



Are Resource Abundant Countries Afflicted By The Resource Curse?

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Abstract

We find evidence for the 'resource curse' phenomenon for the decade of the 1980s only, as revealed by higher average annual rate of GDP growth for the resource scarce countries as compared with the top oil and gas exporting countries and ore and mineral rich countries. The low growth rate prediction of the resource curse literature is refuted as the average annual rate of growth of ore and mineral rich countries is higher, while that of the top oil and gas exporting countries much higher as compared with the resource scarce countries for the 1990 and 2000 decades.

Key Words: Resource Curse; Dutch Disease; Global GDP Growth Rates; Resource Rich Countries; Resource Scarce Countries.

JEL Classification: O47; Q34; Y10.

1. Introduction

Great body of the literature on resource abundance and growth states that for the last almost five hundred years resource-poor countries outperformed resource rich countries. In the 17th century Netherlands outperformed Spain, although the latter enjoyed the natural resources like gold and silver in its Latin America colonies. In the 12th century Switzerland and Japan, both resource poor countries outperformed resource abundant countries like Russia. And more recently, the Newly Industrialised Economies, i.e. Korea, Taiwan and Hong Kong outperformed most of the resource abundant economies. This paradox has baffled economists as natural resources increase the wealth of nations, which should increase investment, growth rates and promote economic development.

The lack lustre performance of resource abundant economies has been attributed to different factors. For example, a vast body of the literature has attributed the dismal performance to the Dutch Disease. This may be via the slow saving and investment route, e.g. Sachs and Warner (1997, 1999), Gylfason (1999, 2001), Gylfason and Zoega (2003), Barbier (2002), Auty (2007). The Dutch Disease explanation, may alternatively, be through the exchange rate mechanism, as for example in Corden and Neary (1982), Gylfason et. al (1999), Bulte et. al (2005). Some studies have emphasised the negative impact emanating from rent seeking and poor governance, these include Auty (2001), Torvik (2001), Gylfason and Zoega (2006). While there is a whole body of literature that attributes the slow growth of resource abundant economies to the absence of the rule of law, property rights on account

of institutional decay, etc. Notable among these are Vijayanaghavan and Ward (2001), Murshed (2004), Bulte et al (2005), Alayli (2005), Mehlum et al (2005, 2006a and b), Olsson (2005, 2006), Arezki and Ploeg (2006). Conflict has also been found to be an important factor in affecting growth rates in resource abundant economies, for example Easterly and Levine (1997), Collier and Hoeffler (1998, 2003, 2004), Ross (2002), Mejia (2004), Humphreys (2005), Lindgren (2006). Though there is difference of opinion on whether the impact of conflict on growth is positive or negative.

An explanation based on political economy considerations states that natural resource production generates high economic rents, Gelb [1988] for example, emphasised that governments earn rents from natural resource exploitation. There is also the view that natural resource abundant countries have a corrupt and inefficient bureaucracy giving rise to high rents, crowding out government investment in infrastructure, causing low income and growth rates. In Lane and Tornell (1999) and Torvik (2002) resource abundance increases incentives for rent seeking.

Although these are different explanations of the impact of natural resources on growth, there are spillovers and interactions between them. For example, rent seeking and poor governance is likely to prevail in societies where institutions have not been developed. Similarly, if institutions have not been developed, the occurrence of conflict is more imminent. And so on and so forth.

An attempt is being made to explore whether resource abundant countries have suffered from this curse during the last thirty years. After this brief introduction, we begin by visiting the resource curse literature in section II. In Section III we discuss the criteria used to categorise countries into resource abundant and scarce and the data sources. Section IV is the all important section in which growth performance of resource abundant and scarce countries is discussed for the last three decades. Our major focus in this study is not so much on the causes of poor growth performance of resource abundant countries, but on whether the growth performance of resource abundant countries is *actually* inferior to that of resource scarce countries. The transmission mechanism from resource abundance to growth has been pursued in another study. Section V makes a cross category comparison of growth rates and presents the main conclusions of the study

2. Previous Research on Resource Abundance and Growth

Sachs and Warner (1997) found natural resource abundant countries to have lower growth rates directly on account of rent-seeking, corruption and poor governance, and indirectly through reduction in investment demand. Anderson (1998) compared densely populated, natural resource scarce countries which had fastest growing economies like Japan, Hong Kong, Singapore, Taiwan, South Korea and China with land-abundant, low-income Latin American and Sub-Saharan African countries. The author reported a negative and statistically significant relationship between GDP growth rates and natural resource endowments and attributed this to “riches leading to sloth.” Gylfason et al. (1999) also reported the presence of resource curse phenomenon and attributed it to a variant of the Dutch Disease. Stijns (2000), however, stated that natural resources may affect growth both positively and negatively, but Dutch Disease symptoms are present in the case of oil, gas and land, while for coal the evidence is mixed.

