The Resource Curse in Perspective

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CONTENTS

I. Introduction:

In a series of influential articles Jeffrey Sachs and Andrew Warner demonstrate that a higher proportion of natural resources in a country's merchandise exports reduces economic growth (Sachs & Warner, 1995, 1999, 2001). Sala-i-Martin (1997), using Bayesian Averaging of Classical Estimates, rank Sachs & Warner's measure of resource intensity as the sixth variable most robustly correlated with economic growth. Using different measures of resource intensity and a different econometric model from Sachs and Warner, Gylfason & al. (1999), also find a negative and statistically significant effect of natural resource abundance on economic growth.

While there are several definitions of the "resource curse", this paper considers it as the empirical observation that resource abundant countries have a lower rate of economic growth than their resource poor counterparts. This "resource curse" leads to lower development outcomes in countries that are abundant in natural resources. Understanding the causes of the resource curse is of crucial importance because "so many countries are economically dependent on their natural resources" and "resource-rich countries tend to be wealthy countries with poor people (Stiglitz, 2006; pg 134)." The fundamental reason why we need to solve the resource curse paradox is to remedy the causes for the inefficiency in the use of natural capital. Knack & Keefer (1995) show that institutions are a major determinant of economic performance because they structure economic incentives and favor the allocation of capital towards activities that promote growth.

This paper is to shed light on the role of institutions in affecting countries' ability to use their natural resources in a way that promotes growth. North (1991) defines institutions as "the humanly devised constraints that structure political and economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights) (North, 1991, page 97)."

This paper concentrates on the influence of institutions on economic growth given countries resource endowments because institutions account for the overwhelming differences observed in long-run economic performance across countries (Hall and Jones, 1998). According to Hall and Jones (1998) social infrastructure explains over half of the variation in output per worker across

nations.[1] This is more than what can be account for by differences in measures of physical capital per worker and human capital per worker combined (see Hall and Jones, 1998).

Several researchers hypothesize that institutional quality determines economic performance, but lack of data on institutional quality has inhibited the testing of this proposition (Knack & Keefer, 1995). Knack and Keefer (1995) using a new set of data on institutional quality demonstrate that the security of property rights and the enforcement of contracts have a large positive and statistically significant effect on economic growth. Sachs and Warner (1997), in an empirical evaluation of *The Sources of Slow Growth in African Economies,* recognize that policies and market-supporting institutions have a larger influence on growth than resource abundance. They do not determine what institutional parameters contribute most to growth in resource abundant countries. Using a similar estimation methodology as Sachs and Warner (1997), Mehlum et al (2006) find that an interaction term between institutional quality and resource abundance is both positive and significant. Further, they find that the results found by Sachs & Warner (1995) are contingent on sample selection. Overall, their results show that the "resource curse" is contingent on the quality of institutions.

Most of the researchers who examine the effect of institutions on growth use only one measure of institutional quality. Barro (1996) uses a measure of the respect of the rule of law to control for institutional quality in his investigation of democracy's contribution to growth. Sachs and Warner (2001) also use respect-of-the-rule-of-law to control for institutional quality in their study of the resource curse. The rationale for using one measure of institutional quality is the strong positive intercorrelation of measures of institutional quality. However, this approach is not very helpful to determine what institutional parameters affect countries' ability to use their resources efficiently. Using one measure of institutional quality does not capture *which* institutions are correlated with specific economic outcomes.

Sachs & Warner (2001) find that the resource curse effect is robust to the inclusion of various geographic and ecologic variables such as latitude, the proportion of a country's population that lives within the tropics, and the proportion of a country's land area where malaria is prevalent.

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[1] Hall and Jones (1999) define social infrastructure as a society's ability to (1) promote economically divertive activities such as theft and corruption, and (2) promote economically productive activities such as investment in physical and human capital.

These results echo those of Gallup & al. (1998) who found that geographic variables, such as latitude, and measures of ecologic conditions, such as malarial prevalence, constrain economic development. Acemoglu & al (2001) using a cross section analysis of the effect of institutions on economic growth find that the geographic and ecologic variables proposed by Sachs & Warner (1995) loose their explanatory power once institutions' influence on growth is accounted for. Likewise, Rodrik & al (2004) find that once the effects of institutions on growth are controlled for, geographic variables have weak direct influences on growth. Rodrik & al (2004) conclude that institutions have a stronger influence on economic growth than geographic variables. In addition to geographic & ecologic variables' effect on growth, the influence of historic & demographic variables' effects on growth has also been thoroughly investigated.

In an empirical evaluation of Africa's growth experience, Easterly & Levine (1997) find that ethnic fragmentation is a key determinant of poor policy choices. More fragmented countries have states that promote rent seeking and wealth redistribution at the expense of productive activities (Easterly & Levine, 1997). Alesina & al (2003) similarly find that measures of ethnic, linguistic, and to a lesser extent religious fragmentation, determine the quality of various determinants of institutional quality.[2] Landes (1999) argued that religions, particularly Catholicism and Islam, negatively influence states willingness to provide public goods, and as a consequence, inhibit economic growth. LaPorta & al. (1999), in a statistical evaluation of the determinants of the quality of government, also find that Catholic and Muslim countries have lower government quality.

The specific objective of this paper is to provide a perspective on a series of question that arise as to what *institutions* affect the resource curse. Is there a resource curse effect once we control for the effects of corruption on growth? How does the security of property rights affect countries' use of their resources? How does fiscal and monetary policy quality influence natural resources effect on growth? In sum, what instrumented institutional quality parameters have the greatest influence on a country's use of its natural resources?

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[2] Alesina & al. (2003) evaluate determinants of institutional quality such as business quality, the size of government, the quality of public infrastructure, investment in human capital. Alesina & al. (2003) use these variables as a proxy for effectiveness of the government in the provision of public goods in general.

In light of the intense discussion on whether institutions account for the effects of geography on growth, this study will check the robustness of the institutional variables that affect the resource curse against the most commonly used geographic and ecologic variables used in the literature. Further this study will check the robustness of our results against historical variables of religious affiliation and ethnic fragmentation to determine if initial conditions determine institutional quality in the context of resource abundance.

The remainder of this paper is organized as follows. In the next section we review the literature on the causes of the "resource curse", and the literature on institutions and economic performance. In section III, we outline the econometric model that we will estimate. In section IV, we interpret the results of my regressions. Section V concludes this essay.

II. Literature Review:

The "resource curse" was first coined by Auty (1993). He coined the term "resource curse" to describe a series of developing countries with poor economic performances in spite of their abundant mineral resources. Auty argues that mineral resources provide an incentive to governments to adopt inefficient policies that hamper growth. There are two main families of explanations for the "resource curse": Dutch disease mechanisms and rent-seeking behaviors. The Dutch Disease is an umbrella term that describes various macroeconomic perturbations induced by the inflow of resource revenues that reduce the productivity of non-resource sectors in a way that is detrimental to overall economic performance (Corden, 1984). Rent seeking describes the set of behaviors through which economic agents optimize their private benefits by engaging in activities that are wasteful and economically inefficient (Murphy & al., 1993).

a. The Dutch Disease and the Resource Curse:

The term "Dutch Disease" was coined to describe the increase in unemployment and the decrease in growth that happened in the Netherlands, following the discovery of natural gas in the North Sea (Corden, 1984). In the case of the Netherlands, the influx of royalties from the exploitation of natural gas led to an appreciation of the real exchange rate that hampered the manufacturing sector's competitiveness (Krugman, 1987). This loss of competitivity occurred because the Dutch manufacturing sector was a price taker on the international market where it sells its output (Krugman, 1987). In the Netherlands it was the manufacturing sector which was

handicapped; however the same effect applies to other sectors that produce tradable goods. The appreciation of the real exchange rate leads to the contraction of export sectors which are significantly more labor intensive than the resource sector (Corden, 1984).

The Dutch Disease has worse consequences in developing countries than in industrialized nations, because they have less sophisticated policy apparatuses to mitigate the macroeconomic perturbations due to the inflow of resource-wealth. In the case of Nigeria, an appreciation of the real exchange rate, that was not mitigated by the government, led to a decline in the total land area under cultivation from 18 million hectares in 1975 to less than 11 million hectares three years later (Shaxson, 1995). Further, the influx of royalties leads to an increase in the cost of non-traded goods that are used as inputs in the non-traded sector (Sala-i-Martin & Subramanian, 2003). Considering the low labor-intensity of the resource sector and the difficulty for workers in other sectors to work in the resource sector, an appreciation of input prices reduces output and employment in the non-traded sector (Corden, 1984). This phenomenon reduces the growth of employment and output in the manufacturing sector.[3]

Thus, the Dutch disease operates through two channels: an appreciation of the real exchange and a distortion of relative prices. Both of these effects lead to a contraction in terms of output and employment of the export oriented sector and the non-traded sectors. The expansion of the resource sector does not compensate for the contraction of the tradable-goods sectors because resource extraction industries have limited linkages with the rest of the economy (see Hirschman (1958); Mikesell (1997)). This process is known as de-industrialization (see Matsen & Torvik, 2005). De-industrialization is detrimental to economic growth because most Dutch Disease models assume that the sectors that are being 'destroyed' by the influx of natural wealth have positive externalities which benefit economic growth (see Corden, 1984; Matsen & Torvik; 2005). Specifically, the export-oriented sectors and the manufacturing sector allow learning by doing, and exhibit increasing returns to scale (see Arrow (1961) & Romer (1986)). This is even more significant when we consider that under the assumption of dynamic economics of scale,

[3] In Countries abundant in petroleum reserves, governments mitigate the loss of employment in manufacturing by employing people in the public sector and creating generous welfare programs.

temporary loss of productivity due to the Dutch Disease mechanism may become permanent once resource wealth influx have subsided (see Krugman; 1987).

The Dutch Disease requires an inept government that neglects to implement fiscal and monetary policies that support weakened economic sectors during resource booms. The policy failure of some resource abundant governments to mitigate the Dutch disease is accentuated by two other phenomena.

