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# Natural Resources and Sustainable Development*

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*Keywords*: Natural resource curse; sustainable development; wealth creation; adjusted net saving (ANS); Dutch disease

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# 1 Introduction

Developing countries are usually deficient in physical and human capital, two important factors of production. Some of these countries have a relatively large stock of natural resources that can potentially play a crucial role in the initial stage of growth and development.[1] However, these countries often face a difficult choice of using natural resources (or revenues from them) for current consumption or for building physical and human capital. Of course, the first choice may make the country prosperous in the short-run but will not place it on a path of sustainable growth and development. This is particularly true if the resources are nonrenewable. In contrast, if a country chooses to transform its natural resources into physical and human capital, it will set the country on a course of sustainable growth and development. Sometimes a country is so poor that it is forced to use its natural resources for current consumption and thus gets trapped in abject poverty in the long-run. As we will discuss below, these choices are intricately related to a host of other economic and noneconomic factors. Thus, formulating and implementing an appropriate policy on how to harness natural resources for sustainable development could be a formidable task.

Empirical evidence suggests that many of the natural resource abundant countries grow slower than those with little or no such resources. Consequently, there is little change or even decline in the standard of living in those countries.[2] This paradoxical phenomenon is often referred to as the natural resource curse or the paradox of plenty.[3] There are two important points to note here. *First*, some countries reach a level of economic prosperity in terms of per capita income due to natural resources.

[1] In economics, natural resources are traditionally considered a factor of production that contributes to economic growth of a country or a region. However, their existence is not a necessary nor a sufficient condition for growth. Japan is a typical textbook example. Despite being poor in natural resources, Japan has been able to achieve high economic growth. In contrast, Congo, a natural resource rich country, has been languishing in economic growth and prosperity.

[2] Although we will use resource abundance and resource dependence almost interchangeably, they are not exactly the same. A natural resource abundant country does not have to be natural resource dependent. To be more precise, natural resource dependent will be an apt description of a country if natural resource rents account for a substantial share of national income.

[3] The phrase "natural resource curse" is attributed to Auty (1993, 2001)

For example, Saudi Arabia, Kuwait, and Qatar - to name a few - are classified as high income countries. But their growth records have not been impressive nor are they among the top when it comes to other indicators of human development. *Second*, there are other natural resource-rich countries that have never achieved high levels of economic prosperity. These countries have been either growing very slowly or declining.

The objectives of this article are two-fold. We first discuss the undesirable consequence of natural resource abundance – the resource curse that has plagued many developing countries around the world and has the potential of making development unsustainable unless appropriate strategy is adopted. We then present some empirical data to highlight the relationship between natural resource abundance and sustainable development. We follow a relatively new paradigm of sustainable development that emphasizes creating wealth as a source of sustainable income and social well-being.

The rest of the article is organized as follows. Section 2 briefly discusses empirical evidence of the resource curse from existing studies. It also includes a discussion of various channels through which natural resource curse acts to hinder economic development. In Section 3, we present data on various types of wealth, including natural resources, across different countries to highlight the changes in wealth over time and to decipher some relationships between natural resource abundance and sustainable development. The final section includes a summary and the concluding remarks.

## 2 The Resource Curse

As we have mentioned earlier, countries abundant in (more appropriately, dependent on) natural resources do not necessarily experience rapid economic growth. The following figure presents a scatterplot of average annual growth rates and GDP shares of resource exports for a number of countries from 1970 to 2009. As the figure reveals, countries with high resource exports such as Gabon, Venezuela, and Zambia have lower growth rates than countries with relatively low natural

resource exports such China, Thailand, and India. Overall, there seems to be a negative relationship between economic growth and natural resource dependence. There are a number of empirical studies (e.g. Sachs and Warner 1995 & 2001; Sala-i-Martin and Subramanian 2003) that find evidence of a negative relationship between dependence on natural resources and economic growth using various datasets and controlling for other factors relevant for growth. However, there are counterexamples.[4] For example, Norway is rich in oil but has one of the highest standards of living among even the developed countries.[5] Among developing countries, Botswana, abundant in diamonds, has not only achieved the highest economic growth for over three decades in continental Africa but has also been successful as a democracy with political stability.

[Insert Figure 1]

There is no consensus among the findings of the empirical literature on the relationship between natural resource abundance (dependence) and economic growth. There are some studies (e.g. Davis 1995; Herb 2005) that find little evidence of resource curse. Some other studies (Alexeev and Conrad 2009) in fact show positive effects of oil and mineral resources on per capita income. In some cases, there are technical and data issues that are responsible for different results. However, even casual observations would tell us that many resource-rich countries have low growth and lag behind others in certain measures of human development. The literature discusses several potential channels through which this curse may operate. It is in this context that it is worthwhile to discuss and understand some of these channels. A grasp of these channels could be useful in formulating prudent policies for harnessing natural resources to promote growth and development.

[4] For a detailed survey, see Frankel (2010).
[5] According to the World Bank (2011), natural resource rents accounted for about 14 per cent of Norway's GDP.