Using a neoclassical growth model Vijayaraghavan and Ward (2001) examined the relationship between economic growth and institutions in 43 countries during the period 1975 to 1990. Institutional infrastructure was represented by governance which is a simple average of three indicators, i.e. rule of law, corruption and bureaucratic quality. For security of property rights a simple average of risk of repudiation of contracts and risk of appropriation was used. And political freedom is gauged by a simple average of civil liberties and political rights. Other variables used in the study are government consumption, initial income, investment share and human capital. The authors found all the institutional variables affecting economic growth positively. Using stepwise regression, they reported that security of property rights and size of the government are the institutional variables that explain the differential in growth rates.

Auty (2001) stated that many resource-abundant countries grew very rapidly during the First Golden Age from 1870 to 1913 and the Second Golden Age from 1950 to 1973. Similarly Lederman and Maloney (2006) did not find support for a negative relationship between natural resource abundance and economic growth. Export concentration measured by the Herfindahl index and natural

resource exports as a percentage of total exports has a negative impact on growth, which is extremely robust in cross sectional data, but not in panel data. Lederman and Maloney, therefore, refuted the resource curse hypothesis.

In a cross country comparison Barbier (2002) confirmed that resource-abundant countries with a high ratio of natural resource exports to GDP have lower growth rates than resource poor countries. Papyrakis & Gerlaugh (2003) reported a negative and highly significant relationship between economic growth and natural resources, i.e. a one percentage point increase in income from mineral resources, relative to total income, causes a decline in growth rate by 0.075% per year. Neumayer (2004) attributed the poor growth performance of resource abundant countries to governance and institutional quality variables. Murshed (2004) stated that the impact of natural resource endowment on economic performance is mainly determined by the type of natural resource endowment and institutional quality. The negative relationship between natural resource abundance and economic growth has also been reported by Bulte et. al (2005) and Isham et. al. (2003).

Alayli (2005) stated that lack of good governance and democracy causes low rate of growth of resource abundant countries and attributed the poor growth performance to the misappropriation of resource rents by corrupt leaders and officials. This gives rise to grievances causing conflicts and civil wars, leading to what has been called the “natural resource curse.” Natural resources, therefore, cause stagnation, corruption, poor governance, civil wars and undermine democracy. Foreign exchange revenues earned from the export of oil and mineral wealth are used for patronage by dictators. Since in a point resource-led economy the ruling clique starts losing its grip on power as a result of industrialisation and urbanisation, they resist development and change.

In the Travaglianti (2006) model, natural resource abundance leads to negative economic growth as Dutch Disease occurs, crowding out manufacturing and service sectors. This results in loss of financial and human capital, causing income inequality to increase. And low levels of per capita income increases the risk of war, which has a negative impact on the economy, manufacturing and service sectors, causing decline in national and foreign investments. And low levels of development adversely impacts democracy, institutional quality, rent seeking and corruption. As a result of weak institutions, grievances are accumulated, giving rise to insurgencies. These ideas resonate with those of Mehlum et al. (2005), who stated that resources have a non-monotonic effect on growth depending on the quality of institutions. The net effect of resource abundance on growth depends on how “grabber friendly” the institutions are. They stated that natural resources raise national income if institutions are “producer friendly”, but reduce national income if they are “grabber friendly”.

Mehlum et al (2006a) argued that resource-rich countries such as Nigeria, Zambia, Sierra Leone, Angola, Saudi Arabia and Venezuela have been growing slowly, while the resource-poor Asian Tigers i.e. Korea, Taiwan, Hong Kong and Singapore have been growing at spectacular rates, fuelling the suspicion that all resource rich countries are cursed. But high rates of growth have been witnessed for Botswana, Canada, Australia and Norway, which are rich in resources. Mahlum et al. (2006b) pointed out that the economic development of Australia, Canada, US, New Zealand, Iceland and the Scandinavian countries was stimulated by natural resource abundance. The authors stated that there are high growth performers among the resource-rich countries such as Botswana and Norway. The latter country started its oil extraction in 1973, and has had high economic growth since then as compared with other Scandinavian countries. While Chile, Brazil and Australia are other examples where resource abundance has had a positive impact on growth. Among developing countries Peru, Malaysia and Thailand are resource-rich, but have not been afflicted by the curse.

