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The Complex Curse

Examining conditions for the resource curse

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Abstract

According to the resource curse hypothesis, natural resource abundance can lead to lower growth. The literature has mainly focused on economic explanations, but some scholars have suggested that the curse can be turned into a blessing with good institutions. It has been argued that Quality of Government (QoG) and constraints on executives are important conditions for economic growth but these aspects have not been studied in depth in the resource curse literature. This thesis therefore examines whether theories regarding QoG, constraints on executive and the resource curse are supported in an empirical regression analysis of more than 40 countries over 16 years. The thesis also presents an extensive literature review on the explanations of the curse. The main result from this thesis is that the curse is only evident in countries with low QoG. Countries with high QoG avoid the curse and benefits from their natural resources. The evidence for a curse is not as strong as some scholars argue. The political-institutional variables upraised here need to be explored by further research in order to test whether stronger effect on the resource curse exists.

Key Words: Resource Abundance, Economic Growth, Economic Explanations, Political-Institutional Explanations, Quality of Government, Constraints on Executive

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1 Introduction

This thesis examines the effect of natural resources on growth and deals with a classical account in the literature exemplified as the resource curse hypothesis (Sachs & Warner 1995). "We are fortunate to not have oil or diamonds" said Lenoardo Simao (the former minister of foreign affairs in Mozambique), which illustrates issues related to natural resources (Boshini et al 2007:613). The idea is that the economy of natural resource abundant countries tend to grow economically slower than countries with less abundance, and this has been highlighted by researchers during the past decades. The phenomenon has been labeled the "Resource Curse" and the countries of Algeria, Congo, Nigeria, Mexico, and Sierra Leone are good examples of the resource curse as the countries' growth have been poor despite richness in natural resources (Torvik 2009:46). Japan, Korea and Singapore, on the other hand, provide examples of countries with substantially lower amount of natural resources demonstrating a strong economic growth during recent decades. Natural resource rich countries such as Botswana, Norway, Canada, and Malaysia demonstrate that it is possible to avoid the resource curse, perhaps with the right tools of management.

The modern research on the resource curse can be said to have started in 1995 with the classical work of Sachs and Warner (1995a). The authors find a negative correlation between resource abundance and economic growth, suggesting that natural resource rich countries perform worse than natural resource poor countries (Sachs & Warner 1995a). It is however surprising that recent studies have used the same data from Sachs and Warner who analyze the years 1970-1990, when more recent data is available. The literature about the resource curse would furthermore benefit from an expansion of Sachs and Warner's model where alternative explanations and interaction effects are taken account for. The causal mechanisms that drive the alleged resource should also be theorized in more detail, in order to achieve a more complex understanding of why many resource rich countries fail to produce high rates of economic growth.

Quality of government (QoG) is one of the alternative explanations of the resource curse which should be both explained and tested in further depth. QoG is a concept that deals with the reliability, impartiality and the level of corruption of governmental institutions. Research on the subject has suggested that increasing level of QoG causes economic growth to accelerate (Rothstein & Teorell 2008). QoG also distinguishes impartiality as a morale

principle (Ibid), which is relevant due to cases of suspicious extraction from natural resources for personal benefits. QoG could possibly be an essential factor for avoiding the curse.
This study also examines how constraints on the executive affect growth in resource rich countries. This thesis is to my knowledge the first paper that examines interactive effects between natural resource abundance and constraints on economic growth.

The aim of this thesis is to provide new insight on the resource curse, and to explore some potential limitations in previous research. The present study examines Sachs & Warner's model with more recent data, time series methodology and an extended set of potential explanations. Also, the levels of QoG and growth have changed in many countries since 1990 and the model that Sachs & Warner (1995a) examined for countries in the time period 1970-1990 does therefore not necessarily predict economic growth as well in the post 1990-era. This study consequently contributes to the existing literature about economic growth and the resource curse on three points: First, by discussing important theoretical perspectives and limitations of previous research; Second, by analyzing an extended, empirical model of resource curse dynamics and economic growth; and Third, by interpreting the hypotheses that are derived from the theoretical literature in light of the estimated model. The text is organized accordingly, with a literature review and theory section which is preceded by a discussion of methods and data and at last an analysis section and a conclusion.

This analysis finds that the resource curse only is evident when it is conditioned by QoG. Resource abundant countries with low QoG are trapped in the curse while resource abundant countries with high QoG tend to acquire higher growth. The "curse effect" is otherwise not apparent. The effect does not hold with control variables and needs to be further tested. The effect of executive constraints was not statistically proven while the interaction for political system indicates that resource abundant parliamentarian countries experience higher growth than presidential countries with similar natural resource exports. The QoG interaction hypothesis is more supported than the other interactions. I suggest that further research needs to address issues of conditional effects (interactions) that have not been adequately dealt with in previous literature.

2 Theory

2.1 Literature review

Three different outcomes of resource abundance on growth have been established in the literature: negative, positive or no effect. The scholars who find a negative effect have dominated the field and also defined resource abundance as a "curse" (Sachs & Warner 2001:837). The findings were highlighted in several articles from the end of the 90s to the beginning of 00s (Gylfason 1999, Atkinson & Hamilton 2003).

The second outcome is a positive effect on growth and there are few articles that show evidence of such a relation. What has been highlighted is that different types of resources can lead to different results (Sala-i-Martin & Subramanian 2003) and some of the evidence is found over different time periods (Ibid, Lederman & Maloney 2003).

The third outcome in the literature does not find any effect of resource abundance on growth. According to these studies, there is not enough evidence for a curse. Studies in this part have tended to revolve around previous research (Van Der Ploeg 2011) and underlining the limitations of previous studies (Manzano & Rigobon 2008). I will discuss the outcomes more in detail below.

The general point of the resource curse is that countries with more natural resources tend to perform worse than countries with fewer natural resources. Several studies have illustrated this relation (Gelb 1988; Auty 1990; Gylfason 1999 et al). Others have reached similar results while using different measurements, some find evidence for a resource curse when addressing oil exports as an independent variable (Kaldor et al 2007; Ross 2001; Subramanian et al 2003; Smith 2004). Sachs & Warner (1995a) also find a negative effect of natural resource abundance when examining the effects of oil and minerals. They find the curse in 97 developing countries from the years 1970-1990 and argue that resource abundant economies reach slower growth (Sachs & Warner 1995a).

Previous research has also examined exceptions with resource abundant countries that experience a positive effect on growth, which constitute concerns to the resource curse argument. Botswana is a diamond rich country that has shown a remarkable growth in recent decades and has therefore been studied in depth. Why has Botswana succeeded? Some attempts to explain the success of Botswana have been put on the consequence of accountable officials, good governance throughout the regions, and an overall strong state capacity

(Astushi 2007:668). Others note that strong institutions were established before the resources were discovered (Eigan 2005:2). At the same time, an economic policy was well implemented to avoid external debt, which has been a concern for other resource abundant countries (Ibid). The combination of good governance and accountable officials points to a less problematic acquirement of natural resources. The government owns much of the shares in mining firms and also asserts control over the mining sector (Astushi 2007:676). Botswana has more successfully monitored and managed their resource sector than numerous other countries that are considered to be trapped in the curse. In these countries, the government might be in control of the natural resources, but it is often the lack of accountability and weak institutions that lead to adverse development (Amundsen 2014:176).
Alexeev & Conrad (2009) controlled for several variables – particularly dummies for East Asia and Latin America – and found that oil and mineral wealth had a positive effect on income per capita (Alexeev & Conrad 2009). Lederman & Maloney (2003) also find a positive correlation (Behbudi et al 2010:85).

Several quantitative studies do not find any particular evidence for a curse (Maloney 2002; Davis 1995; Herb 2005; Delacroix 1977). Some argue that both cases exist and that it is up to each country to turn a possible curse into a blessing (Van Der Ploeg 2011). Manzano and Rigobon (2008) find methodological issues with previous research and argue for a limited effect of resource abundance (Manzano & Rigobon 2008). Lederman & Maloney (2008) go further and argue that there is evidence of a negative correlation but that the description of a curse is problematic, and claim that interaction terms could lead to a better understanding of the relation (Lederman & Maloney 2008:52).

Empirical studies have found evidence for a negative, positive and no effect on growth. The findings in the literature would suggest more evidence for a curse. The major contributions come from Sachs and Warner (1995a). Sachs and Warner's model (1995a) measures several geographical, economic and political variables, but lacks some important explanations. Institutional indicators should be more emphasized which I have aimed to do in this thesis. There are also some methodological concerns. Sachs and Warner (1995a) use a cross sectional method, not time series, and this might imply that Sachs and Warner (1995a) might have overlooked time series variation. The scholars focus on 1970-1990 while this thesis puts focus on the years from 1980 to 2010. Even though it is interesting to look upon more years, it is unlikely that this will prompt new discoveries. With that said, some scholars address

criticisms about the years that Sachs and Warner examined as the 19070's debt crises resulted in a debt overhang in countries with much resources (Manzano & Rigobon 2001:22) The explanations of why natural resource lead to lower growth is often overlooked in this part. I therefore intend to correct these limitations and examine the hypotheses with a more appropriate methodological approach.