Firstly, many governments that are resource abundant exhibit myopic behavior with respect to their budget constraint. During resource booms, governments borrow and spend excessively based on historically high resource revenues (Manzano & Rigobon, 2001). The rapid increase in resource revenues due to the volatility of primary products markets leads to an inefficient use of government rents (Davis & Tilton, 2005). In the case of Nigeria, oil revenues following the oil shocks of the seventies fueled a public investment boom whereby most projects were inefficient (Sala-i-Martin & Subramanian, 2003). Once resource prices fall below their historical high levels, governments find it difficult to cut back on spending and accumulate excessive levels of debts. High debt levels force states in a debt-overhang situation that prevents them from enacting pro-growth policies (Shaxson, 2005). The debt burden that those countries face leads them to renege on their debt or service very high debt levels (Manzano & Rigobon, 2001). This situation implies that those countries are effectively credit rationed and are unable to make the investments needed to sustain healthy long-term growth rates; which partly explains the 'resource curse' (Manzano & Rigobon, 2001).

Secondly, many resource abundant countries are unable to identify priorities. Gylfason (2001) finds that resource-abundant nations invest less in human capital formation than resource-poor nations. Similar results are found by Ascher (1999) and Birdsall & al (2001). Underinvestment in human capital is a particular concern because it reduces countries long term growth (Becker, 1994), and it inhibits the emergence of institutions that promote good governance (Barro, 1998). However, the consequences of the Dutch Disease can be mitigated by judicious policy choices. Botswana offers such an example.

Botswana (the second largest producer of diamonds in the world) is considered a success story and a prominent counter-example to the immutability of the "resource curse" (Hope, 2000).

Through a judicious use of its resources, Botswana was able to achieve the fastest rate of economic growth in the world over the 40 years period that ended in 2002 (Easterly, 2006). It was able to avoid a strong appreciation of its real exchange rate by pegging its currency to a basket of currencies (Hope, 2000). Its central bank pursues concomitantly real exchange rate and inflation targets (Bank of Botswana, 2007). Botswana avoided the collapse of its agricultural sector through active government support of beef production and exportation (Hope, 2000). Further, the government encouraged economic diversification by creating favorable conditions for the expansion of new industries like car assembly (Hope, 2000). To avoid misuse of mineral revenues, the government follows a rule whereby mineral wealth supports "investment expenditure" (Limi, 2006). In the same vein, to prevent excessive fluctuations in government spending due to fluctuations in mineral revenues, Botswana established a stabilization fund, the Pula Fund, "where financial assets are invested only on a long-term basis in a transparent and accountable manner (Limi, 2006, page 10)." While all of these policies were instrumental to mitigate the Dutch Disease, it is Botswana's institutions of: parliamentary democracy, respect of property rights, and the respect of the rule of law, that have allowed it to prosper (Acemoglu & al. 2002).

The experience of Botswana in designing good policies and institutions that have enabled it to use its resources towards growth and development is not singular. Joseph Stiglitz (2006) outlines a similar set of policies that many resource abundant countries have used to overcome the resource curse, and use their natural capital efficiently to spur economic growth and development.[4] Accordingly, it is reasonable to expect that countries with quality governments, able to implement comprehensive fiscal policies and guarantee a stable monetary environment, are not vulnerable to the resource curse due to Dutch Disease mechanisms. Since policy choices are determined by institutional quality (Robinson & al, 2006), it is ultimately institutions that determine the development of the Dutch Disease. The estimation model presented in section III tests this proposition.

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[4] See Chapter 5 "Lifting the Resource Curse" of *Making Globalization Work*. (Stiglitz, 2006).

b. Rent Seeking and the Resource Curse:

We understand rent seeking as the set of unproductive activities that economic agents or groups undertake to benefit themselves but whose social consequences are negative for aggregate economic activity (see Murphy & al. 1993). A prominent example of rent seeking is corruption. Rent seeking is different from the Dutch Disease insofar as it leads to lower growth by changing economic agents' incentives and preferred activities. Theoretically, rent seeking can still take place in a country that has managed to neutralize Dutch Disease mechanisms.

Rent seeking mechanisms are modeled using two sectors, a modern sector and an informal sector. A positive wealth shock leads interest groups to impose a redistributive burden on the modern resource sector which induces its contraction (Tornell & Lane, 1999). This redistributive burden leads to the contraction of the resource sector because its value exceeds the net value of the wealth shock generated by the resource sector (Lane & Tornell, 1996). Lane and Tornell (1996) call this mechanism the voracity effect. The debilitating economic consequences of the voracity effect are compounded by the fact that entrepreneurs shun the modern sector in favor of the informal sector where they can evade taxation (Tornell & Lane, 1999). The informal sector is characteristically much less productive than the modern sector (Tornell & Lane, 1999).

Torvik (2002) offers a simple model that reflects rent seeking in resource abundant countries. Torvik (2002) assumes that the number of entrepreneurs in an economy is fixed, and that natural resource wealth changes the incentive structure of entrepreneurs by raising the returns to rent-seeking relative to those of other economic projects. This shift in incentives increases the proportion of entrepreneurs that decide to become rent seekers. The change in the proportion of entrepreneurs who abandon productive activities characterized by increasing returns to scale for rent-seeking, which is inefficient, reduces the rate of economic growth (Torvik, 2000).

Examples of rent seeking include lobbying activities where an interest group is able to force legislation that is socially inefficient but privately lucrative. All forms of rent seeking involve measures that induce wealth redistribution in a way that is inefficient for society as a whole (see Murphy & al. 1993). For example, the American sugar industry's lobbying efforts for import quotas on sugar, cost several billions to consumers who purchase domestically produced

sugar for twice the cost of sugar on the international market, while private benefits to domestic sugar producers are estimated at half the loss to the public (Krugman & Obstfeld, 2005, page 71). In the case of Nigeria, investment projects were chosen according to the imperative of rewarding various political groups and not according to efficiency criteria, which resulted in most of the oil wealth being misspent (Lane & Tornell, 1996). Another classic example of rent seeking involves profligate public spending. For example, Venezuela constructed aluminum and steel plants which were severely underutilized (Bourguignon, 1988). In its crudest form, rent seeking takes the form of corruption whereby powerful individuals or groups appropriate themselves public wealth. Leite and Weidmann (1999) provide strong econometric evidence that natural resource abundance increase rent seeking through corruption.

The question that remains is: how do *institutions* affects rent seeking? Lane & Tornell (1996) show that countries with weak institutions suffer rent seeking behaviors that are detrimental to growth when they receive natural wealth windfalls. Tornell & Lane (1999) suggest that countries that lack legal and political institutions that constraint discretionary redistribution are vulnerable to rent seeking. Leite and Weidman (1999) find trade-openness, respect of the rule of law, and political stability all lead to decreased corruption. Baland & Francois (2000) demonstrate that the initial level of entrepreneurs in an economy determines whether or not rent seeking occurs. In countries with a high initial level of entrepreneurs (industrialized nations), resource booms stimulate entrepreneurship and boost growth. Alternatively, resource booms in countries with a low initial-level of entrepreneurs gives an incentive for entrepreneurs to engage in rent seeking which reduces economic performance. Baland & Francois (2002)'s theoretical apparatus suggest that only developing economies are vulnerable to the resource curse. Mehlum et al (2006) confirm these results by showing that resource abundant countries with poor institutions have lower rates of economic growth while those resource abundant countries with strong institutions have higher rates of growth.

c. <u>The Fundamental Role of Institutions in the Resource Curse:</u>

The review of the major contributions of the Dutch Disease literature and the rent-seeking literature shows that policies determine the outcome of the two most prominent mechanisms that explain the resource curse. Under the proper set of policies countries can neutralize the social, economic, and political dynamics that lead to an inefficient use of their

resources. Robinson & al (2006) argue that it is the lack of institutions that can constraint politicians' ability to stay in power through an inefficient allocation of resource wealth that leads to the resource curse. Robinson & al (2006) emphasize the effect of institutions over specific policies because institutions determine how "political incentives map into policy outcomes (Robinson & al, 2006, page 447)."

In the seminal work of Douglass North (1990), institutions determine long term economic performance because they structure the incentives and goals of economic agents. Institutions are the key to strong economic performance because they reduce the cost of exchange and production (North, 1990).[5] Specifically, North (2005) identifies property rights and the legal protection of those rights as key determinants of economic development.[6] The security of property rights, through efficient and low contract enforcements, increases the returns to cooperative activity, increases the returns to investment in human capital, and reduces market transaction costs (North, 2005, page 18)." Without an effective system of property rights, economic agents engage in rent seeking activities that are unproductive. North identifies the lack of an effective legal system of enforcement of well defined property rights as the key to the underdevelopment of third world countries (North, 2005, chapter 12).

The securitization of property rights and their enforcement critically depend on a good bureaucracy (LaPorta & al, 1999). Only the state is able to implement measures against various forms of rent seeking (LaPorta & al, 1999). Further, only the government is able to channel resource wealth towards essential investments (like building roads, schools, hospitals, and institutions), and limit the redistribution of wealth towards venture that weaken the incentive of economic agents to participate in productive activities (LaPorta & al, 1999). Rauch & Evans (1995) reach similar conclusions. Good bureaucracy is a necessary condition for the 'developmental state' to promote good economic performance (Rauch & Evans, 1995).

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[5] Reducing the cost of exchange increases the allocative efficiency of markets, and reducing the costs of production increases factor productivity and innovation (North, 1990).

[6] North defines property rights as "the formal economic rules ... [that determine] ownership, use, rights to income, and alienability of resources and assets as expressed in laws and regulations (North, 2005, page 57)."

III. Methodology:

To evaluate the influence of institutions on the resource curse, we estimate an augmented Solow growth model using Two-Stage Least Squares (2SLS) estimation. To measure the "resource curse" and following Sachs & Warner (1995), we include a resource intensity variable in the growth equation. We include institutional quality variables to our growth equation to control for the impact of institutions on the resource curse. To reflect the influence that institutions have on resources we include an interaction term between institutions and resource abundance following Mehlum & al. (2006).