Ortega and Gregorio (2006) compared Scandinavian economic development which was natural resource based with Latin American economic development where natural resources did not play any role. Using panel data for the period 1970-90 they regressed growth rate of GDP per capita on the share of natural resource exports in GDP and total exports, human capital measured by years of schooling, government expenditure as a percentage of GDP, exports plus imports as a percentage of GDP to measure openness, investment as a percentage of GDP, terms of trade and initial income. They also used natural resources and human capital as an interaction variable in one of the estimating equations. The authors found a positive effect of natural resource abundance on per capita income,

and a less robust negative impact on the rate of growth. They stated that the share of natural resources in GDP is positively correlated with income, but the share of natural resources in total exports is negatively correlated with growth rates. Ortega and Gregorio state that the negative effect of natural resources on economic growth is offset by human capital, implying that natural resources have a negative effect in economies which do not invest in human capital.

Gylfason and Zoega (2006) cited the Botswana and Sierra Leone cases, whose economies were dependant on the production and export of diamonds. Botswana by managing its export revenues well, achieved the highest rate of growth of gross national product (GNP) per capita during 1965 to 1998. While Sierra Leone remained poor as a result of internal conflict as warlords scrambled to control diamond trade. The authors stated that when the share of natural resources in national wealth is more than 15 per cent, economic performance is compromised.

Using natural capital per capita in US \$ as an indicator of resource abundance, Brunnschweiler (2007) challenged the resource curse hypothesis. Both OLS and 2SLS estimates revealed that mineral reserves had a positive impact on real GDP growth during 1970-2000, even when institutional quality is controlled. She did not find that resource abundance has a negative impact on institutional quality through rent seeking and concluded that natural resource abundance is not a curse, but a boom.

Explaining the negative relationship between natural resource abundance and economic growth Bulte et. al (2005) resorted to the Dutch disease, rent seeking and institutional models to explain the phenomenon. In the Dutch disease explanation a resource boom causes a country's exchange rate to appreciate, due to which there is contraction of manufactured exports.¹ The authors try to explore the impact of natural resources, through institutional quality, undernourishment, poverty, and other human development indicators. They stated that human development is affected by institutional quality and income, both of which are affected by natural resource wealth. If both are constant, natural resources will not affect development. And like previous researchers, Bulte et. al found that point resources are associated with less democratic regimes and unproductive social institutions. Since these resources can be easily controlled by a small group, a highly skewed distribution of income is the consequence.

Arezki and Ploeg (2006) also found resource-rich countries like Congo, Nigeria, Bolivia, Sierra Leone and Venezuela performing worse than resource-poor countries like the Asian Tigers. Countries with a large share of natural resource exports have a relatively low income per capita, but there are exceptions. For example, Fasano (2002) stated that the United Arab Emirates has turned the resource curse into a blessing by investing in infrastructure and education. The crucial question is, *which policies* are able to turn natural resource curse into a blessing. According to the authors, institutional quality and trade openness play a crucial role. In natural resource abundant countries poor rule of law and corruption give rise to internal and external conflicts. In the developed countries such as Australia, Austria, Belgium, Canada, Switzerland, Germany, Denmark, Finland, United Kingdom, Japan, Netherlands, Norway, New Zealand, Sweden and the United States of America which have a high level of institutional development, natural resource exports increase economic growth. They state that trade policy which increases competition and transfers technology, managerial skills and technical knowhow from abroad turn the natural resource curse into a blessing. This is borne out by the experience of rich OECD countries and Bolivia, Indonesia, Jordan, Ecuador, Thailand, South Korea and Malaysia among the developing countries. But this is not true for most resource rich African countries.

Arezki and Ploeg are among the very few studies that incorporate the impact of external factors as they recognise that colonial empires robbed colonies of their natural resources and did not invest in institution building. They stated that 'rapacious rent seeking' in a resource dependent country lowers per capita income. Their results confirm that institutions, openness and geography determine variations in income across countries and that resource curse is less severe for countries with good institutions. The authors report evidence of a resource curse based on OLS regressions does not hold when the instrumental variable technique is used. Second, when income per capita, institutional quality and openness are used, a negative direct effect of natural resource exports on income per

¹ According to other explanations a booming resource sector attracts capital and labor from manufacturing, raising manufacturing costs as a result (Neary and van Wijnbergen 1986).

capita are obtained even when geography, openness and institutional quality are held constant. Third, when the instrumental variable technique is used, the finding that the natural resource curse can be turned into a blessing for countries with good institutions does not hold. Arezki and Ploeg found that more open trade policies can make the resource curse less severe and may even turn it into a blessing. Fourth, their results are robust to different indicators of institutional quality, like the risk of expropriation or the degree of corruption.