2.1.2 Economic explanations

Economic explanations have dominated the field of the resource curse and several important contributions have been put forward. This is not surprising as a large part of the research on this topic is also dominated by economists. The most notable discussion in the literature revolves around the Dutch disease. The Dutch disease argument was used to describe the 1960s when the Netherlands found natural gas in the North Sea. The gained wealth resulted in an appreciation of the currency, which made other Dutch exports less competitive. The government in the Netherlands had already used parts of the windfall from the gas revenues to establish a generous welfare system.[1] The country's income however dropped dramatically and ultimately resulted in an economic stagnation (Ibid).

The Dutch disease identifies the difficulty with high concentration in exports, and refers to some problematic side effects of a boom in natural resources. The problem arises when the boom causes an increase in spending, an appreciation in the currency, an increase in non-traded goods and a current account deficit (Frankel 2010:19). The Dutch disease model assumes that an economy has three sectors: a tradable natural resource sector, a tradable non-resource manufacturing sector and a non-traded sector (Sachs & Warner 1995a:6). The demand for non-tradable goods is greater if natural resource revenues increase and non-tradable goods are goods that usually are not traded (for example construction, communication, electricity). The disease evolves because most focus is put on the resource tradable sector, which leaves the manufacturing sector to shrink as it becomes less competitive to the appreciation of the currency (Ibid).

The consequences of the disease are determined by two types of effects: The spending effect and the resource movement effect (Fardmanesh 1991:711). The spending effect involves the process of exchange rates and if the exchange rate is fixed, the exchange of the foreign

[1] http://www.imf.org/external/pubs/ft/fandd/basics/dutch.htm

currency into the local currency increases the country's money supply, and domestic pressure would boost the domestic prices. This leads to a more expensive domestic market and makes a country's products less competitive.[2] If the exchange rate is flexible, the additional supply of foreign currency drives up the value of the domestic currency and causes the traditional manufacturing sector to shrink.

The resource movement effect happens when capital and labor shifts to the production of domestic goods which are not internationally traded, this is a reaction to the domestic demand and a consequence of the resource boom (Fardmanesh 1991:712, img.org). The boom will lead to an appreciation of the currency and a less competitive manufacturing sector. The manufacturing sector shrinks because of the boom. Exports in a country are therefore more expensive after the boom than before which ultimately could lead to lower growth.

Fardmanesh (1991) finds evidence supporting the Dutch disease hypotheses. He claims that Ecuador, Indonesia and Nigeria were affected by their oil boom as they reduced the agricultural sector due to the increase of their oil revenues (Fardmanesh 1991:714).

Other scholars such as Van Wijnbergen (1984) Krugman (1987) Gylfason (1997) have all stressed several models which imply a decline in productivity (Torvik 2001:286). Sachs & Warner (1995a) use growth effects to model for the Dutch disease and find evidence for the theory, as tradable manufacturing versus natural resource sector matters for endogenous growth (Sachs & Warner 1995a:22).

Another explanation revolves around rent seeking, rent describes income that is above normal, which means income that is higher than what a company or individual would have accepted normally (Khan 2000:3). Rent centers on individual activities while rent seeking refers to collective activities. Rent seeking is the attempt to an actor or a group to gain unrightfully access to a country's share of existing wealth without creating new wealth, through dubious actions. If the productivity increases, each group in a given society aims to receive a greater share of production by demanding more transfers (Torvik 2001:456). They seek to create, maintain or change the rights and institutions on which rents are based on (Khan 2000:4, Tollison 1988). The presence of rents gives incentives for groups to discover more beneficial ways of their resources. It occurs when people seek rents to reach benefits through the political arena, subsidies, tariffs or regulations that hinder competitors are

[2] http://www.imf.org/external/pubs/ft/fandd/basics/dutch.htm

examples of ways rent seeking can be attained. When it comes to natural resource rents, the issue of scarceness derives (Khan 2000:33). For example, if a country is highly abundant in diamonds, rents would create competition for the diamonds which require more diamonds, and more time invested in mining firms. It is therefore fundamental that the cost of attaining diamonds is equal to the benefits of having them. The problem with rent seeking arises when the costs are higher than the benefits. One way in how this has been observed is through time consuming rent seeking which crowds out time and investment in other fields, fields that could generate more growth in the long term, such as education (Wadho 2014:149).

Lane and Tornell (1995) argue that resource rich countries tend to provide extreme rent seeking as national politics is oriented to grabbing the rents earned by the natural resource endowments (Sachs & Warner 1995a:4). There are several studies that find rent seeking behavior within natural resource rich countries (Gelb 1988). This has also been found when looking at the case of Zambia: Zambian management of mineral dependence triggered a decline in growth due to rent seeking behavior (Auty 1991:183). The Zambian government approached rent seeking from urban groups as post independent policies aimed to organize rents from copper. The copper rents were managed through mines and factories and led way to an urbanization of the population in the 1970s, much higher than most other African countries (Auty 1991:174). Some scholars argue that natural resources lead to rent seeking (Auty 2001; 2004; Ross 2001). Rents can increase the rebels' desire to capture the state, even though the capability of the rebels to capture the state might be low (Ross 2004:344). Ross (2004) argues that resource rich governments often have tools to suppress rebellions as resource abundance leads to an increase of governmental expenses on military (Ross 2004:344). Auty (2001a) argues that rents prompt a certain type of political state. He claims that resource abundant countries tend to be "factional oligarchy" or "predatory states" that look after exclusive interests in the expense of a sound economic policy and social welfare (Auty 2001a:844) Another approach looked upon ethnicity and found that natural resources lead to rent seeking, poor institutions and low growth in fractionalized societies, but to little rent seeking in homogenous societies (Hodler 2006).

The literature has aimed to explain why resource abundant developing countries struggle more. These countries tend to be economically smaller, as well as more likely to specialize in the export of basic/primary commodities, such as oil (Frankel 2010:6). Prebisch and Singer explore why primary goods might be problematic for developing countries. The idea is that

the demand for manufactured goods is greater than for primary products. Because developing countries are more likely to specialize in primary goods, they will experience lower growth than developed countries which specialize in manufactured goods (Harvey et al 2010:367). Specializing in primary exports such as natural resources is challenging for the economy, because industrialized countries will benefit more than primary goods economies, due to a higher demand for manufactured goods (Frankel 2010:5). The finding holds that north and south will grow differently, as south has been more dependent on primary products, while in the north there have been producers of manufactured goods (Harvey et al 2010:367).
Harvey et al. (2010) find some support for the hypothesis (Ibid), while Frankel claimed that the effect from the Prebisch & Singer hypothesis was weak (Frankel 2010:34).

Another hypothesis concerns the instability in prices of natural resource products. The hypothesis suggests that it is the instability of the natural resource prices that can hurt the economy, rather than the trend which is suggested in the Prebisch & Singer hypothesis (Blattman et al 2007). It is believed that the prices of natural resources are difficult to predict, and therefore constitute a problem if, for example, the prices were to drop. Other studies reach a similar conclusion, arguing that the mechanism derives from the interaction between the specialization in non-tradables and the financial market imperfections – if the non-tradable sector disappears, the economy becomes more volatile (Hausmann & Rigobon 2003).

Some scholars reject the resource curse argument and claim that it is rather a matter of a debt overhang than a curse of resources. Manzano & Rigobon (2001) argue that commodity prices were high in the 70s and this might have induced resource abundant countries to use them as a guarantee. In the 80s, during a decline in commodity prices, resource abundant countries fell to a debt crisis, in other words, a debt overhang (Manzano & Rigobon 2001:22). As mentioned in this text, much of the literature focuses on the years 1970-1990, initially the same period that Sachs and Warner (1995a) examined.

I have in this section discussed important economic explanations that involve some of the most apparent arguments for why natural resource abundance can lead to a decline in growth. This thesis discusses economic arguments in relation to political-institutional arguments, which is rare in the literature. Even though most scholars are testing different factors (e.g. Sachs & Warner 1995a:1997), the explanations apart from the economic ones are not always studied properly. The economic aspects are nevertheless profoundly emphasized in the

literature. The Dutch disease and rent seeking have been the most apparent models at this juncture. I believe these models are helpful in partly understanding the resource curse, but other aspects are also important, such as political-institutional explanations which seem to have a limited discussion in the research presented in this section. Furthermore, I believe that the Prebisch-Singer hypothesis is of less importance when it comes to understanding the resource curse as it attempts to explain it through developing countries. The curse might be more evident in developing countries, but it is not exclusively the primary goods sector that is causing it. Recent research argue that it is not an issue of developing countries, or an abundance in primary products that causes low growth, but rather an issue of the quality of institutions (Mehlum et al 2006).

