al, 2001). Acemoglu et al., 2001, further argue that this test would not necessary lead to the rejection of instruments if they are invalid and then we should be cautious with the interpretation of the results.

Once the p-value of this test is insignificant then it gives us confidence that our instruments are valid and can be relied upon. In this study the Sargan statistic (i.e. over identification test of all instruments) is **0.2155** which indicates to us that our instruments are valid. The Sargan test

together with the first-stage results suggest that the instruments employed are valid. The correlation matrix table 5.5 sets to further explain the validity and relevance of the instrumental variables. It is evident from the table the IV'S (population who are Muslim's, Ethno-Linguistic fractionalization and legal origin) have a high correlation with the resource governance index or institutional quality of (-0.9998), (-0.7189) and (-0.8150) respectively. This clearly shows that the instruments are valid and relevant for the study.

Table 5.5 Correlation matrix for the instrumental variables

	LOG GDPPERCAPITA	MIN	RGI	MIN*RGI	POP	INITIAIGDP	INV	TRD	FDI	INFLAT	LI	HIN	HINC	UMI	ETHNOF	LEGALORIGIN	MUSLIM80	REG1
LOG GDPPERCAPITA	1																	
MIN	-0.0237	1																
RGI	0.5854	-0.0053	1															
MIN*RGI	0.0536	0.9791	0.1140	1														
POP	-0.1747	0.0197	-0.2622	-0.0251	1													
INITIALGDP	0.2812	0.1568	0.3799	0.2412	0.3357	1												
INV	-0.0118	0.0636	-0.0798	0.0276	0.0177	0.0763	1											
TRD	0.1581	0.0717	-0.1371	0.0553	0.1345	-0.0222	0.1971	1										
FDI	-0.0807	-0.0011	-0.0059	-0.0113	0.0336	-0.1438	0.1687	0.3492	1									
INFLAT	-0.0699	-0.0494	-0.1011	-0.0533	0.0370	-0.1285	-0.0790	0.1600	0.1239	1								
LI	-0.2452	-0.1504	-0.3260	-0.1541	0.0579	-0.2730	-0.3699	0.0561	0.3206	0.3012	1							
HIN	0.4804	0.0182	0.5908	0.1211	-0.1784	0.6835	-0.0533	-0.1761	-0.0643	-0.0933	-0.1643	1						
HINC	0.0688	0.1703	-0.1695	0.1141	0.4350	0.3313	0.1563	0.3463	-0.0419	-0.0775	-0.1935	-0.1359	1					
UMI	-0.1298	0.1499	-0.0329	0.1311	-0.2049	-0.1816	0.1474	-0.1733	-0.1809	-0.0848	-0.3245	-0.2279	-0.2683	1				
ETHNOF	-0.3703	-0.3285	**-0.7189**	-0.3179	0.2218	-0.3672	-0.2715	0.0626	0.1501	0.2111	0.4105	-0.3900	0.0313	-0.2460	1			
LEGALORIGIN	-0.0455	0.0221	**-0.8150**	-0.0614	-0.0243	-0.0151	0.1457	-0.0455	0.0221	-0.0150	-0.0614	-0.0243	-0.0151	0.1457	-0.4073	1		
MUSLIM80	-0.3135	0.2722	**-0.9998**	0.2004	0.3656	-0.0070	0.0909	0.0106	-0.0963	-0.1003	-0.0200	-0.2867	0.2336	0.0755	-0.0584	0.0900	1	
REG1	-0.2665	-0.1378	-0.2166	-0.1683	0.1100	-0.2758	-0.1964	0.1801	0.2664	0.2356	0.4614	-0.2187	-0.0379	-0.1863	0.7282	-0.3748	-0.2394	1

5.5 Conclusion

The evidence of our cross-country estimations shows no evidence of a negative slow growth effect of natural resource abundance. Using the new measures of natural resource abundance, (natural resource rents per capita) and Resource Governance Index, we instead find a positive direct association with economic growth over the period 2008–2012, which is confirmed when we consider the role of institutional quality or governance. The findings are consistently highly significant when we concentrate on mineral resources, which is consistent to some of the resource-and-growth literature but inconsistent with our hypothesis. Also, our estimations do not confirm the negative effects of resource abundance on economic growth as found in some of other studies.