Olsson (2006b) tried to explore the reasons for the negative relationship between diamond abundance and GDP growth rate and attributed this to the Dutch disease, i.e. the crowding-out of the manufacturing sector due to the inflow of resource rents.² The author also raises the question whether there is a link between diamond abundance and social institutions, rent seeking and 'kleptocratic' governments. Olsson stated that in most African countries, rent grabbing has given rise to civil wars and recommends the conflict theories propounded by Hirshleifer (1991), Grossman (1991) and Grossman and Kim (1995)³ for studying the phenomenon⁴.

Boschini et. al (2007) stated that natural resource scarce countries such as Hong Kong, Singapore, Korea and Taiwan have grown fastest, while resource rich countries like Sierra Leone, Angola and the Democratic Republic of Congo have performed poorly during the last few decades. They reported that Venezuela and Ecuador have faced problems as a result of oil reserves, while Norway has become one of the richest economies due to its oil reserves. Diamonds have brought miseries to Sierra Leone, Liberia and the Democratic Republic of Congo, but prosperity to Australia, South Africa and Botswana. The authors state that the impact of resources is determined by the interaction between the type of resources that a country possesses and the quality of institutions, which they refer to as the 'appropriability of a resource'. They stated that the concept of appropriability links natural resources to rent-seeking, corruption and conflicts which have a detrimental impact on economic development. In countries where resources are highly appropriable, resource abundance causes problems, whereas in countries where resources are less appropriable, resource abundance leads to economic growth. They refer to this as the technical appropriability of a resource. Resources which are very valuable and can be easily stored and transported are prone to rent seeking and institutional quality determines the institutional appropriability of a resource.

Boschini et. al recognized that an important mechanism through which natural resources affect economic development is conflict and resources most prone to conflict are diamonds and oil. But they state that the appropriability effect of resources is more important than the conflict effect, and improvement in institutional quality can change the impact of resource abundance from being a curse to a blessing. The greatest benefits accruing from good institutions are for countries rich in appropriable resources. They stated that the effects are strongest for precious metals and diamonds. If Sierra Leone that had a growth rate of -2.05 percent since 1975 could bring the quality of its institutions at par with those of Botswana, which has a growth rate of 4.99 percent per annum, its growth rate would approach that of Botswana. Boschini et. al challenge the traditional resource curse literature which states that a country would be better off without its resources. Their advise to resource rich countries aptly describes their stance: "Get your institutions right, especially if you have plenty of diamonds and precious metals".

Summarizing the mechanisms through which conflict affects economic growth, Mejia (2004) point out that while there is consensus on the negative effect of conflict on economic growth, the channels through which conflict affects development are very diverse. Most researchers have attributed this to the diversion of resources to non-productive rent seeking activities, others emphasise the destruction of capital and wealth that comes with violent conflict. This gives rise to insecurity,

² According to another variant of the Dutch Disease theory it is lack of investment in human capital accumulation that causes the problem, as is borne out by very low secondary school enrolment rate in 1998 in most countries.

³ See also Grossman (1999), Klare (2001), Collier and Sambanis (2002).

⁴ The author states that in 1966 when the country became independent, Botswana was a poor country, but was able to develop its institutions of private property before the discovery of diamond deposits in the early 1970s. Distinguishing between alluvial mining which takes place near river beds and kimberlite mining done through drilling rocks, he states that countries with alluvial diamonds have become prone to violent conflict.

rising interest rates, reduction in investment and crowding out resources on account of military expenditures.

Collier and Hoeffler (1998, 2004) found a non-linear relationship between natural resources and the risk of armed conflicts and conclude that resources are a source of armed conflict. Studying the occurrence and duration of civil wars during 1960-92 using probit and tobit regressions, they found that the higher the per capita income, the lower the risk of civil war and attribute this to the effect of higher income on the opportunity cost of rebellion. The effect of natural resource endowments is non-monotonic, with increase in natural resources increasing the risk of war initially, but when income levels rise, natural resources reduce the risk of war. This is attributed to enhanced financial capacity of the government, which increases military expenditure, thus the defence capability of the country.

In their study of 54 large civil wars Collier and Hoeffler (2003) stated that the higher the share of primary commodity exports in GDP the higher the risk of conflict. Countries where the share of primary commodities in GDP is between 10 – 25 %, the risk of civil war increases by 11 – 29 % during the next five years, when other variables are held constant. And at high levels of per capita income, the risk of civil war is unlikely irrespective of the natural resource endowments of the country. Ross (2003) stated that oil dependence is linked to conflict initiation rather than conflict duration, while gemstones, opium, coca and cannabis are not linked to conflict initiation, but to its duration. While agricultural commodities are neither linked to conflict initiation nor its duration.