2.1.3 Political - institutional explanations

The political and institutional explanations were proposed later than the economic explanations, but have recently been emphasized by several scholars. A political-institutional label can be put on these explanations as they address institutions, governments, types of systems, among other factors, and how these factors affect the economic growth in resource abundant countries. These indicators usually appear in a conditional framework, for example that natural resources hamper growth only in countries with weak institutions. The overall idea is that bad institutions lead to inequality, intermittent dictatorship and a difficulty to prevent elites and politicians from taking it all. Good institutions would function coherently and impartially to provide services that benefit businesses and entrepreneurs – which provides a suitable institutional framework and consequently lead to sustained growth (see Keefer & Knack 1995, Hall et al 2010). It might however be difficult to adapt good institutions abruptly. Institutions are said to evolve and emerge as a result of social interactions. Sometimes institutions derive from deliberate initiatives, and sometimes they appear to be arbitrary (Hersberg 2010:8). A possible channel in how good or bad institutions have been created is suggested by Acemoglu & Robinson (2001). Acemoglu & Robinson's (2001) "The Colonial Origins of Comparative Development" stress that only the colonies where Europeans settled were given good institutions (Acemoglu & Robinson 2001:1369). The authors apply data on mortality rates of soldiers, bishops and sailors between the 17th and 19th centuries in order to test their hypotheses. The mortality rates of the early settlers affected the overall settlement, in which early institutions were formed. The institutional conditions were accordingly dependent on mortality rates, with lower rates indicating a smoother settlement and a more likely initiation of good institutions. The initial institutions continued in a path

dependent way, and this led to the standards of current institutions. Acemoglu & Robinson argue that the current performance among former colonies can be traced back to the initial institutions (Acemoglu & Robinson 2008:1370). They do not address natural resources specifically, but design a model to understand why weak institutions are formed. Resources might, however, have been a part of the establishment. The authors point to the fact that in extreme cases European colonizers initiated extractive states with weak institutional framework, to transfer resources back home (Acemoglu & Robinson 2008:1370). It is not specified whether these resources were especially crucial in the unfolding of less/more appropriate institutions.

Another model predicts that the ruling elites are more prone to weaken property rights if appropriable natural resource rents exist (Olsson & Congdon Fors 2007). The model expect that appropriable natural resource rents are proceeds from a state controlled natural resource sector, the revenues are assumed to flow into the governmental budget (Olsson & Congdon Fors 2007:1904). The ruling elite has an economic interest in the formal sector, but can attain rents from the natural resource sector. Strong property rights make the formal sector flourish. Weak property rights lead to a poorly functioned formal economy, but it makes the attainment of resource rents easier. The more available natural resource rents are, the more likely the ruling elite would choose weak property rights (Olsson & Congdon Fors 2007:1897).

The affiliation between elites and natural resources has also been stressed through institutions of extraction and redistribution in the case of Angola. Firstly, the institutions of extraction consist of petroleum companies, ministries of finance, tax authorities, the central bank and the ruling party (Amundsen 2014:172). In Angola, the institutions of extraction turned grabber friendly and not accountable (Amundsen 2014:184). Secondly, the institutions of redistribution involve power sharing, checks and balances, and accountability. The parliament and judiciary are vital in this aspect (Amundsen 2014:172). If the institutions of redistribution do not control the institutions of extraction the consequence could induce the elite to turn grabber friendly and not accountable. In Angola, the institutions of redistribution are weak, inefficient and sidelined by the president and the ruling elite (Amundsen 2014:178).

Rosenberg & Birdzell (2008) emphasize the importance of institutions to reward and allow innovation (Norman 2008). Another approach that has been discussed to a large extent is the work of Mehlum et al. (2006). They present important work on institutions and claim that

resource abundant countries with good institutions/producer friendly institutions receive higher growth than resource abundant countries with bad institutions/grabber friendly institutions. The article has been criticized for its measurements. Boshini et al. (2007) were skeptical of the measurement of Mehlum et al. (2006), as they believe that the quality of institutions needs to be put in relation to a country's type of resources. According to their argument, institutions matter if the type of resources is appropriate.

Mehlum, Moene and Torvik (2006) conceptualize institutions in two different types – grabber friendly institutions, where rent seeking and production are competing activities, while rent seeking and production in producer friendly institutions are complementary activities. In the grabber friendly institutions, there are gains from specialization in unproductive influence activities such as rent extraction, caused by poor bureaucracy, weak rule of law and corruption (Mehlum et al 2006:3-4). Resource abundance attracts scarce entrepreneurial resources out of production and into unproductive activities. With producer friendly institutions this would not happen, as resources attract entrepreneurs into production, which leads to a higher growth (Mehlum et al 2006:3). The idea that institutions matter for economic growth among natural resource abundant countries, challenge the economic explanations and the idea of the Dutch disease, as it suggests that exposed countries can turn the resource curse into a blessing. The countries are not only dependent on the effect of certain sectors and the negative consequences of natural resources (and the booms). Mehlum et al. (2006) measure institutional quality through a set of indexes centered on rule of law, bureaucratic quality, corruption in government, risk of expropriation index and a government repudiation of contracts (Mehlum et al 2006:13).

Boschini et al. (2007) argue that institutions matter, not in the way Mehlum et al. (2006) points out, but together with something they call appropriable resources. With technical appropriability, the authors refer to resources that cause a certain appropriative behavior – valuable resources that are easily transported, smuggled and sold are more attractive to short term illegitimate profits. Institutional appropriability refers to the effect of resources on certain types of quality of institutions. Problematic resources are more likely to boost the economy of a country with good institutions, rather than a country with bad institutions (Boschini et al 2007:594). The more problematic resources a country has, the more important it is to have good institutions in order to perform well (Boschini et al 2007).

According to Andersen & Aslaksen (2007), concerns should be raised with measures of institutional quality, as institutional performance indicators probably are endogenous to growth, and it is unclear exactly which elements of institutional quality are important for economic growth (Andersen & Aslaksen 2007:228). What do they mean with endogenous to growth? It is sometimes argued that institutions are endogenous, meaning that they are the result of economic growth rather than the cause of the growth. The authors control for several indicators, and find evidence that constitutional design matters for the resource curse. The curse is accordingly present more in presidential countries as well as in non-democratic regimes, but not in democratic parliamentary countries. The reason for this is not that apparent in the discussion. The discussion is, however, set on the idea that presidential forms of government are associated with less rent extraction and lower levels of taxation than parliamentary forms of government. The fear of a government crisis in parliamentary regimes creates strong incentives to maintain party discipline (Andersen & Aslaksen 2007:230). The reason could be that institutional quality differs within constitutions, as the authors admit that institutional quality is better in parliamentary countries (Andersen & Aslaksen 2007:233).

Political and institutional aspects are less apparent in previous research, but gained importance after the prominent contribution from Mehlum et al. (2006). I continue this section by a simple presentation of the mechanisms around constraints on executive which is a rather new variable that previous research has not examined to a large degree. I then discuss some aspects of QoG.

If we first look at constraints on executive, the idea is that natural resources function better in countries with strong constraints on the executive, than in countries with weak constrains on executives and is inspired by Acemoglu & Robinson (2001). The authors did not test it with resource abundance (Acemoglu & Robinsons 2001). Why would constraints on executive be profitable for countries? With strong constraints, the executive power might not be able to act without the assistance of other auditing sections. If there are competing institutions that hold veto power, executives might avoid risky policies (Allen & Beardsley 2005:5). Executives might find it more difficult to act in their own interest and personal gains if there are institutions auditing the executive branch. In a resource rich environment, with no constraints on executive, it could be that the distribution of income benefits a certain elite of society, perhaps the executive part. The example of a sub-Saharan country illustrates the problems. The president of Angola serves as the head of the state, government, army, and ruling party,

holds extensive power over nominations and faces few constraints. The president can dissolve the parliament, but the parliament cannot dismiss the president – the president is also at the top of the rich list in Angola (Amundsen 2014:176). This can explain why Angola is trapped in the resource curse and experiences immense economic/political problems.

Executive constraints are also highlighted in Lederman and Maloney's article (2008): "In search for the missing resource curse" where they put forward critical arguments against the curse. They explore the institutions by using constraints on executive as the main institutional factor. The authors have, in previous papers, been critical about the existence of the resource curse and find now that the growth effects of natural resources are conditional, hence arguing against the existence of a resource curse. It is, in their view, dependent on other factors such as institutional quality, management and coordination (Lederman & Maloney 2008:48). My concern about their way of using executive constraints is that they consider measuring institutional quality with this variable. I am not sure if constraints of executive should be used as the key institutional variable as the variable measures how independent an executive is, but does not involve other important institutional factors. I explain this in the QoG discussion below. They do not make any clear arguments for why executive on constraints is used to measure institutional quality, and they also fail to discuss the mechanisms around it. I believe that institutional quality shall also contain other elements, and that executive constraints can be used as an extension, which also highlights the importance of this aspect.