However, unlike Mehlum & al. (2006) we use the instrumental variable method to control for the effect of institutions on growth because institutional quality is not exogenous to economic growth. Arezki & Ploeg (2007) find that "it is a serious defect of the empirical literature on the resource curse that it does not use instruments for institutions and trade and thus ends up with biased and misleading estimates (Arezki & Ploeg, 2007, page 5)." Institutions are endogenous determinants of growth because poorer countries lack the resources to invest in good institutions, and wealthier countries demand better quality institutions (Hall & Jones, 1999). To instrument our institutional variables we use two instruments.

The first set of instrument was created by Hall & Jones (1999) who use the proportion of a country's population that speaks English, and the cumulative proportion of a country's population that speak European languages (English, French, German, Portuguese, or Spanish). Hall & Jones (1999) argue that these variables are a good set of instruments because they are not correlated with output per worker, yet they are correlated with institutional quality.[7] The second instrument that we use is the logarithm of settlers' mortality. This instrument was constructed by Acemoglu & al. (2001). Acemoglu & al. (2001) argue that the mortality rate of settlers is inversely correlated with contemporary institutional quality, yet it cannot have an incidence on current growth performance.[8]

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[7] Hall & Jones argue that institutional quality is correlated with the proportion of people that speak European languages because the notions of balance of power, security of property rights were discovered by European philosophers and then spread to the rest of the world (Hall & Jones, 1999, page 100).

[8] Settler mortality affects institutional quality because in places where mortality was high settlers did not build any institutional infrastructure. On the other hand, in countries where settler mortality was low, European colonizers founded institutions that evolved (Acemoglu & al, 2001).

Equation 1 shows my first stage Ordinary Least Squares regression. $INSTITUTION_i$ represents an institutional variable. The set of institutional variables that we use to estimate equation (1) were constructed by Sachs & Warner (1997), the Heritage Foundation (2008), and the Polity IV Project (2007).[9]

In equations (2) to (6), the dependent variable is the log of per capita income estimated at purchasing power parity (PPP) in 1995. XVARS is our core set of variables (described below). RES is the variable that measures natural resource abundance. $IINS_i$ is the instrument for specific institutional quality variables. $(IINS_i \times RES)$ is an interaction term that measures the effect of resources given specific levels of institutional quality. Together equations (1) and (2) and (3) represent our two-stage least-squares model.[10] We estimate equation (2) to show how the inclusion of an interaction term affects the magnitude of the resource intensity and institutional quality variable in equation (3). We used the residual from the estimation of equation (1), as an instrument for institutional quality in equation (2).[11]

$$(1) \quad INSTITUTION_i = \alpha_0 + \beta_1 \times XVARS + \gamma_2 \times RES + \varepsilon_i$$

$$(2) \quad Log\ (y_{95}) = \alpha_1 + \beta_2 \times XVARS + \gamma_3 \times RES + \delta_4 \times IINS_i + \varepsilon$$

$$(3) \quad Log\ (y_{95}) = \alpha_2 + \beta_3 \times XVARS + \gamma_4 \times RES + \delta_5 \times IINS_i + \varphi_6 \times (IINS_i \times RES) + \varepsilon$$

XVARS represents our set of exogenous variables. We use six core variables: (i) log of GDP per capita in 1970 evaluated at purchasing power parity, (ii) average gross capital formation as a share of GDP between 1970 and 1990, (iii) trade (imports + exports) as a share of GDP between 1970 and 1990, (iv) average life expectancy between 1970 and 1990, (v) square of life expectancy 1970-1990, and (vi) average inflation rate 1970-1990. These variables are similar

[9] Sachs & Warner (1997) use data from the International Country Risk Guide, which was created by the Political Risk Group.

[10] In equation (3) the fact that RES is a variable in computing the instrumental variable for institutions may slightly increase the coefficients of correlation between RES, $IINS_1$, RESx$IINS_1$ but multicollinearity does not compromise our results; it simply increases the standard errors of our coefficients.

[11] This model is best estimated using a two-stage least squares model as opposed to a simultaneous equation model because the errors of equations (1), (2), and (3) are not correlated as there is no feedback amongst their variables. See Griffiths & al. Chapter 18.

to the ones used by Sachs & Warner (2001).[12] All of our exogenous variables are from the World Bank's Development Indicators database (World Bank, 2006).

We include the log of GDP per capita in 1970 to control for the initial level of income of the countries that we use to estimate our model. Empirically, divergence is observed between developing and developed countries (see Pritchett (1997), Barro & Sala-i-Martin (2003)). We include a variable that measures the average gross capital formation between 1965 and 1990 as a proxy for the level of investment in an economy. We control for the effect of investment on growth because neoclassical growth theory predicts that a higher level of investment raises the steady state level of output and the growth rate of output per worker (see DeLong & Summers (1991); Barro & Sala-i-Martin (2003)). We include life expectancy in estimations of equations (2) and (3) as a proxy for human capital (see Benhabib & Spiegel (1994), Barro (1997)). Following Sachs & Warner (1997), we include the square of life expectancy among our exogenous variables to reflect diminishing marginal returns to human capital accumulation.[13] Inflation has been shown to have a significant negative effect on economic growth (see Fischer (1993), Judson & Orphanides (1999)). To control for the effects of monetary policy on growth we included an inflation variable which measures the average rate of inflation between 1965 and 1990. RES is a resource intensity variable. Following Mehlum & al. (2006), we use the sum of fuel exports and ores exports as a proportion of merchandise exports to measure resource intensity.[14]

To verify the robustness of the most significant institutional parameters, we add geographic & ecological variables, and demographic & religious variables to equation (3). We use the latitude, and the proportion of people that live in areas where malaria is prevalent as

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[12] I. Sachs and Warner (2001) use the data from S & W (1997). S&W (1997) use the Log of GDP per head of economically active population in 1970 (using data from the Penn World Tables (PWT) and the World Bank (WB)) We use the log GDP per capita in 1970 from the WB's WDI (2006) to measure initial level of income. II. S & W (1997) use investment data from Barro & Lee (1994) and Summers & Heston v.55, we use gross capital formation from the WDI (2006) to measure investment. III. S&W (1997) compute a variable of "openness" to trade that measures the number of years a country is considered open based on its trade regime policies. Following Limi (2006) we use trade measured as (imports + exports) as a measure of openness. IV & V. S & W use measures of life expectancy form Lee, while we use measures of life expectancy from the WDI (2006). VI. S & W use the average inflation rate from the WDI (1995), we use data on average inflation rate from the WDI (2006).

[13] For example, an increase in life expectancy from 70 to 80 has little economic benefits because it reflects greater longevity of (retired) people who have a low labor force participation rate and do consume lots of health care services.

[14] S&W (2001) use the sum of natural products export (food + agricultural products + fuels + ores and metals) as measure of resource intensity. Following Leite & Weidmann (1999) and Sala-i-Martin & Subramanian (2003) we use the sum of the shares of fuel exports and ores and metal exports as a share of merchandise exports to gauge resource intensity. My choice of resource intensity is motivated by the fact that fuels and ores have a stronger "resource curse" effect (Leite & Weidmann, 1999) because the generate rents that can be captured more easily (Sala-i-Matin & Subramanian, 2003).

proxies for geographic and ecological variables in equation (4).[15] Those two variables have been shown to be strongly correlated with developmental outcomes (Gallup & al., 1999).

$$(4)\quad Log\,(y_{95}) = \alpha_3 + \beta_4 \times XVARS + \gamma_5 \times RES + \delta_6 \times IINS_i + \varphi_7 \times (IINS_i \times RES) + \rho_8 \times LATITUDE + \omega_9 \times MALARIA94 + \varepsilon$$

We introduce ethnolinguistic and religious fragmentation variables in equation (5), because influential studies have shown that these structural variables influence the quality of institutions in developing countries (see Easterly & Levine (1997)[16]; Alesina & al. (2003); Fearon (2003)).

$$(5)\quad Log\,(y_{95}) = \alpha_4 + \beta_5 \times XVARS + \gamma_6 \times RES + \delta_7 \times IINS_i + \varphi_8 \times (IINS_i \times RES) + \rho_9 \times ETHNOLING + \omega_{10} \times RELGFRAG + \varepsilon$$

We include the proportion of various religious groups in equation (6), because these variables have been shown to be significantly correlated with growth (see LaPorta & al. (1999); Sala-i-Martin & al. (2004)).[17]

$$(6)\quad Log\,(y_{95}) = \alpha_5 + \beta_6 \times XVARS + \gamma_7 \times RES + \delta_8 \times IINS_i + \varphi_9 \times (IINS_i \times RES) + \rho_i \times RELIGION_i + \varepsilon$$

The exogenous variables of this model are taken from the Word Development Indicators (2006) dataset. The sample of variables ranges from 119 countries in 1975 to 174 countries in 1995, and it includes nations from all world regions. Data on institutional quality is acquired from Sachs & Warner (1997) and The Heritage Foundation (Heritage foundation, 2008). The data set from Sachs & Warner (1997) covers 67 to 120 countries, depending on the variable,

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[15] Sachs (February 2003) argues that institutional variables are not significant once we take into account of geographic variables becausc institutional variables constraint the development of institutional variables.

[16] Easterly & Levine (1997) find that ethnic fragmentation increases rent seeking and political instability, and greatly reduces the quality of economic policies adopted by states. They estimate that Africa's greater fragmentation relative to Latin America explains 1/3 of the difference in growth performance between the two continents.

[17] We use the proportion of Christians, Jews, Muslims, Buddhist, Hindus, and Confucians in a country to evaluate the robustness of institutional variables given religious variables.

between 1985 and 1989. The data set from the Heritage foundation covers 101 countries in 1995. Both of these data sets include information from countries in all world regions. The instrument that we use was computed by Acemoglu & al. (2001). This sample measures the mortality rate of European settlers in 64 former colonies of France, the United Kingdom, Spain, and Portugal between 1604 and 1876. Once we instrument our variables our estimated sample includes 48 nations from Africa, Asia, and Latin America, with no countries from any other world region.