Humphreys (2005) breaks from past research on natural resources and conflict by articulating his “greedy outsiders mechanism”.⁵ He states that instead of the greed of rebels emphasized in the literature, natural resources are an incentive for third parties, i.e. corporations and states to bring about conflict. He gives the example of the escalation of civil war in the Democratic Republic of Congo as a result of the involvement of the latter’s neighbours on account of their interest in the country’s natural resources. Humphreys points out that the secessionist movement in Congo was supported by the Belgian firm Union Miniere du Haut Katanga and escalated as a result of French oil corporation Elf.

The “weak state mechanism” is another interesting concept articulated in the paper. According to Humphreys, states that are dependant on natural resources rather than taxation have weak state structures and are unable to withstand threats. Humphreys collected data on loot-able resources like diamond and the average amount of oil extracted per day in a given year and the share of agriculture in national income to measure economic structure. He finds that natural resources affect conflict through its impact on state capacity, i.e. loot-able resources lead to conflict, with the impact determined by state strength. Countries dependent on agricultural commodities are at risk irrespective of their oil and diamond endowments. He also finds strong evidence to support the weak state structure rather than state capture hypothesis.

Koubi (2005) studied the consequences of inter and intra state wars for economic growth for a cross-section of countries for the period 1960-89. The study showed that cross-country differences in economic growth are systematically related to the severity and duration of war and countries engaged in severe and prolonged wars perform poorly.

3. Country Categorisation and Data Sources

The insights gained from the review of literature in the previous section will be used to investigate the growth performance of resource rich and poor countries by computing global trends in GDP growth. We are interested to investigate whether resource rich countries have lower rates of GDP growth as compared with resource poor countries. The world mineral map (Appendix 1) was used to identify oil, gas, mineral and ore rich countries. Minerals marked on this map are: uranium, silver, gold, oil, iron, lead, zinc, diamond, bauxite, coal and copper. The top oil and gas producing countries are listed in Appendix 2. Using the information obtained from the Appendices we have categorised countries into the following groups:

⁵ The few studies that have recognized the impact of the external factor in exacerbating the resource curse impact on resource abundant countries includes Arezki and Ploeg (2006) discussed earlier.

Top oil and gas producing countries.

Top oil and gas producing Developed Countries (DCs), where category 2 is a subset of category 1.

Top oil and gas producing Less Developed Countries (LDCs), where category 3 is a subset of category 1.

Top ore and mineral rich countries.

Top ore and mineral rich DCs, where category 5 is a subset of category 4.

Top ore and mineral rich LDCs, where category 6 is a subset of category 4.

Residual countries i.e. resource scarce countries.

Data on Gross Domestic Product (GDP) in constant US\$ in the year 2000 for the decades of the 1980s, 1990s and 2000s have been taken from the World Development Indicators (WDI) of the World Bank. Data on world mineral reserves used to categorise countries are from www.mineralsworld.com, while the data used to identify top oil and gas exporting countries are from the KBC Market Service.

4. Global Trends in GDP Growth Rates

A summary of growth of top oil and gas exporting countries for the last three decades is contained in Table 4.1. It is interesting to note that while the rate of growth of GDP for the 1980s for this category of countries is as predicted by the ‘resource curse’ literature discussed earlier, their growth performance during the decade of the 1990s improved quite substantially, while during the 2000 decade their performance has been quite remarkable. We find that the improvement in the rate of growth of GDP was an account of high growth performing countries like Malaysia during the 1980s and the 1990s, Turkmenistan during 1998 – 2009, Kuwait during the 1980s, and improvements in Qatar and Russian performance during the 2000 decade.

Table-4.1. GDP Growth Rates of Top Oil and Gas Exporting Countries

Period	Growth Rates
1980s	2.05
1990s	4.68
2000s	5.23

We disaggregated the top eighteen oil and gas exporting countries into oil and gas exporting developed countries (DCs) and oil and gas exporting less developed countries (LDCs). These data are presented in Tables 4.2 and 4.3 respectively.