QoG is a concept that could be applied to understand institutional – and governmental quality. Rothstein & Teorell (2008) define QoG "as the idea that democracy in the form of political equality on the input side must be complemented with impartiality on the output side of the political system, in the exercise of public authority" (Rothstein & Teorell 2008:170). QoG is the exercise of power and not the access to power. They highlight impartiality as a key word, and their definition suggests that "when implementing laws and policies, government officials shall not take into consideration anything about citizen/case that is not beforehand stipulated in the policy or law" (Ibid). QoG or quality of institutions? First of all, these two concepts are very closely related and some scholars would perhaps argue it is the same thing. I discuss these two as I have encountered a more precise definition of QoG with clear dimensions. When it comes to quality of institutions, some scholars use the framework to capture one or a few institutional dimensions (Lederman & Maloney 2008), while others capture many dimensions (Kauffman et al 2008). Second, with the QoG definition produced by Rothstein and Teorell, there are at least two clear distinctions between QoG and the use of institutional

quality in the aspect of natural resources. A) The rule of law has been used in examining institutional quality (see Kolstad 2009, Norman 2008). The classical use of rule of law has been abandoned in Rothstein and Teorells definition as they argue it lacks proper definition and consists of ambiguous elements (Rothstein & Teorell 2008:181). They further believe the use of rule of law is incorporated in their definition, as "no one is above the law", and that an impartial government institution would embrace this notion (Rothstein & Teorell 2008:182). B) There are not always clear divisions between institutions and democracy. Sometimes, it remains rather unclear what institutional variables measure, and if democracy is a part of the framework or not. In the QoG discussion, Rothstein and Teorell conclude that there are both theoretical and empirical reasons for why democracy is not part of the QoG definition. There are no guarantees that the majority will respect the impartiality principle, and there is no simple relationship between "democracy in the access to public power and impartiality in the exercise of public power" (Rothstein & Teorell 2008:178-179).

The concentration on QoG contributes to the existing research. The research focuses on certain models such as grabber versus producer friendly institutions, rule of law, or institutions in relation to types of resources as explained in this chapter, but not a fully extended version, in the way QoG constitutes and is defined. It is therefore important to account additional aspects on the institutional spectrum.

2.2 Hypotheses

In the previous section I have presented a review of the explanations related to the curse and attempted an appraisal and critique. In this section I present the hypotheses that will be tested in order a) to provide an updated test of the resource curse as such and b) to extend this research by taking into account the theoretical and methodological concerns that have been expressed above especially as regards the quality of institutions, the political regime type and the constraints on executives.

As it is clear from the text above, the very existence of the curse is contested in the literature. As such the "baseline" hypotheses in this thesis are as follows.

Hypothesis 1: Natural resource abundance leads to decreasing economic growth.

Hypothesis 2: Natural resources abundance leads to increasing economic growth.

In the economic part the discussion was positioned on the Dutch disease, rent seeking and primary versus manufactured goods. I have argued that the first two have been vital in the literature, but that the third is of less importance. The present study is inspired by Sachs & Warner's seminal article "Natural Resource Abundance and Economic Growth" and aims to test the main findings in that paper with more sophisticated methods and an updated dataset. One of the variables they use is openness, which I will also test. This might capture a part of the Dutch disease explanation, as it is believed that resource abundant countries become less competitive due to an appreciation of their currency. The outcome of openness to trade would consequently not be as notable. A concern with some parts of this literature is describing the resource curse as a fact (Sachs & Warner 1995a, 1997). The question of how resource abundant countries should manage their resources to avoid the curse is therefore somewhat overlooked. If there are exceptions, could there not be a way to avoid it?

One hypothesis will be tested from the economic part:
Hypothesis 3: Increasing openness to trade leads to increasing economic growth.

One concern in this study is that it does not involve enough economic indicators. The models in previous research are often based on equations and extensive models. I would have problems in bringing something new to the research in establishing new or modify other economic models. My focus in the analysis is therefore on political-institutional explanations as this is the "new or recent" aspect of my research.

The political and institutional section reviewed previous research on institutions and political systems. One of my main concerns was the lack of operationalization on the institutional variable, on which I aimed to provide a more sufficient explanation with the use of QoG. In Mehlum et al. (2006), the focus is on creating an adequate model, but the discussion of what institutional quality is, and how it affects growth in relation to natural resources, is not that evident. Another ambitious model is presented by Boshini et al. (2007) which puts institutions in relation to types of natural resources. I am not convinced that the types of resources are totally decisive, even though it sometimes might be part of the matter. My overall understanding is that quality of institutions matter, despite the type of resources in resource abundant countries, and evidence from Mehlum et al. (2006) and the discussion about the success story of Botswana supports this claim. It can also be subject to political systems which Andersen & Aslaksen (2008) argue. Issues could however be raised regarding political

systems, and the institutional quality in each respective system. Political systems and institutions are closely connected and it is a known belief that institutions are worse in presidential systems (Gerring et al 2009:327).

Three hypotheses will be tested from the political – institutional section:

Hypothesis 4: Natural resource abundance leads to increasing economic growth in countries that have a parliamentary political system.

Hypothesis 5: Natural resource abundance leads to increasing economic growth in countries that have high quality of institutions.

Hypothesis 6: Natural resource abundance leads to increasing economic growth in countries with constraints on executives.

The research question - Why might resource abundance hurt rather than help a country's economy, and how can resource abundant countries receive higher growth? – has been designed from my criticisms of previous literature. There are, nevertheless, aspects that are not fully discussed. In the next section two of these are briefly approached.

2.3 Democracy and Corruption

This thesis sets out to understand and explain a few factors' impact on economic growth. Democracy is a factor that is not tested in this analysis. The QoG discussion would suggest it is not democracy that leads to growth, but QoG (see previous QoG discussion). The idea of democracy's impact on growth is also contested. Some authors point to the evidence that several authoritarian regimes perform better than some democratic regimes (Keefer 2007). Others say that we do not have a certain answer to this question (Przeworski & Limongi). Keefer (2007) believes that it is a matter of young or old democracies, and claims that young democracies are often more fractionalized, and have more incentives to choose the "wrong" option than older democracies (Keefer 2007:814). That might be a reason why young democracies fail. Another view is that democracy is good for growth. Olsson also approaches the time aspect, but in a different way. Olsson argues that an authoritarian regime might have successful growth for a generation or so – if a strong dictator created good economic policies – but that only democracies would reach growth over generations since they would be less dependent on the consequences (successes or failures) of a leader (Olsson 1993:572).

Another topic that has not been emphasized is corruption which is included in the QoG variable. It is believed that corruption can fuel political instability through polarization, inequality and impropriety, as corruption attacks the foundation of democratic systems.

Instability is therefore empirically said to reduce growth (Hodge 2011:4). Corruption can, however, also be good for growth in some aspects. The two channels of government size and trade openness are said to foster growth by reducing government consumption and increasing trade openness (Hodge 2011:3). There are several scholars who find that corruption hinders economic growth (Tanzi 1998; Gupta et all 2008, Rock & Bonnet 2004; Pelegrini & Gerlagh 2004), and they argue that the effects of corruption are limited. Johnson et al. (2007) find through their measurement that corruption does not seem to prevent growth, even though it might be problematic for many countries (Johnson et al 2007:25). Mendez and Sepulveda (2006) find that corruption has a positive impact on growth in the long run, at low levels of incidence (Hodge 2011:2).

There are many aspects of growth to account for, in which I have had to make a decision on what to include. This study deals with other possible explanations then discussed in this section, because I have found them more plausible for the analysis and the intention of the study.

3 Data and Method

3.1 Data

The analysis covers 43 countries (see the list of countries in Appendix A) and the years of analysis is between 1984-2010. Some concerns can be raised with some variables that are not well distributed, namely GDP growth, which is dealt with a log of GDP. Furthermore, the dataset has been balanced. See appendix A for full variable descriptions.

A growth variable has been computed by the lag of GDP per capita for each observation of GDP per capita. The log of GDP growth is used as the dependent variable, and the data has been gathered from the World Bank's indicator of GDP per capita, ppp (constant international dollars.

The main independent variable is natural resource exports. The definition of resource abundance in Sachs & Warner's study is "resource wealth", and the measurement to distinguish abundance is the share of primary exports in GDP (Sachs & Warner 1995a). The variable to distinguish resource abundance follows the same distinction. To distinguish natural resources, this study has generated a variable from World Development Indicators for

agricultural exports, ores & metals exports, and fuel exports (appendix A). The variables measure exports in percent of merchandise exports. The higher the percentages, the more resource abundance. The analysis covers a large extent of natural resources with these variables. One problem is that more resources should be covered in the variable, such as mineral abundance. There are countries that are highly dependent on precious stones and minerals which will not be covered completely. Due to limitations in the data found in WDI, this is expected for the use of this particular variable. Other resources and minerals are unfortunately not measured in exports.
The natural resource variable has been differenced in this study since a Breitung Unit-Root test indicates that it is not behaving in a stationary manner (see Figure 1 In appendix B), the value is not significant which is an indication that the data is not stationary.