To evaluate the robustness of our results to geographic & ecological variables, we use data on malarial prevalence from Gallup & al. (1999), and a measure of latitude form Hall & Jones (1999). Further, to evaluate the robustness of our results to demographic & historic variables we use variables of ethnolinguistic fragmentation, between 1983 and 2001, from Alesina & al. (2003), and measures of religious affiliation in 1995 from the Association of Religious Data Archives (2006). The set of countries covered by these datasets matches the dataset for our instrumental variable. Overall, once our variables are instrumented we estimate our model with a dataset of 47 to 48 countries.

IV. Results:

We analyze the results of the second stage least squares estimation of our model because the first stage least squares estimation is not relevant to our study of the impact of institutions on the resource curse. The results of the first stage least squares instrumentation phase of our institutional variables are shown in Appendix A. Tables 1 & 2 show the results of the estimation of equations (2) and (3), respectively.[18] We analyze the results of the regressions that have been estimated using the instruments from Acemoglu & al. (2001). While the regressions using the proportion of people who speak a European language (or English) are not quantitatively different they are qualitatively inferior.[19]

The explanatory power of all of the estimations is very high, ranging from 0.87 to 0.95. It is slightly higher than the goodness of fit reported by Sachs & Warner (1999) or Mehlum & al.

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[18] Below the coefficients are my standard errors. We include in brackets in table 1 the standardized coefficients of the resource intensity variable.

[19] The instruments from Hall & Jones (1999) are not as strongly correlated with institutional quality than settler mortality, despite a larger sample size.

(2006).[20] The difference is most likely due to the differences in the variables that we use. Due to the very high explanatory power of our model, we checked for multicollinearity among our explanatory variables. The correlation matrix displayed in Appendix B does not indicate a high level of correlation among the explanatory variables of the model.[21] Only LEX90 and LEX902 are significantly correlated which is to be expected since LEX 902 is the square of LEX90.[22] Further, we test for heteroskedasticity using the Breusch-Pagan-Godfrey statistic, and we cannot reject the assumption of homoskedasticity at the 5% significance level for all regressions except regression 0.[23] Lastly, we use the Durbin Watson statistic to test for autocorrelation. We can reject the assumption of autocorrelation at the 5% significance level for all of the regressions. Before analyzing the influence of institutions on the resource curse, we will comment the significance of the exogenous variables.

The initial level of income, LGDPCP95[24] has a strong, statistically significant impact on economic growth (at the 1% level) in all of the specifications.[25] This result supports economic divergence in the sample of countries that we analyze, whereby richer countries in 1975 grew faster than their poorer counterparts. This is expected considering the heterogeneous economic structure of the sample of countries that we investigate.[26] Gross capital formation has a positive but insignificant effect in most of my regressions, as expected. The coefficient of the life expectancy variable is always positive, though it is not significant.[27] The coefficient on the square of life expectancy is inconsistently negative and not always insignificant. The inflation variable is not significant in most regressions but is negative in most cases, as expected.

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[20] The R^2 of their regressions vary between 0.67 and 0.89.

[21] We consider a correlation coefficient among explanatory variables that is superior to 0.8 to be an indicator of multicollinearity.

[22] We choose not to exclude LEX902 from our model because multicollinearity marginally reduces the efficiency of our estimator by increasing the standard errors of strongly correlated variables but does not bias our results. In our model this implies that the coefficients of LEX90 and LEX902 are not significant. Excluding LEX902 from the model will bias the results and reflect an undue effect of human capital on economic growth (see Wooldridge, 2005, chapter 3).

[23] This implies that the statistical significances of our estimates are reliable. The presence of heteroskedasticity in regression (0) reflects the omission of an institutional quality variable.

[24] LGDPCP75 is the logarithm of per capita income in 1975.

[25] Sachs & Warner (1999) find that initial income has a negative and statistically impact on negative growth. Sachs & Warner (1999) results imply convergence of incomes. This is most likely due to the fact that their study is based on a homogenous sample of Latin American countries that are resource abundant. My data set is far more heterogeneous with as many as 101 countries on all continents.

[26] The sample of country that We analyze is constrained by data availability for settlers mortality (see Acemoglu, 2002), and includes countries in Latin America, Africa, Asia, the Middle East.

[27] Benhabib & Spiegel (1994) find that proxies of human capital accumulation are systematically positive in various estimations of an augmented Solow growth model.

Regression (0) of table 1 shows the impact of natural resource abundance on the rate of economic growth, when no institutional variables are included. In regression (0) all of my explanatory variables, except life expectancy (LEX90) and the square of life expectancy (LEX902), have statistically significant coefficients. The coefficient of the variable that measures resource intensity is negative and statistically significant. A one standards deviation increase in the share of natural resources in merchandise exports reduces economic growth by approximately 0.2425% per year. Over a 20 year period, ceteris paribus, a one standard deviation in the resource intensity results in a GDP per capita that is 4.85% lower.[28] In an estimation of the resource curse on per capita income in Latin America over a 20 years period, Sachs & Warner find that a standard deviation increase in resource intensity would reduce income per capita by 7%.[29]

The inclusion of the *instrumented* institutional variables used by Sachs & Warner (1997) does not change the magnitude of the resource intensity coefficients but makes it insignificant.[30] Further, most coefficients seize to be significant once the instruments for various parameters of institutional quality are added to the regressions (see Table 1). The explanation for this effect is that institutions determine the quality of policies, and therefore controlling for institutional quality reduces the significance of policy variables (Robinson & al. (2006); Keefer (2007)).

The inclusion of institutional variables from the Heritage Foundation significantly reduces the magnitude of the standardized resource coefficient by a factor of 4. Accordingly, a standard deviation of the share of natural resources in merchandise exports will handicap growth by 1% over a twenty years period. Considering that this effect is statistically insignificant it is reasonable to infer that once the effect of institutions is adequately accounted for there is no evidence of a "resource curse".

The effect of the inclusion institutional variables elaborated by the Heritage Foundation on the resource curse is interesting. Those variables measure institutional quality dimensions that

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[28] This is only a stylized effect. Measuring with accuracy the growth handicap due to resource abundance requires a model that controls how the fluctuations in the price of natural resources affect their influence on economic activity.

[29] The difference between the estimate from regression (0), and Sachs and Warner are due to: their smaller sample (11 observations versus 101 observations in regression (0)); the lower standard deviation of their resource intensity variable (Natural resource exports / GDP 1970) of 0.12, relative to the standard deviation that we use (Fuels and Ores exports / total merchandise exports) of 0.39.

[30] Regressions whereby the institutional variable used by Sachs & Warner (1997) are used without being instrumented to estimate equation (2) show that the resource curse is statistically significant at the 5% level, and further, the institutional variables are significant at 1% level.

are similar to those used by Sachs & Warner (1997) but they are constructed differently. The variables from the International Country Risk Guide measure institutional quality on scales that range from 1 to 6 and from 1 to 10 (Sachs & Warner, 1997). The score of a country is determined by a mix of quantitative variables and qualitative estimates. The variables from the Heritage foundation are constructed using a methodology that strongly emphasizes the use of quantitative variables to measure institutional quality (Heritage Foundation, 2008). The sensitivity of the influence of the resource intensity variable to the data set used shows that the finding of a resource curse effect depends on the data used to measure institutional quality.

Some results from Table 1 are noteworthy. The coefficient of the instrument of trade freedom is negative though insignificant. This may reflect the fact that the nature of the goods and services that a country trades does affect its growth performance. Hirschman (1952) argues that resource exports may not benefit growth as much as other types of exports because mineral extraction has poor linkages with the rest of the economy. Hausmann & al. (2007) show that the trade in goods whose production does not generate knowledge spillovers and induce specialization of labor do not have strong effects on economic growth. The coefficient of the instrument on monetary freedom is positive and statistically significant at the 5% level. We conjecture that this reflects the influence that institutions that promote exchange rate stability and price stability on mitigating the Dutch disease. Further, the instrument for property rights has a positive and statistically significant effect on growth. This reflects the role that secure property rights play in promoting growth by giving economic agents an incentives matrix that favors productive activities at the expense of rent seeking activities. Lastly, the Total Score (which is the average of all institutional quality instruments), is positive and significant, reflecting the positive contribution of institutions to growth.

Table 1:

Second Stage Least Square							
Dependent Variables Log of GDP Per Capita at PPP in 1995							
	Regression (0)	Regression (1)	Regression (2)	Regression (3)	Regression (4)	Regression (5)	Regression (6)
	Base Regression	Corruption (S)	Risk of Expropriation (S)	Government Repudiation (S)	Rule of Law (S)	Institutional Quality (S)	Business Freedom (H)
LGDPPCP75	0.59811[c]	0.56421[c]	0.5047S[c]	0.5047S[c]	0.56421[c]	0.60503[c]	0.59313[c]
	(0.04769)	(0.09946)	(0.1074)	(0.1107)	(0.09692)	(0.07704)	(0.08582)
GKF6590	0.018185[c]	0.0176835	0.016920	0.016921	0.017683	0.015331	0.013613
	(0.005518)	(0.01123)	(0.01154)	(0.01190)	(0.01094)	(0.01025)	(0.009754)

LEX90	0.018094 (0.03148)	0.0094461 (0.08615)	0.068617 (0.1013)-	0.068617 (0.1044)	0.0094461 (0.08392)	0.018946 (0.04896)	0.034257 (0.05614)
LEX902	0.00023809 (0.0002774)	0.00030153 (0.0007309)	0.00019742 (0.0008596)	-0.00019742 (0.0008863)	0.00030153 0.0007120)	0.00021411 (0.0004306)	0.00011237 (0.0004862)
TRADE6590	0.00016841 (0.0007996)	-0.00094007 (0.001459)	0.000048114 (0.001626)	0.000048114 (0.001676)	-0.94007 (0.001422)	-0.20228 (0.001530)	0.00053748 (0.0004862)
INFL6590	-0.00028849[A] (0.0001636)	-0.00024959 (0.0002052)	-0.00019275 (0.0002084)	-0.00019275 (0.0002149)	-0.00024959 (0.0001999)	-0.00026237 (0.0001885)	-0.00027910 (0.0001986)
Institution (i)		0.066004 (0.04451)	0.074769[B] (0.03933	0.054766 (0.04479)	0.085004[B] (0.04121)	0.45148 (0.3427)	0.0047889 (0.004414)
RES6590	-0.0019537[A] (0.001023) [-0.0485]	-0.0018150 (0.001748) [-0.0592]	-0.0014824 (0.001784) [-0.0599]	-0.0014824 (0.001840) [-0.0599]	-0.0018150 (0.001703) [-0.0592]	-0.0016004 (0.001582) [-0.0456]	-0.00035319 (0.001619) [-0.0107]
β_2	1.6780[A] (0.9735)	2.2529 (2.709)	0.88359 (3.016)	0.88359 (3.110)	2.2529 (2.639)	1.7110 (1.492)	1.2372 (1.692)
Observations	101	45	41	41	45	52	48
R^2	0.9551	0.9175	0.8841	0.8768	0.9217	0.9342	0.9243

Significance levels: a → 10%; b → 5%; c → 1%.