*2.1 Worsening Terms-of-Trade*

If a country is solely dependent on the export of one or a few primary commodities (agricultural products, minerals etc.), the economy tends to be less diversified. If the rent from the natural resources is not invested in the accumulation of physical and human capital and is entirely used for consumption, there will be hardly any scope for diverse economic activities. From the perspective of the classical trade theory, this should not be problematic as the country may have specialized according to its comparative advantage and, as such, it will keep exporting the primary commodities and will import other goods with the export revenues. However, Prebisch (1950) and Singer (1950) argue that as world income increases, the demand for primary commodities will remain stagnant and, consequently, their prices relative to the prices of manufactured and other products will fall and this will be harmful to the growth unless the country industrializes by diversifying into manufacturing.[6]

*2.2 The Dutch Disease*

A boom in resource exports – due either to an increase in the world price or to an expansion in supply – causes an appreciation of domestic currency against foreign currencies. While this makes imports of other tradable items from the rest of the world cheaper it hurts exporters as domestically produced goods become more expensive to foreigners. It also increases domestic demand for non-tradable items such as housing. Thus, there is a change in domestic industry-mix with reduced share of manufacturing sector, which - some would argue – is critically important for long-run growth. In particular, without a well-developed manufacturing sector, the scope for technological progress and growth is limited. At least, so goes the argument. However, this is just one way of thinking about the harmful effects of a resource boom. The other, perhaps more plausible, way a resource boom could harm growth has to do with the transitory nature of the changes in world prices. Once the world price goes down, all the

[6] This was in fact the main theoretical argument for import substitution development strategy that was adopted by many countries including India after the World War II.

processes discussed above are reversed. The harmful effect of a boom in resource exports is known as the "Dutch disease", after the detrimental effects of natural gas boom in the North Sea on the Dutch economy. However, as Collier (2007) discusses, "by the 1980s Dutch disease did not seem a sufficient explanation for the problems of resource-rich countries" (pp. 40). Then the economists focused their attention on the volatile nature of resources revenue as a potential source of those problems.

*2.3 Volatile and Transitory Resource Revenue*

Natural resource revenues are often very volatile and transitory. This has several important implications for overall growth and development of the economy. The public infrastructure projects that are dependent on resource revenues suffer from the revenue volatility. Also, the governments tend to choose faulty planning and policies for public works that have significant consequences for development. For example, the governments in resource rich countries would often go for very expensive white elephant projects during the resource booms and then not be able to complete them due to a lack of funds during the resource busts.[7] Further, governments fail to prioritize public spending during the resource booms. They make excessive budget allocation to frivolous and often populist programs during the resource booms and find it hard to cut back when resource revenues dry down during the slump. For example, as Medas and Zakharova (2009) point out, oil windfalls have often been spent on higher public sector wages. They are also used for hiring more government employees. The increased wage bill is hard to reverse when oil revenue goes down. Consequently, spending in basic investment sectors such as education and health gets cut with long-run detrimental effects. The volatile and transitory nature of natural resource revenue also makes investment in the country risky.

[7] See Gelb, 1986.

*2.4 Natural Resources and Conflicts*

Some studies (e.g. Hodler 2006; Collier 2007) state that dependence on primary commodities such as oil and diamonds may lead to violent conflicts or civil wars that in turn harm economic performance. The attempts by various factions to take control over the resources lead to violent conflicts. In absence of the enforcement of property rights by legitimate governments, the multinational companies that are engaged in extraction and exports of natural resources often rely on the warring factions and pay rents to them in return for providing protection. The conflicts in Angola, Congo, and Sudan are prime examples of such conflicts. In contrast, some studies show that it is not the dependence on primary commodities that leads to conflict but it is the conflict that increases the dependence on natural resources exports. The natural resource rents provide a steady source of finance for the conflicts.

*2.5 Natural Resources and Institutions*

The existing literature also holds that natural resource abundance may inhibit the creation of institutions and governance that are conducive to long-run growth. As we have already seen above, the attempts to take control of natural resources may lead to violent conflicts and the worst form of governance. Furthermore, as Engerman and Sokoloff (2000) explain, countries endowed with extractive industries and plantation crops developed institutions of slavery, inequality, dictatorship, and state control, whereas countries with climates suited for fishing and small farming developed institutions based on individualism, democracy, egalitarianism, and capitalism. According to them, these institutions explain why industrialization first took place in North America and not in Latin America.[8]

[8] However, good institutions are not necessarily equated with democracy that may not be necessary for economic growth. It is important to ensure rule of law, political stability, openness to international trade, initial equality of economic endowment and opportunities that can be achieved even without democracy. Chile, Singapore, Taiwan, Korea are prime examples.

Many resource-rich countries are under autocratic regimes and, going by the conventional measure of economic prosperity, they are doing relatively well. For example, the oil rich countries of the Middle-East and Northern Africa are either high-income or middle-income countries according to the level of per capita income.[9] Some studies (e.g. Norman 2009), however, question the proposition that natural resource endowments lead to the development of different types of institutions with implications for economic growth and prosperity. According to others, it is more important to consider the quality of institutions at the time of discovery and development of natural resources.

*2.6 Natural Resources and Democracy*

In natural resource rich countries, democracy tends to malfunction. According to Collier (2007), natural resource rents undermine two sets of rules that define democracy. The first set of rules is about how power is achieved, i.e. about electoral competition, and the second set of rules is about how power is used. In normal circumstances, electoral competition is won by delivering effective and efficient public services. In resource-rich countries, politicians can use resource rents to bribe the voters. Furthermore, in case of the second set of rules taxation of the people to run the government creates accountability. People (voters) hold politicians responsible for spending the tax revenues. However, in resource rich countries people do not have to pay taxes and therefore they are indifferent about how resource rents are used. Consequently, the politicians do not feel responsible and squander the rents on items that are not at all important for future growth and development. Since they can use the resource rent to bribe the voters they do not have to worry about spending them on public services.

[9] As Mahdavy (1970) and many others suggest, governments in these countries need not tax their people as they have full access to the oil revenue. With no need for taxation, there is hardly any reason to have democracy.

One or more of these channels could be at work for natural resource curse to plague a country. Addressing the resource curse would require a comprehensive policy that addresses the issues associated with the relevant channels.