The QoG, ICRG will be the model's main institutional measurement. It is the mean value of ICRG variables "corruption", "law & order", "bureaucracy quality", scaled 0-1, with 1 indicating higher QoG. These are also aspects that measure the institutional strength, such as the quality of bureaucracy and judicial system.

Regime type/political system is used as an indicator of the type of political system. It is written as both political system and regime type in the text. The index takes several questions into consideration before labeling countries (see a more precise explanation at QoG codebook 2013:170). It measures 0="presidential", 1="strong presidential elected by assembly", 2="parliamentary". The database of political system has collected the data and is available in QoG database.

Constraints on executive is taken from the political constraints index III. The index ranges from 0 to 1, with higher scores indicating more constraints (see QoG codebook 2013:223). The variable measures political constraints. Another variable measured constraints on executive but the scale was more problematic so I decided to use political constraints.

Openness measures openness to trade and is collected by Penn World Table (PWT). Openness calculated as the total trade (exports+imports) as a percentage of GDP. (See appendix A for a full explanations of the variables)

3.2 Control variables

Structural

There are other variables that have been included in the models, a few of them account for structural elements. One of these is ethnic fractionalization. Previous research suggests that countries with many rival groups have more intensified conflicts. Also in highly fractionalized societies weaker property rights make productive activities less attractive, and are due to a decrease in aggregate production (Hodler 2006:1368). Another way in which structural factors can influence economic growth is the aspect of dismemberment (ethnic split between borders) which could lead to a greater ethnical disparity with possible economic stagnation as a consequence (Engelbert et al 2002:1113).

The indicator for ethnic fractionalization measures was used by Fearon, in his article "Ethnic and cultural diversity by country" in 2003. The content has been gathered from Stanford. The intermediate organization of the scale is 0=perfectly homogenous and 1=highly fragmented (QoG 20dec 2013:199).

Sachs and Warner examine the effects of geography by using four geography and climate variables; percent of land area within 100 kilometers of the sea; kilometers to the closest major port; the fraction of land area in the geographic tropics and a malaria index – and find that geographical variables do not eliminate evidence for the resource curse (Sachs & Warner 2001:830). Another scholar argues that countries benefit from being smaller, even though he does not examine resource abundance (Alesina 2003:308).

The geographical aspect will be examined with the size of population.

The size of population is a PWT variable and measures population in thousands (QoG codebook 2013:313).

Structural explanations such as these seem to be rather limited in the resource curse literature, in both theoretical models and empirical results. I therefore suspect less impact by structural variables. It might be that some scholars are directing focus on other than geographical variables. Education is another variable that focus has been put on. In the literature, at least three mechanisms have been addressed. First, an economy develops human capital from education and other types of training. Human capital improves workers' productivity which would cause economic growth (Behbudi et al 2010:84). Second, education might increase the innovative capacity of the economy, create new awareness of products and technologies that promote growth (Behbudi et al 2010:84). Third, education can help a transformation from

older to newer processes/technologies and also initiate a better implementation of these (Hanushek & Wössmann 2010:245). More and improved education is elementary for rapid economic development and can also be helpful in resource abundant environments (Gylfason 2001:851).
Education, average schooling 25+ men and female, measured in years. This variable is thought to cover the education aspect.

Most of the data has been collected from the QoG time series cross sectional dataset, updated in December 2013.

3.3 Method

This study applies multiple regression analysis. The primary focus is positioned on the variables covering the hypothesis, and especially the aspects of QoG, constraints on executive and political system. The regression analysis is a way of predicting an outcome variable from one or several predictor variables and to understand possible relationships (Field 2013:198). The analysis cover aspects from previous literature but the data on the variables in the multiple regressions do not involve more than 43 countries and ideally it would involve more cases. Field (2013) assert that the accuracy of a model is based on two questions, 1) does the model fit the observed data well? 2) Can the model be generalized to other samples? (Field 2013:214). Apprehension of the results and generalization will be further explored in the analysis section.

The regression equation - $Y=a+bx+e$ – represents the dependent variable (Y), the intercept (a), the slope coefficient/ (b), the independent variables (x) and the residual (e) which is the variation in the model that the independent variables cannot explain (Ibid). The main focal relationship in this thesis is the effect of natural resource exports (independent variable) on GDP growth (dependent variable) which has been established by previous literature. The significant level between 0,01 and 0,1 will be used in the analysis to sort out if the regression coefficients are statistically significant.

The estimation of the regressions is performed by the statistical software program Stata. The program makes it easier and possible to deal with time series cross sectional data. The advantage of using Stata is that it consists of a command syntax which makes it easy to save the regression analysis and to receive quick results.

The methodological issues of concern for this study are namely three components. The first part is longitudinal research which involves data across time periods. The second is the distinction between random effects and fixed effects models. The third is the introduction of interaction effects. I will briefly introduce these three parts but not go into details.

In order to examine the resource curse and test different explanations, the choice of method is important. The thesis will involve data from 1980s onwards in most cases. As data availability is an issue here. The analysis will also contain all available countries. The choice of method is longitudinal research, because the analysis involves time periods. The use of cross sectional data only and not cross sectional time series data (e.g. Sachs & Warner 1995a; 1997 Gylfason 1999; 2001;) has been criticized. In the past, Manzano & Rigobon (2001) argue that the use of cross sectional data and GDP as independent variable may have had an impact on the coefficients and this might imply that Sachs and Warner (1995a) overlooked time series variation (Manzano & Rigobon 2001:2). In this analysis, changes in GDP (GDP growth) will be used as the dependent variable.

The primary purpose of longitudinal research is to be able to describe patterns of change and to set a direction of causality (Menard 2002:3). There are two basic methods when it comes to the analysis: fixed effects models and random effects models. The analysis is performed with random effects models.

This study deals with interaction effects. The advantage of dealing with interaction is the possibility to understand one independent (X) variable's impact on the dependent variable (Y) when another independent variable (Z) is absent, or present which the equation below illustrates (Brambor et al 2006:65).

$$Y = \beta_0 + \beta_1 X + \beta_2 Z + \beta_3 XZ + e$$

B3 specifies the conditional nature of the model. In this study I am interested in examining three hypotheses that capture interaction terms, QoG, regime type and constraints on executive. These variables are considered as Z in the interaction equation and could be understood as conditional in nature. The resource curse literature is divided when it comes to the use of interaction effects but the most notable discussion in the political-institutional part

are from studies that employ interactions (Mehlum et al 2006; Boshini et al 2007; Andersen & Aslaksen 2008).

4 Analysis

The analysis is presented through random effects models First of all, a simple regression model is performed to see if there is any correlation, and a potential resource curse. The main independent variable has been differenced, as the Breitung Unit-Root test estimates that the variable has a unit root. The test for Breitung Unit Root was not significant which could be interpreted as an indication that there are signs of non stationarity. The test assumed that "time trance" - values for a variable always tend to increase each year and therefore correlates with other variables that are decreasing/increasing over time – was not a problem for the "Resource Abundance (resource exports)" variable.

The first regression presents a significant positive effect which does not indicate a curse. The effect on GDP growth is + 4.1 with one unit increase of resource abundance.

Table 1. Restricted model, with estimate of the resource curse effect

Dependent: log GDP Growth	**Table 1**
dif.Resource Abundance	4.163 ***
	(1.61)
.	
Intercept	201.6***
	(21.1)
R2	0.04
Countries	152
Observations	3006

* p<0.10, ** p<0.05, *** p<0.01

The second table is a very simplified version of Sachs and Warner's original model with resource abundance, trade and education included. The direction of resource abundance is negative but it is not significant. The other variables are significant and indicate an expected positive direction.

Table 2. Simplified replication of S&W's model.

Dependent: log GDP Growth	**Table 2** ***S&W replication***
dif.Resource Abundance	-1.27 (12.1)
Openness to Trade	5.48(2.0)**
Education	60.8(12.1)***
Intecept	-384 (1385)***
R2	0.35
Countries	43
Observations	258

* p<0.10, ** p<0.05, *** p<0.01

In table 3 I run random effect models with the main predictors. In model 1, resource abundance has a positive and significant effect of 12.9 on log of GDP growth, which is the opposite of what we would initially expect from the resource curse argument. Regime type and executive constraints are not significant. The QoG variable has a strong and positive effect indicating that higher QoG leads to an increase in GDP growth.

The second model includes control variables and the effect of regime type, QoG and executive constraints are not significant. Openness to trade has a significant and positive effect of 5.5 on growth. Education also specifies a significant positive effect on growth. The coefficient for ethnic fractionalization is significant and negative which means that more homogenous countries are more likely to reach higher growth in this model. These predictors follow the expected direction. The overall model explains about 39 percent of the variance and the intercept is at -409. The political-institutional variables do not hold a significant effect when control variables are included.