Second Stage Least Square						
Dependent Variables Log of GDP Per Capita at PPP in 1995						
	Regression (7)	Regression (8)	Regression (9)	Regression (10)	Regression (11)	Regression (12)
	Freedom from Corruption (H)	Financial Freedom (H)	Investment Freedom (H)	Trade Freedom (H)	Fiscal Freedom (H)	Government Size (H)
LGDPPCP75	0.59313[C] (0.08427)	0.59313[C] (0.08709)	0.59313[C] (0.08649)	0.59313[C] (0.08586)	0.59313[C] (0.08708)	0.59313[C] (0.08677)
GKF6590	0.013613 (0.009578)	00.13613 (0.009898)	0.013613 (0.009830)	0.013613 (0.009758)	0.013613 (0.009897)	0.013613 (0.009862)
LEX90	0.034257 (0.05513)	0.034257 (0.05697)	0.034257 (0.05658)	0.034257 (0.05616)	0.034257 (0.05696)	0.034257 (0.05676)
LEX902	0.00011237 (0.0004775)	0.00011237 (0.0004934)	0.00011237 (0.0004900)	0.00011237 (0.0004864)	0.00011237 (0.0004934)	0.00011237 (0.0004916)
TRADE6590	0.00053748 (0.001307)	0.00053748 (0.001350)	0.00053748 (0.001341)	0.00053748 (0.001331)	0.00053748 (0.001350)	0.00053748 (0.001345)
INFL6590	-0.00027910 (0.0001950)	-0.00027910 (0.0002015)	-0.00027910 (0.0002002)	-0.00027910 (0.0001987)	-0.00027910 (0.0002015)	-0.00027910 (0.0002008)
Institution (i)	0.0036910 (0.002262)	0.00040358 (0.003632)	0.0025033 (0.003363)	-0.0031245 (0.002925)	0.00061303 (0.004317)	-0.0013969 (0.002543)
RES6590	-0.00035319 (0.001590) [-0.0107]	-0.00035319 (0.001643) [-0.0107]	-0.00035319 (0.001632) [-0.0107]	-0.00035319 (0.001620) [-0.0107]	-0.00035319 (0.001643) [-0.0107]	-0.00035319 (0.001637) [-0.0107]
β_2	1.2372 (1.661)	1.2372 (1.717)	1.2372 (1.705)	1.2372 (1.692)	1.2372 (1.716)	1.2372 (1.710)
Observations	48	48	48	48	48	48
R^2	0.9270	0.9220	0.9231	0.9242	0.9221	0.9385

Second Stage Least Square						
Dependent Variables Log of GDP Per Capita at PPP in 1995						
	Regression (13)	Regression (14)	Regression (15)	Regression (16)	Regression (17)	Regression (18)
	Monetary Freedom (H)	Property Rights (H)	Total Score (H)	Polity Score (P4)	Durability (P4)	Executive Constraint (P4)
LGDPPCP75	0.59313[C] (0.08122)	0.59313[C] (0.08172)	0.59313[C] (0.08353)	0.60374[C] (0.07120)	0.60374[C] (0.07043)	0.59659[C] (0.04937)
GKF6590	0.013613 (0.009232)	0.013613 (0.009288)	0.013613 0.009493)	0.018149[B] (0.008995)	0.018149[B] (0.008899)	0.020964[C] (0.005769)
LEX90	0.034257 (0.05313)	0.034257 (0.05345)	0.034257 (0.05464)	0.039206 (0.04574)	0.039206 (0.04525)	0.025456 (0.03238)
LEX902	0.00011237 (0.0004602)	0.00011237 (0.0004630)	0.00011237 (0.0004732)	0.000015368 (0.0004040)	0.000015368 (0.0003996)	0.00016324 (0.0002880)

TRADE6590	0.00053748 (0.001259)	0.00053748 (0.001267)	0.00053748 (0.001295)	-0.0031768 [B] (0.001495)	-0.0031768 [B] (0.001479)	-0.0014038 (0.001019)
INFL6590	-0.00027910 (0.0001880)	-0.00027910 (0.0001891)	-0.00027910 (0.0001933)	-0.00029848[A] (0.0001748)	-0.00029848[A] (0.0001729)	-0.00029385[A] (0.0001660)
Institution (i)	0.0058047[B] (0.002400)	0.0075818[B] (0.003290)	0.013475[A] (0.007295)	0.0044445 (0.007837)	0.0019862 (0.001749)	0.024592 (0.07505)
RES6590	-0.00035319 (0.001532) [-0.0107]	-0.00035319 (0.001542) [-0.0107]	-0.00035319 (0.001576) [-0.0107]	0.0012023 (0.001463) [-0.0352]	-0.0012023 (0.001447) [-0.0352]	-0.0022831[B] (0.001093) [-0.0566]
β_2	1.2372 (1.601)	1.2372 (1.611)	1.2372 (1.646)	1.3082 (1.384)	1.3082 (1.369)	1.5409 (0.9872)
Observations	48	48	48	53	53	91
R^2	0.9322	0.9314	0.9283	0.9390	0.9409	0.9562

In Table 2, we include an interaction term between the institutional variable and the resource intensity variable. When equation (3) is estimated, some variables become significant. The instruments for the government's propensity to repudiate contracts, and the respect of the rule of law become statistically significant. The interaction term for the instruments of the risk of expropriation, the propensity of government to repudiate contracts, the rule of law, financial freedom, trade freedom, polity and executive constraints are negative, and none of those coefficients are significant. The negative sign of the interaction term's coefficients reflects the fact that for a given parameter of institutional quality, greater resource intensity still has a negative influence on growth through other channels. This suggests that these institutional parameters do not play a critical role in the resource curse.

The coefficients on the interaction term between resources and the instruments for corruption, overall institutional quality, business freedom, freedom from corruption, investment freedom, fiscal freedom, government size, monetary freedom, property rights, overall institutional quality and political stability are positive. Two of these interaction terms have statistically significant results: monetary freedom and total score on institutional quality. The statistical significance of the interaction term controlling for monetary policy implies that mitigating the Dutch disease is a key element in avoiding the resource curse. The significance of the interaction term between resource intensity and the instrument on overall institutional quality imply that improvement in overall institutional quality improves the positive influence of resources on economic growth. This suggests a non linear effect of institutions on the efficient use of resources, with potential increasing economic returns to improvements in institutional

quality.[31] Due to the lack of statistically significant results on the other instrumental variables, it is not possible to pursue these conjectures further.

Table 2:

Second Stage Least Square (With Institutional Interaction Term)							
Dependent Variables Log of GDP Per Capita at PPP in 1995							
	Regression (0)	Regression (I1)	Regression (I2)	Regression (I3)	Regression (I4)	Regression (I5)	Regression (I6)
	Base Regression	Corruption (S)	Risk of Expropriation (S)	Government Repudiation (S)	Rule of Law (S)	Institutional Quality (S)	Business Freedom (H)
LGDPPCP75	0.59811[C] (0.04769)	0.57703[C] (0.1033)	0.49928[C] (0.1095)	0.50541[C] (0.1093)	0.55765[C] (0.09864)	0.62938[C] (0.07967)	0.59679[C] (0.08622)
GKF6590	0.018185[C] (0.005518)	0.018409 (0.01143)	0.016858 (0.01169)	0.014378 (0.01191)	0.015919 (0.01152)	0.018955[A] (0.01070)	0.016033 (0.01019)
LEX90	0.018094 (0.03148)	0.014761 (0.08758)	0.066621 (0.1027)	0.070028 (0.1032)	0.016294 (0.08570)	0.016716 (0.04882)	0.027353 (0.05690)
LEX902	0.00023809 (0.0002774)	0.00025174 (0.0007441)	-0.00017144 (0.0008728)	-0.00019565 (0.0008754)	0.00025516 (0.0007242)	0.00019969 (0.0004292)	0.00015651 (0.0004906)
TRADE6590	0.00016841 (0.0007996)	-0.00093210 (0.0001474)	-0.00013064 (0.001698)	-0.000056028 (0.001657)	-0.00095155 (0.001436)	-0.00033496 (0.001529)	0.00034450 (0.001354)
INFL6590	- 0.00028849[A] (0.0001636)	-0.00025525 (0.0002075)	-0.00020323 (0.0002125)	-0.00022682 (0.0002137)	-0.00025705 (0.0002023)	-0.00024212 (0.0001886)	-0.00025358 (0.0002015)
Institution (i)		0.034818 (0.07376)	0.10015 (0.07116)	0.11090[A] (0.06083)	0.11015[A] (0.06251)	0.97873 (0.04607)	0.00056593 (0.006630)
RES6590	-0.0019537[A] (0.001023)	-0.0015911 (0.001815)	-0.0016487 (0.001848)	-0.0018466 (0.001837)	-0.0018671 (0.001722)	-0.0012478 (0.001606)	-0.00070066 (0.001674)
INS*RES		0.0012071 (0.002264)	-0.00090257 (0.002097)	-0.0025044 (0.001863)	-0.0010196 (0.001891)	0.022804 (0.01995)	0.00017317 (0.0002023)
β_3	1.6780[A] (0.9735)	2.0038 (2.776)	0.96446 (3.061)	0.86148 (3.072)	2.0983 (2.681)	1.6410 (1.488)	1.4300 (1.712)
Observations	101	45	41	41	45	52	48
R^2	0.9551	0.9181	0.8848	0.8336	0.9223	0.9362	0.9257