# 3 Natural Resources and Sustainable Development

## *3.1 The Conceptual Framework*

The above discussion highlights how natural resources may be harmful to economic growth, particularly in developing countries. Even if some country may enjoy economic prosperity and growth due to natural resource abundance it could be short-lived. In particular, unless natural resource revenues are prudently utilized to build economic capacity, prosperity will soon evaporate. Unfortunately, measuring development by per capita GDP and its growth may lead to erroneous policies with respect to the extraction and use of natural resources. A pursuit of increases in per capita GDP may lead to depletion of natural resources with no more future growth. If the goal of development is a sustained sense of wellbeing, the role of natural resources has to be defined in terms of creating and maintaining a source of such wellbeing. In recent decades, thinking along this line has led to a new paradigm for understanding and pursuing sustainable development. It defines development as "a process of building and managing a portfolio of assets".[10] Here, assets (wealth) are the source of sustained income and, therefore, of wellbeing.

The wealth accounting within this new paradigm divides wealth into three broad types, namely produced, natural, and intangible capital. Produced capital includes machinery, equipment, and structures, and urban land. Natural capital includes energy resources (oil, natural gas, hard coal, lignite), mineral resources (bauxite, copper, gold, iron, lead, nickel, phosphate, silver, tin, zinc), timber

[10] World Bank (2011), pp. 4

resources, non-timber forest resources, crop land, pasture land, and protected areas. Intangible capital is calculated as a residual by subtracting produced and natural capital and net foreign assets from total wealth. It includes human, social, and institutional capital. The objective of creating national wealth accounts is to obtain a comprehensive and uniform measure of wealth across nations and over time so that development can be gauged in terms of creating economic capability that will ensure sustainable wellbeing.

Consistent with this new wealth accounting framework is the concept of adjusted net saving (ANS) or genuine saving. In general, savings and investment are important measures for understanding the dynamics of capital accumulation. Since the definition of wealth in this new framework is much broader than that of capital, ANS is also defined broadly. It is national net saving adjusted for the value of resource depletion and environmental degradation and credited for education expenditures (a proxy for investment in human capital). This measure is very important and useful for assessing the dynamics of sustainable development.

As we will see below, natural resource capital constitutes a relatively large share of comprehensive wealth in many developing countries. Thus, the question of sustainable development is intricately related to policies and practices that natural resource dependent developing countries adopt with respect to managing their natural capital. In those countries, natural resources play a critical role in creating wealth through saving and investment. How are resource rents allocated between consumption and savings? Savings are important for financing investment through which wealth is created. Hartwick (1977) provides a simple rule of thumb, known as the Hartwick rule.[11] According to this rule, countries abundant in nonrenewable natural resources can maintain consumption, i.e. can

[11] Solow (1986) later dwelt on the Hartwick rule.

achieve sustainable development, by continuously investing the resources rents rather using them for consumption.

*3.2 Distribution and Creation of Wealth across the Developing World*

Using the new wealth accounting framework, the World Bank (2011) estimates wealth for more than 100 countries around the world for three years: 1995, 2000, and 2005. Table 1 below summarizes the findings for 1995 and 2005. In our discussion below, we will mainly focus on developing countries, i.e. low and middle income countries.

[Insert Table 1]

Table 1 reveals that low income countries accounted for less than half a percent of global wealth in 1995. This share increased marginally in 2005. Note that 10 per cent of the world population lives in those low income countries. The shares of higher middle income countries and high income OECD countries declined while that of lower middle income countries increased. Lower middle income countries experienced the fastest growth in total wealth. Per capita wealth increased at an average annual rate of 1.5 per cent worldwide. Among different income groups of countries, the growth rate was the highest (about 4.1 per cent) for lower middle income countries and the lowest (about 1 per cent) for the upper middle income countries. The growth in lower middle income countries was primarily driven by wealth accumulation in China. China's per capita wealth more than doubled from US$ 9,845 (2005 constant US$) in 1995 to US$19,234 in 2005. In contrast, India – a member of the same group of countries – increased its per capita wealth from US$7,396 to $10,539, an increase of about 42 per cent. Note that upper middle income countries include many natural resource rich countries of Latin America, Middle East and North Africa, and Former Soviet Union. The low income countries experienced an average growth of about 1.5 per cent. These countries also experienced very high population growth during this period.

[Insert Table 2]

Table 2 presents the regional distribution of wealth among developing (low and middle –lower as well upper - income) countries in 1995 and 2005. These countries are home to more than 80 per cent of the people who live in the 124 countries included in the World Bank sample. However, they accounted for only 14.5 per cent of total wealth in 1995 and this ratio slightly increased to about 16.1 per cent in 2005. Although total as well as per capita wealth increased in all regions, the relative shares of Latin America and the Caribbean, Middle East and North Africa, and Sub-Saharan Africa declined while those of East Asia and the Pacific and South Asia increased between 1995 and 2005. Despite the fact that the relative wealth share of Latin America and the Caribbean region declined from about 45 per cent to about 39 per cent, the region still has the largest share among developing nations.

In terms of wealth creation in the developing world between 1995 and 2005, East Asia and the Pacific region experienced the largest increase, followed by South Asia. Wealth accumulations in China and India were primarily responsible for the faster growth in these two regions. While Latin America and the Caribbean region registered the slowest growth in total wealth, Sub-Saharan Africa experienced the slowest growth in per capita wealth. In Sub-Saharan Africa, wealth declined in Nigeria, one of the two big economies, while it increased in South Africa, the other large economy. Figure 2 depicts the percentage growth of total and per capita wealth in the developing countries by different regions.