Table 3. Regression with main coefficients and control variables

Table 3

Dependent: Log GDP Growth	**Model 1**	**…**	**Model 2**
dif.Resource Abundance	12.9(4.4)***		4.09 (11.9)
Regime Type	102.69(78.5)		38.0 (129.9)
QoG	512.5 (119.5)***		379.9 (239.9)
Executive Constraints	-152.8(149.1)		12.8 (146.8)
Openness to Trade			5.5 (1.8)***
Education			37.8 (16.7)**
Ethnic Fractionalization			-306.6 (174.4)*
Population			0.0002(0.0)
Intercept	-22.2 (66.2)		-409.5(191.)**
R2	0.07		0.39
Countries	43		43
Observations	1160		258

* p<0.10, ** p<0.05, *** p<0.01

In table 4a, I proceed by including the interactions specified by each of my hypothesis. The first model includes the first interaction term between regime type and resource abundance. Resource abundance is not significant and is a concern for the interaction. The regime type dummy has a positive effect on GDP growth when resources are zero. The interesting result from this model is the significant interaction effect which predicts 32.1 unit increase on growth in parliamentarian countries. The coefficient for parliamentarian countries is 36.6 (4.5+32.1). Figure 1 illustrates this linear relation.

In the second model, the second interaction term is included, which is between resource abundance and QoG. The evidence provides interesting result about QoG and the resource curse. For the first time in the analysis, is there a significant effect of a resource curse, which is conditioned by QoG. In other words, resource abundance has a 26.9 negative effect on log of GDP growth in countries with low QoG. The interaction term for QoG indicates a significant 74.2 stronger effect in countries with high QoG. The effect of resource abundance in high QoG countries is 47.3. Figure 2 illustrates this linear relation.

Furthermore, the interaction term for executive constraints was not significant and is explored in figure 3. In the third model I include all interactions and control variables and the first thing to note is that the interaction effects no longer are significant even though the directions of these variables are in line with theory. The limited number of cases might be one reason for why the effect is not there. This suggests a weakening of my model and the effects of QoG and regime type because the effect does not hold with control variables. The variables for QoG, openness to trade, education and ethnic fractionalization are significant but the main independent variable is not significant. Openness to trade has a significant effect of 5.4 on log GDP growth with one unit increase of openness which suggests that openness is important for growth. Education has a significant effect of 36.6 and ethnic fractionalization has a significant negative effect -292 on log of GDP growth. This means that more years of education and more homogenous countries have a significant correlation on log of GDP which is in line with theory.

Multicollinearity could be an issue for the full model (3) and if VIF values for variables are over 10, it could be problematic for the model. In appendix B figure 2, the test for multicollinearity is presented for model 3 in table 4, with high VIF values for the variables of natural resource exports and interaction for QoG, indicating some concerns. The VIF values for model 2 (figure 3, B) are all below 10 which indicates less concerns with multicollinearity.

Table 4a. Interaction effects with main coefficients

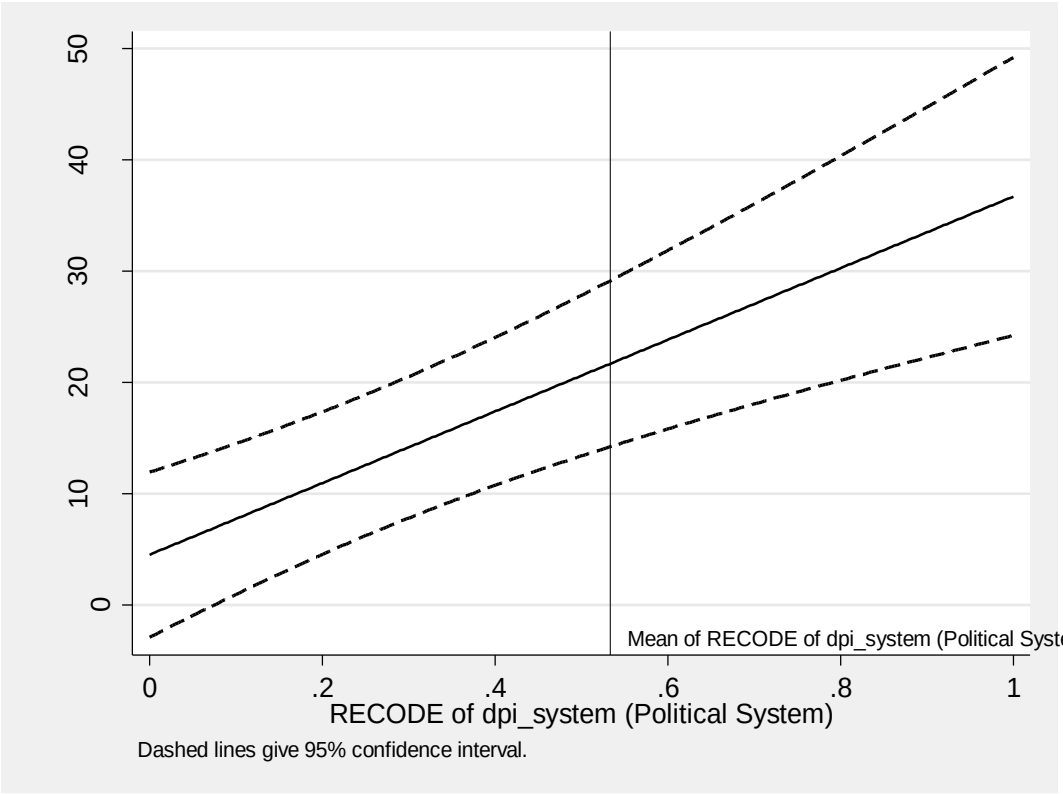
Table 4

Dependent: Log GDP Growth	**Model 1**	**Model 2**	**Model 3**
dif.Resource Abundance	4.5 (3.6)	-26.9 (10.4)***	-19.6 (25.7)
Regime Type	252.8 (62.8)***		23.3 (137.2)
QoG		650.8 (104.8)***	411 (240)*
Executive Constraints			-3.4 (155.8)
Interaction 1	32.1 (7.1)***		9.4 (28.7)
Interaction 2		74.2 (19.4)***	21.1 (66.4)
Interaction 3			20.1 (32)
Openness to Trade			5.4 (1.8)***
Education			36.6 (17.1)**
Ethnic Fractionalization			-292.9 (172.5)*
Population			.0002 (.0001)
Intercept	189.76 (40.1)***	-119.1 (49.0)**	-416.9 (193.4)**
R2	0.005	0.08	0.4
Countries	43	43	43
Observations	1160	1160	258

* p<0.10, ** p<0.05, *** p<0.01

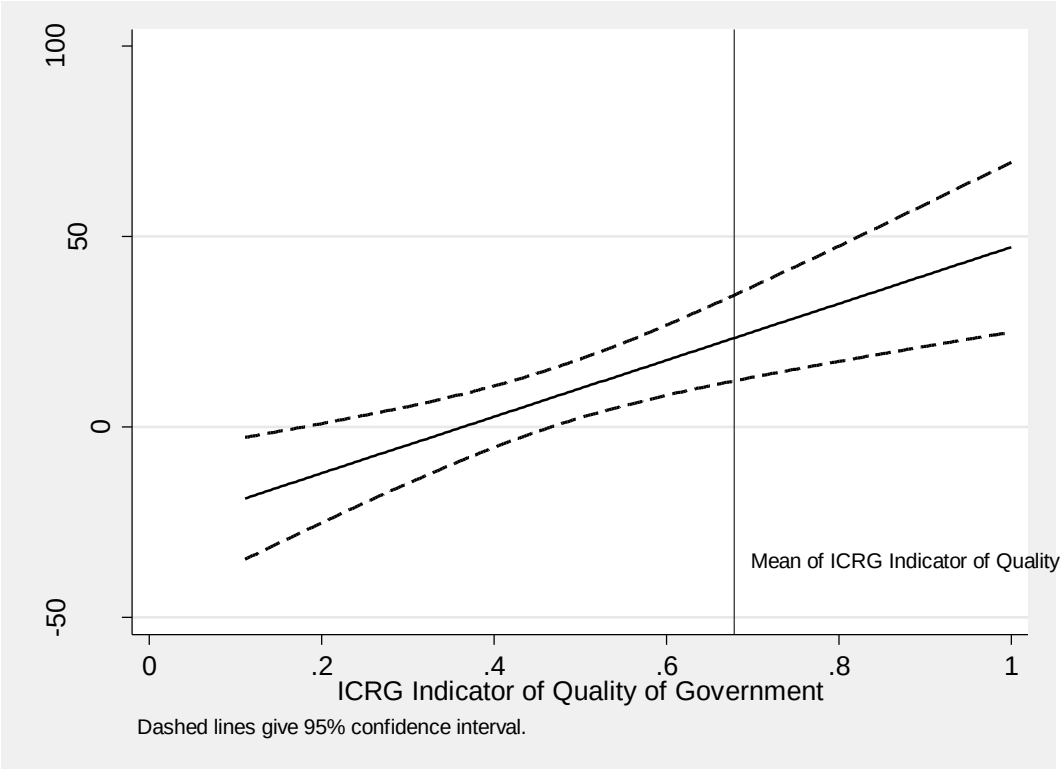
Comments: Interaction 1: Regime Type multiplied with total natural resource exports. Interaction 2: QoG multiplied with total natural resource exports. Interaction 3: Constraints on Executive multiplied with total natural resource exports. Sources: QoG standard database December 2013. World Development Indicators.