Interestingly, adding an interaction term suggests that the beneficial resource effects diminish as institutional quality increases, although the overall effects remain strongly positive and significant. The positive results hold both in ordinary least squares (OLS) and two-stage least squares (2SLS) estimations which consider the endogeneity of institutions, and they are robust to the inclusion of a wide range of additional control variables from the growth literature. The findings strongly suggest that a more cautious approach is called for when assessing the development effects of natural resource endowment; the ‘‘resource curse’’ should be re-assessed before incurring a policy error made trying to avoid it. In the case of the control variables, we find strong evidence suggesting that the higher the population growth the lower growth rate. That is, the coefficient is negative and significant. Inflation is also negative and significant at 10% level, implying that the higher the inflation rates the lower economic growth. High Income OECD countries are also positive and significant as well, meaning that when all other income

level countries are zero or controlled for, these countries enjoyed higher economic growth and the same explanation applies to high income NON-OECD countries and Upper middle income countries as well. The result again reveals that regional dummy Sub-Sahara Africa countries in the sample of our countries experience lower economic growth.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter summarizes and concludes the study. It offers some policy recommendations and directions for future research. The first aspect deals with summary the findings of this study; the second section provides recommendations based on the findings from the thesis. Finally, the last section presents the conclusions of this study and directions for future paper.

6.1 Summary of Findings

This study set out to re-examines the linkage between natural resource abundance and economic growth and also the interaction between resource governance and natural resource abundance on growth based. This paper again used recently developed measures of resource abundance and institutional quality, which is natural resource rents per capita and Resource Governance Index respectively. We used this measure because we believe that, this more accurately captures a country's resource abundance as well as natural resource governance. This paper adopted standard empirical growth model after reading literature because of the link between natural resource wealth, growth and governance. After using the OLS estimator, we went on to use the 2SLS estimator because previous studies have argued that institutional quality may be endogenenous to growth. The institutional quality or governance was instrumented for by using variable like population who are Muslims, Ethno-Linguistic Fractionalization and legalorigin15.

Our cross-country estimations show no evidence of a negative slow growth effect of natural resource abundance. Using the new measures of natural resource abundance, (natural resource

rents per capita) and Resource Governance Index, we instead find a positive direct association with economic growth over the period 2008–2012, which is confirmed when we consider the role of institutional quality or governance.

The findings are consistently highly significant when we concentrate on mineral resources, which is consistent to some of the resource-and-growth literature but inconsistent with our hypothesis. Interestingly, adding an interaction term suggests that the beneficial resource effects diminish as institutional quality increases, although the overall effects remain strongly positive and significant. The positive results hold both in ordinary least squares (OLS) and two-stage least squares (2SLS) estimations which consider the endogeneity of institutions, and they are robust to the inclusion of a wide range of additional control variables from the growth literature. The findings strongly suggest that a more cautious approach is called for when assessing the development effects of natural resource endowment; the ‘‘resource curse’’ should be re-assessed before incurring a policy error made trying to avoid it.

6.2 Conclusions

This study has re-examined the literature that less endowed countries experience lower economic growth as compared to the resource endowed countries. The big push theory, however argue that being endowed with resource serve as a spring board to achieve massive economic growth because it gives enough financial resources to increase economic infrastructure and human capital. Using a new measure of resource abundance and institutional quality which was estimated as the natural resource rents per capita and resource governance index respectively, we discover new cross-country evidence which defy our hypothesis. Evidence revealed from both OLS and 2LSL estimations shows that natural resources have a positive direct link with real

GDP per capita growth over the period 2008-2012, even when quality of institutions are controlled for. In the case of the control variables, we find strong evidence suggesting that the higher the population growth the lower growth rate. That is, the coefficient is negative and significant. Inflation is also negative and significant at 10% level, implying that the higher the inflation rates the lower economic growth. High Income OECD countries are also positive and significant as well, meaning that when all other income level countries are zero or controlled for, these countries enjoyed higher economic growth and the same explanation applies to high income NON-OECD countries and Upper middle income countries as well. The result again reveals that regional dummy Sub-Sahara Africa countries in the sample of our countries experience lower economic growth.

Furthermore, there is no evidence to support the assertion that natural resource abundance negatively affects economic growth for instance via rent-seeking behavior. However, the positive growth effects may reduce as institutional quality improves.

To conclude, resource endowed economies may in fact been of a blessing, that is, help to achieve massive economic growth as often made to believe as curse. This finally recommended a different view on the growth effects of natural resource over the last three decays and is also important from a policy-making viewpoint.

6.3 Recommendations

Our findings have several important policy ramifications.

- One of the key measures that countries can do to derive the entire benefits of natural resources is to establish robust natural resource mechanisms to cater for uncertainties in

this sector. Once this has been established, it will go a long way to help countries to achieve the maximum gains. It is also important that we introduce explicit fiscal measures to manage the mineral revenues.

- Government of various countries should have a special account where windfall gains from the resource sector can be deposited to facilitate economic and social infrastructure projects. In order to boost invertors' confidence, it is also significant to have open terms of contracts and profit-sharing planning with natural resources developers and disclosure of independent external audits to ensure clearness in the resource management.