[Insert Figure 2]

In order to fully appreciate the changes in wealth from the perspective of sustainable development, it is useful to examine a country's or a region's savings and investment that captures the dynamic behavior. Figure 3 plots ANS as a percentage of Gross National Income (GNI) by regions from 1975 to 2008. We observe clear upward trends in two regions: East Asia and the Pacific and

South Asia. In Sub-Saharan Africa, we not only see a declining trend but also ANS has been negative in most recent years. Negative ANS implies that the region is depleting its capital stock and it will have a damaging effect on future well-being. In general, there is substantial volatility in ANS. The volatility has been extreme in oil-rich countries of Middle East and North Africa.

[Insert Figure 3]

Overall, we make the following observations. *First*, wealth creation has been the fastest in lower middle income countries. These countries are mainly concentrated in two regions: East Asia and the Pacific and South Asia. ANS in these regions have been relatively higher and have been rising. *Second*, the natural resource rich upper middle income countries of Latin America and the Caribbean and Middle East and North Africa have done poorly in wealth accumulation. It may be noted that these countries have already achieved a certain level of economic prosperity. Although it is difficult to speculate without further investigation and is outside the scope of this article, some of the problems associated with resource abundance and resource dependence that we discussed in the last section may apply to these countries. Finally, the evidence of wealth accumulation in Sub-Saharan Africa has been dismal and is worth taking note of as a large number of poor people live in that region.

*3.3 Natural Capital in Developing Countries*

We now turn our attention to the composition of wealth and how it has changed over time so that we can examine the role of natural resources in development, particularly in developing countries. As we have discussed before, if natural resources account for a substantial share of wealth in developing countries, it is imperative that they transform these resources into other types of assets for sustainable development.

[Insert Table 3]

Table 3 presents the composition of wealth by income groups of countries in 1995 and 2005. In general, more than three-fourth of the total wealth worldwide is intangible capital. However, there are important differences among different groups of countries. While intangible capital accounts for more than half of total wealth for all different groups of countries in 2005, natural resources still constituted 30 and 25 per cent of total wealth of low income and lower middle income countries respectively. These ratios have decreased respectively from 41 and 34 per cent in 1995. However, the corresponding gains in the share of produced capital have been one and three percentage points in these two groups of countries. In contrast, with nine and six percentage point gains in the share of intangible capital respectively, these two groups of countries have made significant strides in acquiring intangible capital. Furthermore, the asset composition among upper middle income countries has remained almost stagnant with natural capital accounting for 15 per cent of total wealth in 1995 as well as in 2005. The slowest growth and stagnant asset portfolio among these mostly upper middle income countries seem to indicate a lack of appropriate asset management strategy that would be important for sustainable development of those countries.[12]

[Insert Figure 4]

If we focus on developing countries alone and examine the creation of different types of wealth by different regions, we observe some important trends. As Figure 4 indicates, except for the Middle East and North Africa, wealth creation was driven by accumulations of intangible capital in most of the developing world. In the Middle East and North Africa, natural capital that consists primarily of subsoil assets accounted for 56 per cent of wealth creation.[13] South Asia and Sub-Saharan Africa experienced decline in their natural capital. However, there were substantial increases in intangible and

[12] Note that although natural capital accounts for only 15 per cent, most of these countries have abundant natural resources (in absolute quantities).
[13] World Bank (2011), pp. 34

produced capital in South Asia while there was no comparable wealth accumulation in Sub-Saharan Africa. According to World Bank (2011), the dismal performance of Sub-Saharan Africa is due mainly to poor performance of Nigeria and a few other countries. Most countries in this region did much better than the regional average would suggest. The developing countries of Europe and central Asia are unique in the sense that the wealth creation during the period was entirely due to increase in intangible capital. It should be noted that there was a substantial increase in subsoil assets, mainly oil and gas, during 2000-05. But this increase was almost entirely offset by a loss of value for agricultural land, forest land, and protected areas. Thus, the net increase in natural capital was negligible.

Since natural capital is very important for wealth creation in developing countries, it would be informative to examine the different components of natural capital. Table 4 presents the percentage shares of different components of natural resources by regions in 2005. Agricultural land is the dominant type of natural capital in two regions: East Asia and the Pacific and South Asia, the fastest growing regions of the developing world in terms of total wealth creation. Subsoil assets are most important in Europe and Central Asia and the Middle East and North Africa. Crop land and subsoil assets are almost equally important in Latin America and the Caribbean and Sub-Saharan Africa. Finally, forests are relatively more important only in Latin America and the Caribbean. Note that capital accumulation has been faster among the countries with lower per capita wealth and relatively lower endowment of subsoil assets, i.e. nonrenewable assets. In contrast, capital accumulation has been slower in countries with relatively larger endowment of subsoil assets.

[Insert Figure 5]

In order to understand the relationship between natural resource dependence and the dynamics of capital accumulation, we again look at the savings behavior of different countries. We pose the following question. Do natural resource-dependent developing countries lag behind others in ANS?

That is, are resource-rich countries cursed to be on a path of unsustainable development? Figure 5 presents a scatterplot of ANS against resource rents, both as percentages of GNI. Most countries with energy and mineral resources rents accounting for more than 60% of GNI have negative ANS indicating that they are on the path of unsustainable development. In contrast, countries where resource rents account for only a small fraction of GNI have higher ANS. Although it would require further probing as to which mechanisms are at work for these countries to lag behind in capital accumulation, there is clear indication that resource curse is present.