Figure 1. Interaction effect between political system and resources on growth



The graph for figure 1 illustrates the marginal effect of differentiated resource abundance on GDP, when it's conditioned by political system, parliamentarian or presidential. Countries that are parliamentarian (1) are more likely to benefit from their resources than countries that are presidential (0). Note that the curse is not evident in this graph in either political system. The difference is however large, about 5 percent in presidential countries to about 35 percent in parliamentarian countries which suggests that parliamentarian countries are more successful with their resources.

Figure 2. Interaction effect between QoG and resources on growth



The graph for figure 2 demonstrates the marginal effect of differentiated resource abundance on GDP, conditioned by QoG. Countries with low QoG are trapped in the curse while countries with high QoG experience a positive effect on growth according to the analysis. Countries with less than about .4 of QoG show 0 or a negative effect of resource abundance. Countries with higher than .4 show a rising effect on growth. The countries with QoG lower than 2 have an effect of around -20 percent on GDP by their natural resources.

Figure 3. Interaction effect between Constraints on executive and resources on growth

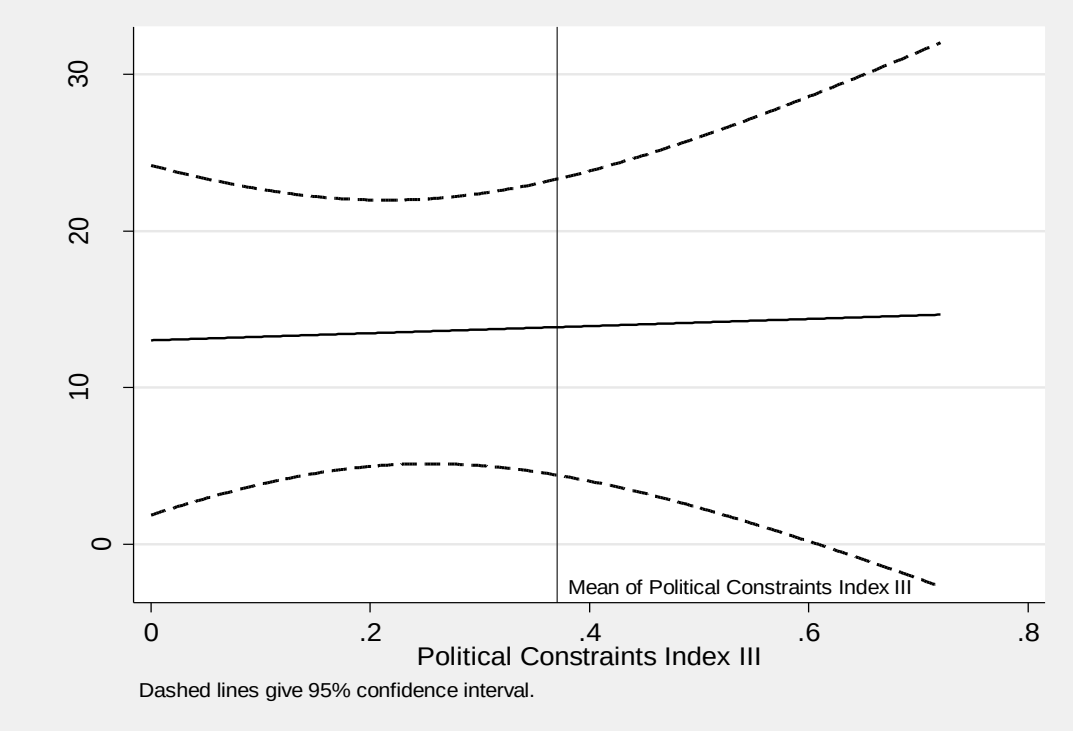


Figure 3 presents the marginal effect of differentiated resource abundance on GDP; when constraints on executive is conditioned. The effect is not significant and not evident for this variable.

The final table (4b) includes control variables for each interaction, to examine if the effect for regime type and QoG holds with control variables. The results indicate that the effect is weaker and not significant for the interactions of regime type, QoG and executive constraints when control variables are included. The QoG variable is the only explanatory variable that estimates a significant effect but the interaction and the main independent variables are not significant. There are 258 observations which are only about a fourth of the observations for the interactions (4a) without control variables. Even though the effect diminishes with control variables, the overall conclusion from the tables is that high QoG is important. The result indicates that countries with high QoG can avoid the resource curse but it is not entirely supported in this analysis.

Table 4b. Interactions with control variables

Table 4b.

Dependent: Log GDP Growth	**Model 1**	**Model 2**	**Model 3**
dif.Resource Abundance	-2.6 (10.3)	--18.6 (22.3)	--8.1(13.4)
Regime Type	111.3 (106.5)		
QoG		436.9 (184.7)**	
Executive Constraints			26.3 (144.5)
Interaction 1	13.5 (19.2)		
Interaction 2		40.9 (37.8)	
Interaction 3			25.6(36.2)
Openness to Trade	5.4(1.9)***	5.5(1.7)***	5.7 (1.9)***
Education	50.1(15.4)***	35.9(16.5)**	56.3 (12.8)***
Ethnic Fractionalization	-351.(167.7)**	-301.5(170.6)*	-408.8 (165.3)**
Population	.00002(.0)	.0002(.0)	.0002 (.0)
Intercept	-261. (164.3)	-422.1 (166.0)**	-259.2 (172.4)**
R2	0.3	0.4	0.37
Countries	43	43	43
Observations	258	258	258

* p<0.10, ** p<0.05, *** p<0.01

Comments: Interaction 1: Regime Type multiplied with total natural resource exports. Interaction 2: QoG multiplied with total natural resource exports. Interaction 3: Constraints on Executive multiplied with total natural resource exports. Sources: QoG standard database December 2013. World Development Indicators.

Six hypotheses were established in the theory section and I will evaluate these based on the results that have been processed from the regression tables. The first two hypotheses derive from the general section:

Hypothesis 1: Natural resource abundance leads to decreasing economic growth.

Hypothesis 2: Natural resource abundance leads to increasing economic growth.

For the first hypothesis, I expected to see a negative relation of resource abundance but this was not evident in my models except for the interactions so the results do not support hypothesis 1. The second hypothesis was statistically significant in 3 of my models and the results support hypothesis 2, stating that natural resource abundance leads to increasing

economic growth. There are some issues with these hypotheses because the effect does not seem to more than the first but it the effect is not particularly strong.

Hypothesis 3: Countries more open to trade experience increasing economic growth.
The third hypothesis capture the openness to trade aspect on growth and it showed a significant positive effect which means that the analysis support this hypothesis.

Hypothesis 4: Natural resource abundance leads to increasing economic growth in countries that have a parliamentary political system.
Hypothesis 5: Natural resource abundance leads to increasing economic growth in countries that have high quality of institutions.
Hypothesis 6: Natural resource abundance leads to increasing economic growth in countries with constraints on executives.

Three hypotheses from the political-institutional section were established to test if these variables have any effect on the curse. The variable for political system had a significant and positive effect in one interaction but the variable for differentiated resource abundance was not significant which makes the hypothesis less trustworthy. The results do not fully support the hypothesis for this sample and the graph does not show any negative effect of being parliamentarian or presidential, in other words, the curse is never evident in this interaction. Hypothesis 5 captured the QoG aspect and the results in the interaction supported the hypothesis as resource abundant countries with high QoG has a significant and positive effect on growth. The curse is evident in countries with low QoG. The results presented in the second interaction model support hypothesis 5, but the effect is not significant with control variables so it is not entirely supported. The results for constraints on executive do not support hypothesis 6 as the effect was not significant or positive. The effect should perhaps be stronger and evident for more cases in order to do a confident generalization.

The effect of a curse and the interaction variables are not particularly strong in the full model or with control variables, which means that further research will have to determine if especially QoG and executive constraints have a stronger effect in other samples. Research including interactions is the way forward, because it is not only interesting to distinguish the existence of a potential curse, but also examine why some countries experience a curse while others a blessing. This study highlights the importance of interactions due to the fact that the

curse was not apparent until the QoG interaction was included. Further research should also attempt to test if QoG and executive constraints have stronger effect in a larger sample. As previously mentioned, research involving panel data has provided less evidence for a curse than cross country analysis, and the results in this thesis also raise concern for the curse as "an empirical fact".