Second Stage Least Square (With Institutional Interaction Term)							
Dependent Variables Log of GDP Per Capita at PPP in 1995							
	Regression (0)	Regression (I7)	Regression (I8)	Regression (I9)	Regression (I10)	Regression (I11)	Regression (I12)
	Base Regression	Freedom from Corruption (H)	Financial Freedom (H)	Investment Freedom (H)	Trade Freedom (H)	Fiscal Freedom (H)	Government Size (H)
LGDPPCP75	0.59811[C] (0.04769)	0.60206[C] (0.08518)	0.59350[C] (0.08796)	0.60201[C] (0.8862)	0.57007[C] (0.09348)	0.62276[C] (0.08986)	0.64041[C] (0.07981)
GKF6590	0.018185[C] (0.005518)	0.012513 (0.009694)	0.013891 (0.001001)	0.013513 (0.009918)	0.015923 (0.01045)	0.013680 0.009835)	0.013698 (0.008907)
LEX90	0.018094 (0.03148)	0.036749 (0.05538)	0.027730 (0.05910)	0.033794 (0.05708)	0.030504 (0.05687)	0.043135 (0.05707)	0.027787 (0.05131)
LEX902	0.00023809 (0.0002774)	0.000093976 (0.0004795)	0.00016707 (0.0005110)	0.00011439 (0.0004943)	0.00015292 (0.0004940)	0.000028252 (0.0004951)	0.00014222 (0.0004441)
TRADE6590	0.00016841 (0.0007996)	0.00046697 (0.001313)	0.00054924 (0.001364)	0.00059486 (0.001356)	0.00011149 (0.001492)	0.00062842 (0.001344)	0.00060688 (0.001215)
INFL6590	-0.00028849[A] (0.0001636)	-0.00027506 (0.0001957)	-0.00026494 (0.0002056)	-0.00031916 (0.0002137)	-0.00024473 (0.0002070)	-0.00036942[A] (0.0002134)	-0.00041796 (0.0001867)

[31] In a study of the link between rent seeking and resource abundance, Leite & Weidmann fount the influence of institutions on rent seeking is non linear.

Institution (i)	-0.0019537[A] (0.001023)	0.0016279 (0.003299)	0.0023305 (0.005420)	0.00066371 (0.004676)	-0.0012008 (0.004175)	-0.0039189 (0.005670)	-0.0010137 (0.001479)
RES6590	-0.0019537[A] (0.001023)	-0.00010648 (0.001621)	-0.00040979 (0.001663)	-0.00031322 (0.001647)	-0.00042217 (0.001635)	-0.00075523 (0.001665)	-0.00026976 (0.001479)
INS*RES		0.000066209 (0.00007684)	-0.000083959 (0.0001738)	0.000065296 (0.0001142)	-0.000067178 (0.0001032)	0.00020454 0.0001673)	0.00060036 (0.0001917)
β_3	1.6780 * (0.9735)	1.1114 (1.673)	1.4184 (1.774)	1.1954 (1.721)	1.4524 (1.737)	0.81527 (1.740)	1.1812 (1.545)
Observations	101	48	48	48	48	48	48
R^2	0.9551	0.9284	0.9225	0.9238	0.9251	0.9250	0.9385

Second Stage Least Square (With Institutional Interaction Term)							
Dependent Variables Log of GDP Per Capita at PPP in 1995							
	Regression (0)	Regression (I13)	Regression (I14)	Regression (I15)	Regression (I16)	Regression (I17)	Regression (I18)
	Base Regression	Monetary Freedom (H)	Property Rights (H)	Total Score (H)	Polity Score (P4)	Stability (P4)	Executive Constraints (P4)
LGDPPCP75	0.59811[C] (0.04769)	0.61067[C] (0.07946)	0.58861[C] (0.08014)	0.64237[C] (0.08105)	0.59717[C] (0.06911)	0.63202[C] (0.07306)	0.58126[C] (0.04982)
GKF6590	0.018185[C] (0.005518)	0.015559[A] (0.009028)	0.017426[A] (0.009404)	0.013702 (0.008928)	0.014733[B] (0.008895)	0.020724[B] (0.009038)	0.020488[C] (0.005722)
LEX90	0.018094 (0.03148)	0.023761 (0.05191)	0.031222 (0.05242)	0.027519 (0.05146)	0.035159 (0.04440)	0.033456 (0.04509)	0.02270 (0.03212)
LEX902	0.00023809 (0.0002774)	0.00018363 (0.0004486)	0.00013679 (0.0004540)	0.00014346 (0.0004452)	0.000072604 (0.0003928)	0.000053586 (0.0003974)	0.00019850 (0.0002861)
TRADE6590	0.00016841 (0.0007996)	0.00019709 (0.001237)	0.00022208 (0.001257)	0.00060976 (0.001218)	-0.0033289[B] (0.001451)	-0.0032250[B] (0.001467)	-0.0015110 (0.001012)
INFL6590	- 0.00028849[A] (0.0001636)	-0.00038295[A] (0.0001911)	-0.00027128 (0.0001854)	-0.00042372[B] (0.0001910)	-0.00024302[A] (0.0001718)	-0.00034139[A] (0.0001745)	-0.00028064[A] (0.0001646)
Institution (i)	-0.0019537[A] (0.001023)	0.00014350 (0.003871)	0.0032681 0.004189)	-0.0011176 (0.009057)	0.018077 (0.01032)	0.00012066 (0.002237)	0.10183 (0.08854)
RES6590	-0.0019537[A] (0.001023)	-0.00050986 (0.001490)	-0.00020933 (0.001513)	-0.00026630 (0.001482)	-0.00032692 (0.001488)	-0.0011389 (0.001436)	-0.0013492[B] (0.001229)
INS*RES		0.00013347[A] (0.00007288)	0.00017638 (0.0001093)	0.00062526[B] (0.0002533)	-0.00055012 (0.0002818)	0.00011208 (0.00008494)	-0.0039187 (0.002440)
β_3	1.6780 * (0.9735)	1.4702 (1.560)	1.2957 1.579	1.1789 1.549	-0.00055012 (0.0002818)	1.2633 (1.358)	1.6720 (0.9812)
Observations	101	48	48	48	53	53	91
R^2	0.9551	0.9377	0.9358	0.9382	0.9440	0.9427	0.9575

Table 3 shows how including geographic/ecological variables and demographic/religious variables affect the institutions influence on the resource curse. The inclusion of a variable that measures the latitude of countries increases the statistical significance of the interaction term between resources and overall institutional quality to the 1% level. The latitude variable itself is not significant. Further, the effect of resources on growth becomes positive but insignificant. Controlling for the proportion of people who live in areas where malaria is prevalent in 1994 the magnitude of the coefficient on the institutional interaction term and makes it insignificant. The coefficient of malaria's effect on growth though negative is insignificant.

The ethnolinguistic fragmentation variable is not significant but its inclusion makes the coefficient of resource abundance positive but statistically insignificant. The religious fragmentation variable is not significant and does not affect the overall regression. An increase in the proportion of the population that is Christian has a statistically significant negative effect on growth, at the 5% level. Further, the inclusion of the variable that measures the proportion of Christians increases the significance of the interaction term to the 1% level, and makes the resource intensity variable positive. The variable that measures the proportion of people that are Muslim has a statistically positive effect on growth at the 5% significance level. Further, its inclusion increase the significance of the interaction term and makes the resource intensity variable positive but statistically insignificant. We do not present the results from regressions that measure the proportion of believers of other faiths because those results are statistically uninteresting.[32]

Table 3:

	Regression (0)	Regression (R1)	Regression (R2)	Regression (R3)	Regression (R4)	Regression (R5)	Regression (R6)
	Base	Latitude	Malaria(94)	Ethnolinguistic Fragmentation	Religious Fragmentation	Proportion of Christians	Proportion of Muslim
LGDPPCP75	0.64237[C] (0.08105)	0.65036[C] (0.07940)	0.59468[C] (0.08202)	0.64871[C] (0.08043)	0.65832[C] (0.08736)	0.75266[C] (0.08338)	0.72275[C] (0.07817)
GKF6590	0.013702 (0.008928)	0.012426 (0.008765)	0.020220[B] (0.009595)	0.013039 (0.008859)	0.012982 (0.009120)	0.0045114 (0.008725)	0.0050104 (0.008640)
LEX90	0.027519 (0.05146)	0.026932 (0.05032)	0.021739 (0.05030)	0.021200 (0.05120)	0.023028 (0.05267)	0.069093 (0.04784)	0.053633 (0.04699)
LEX902	0.00014346 (0.0004452)	0.00015283 (0.0004354)	0.00015931 (0.0004326)	0.00016648 (0.0004414)	0.00017152 (0.0004528)	-0.00021624 (0.0004139)	-0.000071594 (0.0004067)
TRADE6590	0.00060976 (0.001218)	0.00016363 (0.001221)	-0.0012298 (0.001360)	0.00054926 (0.001208)	0.00066942 (0.001235)	-0.00029031 (0.001296)	-0.00046371 (0.001285)
INFL6590	-0.00042372[B] (0.0001910)	-0.00037967[C] (0.0001887)	-0.00033855[A] (0.0001844)	-0.00040499[B] (0.0001897)	-0.00043598[B] (0.0001943)	-0.00041291[B] (0.0001751)	-0.00042705[B] (0.0001743)
Institution	-0.0011176 (0.009057)	0.00051296 (0.008911)	0.011377 (0.01009)	0.0013109 (0.009161)	-0000.96742 (0.009149)	-0.012602 (0.009149)	-0.012547 (0.009142)
RES6590	-0.00026630 (0.001482)	0.000018458 (0.001460)	-0.0014006 (0.001561)	0.00015964 (0.001504)	-0.00033261 (0.001502)	0.00062643 (0.001362)	0.00036852 (0.001356)
INS*RES	0.00062526[B] (0.0002533)	0.00067377[C] (0.0002495)	0.00043176 (0.0002577)	0.00057800[B] (0.0002535)	0.00062111[B] (0.0002559)	0.00074325[C] (0.0002369)	0.00076880[C] (0.0002365)
Robustness Variable (i)		0.0033615 (0.002031)	-0.13501 (0.1279)	-0.23933 (0.1823)	-0.0924443 (0.1771)	-0.32795[B] (0.1319)	0.33595[B] (0.1347)
β_i	1.1789 (1.549)	1.1362 (1.515)	1.8205 (1.590)	1.5478 (1.560)	1.2836 (1.576)	-0.37061 (1.470)	-0.034411 (1.436)
Observations	48	48	46	48	48	47	47
R^2	0.9382	0.9421	0.9460	0.9409	0.9221	0.9491	0.9491

[32] For example, the coefficient on Judaism and Confucianism are very large but insignificant. This is probably due to the concentration of various faith groups in distinct geographic areas (See Huntington (1997)).