[Insert Figure 6]

Since ANS represents change in total wealth, this may camouflage actual development if population grows at a rate faster than the rate of capital creation. In order to maintain and/or raise the standard of living for each person, ANS has to be high enough. Figure 6 plots population-adjusted ANS as a percentage of GNI per capita against population growth rate. In general, there seems to be negative relationship. That is, higher population growth rate is associated with lower ANS per capita. For most developing countries with very high population growth rates (say, higher than 2 per cent), per capita ANS has been negative. In countries with per capita wealth declining it will not be possible to maintain the standard of living for each person and consequently they are on the unsustainable path of development. Note that there are countries that have had positive ANS, such as Algeria, Gabon, Venezuela, but their population-adjusted per capita ANS has been negative. Note that the countries with very high population growth rates such as Maldives and Cape Verde have been able to have positive ANS per capita.

The general conclusion from this section is that countries with relatively larger natural capital and/or highly dependent on natural resource rents have been lagging behind in sustainable development. In those countries, wealth creation has been either slow or negative.

## 4 Concluding Remarks

Empirical evidence suggests that countries abundant in natural resources grow slower than those with little or no such resources. This article briefly discusses this paradoxical phenomenon, known as the natural resource curse, and explains various channels through which this curse may operate. However, natural resources could also be a source of sustainable development if they are prudently used to create wealth. Thus, this paper further presents empirical data on wealth creation across the developing world to assess sustainable development since 1995. In particular, it makes an attempt to unveil a possible relationship between natural resource dependence and sustainable development as measured in terms of creating broadly defined wealth. There are several interesting findings. *First*, among the income groups, lower middle income countries have been creating wealth at the fastest pace. These countries are concentrated mainly in East Asia and the Pacific and South Asia and have low levels of per capita natural capital. *Second*, wealth accumulation has been slower in the natural resource-rich countries of Latin America and the Caribbean and Middle East and North Africa. In highly resource dependent countries, adjusted net saving (ANS) has also been low or negative. *Finally*, ANS in Sub-Saharan Africa has not only been falling but also been negative in most recent years. There has been depletion of natural resources in this region.

Although we have not explored any particular reasons for observed resource curse, our general discussion on various channels provides some guidance for formulating policies to harness natural resources for sustainable development.

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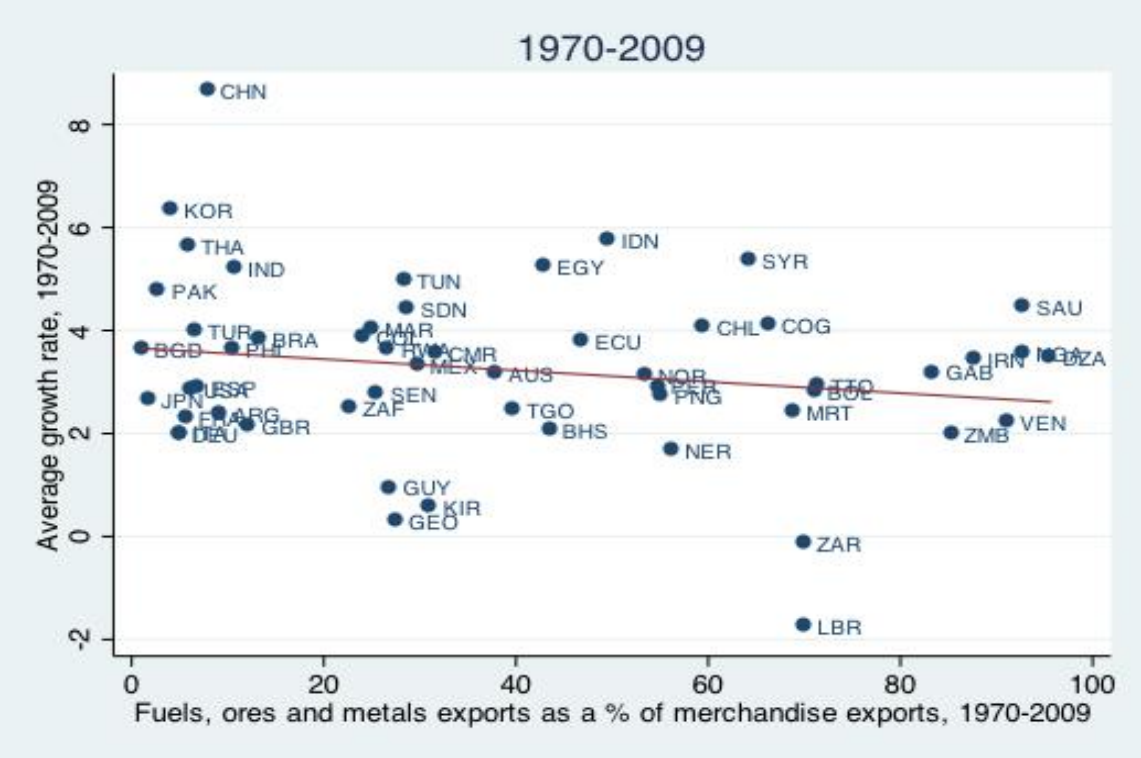
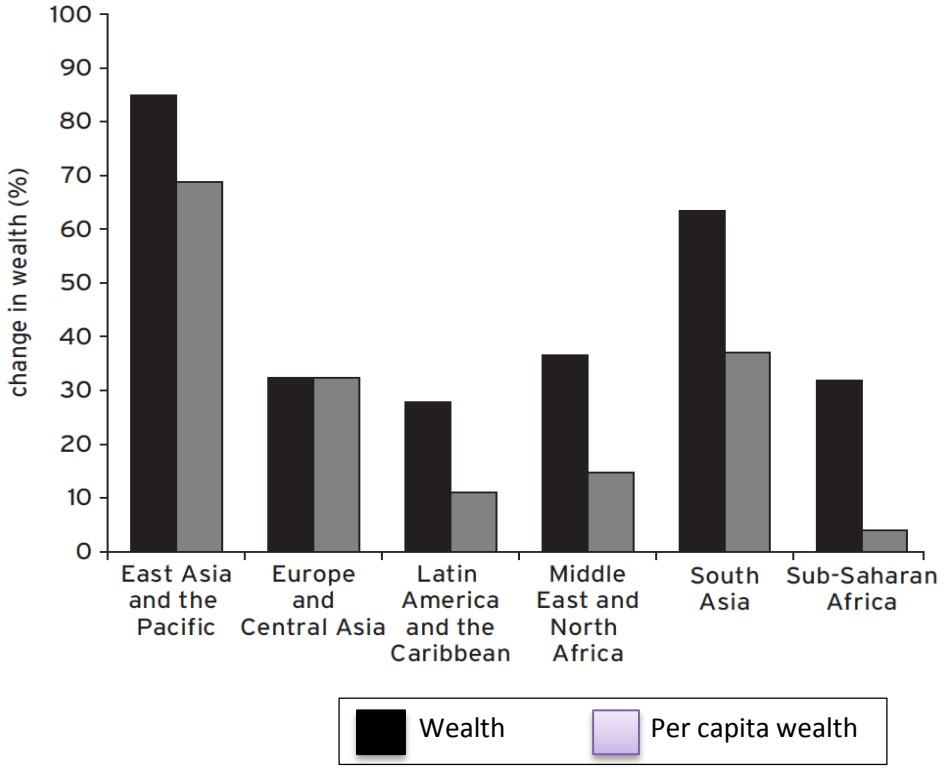
**Figure 1** Natural resource dependence and economic growth: 1970 – 2009