5 Conclusion

Resource abundant countries are said to be trapped in a curse. Recent research has, however, raised concerns about the evidence of such a curse. This analysis has aimed to cover over 40 countries across 16 years to examine the curse with political-institutional variables.

The primary reasons for this study have been to a) contribute with an up-to-date research on the topic, as much of the previous literature examines older time spans and b) distinguish political-institutional variables and QoG as important features, which has not been especially noticeable in the literature. The overall motivation for this study was to be able to give explanations of the resource curse context. This has been done with an extensive literature review where the most important contributions in the field have been discussed. The aim was also to discuss possible "new" explanations, which has been considered through QoG and constraints on executives. Much of the inspiration and interest in the resource curse has originally derived from the works of the Norwegian scholar Ragnar Torvik.

The research question for this thesis was "why might resource abundance hurt rather than help a country's economy, and how can resource abundant countries receive higher growth?" The first part of the research question has had many answers, which the literature review has aimed to cover. There are economical factors such as the Dutch disease and rent seeking, which help in giving an understanding to a resource rich context where a resource boom can lead to problematic outcomes. This analysis has, however, put more focus on more recent ideas; that it is the lack of quality of institutions or low QoG that could be the conditional factor behind a curse. Consequently, the answer given from this analysis on how countries receive higher growth is through high QoG. The aspect of QoG measures whether resource abundant countries are conditioned by QoG when it comes to increasing or decreasing effect on growth. The results from this thesis indicate that the curse only is evident and significant when it is conditioned by QoG. Countries with low QoG are more likely to be trapped by the curse, while countries with high QoG are likely to experience higher growth. The effect does

not hold with control variables but there are indications that QoG is important. The results of this thesis are therefore not entirely as strong as one could hope for, and I believe that covering more than 43 countries would be optimal for further research. Many Sub-Saharan African countries have been important for previous analysis, but due to lack of data, countries from this region are not involved in the analysis. This aspect also concerns the lack of "developing" countries in the analysis. The resource curse is sometimes described as a problem of "developing" countries, but this thesis has not put much emphasis to distinguish it in the analysis.

More research on the topic should aim to examine the effect in a larger database with more observations, to see if the effect holds with control variables. Further research should also examine the indicators with fixed effects to observe if there is a relationship, and if it is stronger or weaker with fixed effects. Furthermore, I would also suggest supplementary qualitative case studies with the aspects of QoG and constraints on executive included. The resource curse literature mainly involves quantitative research but more information could be derived from case studies.

This thesis has provided concerns for Sachs & Warner's statement that "empirical studies have shown that this curse is a reasonably solid fact. It is not easily explained by other variables or by alternative ways to measure resource abundance" (Sachs & Warner 2001:837). In this study, the effect of a curse is not evident, and it is explained through alternative variables. There is no significant effect of a curse, but instead some evidence of a blessing.
This is an attempt to bring something new to the resource curse literature and I believe that this study has highlighted the importance of looking at QoG and applying panel data methods. Also, examining conditional effects is a good way forward. This analysis puts some concerns to the classical resource curse argument stating that resource rich countries will experience negative growth rates. According to this study, it is not natural resources that lead a country into a curse, but the lack of high Quality of Government.

Appendix A

The countries of analysis

Africa
Algeria – Egypt – Morocco – Tunisia

Asia
China – India – Indonesia – Japan – Republic of Korea – Malaysia – Singapore - Turkey

Europe
Austria – Belgium – Denmark – Finland – France – Greece – Ireland – Italy – Netherlands – Portugal – Spain – Sweden – Switzerland – United Kingdom

North America
Canada – United States of America.

Middle and South America
Argentina – Bolivia – Brazil – Chile – Colombia – Costa Rica – Ecuador – El Salvador – Guatemala – Mexico – Panama – Peru – Trinidad and Tobago

Oceania
Australia – New Zealand

Variables

GDP Per capita, ppp (1980-2011): from wdi. "GDP per capita based on purchasing power parity (PPP)". PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States." (QoG codebook 2013:342). A Growth variable created of GDP per capita to measure per capita growth in Percent.

Total Exports: Agricultural exports (1962-2011), consist of SITC section 2: Agricultural raw materials comprise SITC section 2: Hides, skins and furskins, raw, Crude rubber (including synthetic and reclaimed) Cork and wood Pulp and waste paper, Textile fibers (other than wool tops and other combed wool) and their wastes (not manufactured into yarn or fabric), Crude animal and vegetable materials, n.e.s. excluding divisions 22, 27, and 28 (SITC Rev 4)[3].
Ores and metals exports (1962-2011), consist of SITC, divisions 27, 28, 68: Crude fertilizers, other than those of Division 56, and crude minerals (excluding coal, petroleum and precious stones), Metalliferous ores and metal scrap, Non-ferrous metals (SITC Rev 4).
Fuel exports (1962-2011), consists of SITC section 3: Mineral fuels, lubricants and related materials, Coal, coke and briquette, Petroleum, petroleum products and related materials, Gas, natural and manufactured electric current (SITC Rev 4).

Constraints on Executive (1946-2012): "The index is composed from the following information: the number of independent branches of government with veto power over policy change, counting the executive and the

[3] http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=28

presence of an effective lower and upper house in the legislature (more branches leading to more constraint); the extent of party alignment across branches of government, measured as the extent to which the same party or coalition of parties control each branch (decreasing the level of constraint); and the extent of preference heterogeneity within each legislative branch, measured as legislative fractionalization in the relevant house (increasing constraint for aligned executives, decreasing it for opposed executives). The index scores are derived from a simple spatial model and theoretically ranges from 0 to 1, with higher scores indicating more political constraint and thus less feasibility of policy change. Note that the coding reflects information as of January 1 in any given year." (QoG codebook 2013:223)

Regime type/political system (1975-2012): "Systems with unelected executives (those scoring a 2 or 3 on the Executive Index of Political Competitiveness – to be defined below) get a 0. Systems with presidents who are elected directly or by an electoral college (whose only function is to elect the president), in cases where there is no prime minister, also receive a 0. In systems with both a prime minister and a president, we consider the following factors to categorize the system: a) Veto power: president can veto legislation and the parliament needs a supermajority to override the veto; b) Appoint prime minister: president can appoint and dismiss prime minister and / or other ministers; c) Dissolve parliament: president can dissolve parliament and call for new elections; d) Mentioning in sources: If the sources mention the president more often than the PM then this serves as an additional indicator to call the system presidential (Romania, Kyrgyzstan, Estonia, Yugoslavia)." (QoG codebook 2013:170). It calculates 0=presidential 1=strong president elected by assembly 2=parliamentary. The variable has been computed into a 0 & 1 =0 and 2=1. To clarify, Presidential is coded as 0, and parliamentary is coded as 1.

QoG (1984-2012) "The mean value of the ICRG variables "Corruption", "Law and Order" and "Bureaucracy Quality", scaled 0-1. Higher values indicate higher quality of government (QoG codebook 2013:103). For full explanation see codebook.

Ethnic Fractionalization (1946-2012): "Restricting attention to groups that had at least 1 percent of country population in the 1990s, Fearon identifies 822 ethnic and "ethnoreligious" groups in 160 countries. This variable reflects the probability that two randomly selected people from a given country will belong to different such groups. The variable thus ranges from 0 (perfectly homogeneous) to 1 (highly fragmented)." (QoG codebook 2013:199).
*A variable is not a part of the appendix if it is not described more in detail in the codebook than what is already included in the data section.

Appendix B

Figure 1.

Breitung unit-root test for t_exp

Ho: Panels contain unit roots	Number of panels = 43
Ha: Panels are stationary	Number of periods = 27
AR parameter: Common	Asymptotics: T,N -> Infinity
Panel means: Included	sequentially
Time trend: Not included	Prewhitening: Not performed

	Statistic	p-value
lambda	-0.2905	0.3857

Figure 2.

Variable	VIF	SQRT VIF	Tolerance	R-Squared
dif_exp	12.91	3.59	0.0775	0.9225
press_parl	2.42	1.56	0.4128	0.5872
icrg_qog	3.16	1.78	0.3169	0.6831
h_polcon3	1.51	1.23	0.6631	0.3369
int1	2.96	1.72	0.3383	0.6617
int2	14.66	3.83	0.0682	0.9318
int3	6.52	2.55	0.1535	0.8465
pwt_openk	1.21	1.10	0.8293	0.1707
bl_asy25f	2.14	1.46	0.4669	0.5331
fe_etfra	1.25	1.12	0.8005	0.1995
pwt_pop	1.19	1.09	0.8377	0.1623
Mean VIF	4.54			

Figure 3.

Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
dif_exp	9.61	3.10	0.1041	0.8959
icrg_qog	1.03	1.02	0.9695	0.0305
int2	9.57	3.09	0.1045	0.8955
Mean VIF	6.73			

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