V. Conclusion:

In this article we have shown that the "resource curse" effect is contingent upon the quality of institutions. When the influence of institutions on economic activity is adequately controlled for, using an instrument to control for the endogeneity relation between institutional quality and economic performance, natural resources do not hinder growth. The preeminence of institutions' role in the inefficient use of natural resources is reflected by its robustness to popular alternative justifications of economic inefficiency. Namely, the geographic & ecological context of developing nations, and their demographic and religious initial conditions. The results presented above, contradict the findings of the resource curse literature that hypothesize this effect to be strong and robust. My results confirm earlier works that find that institutions play a significant role in the efficient use of natural capital. We build upon previous works by showing that various institutional parameters affect the resource curse differently.

Overall, institutional quality affects the outcome of the resource curse. But more interestingly, monetary policy and the security of property rights appear to have a critical influence on resource abundance's impact on economic growth. The empirical effects of these specific institutional quality measures on the "resource curse" are consistent with the theoretical literature on the roles of the Dutch disease, and rent-seeking, as transmission mechanisms between resource abundance and hampered economic growth.

From a policy perspective, this suggests that institutions that can mitigate rent seeking behavior and the Dutch disease, will allow countries to use their resources to enhance their growth. Furthermore, the influence of institutions on the economic consequences of natural resource abundance is non linear with increasing economic returns to improvements in institutional quality.

Given the instruments currently available and the quality of the data on intuitional quality, it is not possible at this point to make stronger conjectures on the influence of specific institutional dimensions on the efficient use of resources. Better instruments to control for the endogeneity of institutions with respect to growth, and sharper definitions of institutional quality parameters, will allow for qualitatively better statistical analyses of the influence of specific institutional parameters on the economic use of resources. In the meantime, it is the author's

hope that the results presented in this paper, convincingly demonstrate that what has been dubbed the "resource curse", has nothing mystical to it, but is simply a particular case of the paradox of plenty due to institutional vulnerability. The greater challenge, in ensuring the efficient use of resources, natural, physical, or human, is designing institutions that give economic agents the proper incentive framework to contribute to economic growth and more generally to human progress.

APPENDIX A: First Stage Least Squares Result.

Base Regression		First Stage Least Square					
Dependent Variable Log GDP per Capita at Purchasing Power Parity		Dependent Variables Institutional Variables					
		Regression (1)	Regression (2)	Regression (3)	Regression (4)	Regression (5)	Regression (6)
	Regression (0)	Corruption (S)	Risk of Expropriation (S)	Government Repudiation of Contracts (S)	Respect for the Rule of Law (S)	Institutional Quality (S)	Business Freedom (H)
LGDPPCP75	0.59811[C]	0.11755	-0.28806	-0.20066	0.26018	0.065127[A]	6.7769[B]
	(0.04769)	(0.3726)	(0.4828)	(0.4372)	(0.3920)	(0.03470)	(3.126)
GKF6590	0.018185[C]	0.05533	0.069970	0.019689	0.041383	0.0077134[A]	-0.11727
	(0.005518)	(0.04234)	(0.05190)	(0.04699)	(0.04455)	(0.004563)	(0.3549)
LEX90	0.018094	-0.72501[B]	-0.76502	-0.44428	-0.75794[B]	-0.090519[C]	-2.4820
	(0.03148)	(0.3226)	(0.4602)	(0.4167)	(0.3394)	(0.00030)	(2.097)
LEX902	0.00023809	0.0067644[B]	0.0073413[A]	0.0043370	0.0070239[B]	0.00079075[C]	0.023754
	(0.0002774)	(0.002741)	(0.003885)	(0.003518)	(0.002884)	(0.0001934)	(0.01790)
TRADE6590	0.00016841	0.0035893	-0.00099730	0.0014320	0.0049026	-0.00010985	0.090207[A]
	(0.0007996)	(0.005567)	(0.007343)	(0.006649)	(0.005857)	(0.0006842)	(0.04842)
INFL6590	-0.00028849[A]	0.00059558	-0.000053021	-0.00042818	-0.00032190	-0.00016075[A]	-0.011747
	(0.0001636)	(0.000769)	(0.0009374)	(0.0008487)	(0.0008092)	(0.00008425)	(0.007229)
LSMTY		-0.24347	-0.1707	-0.30621	-0.38010[A]	-0.026003	-0.23340
		(0.2130)	(0.2809)	(0.2543)	(0.2241)	(0.02110)	(1.876)
RES6590	-0.0019537[A]	-0.011151	0.0019401	0.0026571	0.0026571	-0.00085224	0.060076
	(0.001023)	(0.2130)	(0.008243)	(0.007463)	(0.007463)	(0.0007084)	(0.05946
β_1	1.6780[A]	20.485[A]	25.588[A]	18.293	21.158[A]	2.5660[C]	77.963
	(0.9735	(10.23)	(14.03)	(12.71)	(10.76)	(0.7342)	(67.97)
Observations	101	45	41	41	45	52	48
R^2	0.9551	0.6636	0.4488	0.3547	0.6515	0.6203	0.5310

- a → 10 %; b → 5%; c → 1%

First Stage Least Square						
Dependent Variables Institutional Variables						
	Regression (7)	Regression (8)	Regression (9)	Regression (10)	Regression (11)	Regression (12)
	Freedom From Corruption (H)	Financial Freedom (H)	Investment Freedom (H)	Trade Freedom (H)	Size of Government (H)	Fiscal Freedom (H)
LGDPPCP75	15.761[B]	0.50940	-3.7777	0.083967	3.1226	2.1064
	(5.990)	(3.855)	(4.134)	(4.718)	(5.486)	(3.243)
GKF6590	-0.28652	0.10281	1.1295[B]	-0.20694	-1.0908[A]	-1.4372[C]
	(0.6802)	(0.4377)	(0.4695)	(0.5358)	(0.6230)	(0.3683)
LEX90	0.046573	2.3187	-2.3436	-7.6262[B]	8.2650[B]	4.8912[B]
	(4.019)	(2.586)	(2.774)	(3.165)	(3.680)	(2.176)
LEX902	0.0043350	-0.0084828	0.026169	0.075034[C]	-0.072892[B]	-0.031745[A]
	(0.03431)	(0.02208)	(0.02368)	(0.02702)	(0.03142)	(0.01857)
TRADE6590	0.062723	0.030595	-0.0040975	-0.021235	0.098466	0.10259[B]
	(0.09280)	(0.05972)	(0.06404)	(0.07309)	(0.08498)	(0.05024)
INFL6590	-0.028540[B]	-0.013916	0.0048919	0.012516	-0.0079570	0.012787[A]
	(0.01386)	(0.008916)	(0.009562)	(0.01091)	(0.01269)	(0.007501)
LSMTY	2.5715	2.7803	-0.35394	-0.44128	0.51776	2.8394
	(3.596)	(2.314)	(2.482)	(2.832)	(3.293)	(1.947)
RES6590	-0.021856	0.022503	-0.10008	0.017819	-0.13469	0.11238[A]
	(0.1140)	(0.07333)	(0.07865)	(0.08976)	(0.1044)	(0.06170)
β_1	-100.37	-75.125	110.61	238.57[B]	-152.82	-114.80
	(130.3)	(83.82)	(89.90)	(102.06)	(119.3)	(70.52)
Observations	48	48	48	48	48	48
R^2	0.4410	0.5004	0.3479	0.4285	0.2152	0.5530

First Stage Least Square					
Dependent Variables Institutional Variables					
	Regression (13)	Regression (14)	Regression (15)	Regression (16)	Regression (17)
	Monetary Freedom (H)	Property Rights (H)	Total Score (H)	Polity Score (P4)	Political Stability (P4)

LGDPPCP75	2.4847 (5.441)	3.6761 (3.993)	3.5297[A] (1.841)	0.23267 (1.385)	15.860[B] (6.140)
GKF6590	0.37746 (0.6179)	-0.45611 (0.4534)	-0.21045 (0.2090)	-0.13103 (0.1733)	1.2817 (0.7682)
LEX90	1.2658 (3.650)	-4.6250[A] (2.679)	0.015322 (1.235)	-1.8675[A] (0.9088)	-11.411[C] (4.029)
LEX902	-0.0092116 (0.03116)	0.046713[B] (0.02287)	0.0056755 (0.01054)	0.018993[B] (0.007902)	0.098588[C] (0.03504)
TRADE6590	0.10350 (0.08429)	-0.018332 (0.06185)	0.050414[A] (0.02852)	0.0074775 (0.03042)	-0.15294 (0.1349)
INFL6590	-0.052618[C] (0.01258)	-0.0097764 (0.009235)	-0.010460[B] (0.004258)	-0.0017765 (0.003386)	-0.021423 (0.01501)
LSMTY	1.1685 (3.266)	-2.5987 (2.397)	0.85749 (1.105)	-1.0992 (0.8601)	-0.90242 (3.813)
RES6590	-0.077170 (0.1035)	0.20192[B] (0.07596)	0.0099836 (0.03502)	-0.010509 (0.02830)	-0.25191[B] (0.1255)
β_1	-8.1013 (118.3)	150.31[A] (86.82)	10.309 (40.03)	47.912 (29.74)	225.32[A] (131.9)
Observations	48	48	48	53	53
R^2	0.4050	0.5333	0.7037	0.4956	0.5362