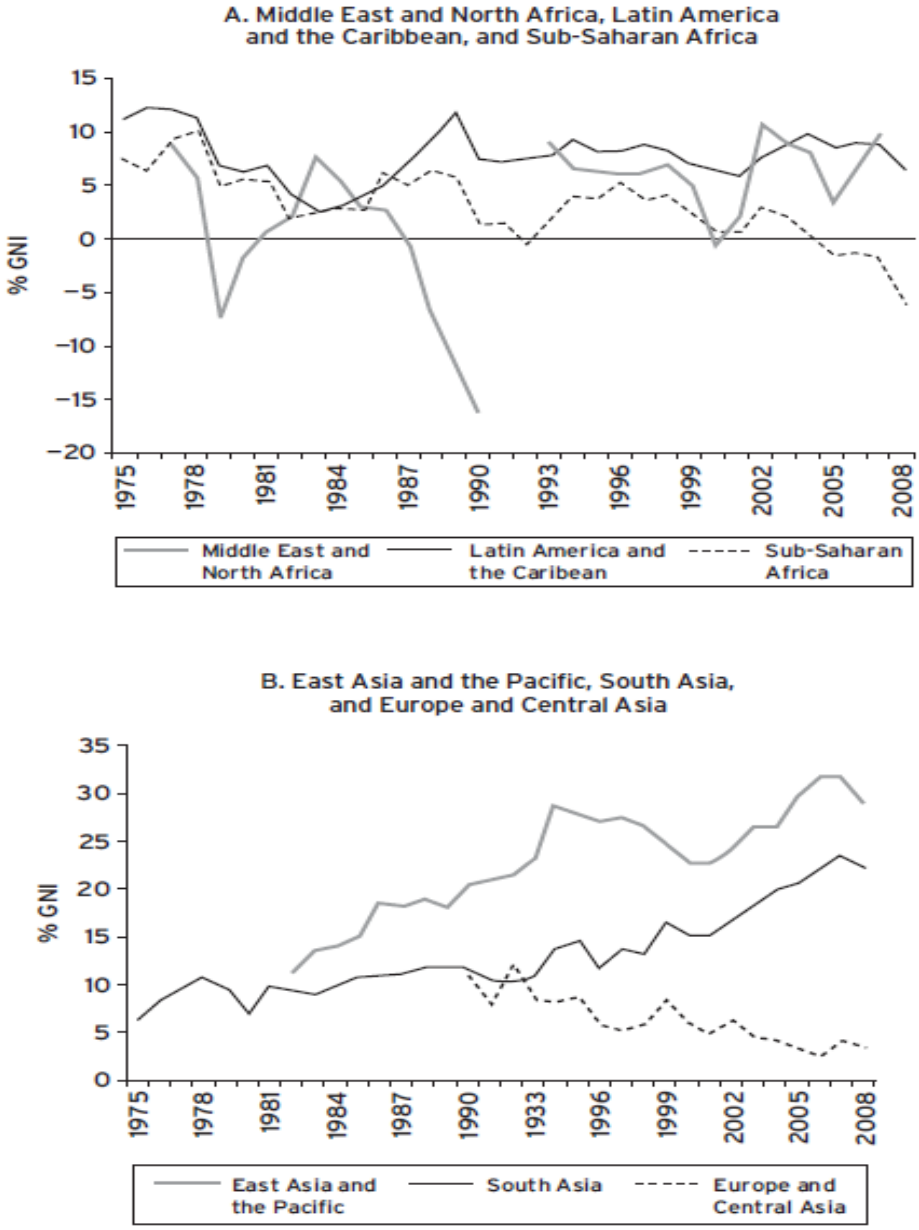

Source: Frankel, J. A. The Natural Resource Curse: Causal Channels, PowerPoint Slides from the lecture presented at the University of Havana, Cuba on November 2, 2012. Downloaded from www.hks.harvard.edu/fs/jfrankel/NRCurseCauses2012Cuba.ppt on December 29, 2013