It is interesting to note that there is evidence for the ‘resource curse’ phenomenon for the decade of the 1980s only, as the average annual rates of GDP growth of oil and gas exporting LDCs (Table 4.3) is below the average annual rate of GDP growth of the DCs (Table 4.2) and the average for the group (Table 4.1). During the decades of the 1990s and 2000 average annual rates of growth of the top oil and gas exporting LDCs (Table 4.3) is much higher than that of the DCs (Table 4.2) and the average for the group as a whole (Table 4.1). This is a somewhat surprising result and contradicts the resource curse view that the rates of growth of resource rich countries are lower on account of the Dutch Disease, rent seeking and dysfunctional institutions, etc.

Table-4.2. GDP Growth Rates of Top Oil and Gas Exporting DCs

Period	Growth Rates
1980s	2.66
1990s	1.08
2000s	2.77

Table-4.3. GDP Growth Rates of Top Oil and Gas Exporting LDCs

Period	Growth Rates
1980s	1.86
1990s	5.99
2000s	5.99

Next we turn to the growth performance of ore and mineral rich countries. The rates of growth of these countries for the decades of the 1980s, 1990s and 2000 have been presented in Table 4.4. We find the growth performance of ore and mineral rich countries somewhat similar to the growth performance of oil and gas abundant countries discussed earlier.

Table-4.4. GDP Growth Rates of Ore and Mineral Rich Countries

Period	Growth Rates
1980s	2.70
1990s	3.89
2000s	4.30

The average annual rate of growth of ore and mineral rich countries was 2.7% during the 1980s, which increased to 3.89% during the 1990s and increased further to 4.3% during the 2000 decade (Table 4.4). The growth performance of this category of countries during the 1980s was also as a result of good growth performance of Botswana, Chile, China and Indonesia. The increase in growth rates in the 1990s was due to the spectacular growth performance of the Iraqi economy during the decade of the 1990s, which could not be maintained during the 2000 decade as a result of US/UK invasion of that country in 2003. The further enhancement in growth performance of this group of countries during the 2000 decade was due to increase in the rate of growth of the Chinese, Indian, Tanzanian and Kuwaiti economies.

In order to isolate the growth performance of developed ore and mineral rich countries from the less developed ore and mineral rich countries, we separated China, Australia, Canada, Russia and USA from the rest. The growth performance of these countries during the decades of the 1980s, 1990s and 2000s are contained in Table 4.5. We find that the respectable growth performance of this group of countries during the last three decades was entirely due to the spectacular performance of the Chinese economy. The Russian economy also picked up during the decade of the 2000s.

Table-4.5. GDP Growth Rates of Ore and Mineral Rich DCs

Period	Growth Rates
1980s	4.81
1990s	2.81
2000s	4.49

The growth performance of ore and mineral rich less developed countries (LDCs) improved during the 1990s, as revealed by Table 4.6, although their growth performance has been stalled during the 2000 decade. The fantastic growth performance of Botswana during the 1980s could not be maintained at the same rate during the 1990s. The spectacular growth performance of Iraq really lifted the rate of growth statistics of this group of countries during the 1990s. Chile and India also performed well. High performing countries during the 2000 decade were Botswana, Chile, India, Indonesia, Peru, Tanzania, Kuwait, Kazakhstan, Iran and the UAE.

Table-4.6. GDP Growth Rates of Ore and Mineral Rich LDCs

Period	Growth Rates
1980s	2.31
1990s	4.31
2000s	4.20

A comparative analysis of Tables 4.4, 4.5 and 4.6 reveals that the average annual rate of growth of ore and mineral rich countries was only 2.7 percent during the 1980s, but increased substantially to 3.89 percent during the 1990s, climbing further to 4.30 percent during the 2000 decade. Our data, therefore, refute the low growth prediction propounded by the resource curse literature for the last two decades. A comparison of growth performance of ore and mineral rich DCs and LDCs reveals that while the former had more than double the average annual growth rate of GDP of the latter in the 1980s, the situation changed substantially during the 1990s, with ore and mineral rich LDCs average annual GDP growth rate almost double the GDP growth rate of the DCs. But ore and mineral rich DCs out-performed ore and mineral rich LDCs during the 2000 decade.

Next we look at the growth rates of resource scarce countries contained in Table 4.7. The rate of GDP growth of this group of countries improved during the last three decades. High performing countries in this group during the 1980s were Argentina and Barbuda, Pakistan, Mauritius, Korea and Hong Kong. But most of these countries could not keep up their growth performance during the 1990s. During the 1990s the high growth performance of Bosnia and Herzegovina in spite of the civil war in that country is somewhat puzzling. During the 2000 decade Azerbaijan topped the list of this category of countries, followed by Ethiopia and Mozambique.