Appendix B: Correlation Matrices

Correlation Matrix of Regression (0):

CORRELATION	LGDPCP75	GKF6590	WLE90	WLE902	WT6590	WIF90	RES90	Constant
LGDPCP75	1.0000	0.11000	0.26025	-0.37832	0.10696	-0.22428	-0.36132	-0.46413
GKF6590	0.11000	1.0000	-0.077258	0.015563	-0.22554	0.010750	-0.20608	-0.012359
WLE90	0.26025	-0.077258	1.0000	-0.98822	0.069428	-0.23071	-0.29722	-0.96929
WLE902	-0.37832	0.015563	-0.98822	1.0000	-0.088053	0.25029	0.35103	0.98235
WT6590	0.10696	-0.22554	0.069428	-0.088053	1.0000	0.082186	-0.14969	-0.098143
WIF90	-0.22428	0.010750	-0.23071	0.25029	0.082186	1.0000	0.084846	0.24576
RES90	-0.36132	-0.20608	-0.29722	0.35103	-0.14969	0.084846	1.0000	0.33796
Constant	-0.46413	-0.012359	-0.96929	0.98235	-0.098143	0.24576	0.33796	1.0000

Correlation Matrix of Regression (15):

Correlation	GDPCP75	GKF6590	WLE90	WLE902	WT6590	WIF90	IHFTS95	RES90	CONSTANT
GDPCP75	1.0000	-0.23878	0.40983	-0.47098	0.35983	-0.18945	-0.67620E-15	-0.11118	-0.36289
GKF6590	-0.23878	1.0000	-0.29691	0.27146	-0.29347	0.068916	0.15175E-15	-0.32956	0.23714
WLE90	0.40983	-0.29691	1.0000	-0.99393	0.29115	-0.24888	-0.44911E-16	-0.077605	-0.99301
WLE902	-0.47098	0.27146	-0.99393	1.0000	-0.32663	0.25354	0.46009E-16	0.10341	0.97951
WT6590	0.35983	-0.29347	0.29115	-0.32663	1.0000	0.012058	-0.15823E-15	-0.053768	-0.27353
WIF90	-0.18945	0.068916	-0.24888	0.25354	0.012058	1.0000	0.14423E-16	0.025703	0.23124
IHFTS95	-0.67620E-15	0.15175E-15	-0.44911E-16	0.46009E-16	-0.15823E-15	0.14423E-16	1.0000	0.60303E-16	0.59921E-16
RES90	-0.11118	-0.32956	-0.077605	0.10341	-0.053768	0.025703	0.60303E-16	1.0000	0.067818
CONSTANT	-0.36289	0.23714	-0.99301	0.97951	-0.27353	0.23124	0.59921E-16	0.067818	1.0000

Correlation Matrix of Regression (I15):

Correlation	GDPCP75	GKF6590	WLE90	WLE902	WT6590	WIF90	IHFTS95	RES90	IXR14	CONSTANT
GDPCP75	1.0000	-0.21615	0.12264	-0.22254	0.15732	-0.37217	-0.16069	-0.16275	0.24615	-0.35595
GKF6590	-0.21615	1.0000	-0.24812	0.22884	-0.25535	0.089151	-0.0026215	-0.31497	0.0040157	0.23232
WLE90	0.12264	-0.24812	1.0000	-0.99038	0.18542	-0.19694	0.034630	-0.060015	-0.053049	-0.96491
WLE902	-0.22254	0.22884	-0.99038	1.0000	-0.21942	0.22983	-0.018471	0.097527	0.028294	0.97550
WT6590	0.15732	-0.25535	0.18542	-0.21942	1.0000	0.022745	-0.015691	-0.041029	0.024037	-0.20837
WIF90	-0.37217	0.089151	-0.19694	0.22983	0.022745	1.0000	0.20026	0.050175	-0.30677	0.26499
IHFTS95	-0.16069	-0.0026215	0.034630	-0.018471	-0.015691	0.20026	1.0000	-0.015504	-0.65280	0.0099483
RES90	-0.16275	-0.31497	-0.060015	0.097527	-0.041029	0.050175	-0.015504	1.0000	0.023750	0.090051
IXR14	0.24615	0.0040157	-0.053049	0.028294	0.024037	-0.30677	-0.65280	0.023750	1.0000	-0.015239
CONSTANT	-0.35595	0.23232	-0.96491	0.97550	-0.20837	0.26499	0.0099483	0.090051	-0.015239	1.0000

Appendix C: Description of Variables.

The International Bank for Development and Reconstruction. (2006). *World development indicators 2006*	
LGDPCP75	Log of per capita GDP evaluated at Purchasing Power Parity in 1975.
LGDPCP95	Log of per capita GDP evaluated at Purchasing Power Parity in 1995.
GKF6590	We compute the average of gross capital formation measured as a percentage of GDP between the years 1965 and1990.
LEX90	We compute the average life expectancy between 1965 and 1990.
LEX902	Square of LEX90.
Trade 6590	The sum of exports and imports as a share of GDP between 1965 and 1990.
RES6590	Sum of Fuels and Ores and Metals as a share of merchandise exports.
Acemoglu, D., Johnson, S., & Robinson, J. A . (2001). The Colonial Origins of Comparative Development. *The American Economic Review, 91*(5), 1369-1401.	
LSMTY	Log of European settlers mortality. European settler mortality measures the mortality rate (out of 1000) of clergymen, soldiers and others settlers from Europe who went to colonize countries in the rest of the world.
Hall, R. E., & Jones, C. I. (1998). *Data Appendix for "Why Do Some Countries Produce So Much More Output Per Worker Than Others?".* Retrieved September 18, 2008, from Charles Jones Web Page at Berkeley: http://elsa.berkeley.edu/~chad/HallJones400.asc	
HJENG	Proportion of a country's population that speaks English.
HJEUR	Proportion of a country's population that speaks English, French, German, Spanish, or Portuguese.
Latitude	Geographical latitude of countries.
Sachs, J. D., & Warner, A. M. (1997). Natural Resource Abundance and Economic Growth. Retrieved September 2008 from: [[http://www.cid.harvard.edu/ciddata/ciddata.html]. Cambridge Massachusetts: Center for International Development and Harvard Institute for International Development at Harvard University.	
Corruption	Variable that measures the perceived level of corruption in government on a scale of 0 to 6. A higher score indicates less corruption.
Risk of Expropriation	Measures the risk of confiscation and expropriation by the government. This variable is measured on a scale of 0 to 10 with a higher score indicating a lower risk.
Government repudiation of contracts	Risk of repudiation, postponement, and scaling down of contracts awarded by the government. This variable is measured on a scale of 0 to 10 with a higher score indicating a lower risk.
Rule of Law	Rule of Law is an index constructed by Political risk services that reflects "the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes". This variable is measured on a scale from 0 to 6 with a higher score indication better respect for the rule of law.
Institutional Quality	"An index ranging from zero to unity. The institutional quality index is an un-weighted average of five indexes based on data from Political Risk Services: a rule of law index, a bureaucratic quality index, a corruption in government index, a risk of expropriation index and a government repudiation of contracts index."
Heritage Foundation. Holmes, K. R., Feulner, E. J., O'Grady, M. A., Kim, A. B., Markheim, D., & Roberts, J. M. (eds.). (2008). *2008 index of economic freedom.* Washington, DC: The Heritage Foundation and Dow Jones Company, Inc. Retrieved from [http://www.heritage.org/research/features/index/downloads.cfm].	
Business Freedom (1995)	Measures the cost of starting, operating, closing businesses. This score is normalized to 100 with a higher score reflecting a lower cost of business activity.
Freedom from corruption (1995)	Measures the perception of the prevalence of corruption in the form of bribery, extortion, nepotism, cronyism, patronage embezzlement, and graft. This variable is normalized to 100 with a higher score indicating less corruption.
Financial freedom (1995)	Measures the efficiency of allocation of capital through financial intermediaries. This variable is normalized to 100 with a higher score indicating less corruption.
Investment Freedom (1995)	Measures of the difficulty for foreign entities to invest in a country. It is a measure normalized to 100 whereby more barriers to foreign investment give a lower score.
Trade Freedom (1995)	Measures of the difficulty to trade (export to, or import from) in a given country. It is a measure normalized to 100 whereby more barriers to foreign investment give a lower score.
Size of Government (1995)	Measures the size of government in the overall economy. It is a measure that is normalized to 100 whereby a larger share of output spent by the government implies a lower score.
Monetary Freedom (1995)	Measures of the quality of monetary policy. It is a measure that is normalized to 100 whereby a higher rate of inflation and a greater extent of price controls induce a lower score.
Property Rights (1995)	Measures of the legal security of property rights and the protection from expropriation in a given country. The higher the legal protection of property rights and the more rigorous the enforcement of the law a country's score. This variable is normalized to 100.
Total Score (1995)	Total score is the average of the scores of all of the institutional quality dimensions listed above.
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Polity Score	Measures the political system of government of a country. It ranges from -10 (for highly autocratic countries) to + 10 to perfectly democratic countries.
Political Stability	Measures the number of years since the most recent regime change. It is a proxy for peaceful transfers of power.
Executive Constraint	Measures the level of discretion (versus rules), and the institutional constraints on executive decisions.

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Proportion of Christians and Muslims	I use Data from ARDA to compute the proportion of countries' populations that are Christians/ Muslim.
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Malaria 94	I use Gallup & al.'s measure of the prevalence of Malaria in 1994. Malaria 94 measures the proportion of a country's land area where Malaria is indigenous.
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Religious and Ethnolinguistic fragmentation	Those indexes measure the probability that two individuals chosen at random will belong to different ethnolinguisitic/religious groups.

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