**Figure 2** Change in total and per capita wealth in developing countries, 1995-2005



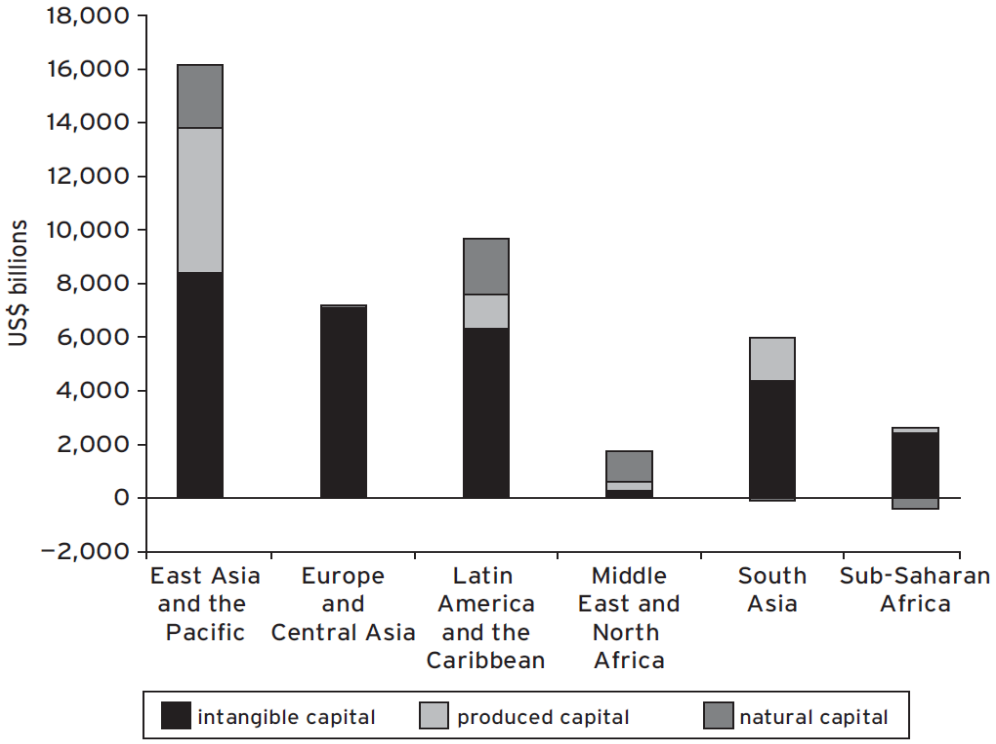

Source: World Bank (2011), Figure 2.4, pp. 34

**Figure 3** Adjusted net savings (ANS) as percentage of Gross National Income (GNI) in developing countries by regions, 1975-2008