Table-4.7. GDP Growth Rates of Natural Resource Scarce Countries

Period	Growth Rates
1980s	2.96
1990s	3.50
2000s	3.78

A comparative analysis of Tables 4.1, 4.4 and 4.7 corroborates our earlier finding that the rates of growth of GDP of resource rich countries was in conformity with the predictions of the resource curse literature for the 1980s only. During the decades of the 1990 and 2000 the rates of growth of resource rich countries have been over taken by the rates of growth of resource scarce countries. The rate of GDP growth of resource scarce countries at 2.96 percent (Table 4.7) was higher than the rate of growth of top oil and gas exporting countries at 2.05 percent (Table 4.1) and the rate of growth of ore and mineral rich countries at 2.70 percent during the 1980s (Table 4.4). But the rate of growth of resource scarce countries at 3.50 percent was far below the rate of growth of the top oil and gas exporting countries at 4.68 percent (Table 4.1) and the rate of growth of mineral and ore rich countries at 3.89 percent (Table 4.4) during the 1990s. The same trend continued during the 2000 decade, with natural resource scarce countries GDP increasing at the annual average rate of 3.78 percent (Table 4.7) compared with the GDP growth rate of 5.23 percent (Table 4.1) for top oil and gas exporting countries and 4.30 percent (Table 4.4) for ore and mineral rich countries. Once again our data appear to refute the predictions of the resource curse literature for the last two decades, and are in conformity with Auty (2001), Lederman and Maloney (2006), Mahlum et al (2006b), Boschini et. al (2007) and Brunnschweiler (2007) who refuted the resource curse theory.

5. Overview Of Global Growth Trends and Conclusion

An overview of global growth trends during the last three decades shows that countries that had rate of GDP growth of 6 plus during the 1980s were: Botswana, China, Indonesia, Congo, Antigua and Barbuda, Hong Kong, Egypt, Korea, Mauritius, Pakistan, Swaziland and Thailand. Out of these the only countries that were able to maintain their growth performance during the decade of the 1990s were: Botswana and China. Congo could not maintain its growth performance as it got embroiled in conflicts starting with the first Congo War in 1996, followed by the Second Congo War in 1998. Indonesia had the Aceh rebellion starting mid 1980s and continuing for several years thereafter. East Timor problem had already started in 1975 and continued till 1999. Indonesia has also been bogged down with conflict as a result of the Ambon ethnic violence starting in 1999, which continues till today. Pakistan's spectacular growth performance that started in the 1960s when Pakistan was considered a role model, was able to continue on the high growth path during the 1980s, in spite of some interruptions during the 1970s. But the decline that started in the 1990s in Pakistan as a result of the debt crisis, World Bank and IMF policies continued during the 2000 decade. In the 2000 decade the aftermath of 9/11, army operations in different parts of the country, return to World Bank and IMF policies on account of IMF borrowings and programs compounded the problems, with negative consequences on GDP growth.

Besides Botswana and China, the other high performing countries during the 1990s were Iraq (whose average is only for two years), Chile, Malaysia, Korea, Bosnia and Ireland. Of these, only China and Kuwait continued to grow at 6 plus rate of growth during the 2000 decade. Korea got involved in the Korean Border Battle in 2001 and the Korean Border Battle at Sea in 2002. The battles seem to have taken their toll. Iraq had the Kurdish rebellion and other internal rebellions in 1991, the first Gulf War in 1990 followed by the second Gulf War in 2003.

China and Kuwait are the only countries that were able to maintain the spectacular growth performance during the 2000 decade. Other high growth economies during this decade were: Azerbaijan, Qatar, Turkmenistan, India, Tanzania, Kazakhstan, Chad, Rwanda, Ethiopia, Sudan, Mozambique, Trinidad and Tobago and Nigeria. Of the high performing countries during the last three decades at least thirteen were resource rich countries. They were not afflicted by the 'resource curse', till such time that they got involved in conflicts, as is borne out by the experiences of Congo, Indonesia, Iraq, etc. It appears that the resource curse literature, which by and large, emphasises the importance of internal factors only, cannot explain the growth performance of countries during last two decades.

Our finding that high performing countries could not maintain their performance as they got embroiled in conflict is in conformity with studies that have emphasised the adverse impact of conflict on growth and include Hirshleifer (1991), Grossman (1991), Grossman and Kim (1995),

Easterly and Levine (1997), Collier and Hoeffler (1998, 2003, 2004), Ross (2002), Meija (2004), Humphreys (2005), Koubi (2005), Gylfason and Zoega (2006), Arezki and Ploeg (2006), Lindgren (2006) and Boschini (2007).