- In a situation where government cannot be trusted to manage the resource revenues efficiently, especially in developing economies, part of these funds can be allocated to provide funding to businesses. Our finding reemphasizes the need for countries to improve their resource governance. This is especially important because most countries are ranked unsatisfactory on the resource governance index. Strong exchange rate management can help to reduce the negative effects associated with natural resource and rather promotes investment.

- Resource rents are said to be volatile and it is imperative that for countries endowed with resources to have a rigid saving machinery or mechanism. In addition, allowing the resources to be in the ground cannot solve the problem. Rather, the issue is how to make sure that the revenues from natural resource extraction are invested in a more productive use such as public sector investment in health, infrastructure and education for the people

whiles genuine savings rate is raised. Cautious fiscal policy, maybe tied with natural resource fund, can help to steady and sterilize some of the revenues.

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Appendix: Resource Governance Index

Rank	Country	Resource Measured	Composite Score	Institutional and Legal Setting	Reporting Practices	Safeguards and Quality Controls	Enabling Environment
1	Norway	Hydrocarbons	98	100	97	98	98
2	United States (Gulf of Mexico)	Hydrocarbons	92	88	97	89	90
3	United Kingdom	Hydrocarbons	88	79	91	83	93
4	Australia (Western Australia)	Minerals	85	88	87	65	96
5	Brazil	Hydrocarbons	80	81	78	96	66
6	Mexico	Hydrocarbons	77	84	82	81	53
7	Canada (Alberta)	Hydrocarbons	76	67	72	74	96
8	Chile	Minerals	75	77	74	65	87
9	Colombia	Hydrocarbons	74	75	73	91	58
10	Trinidad and Tobago	Hydrocarbons	74	64	83	86	52
11	Peru	Minerals	73	88	83	56	55
12	India	Hydrocarbons	70	60	72	83	61
13	Timor-Leste	Hydrocarbons	68	77	82	70	28
14	Indonesia	Hydrocarbons	66	76	66	75	46
15	Ghana	Minerals	63	79	51	73	59
16	Liberia	Minerals	62	83	62	71	31
17	Zambia	Minerals	61	71	62	72	37
18	Ecuador	Hydrocarbons	58	70	64	65	28
19	Kazakhstan	Hydrocarbons	57	62	58	76	32
20	Venezuela	Hydrocarbons	56	57	69	67	18
21	South Africa	Minerals	56	69	31	75	72

22	Russia	Hydrocarbons	56	57	60	62	39
23	Philippines	Minerals	54	63	54	51	46
24	Bolivia	Hydrocarbons	53	80	47	63	32
25	Morocco	Minerals	53	48	60	56	42
26	Mongolia	Minerals	51	80	39	49	48
27	Tanzania	Minerals	50	44	48	68	42
28	Azerbaijan	Hydrocarbons	48	57	54	51	24
29	Iraq	Hydrocarbons	47	57	52	63	9
30	Botswana	Minerals	47	55	28	53	69
31	Bahrain	Hydrocarbons	47	38	40	59	58
32	Gabon	Hydrocarbons	46	60	51	39	28
33	Guinea	Minerals	46	86	45	43	11
34	Malaysia	Hydrocarbons	46	39	45	39	60
35	Sierra Leone	Minerals	46	52	47	59	24
36	China	Hydrocarbons	43	43	46	46	36
37	Yemen	Hydrocarbons	43	57	46	52	16
38	Egypt	Hydrocarbons	43	40	44	48	40
39	Papua New Guinea	Minerals	43	59	34	50	38
40	Nigeria	Hydrocarbons	42	66	38	53	18
41	Angola	Hydrocarbons	42	58	43	52	15
42	Kuwait	Hydrocarbons	41	28	43	36	57
43	Vietnam	Hydrocarbons	41	63	39	31	30
44	Congo (DRC)	Minerals	39	56	43	42	6
45	Algeria	Hydrocarbons	38	57	41	28	26
46	Mozambique	Hydrocarbons	37	58	26	37	37
47	Cameroon	Hydrocarbons	34	63	33	25	17
48	Saudi Arabia	Hydrocarbons	34	30	35	31	38
49	Afghanistan	Minerals	33	63	29	38	8
50	South Sudan	Hydrocarbons	31	80	17	35	8
51	Zimbabwe	Minerals	31	48	23	56	6
52	Cambodia	Hydrocarbons	29	52	13	46	20
53	Iran	Hydrocarbons	28	26	33	26	23

54	Qatar	Hydrocarbons	26	15	14	20	66
55	Libya	Hydrocarbons	19	11	29	15	10
56	Equatorial Guinea	Hydrocarbons	13	271	14	4	4
57	Turkmenistan	Hydrocarbons	5	13	4	0	3
58	Myanmar	Hydrocarbons	4	8	5	2	2