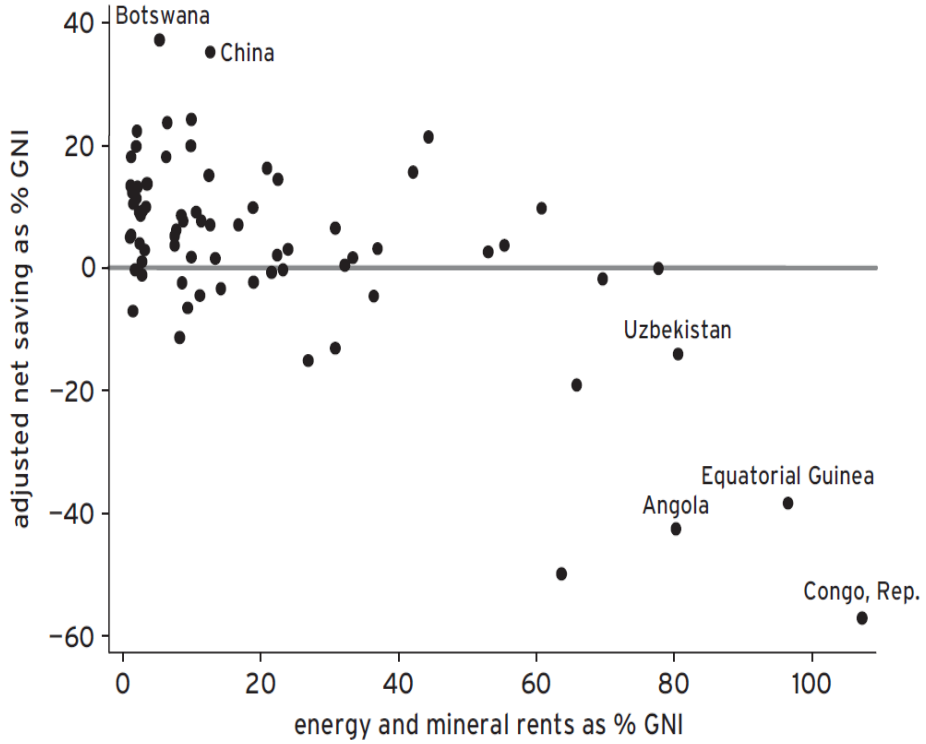

Source: Figure 2.8, World Bank (2011), pp. 40

**Figure 4** Changes in wealth of developing countries by type of assets, 1995 – 2005



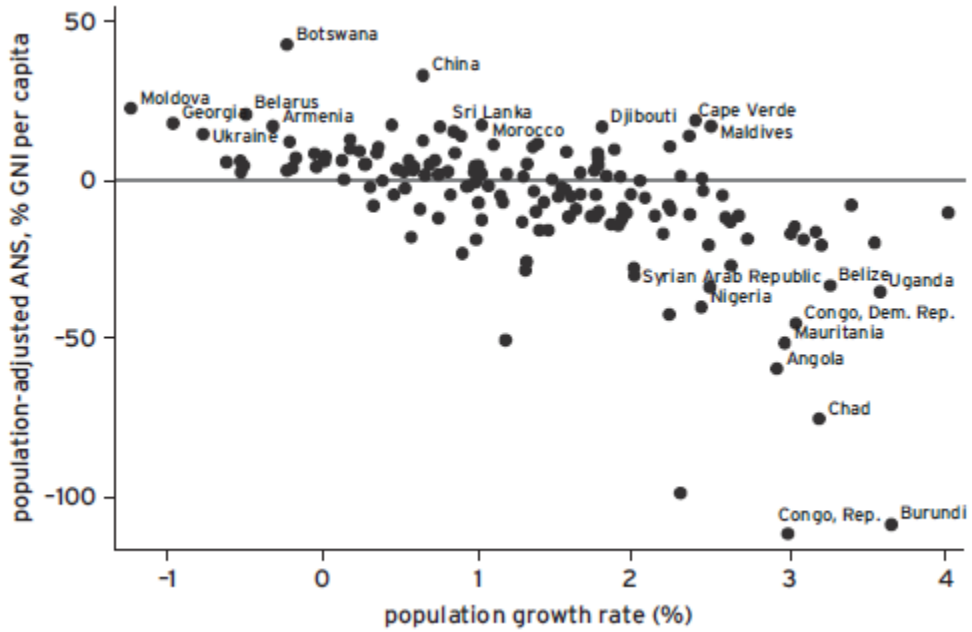

Source: Figure 2.5, World Bank (2011), pp. 35

**Figure 5** Adjusted Net Savings (ANS) across countries with different natural resource dependence, 2008




Source: Figure 2.7, World Bank (2011), pp. 39

**Figure 6** Population-adjusted ANS and population growth rates in developing countries, 2005




Source: Figure 2.9, World Bank (2011), pp. 42

**Table 1** Total and per capita wealth and their growth by income groups, 1995 and 2005

| | Total wealth (billions of 2005 US$) | | | Per capita wealth (2005 US$) | | |
|---|---|---|---|---|---|---|
| | 1995 | 2005 | Average annual growth rate (%) | 1995 | 2005 | Average annual growth rate (%) |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Low income | 2,447 (0.48%) | 3,597 (0.53%) | 3.9 | 5,290 | 6,138 | 1.5 |
| Lower middle income | 33,950 (6.73%) | 58,023 (8.61%) | 5.5 | 11,330 | 16,903 | 4.1 |
| Upper middle income | 36,794 (7.29%) | 47,183 (7.00%) | 2.5 | 73,540 | 81,354 | 1.0 |
| High Income OECD | 421,641 (83.57%) | 551,964 (81.94%) | 2.7 | 478,445 | 588,315 | 2.1 |
| World | 504,548 (100.00%) | 673,593 (100.00%) | 2.9 | 103,311 | 120,475 | 1.5 |

Source: Compiled and computed from Table 1.1, World Bank (2011), pp. 7

Notes: These figures represent group aggregates using a balanced sample of 124 countries. These 124 countries account for more than 85 per cent of the total world population. The percentage shares of total wealth for different income groups are shown in brackets. Growth rates are compounded annually.

**Table 2** Regional distribution of wealth across the developing world (low and middle income countries only)

| Region | Total wealth (billions of 2005 US$) | | Per capita wealth (2005 US$) | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| East Asia and the Pacific | 18,979 (25.9%) | 35,284 (32.4%) | 12,225 | 20,699 |
| Latin America and the Caribbean | 32,848 (44.9%) | 42,079 (38.7%) | 71,536 | 79,194 |
| Middle East and North Africa | 5,073 (6.9%) | 6,951 (6.4%) | 25,015 | 28,992 |
| South Asia | 9,197 (12.6%) | 15,031 (13.8%) | 7,592 | 10,441 |
| Sub-Saharan Africa | 7,094 (9.7%) | 9,457 (8.7%) | 13,295 | 13,888 |
| Total | 73,191 (100%) | 108,803 (100%) | 18,485 | 23,659 |

Source: Compiled and computed from Table B.2, World Bank (2011)

Note: The percentage shares of each region in the total wealth for low and lower middle income countries are given in brackets in Col. (1) and (2).

**Table 3** Composition of wealth by income groups of countries in 1995 and 2005

| | 1995 | | | 2005 | | |
|---|---|---|---|---|---|---|
| | Intangible capital | Produced capital | Natural capital | Intangible capital | Produced capital | Natural capital |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Low income | 48 | 12 | 41 | 57 | 13 | 30 |
| Lower middle income | 45 | 21 | 34 | 51 | 24 | 25 |
| Upper middle income | 68 | 17 | 15 | 69 | 16 | 15 |
| High Income OECD | 80 | 18 | 2 | 81 | 17 | 2 |
| World | 76 | 18 | 6 | 77 | 18 | 5 |

Source: Compiled from Table 1.1, World Bank (2011), pp. 7

Note: For each group of countries, the numbers are in percentages and they add up to 100 in each year.

**Table 4** Total value and composition of natural capital in developing countries by region, 2005

| Region | Per capita wealth (US$) | Crop land | Pasture land | Forest and protected land | Subsoil assets |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| East Asia and the Pacific | 4,401 | 55 | 6 | 16 | 23 |
| Europe and Central Asia | 15,330 | 14 | 11 | 13 | 62 |
| Latin America and the Caribbean | 12,063 | 33 | 10 | 27 | 30 |
| Middle East and North Africa | 9,895 | 20 | 8 | 2 | 69 |
| South Asia | 2,637 | 49 | 25 | 13 | 13 |
| Sub-Saharan Africa | 3,686 | 35 | 13 | 17 | 36 |

Source: Table 2.5, World Bank (2011), pp. 36