Will high growth performing countries be able to maintain their growth performance in the 2010-20 decade? With widespread conflict enveloping the developing world, it is not difficult to foresee that most of these countries will fall prey to it. Whether China continues on the high growth path for the fourth consecutive decade, will depend on whether it is able to keep itself free of conflict. There are already signs of slowing down of the Chinese growth rates as a result of the global recession. Moreover, conflict in the Xinkiang region is also becoming more intense. Whether China is able to keep on the high growth path depends on the ability of Chinese policy makers in finding alternative sources of growth, both internal and external. But equally, it depends on the ability of the Chinese policy makers to preempt the conflict from boiling to a point that it starts disrupting the rate of growth. Further research needs to be conducted to explore why high performing countries fall prey to conflict? Or does conflict afflict all the countries irrespective of performance? What are the external and internal dimensions of conflict? Further research also needs to address the transmission mechanism between resource endowment, conflict and growth. Unraveling the factors that instigate conflict in resource abundant countries need to be identified. Does conflict afflict the resource abundant countries on account of “greedy outsiders mechanism” and the “weak state mechanism” articulated by Humphreys. Further research on these issues will go a long way in bringing peace and tranquility to the present conflict ridden world.

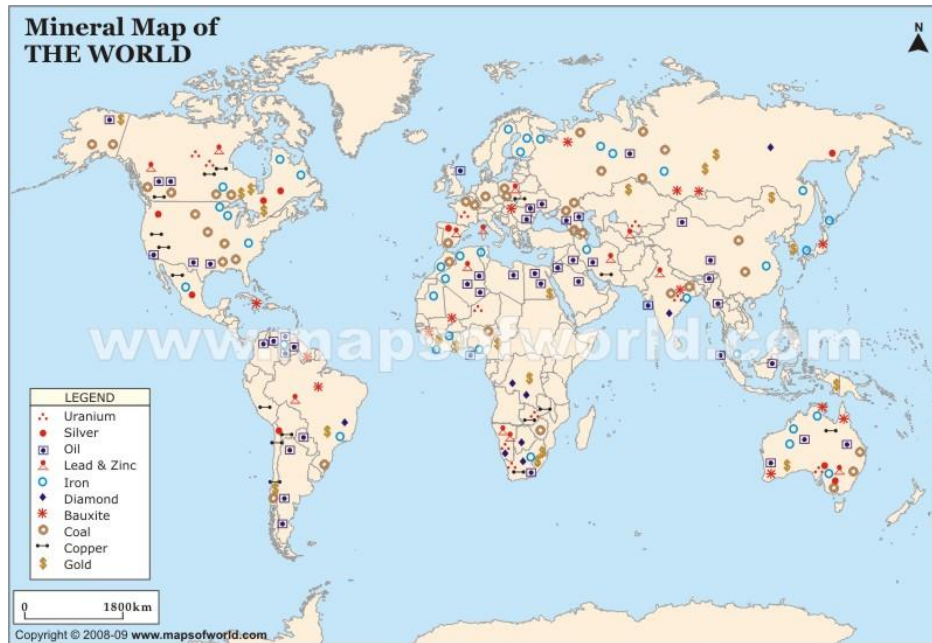
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Appendix-1. World Mineral Map



The **World Mineral Map** shows a world map where the availability of minerals in various parts of the world has been shown.

World minerals marked on the mineral map of the world, are uranium, silver, oil, lead and zinc, iron, diamond, bauxite, coal, copper and gold. .Australia is the continent with the world's largest uranium reserves. Canada is the largest exporter of uranium ore. Mexico is the largest silver exporter in the world. Earlier diamonds were found only in alluvial deposits of southern India. At present Diamond deposits are also found in Africa, South Africa, Namibia, Botswana, the Democratic Republic of Congo, Tanzania and Congo. The five largest producers of iron ore are China, Brazil, Australia, Russia and India. These five countries account for about 70% of the world's iron ore production. Huge chunk of gold supply comes from South Africa.

Canada, United States and Western Australia are also major producers of gold. Oceans also hold vast amounts of gold. Copper-ore can be found in Chile, Mexico, United States, Indonesia, Australia, Peru, Russia, Canada, China, Poland and Kazakhstan. Oil reserves can be found in Canada, United States, Mexico, Saudi Arabia, Iran, Iraq, United Arab Emirates and Kuwait. Bauxite reserves are found in Australia, Brazil, Guinea, Guyana, India, Jamaica, Russia, Suriname, United States and Venezuela.

Source: www.mapsofworld.com

Appendix-2. The Largest Oil Exporters

