

Natural Resources: A Blessing or a Curse?

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“We are in part to blame, but this is the curse of being born with a copper spoon in our mouths” – Kenneth Kaunda, First President of Zambia

1. What is the ‘resource curse’?

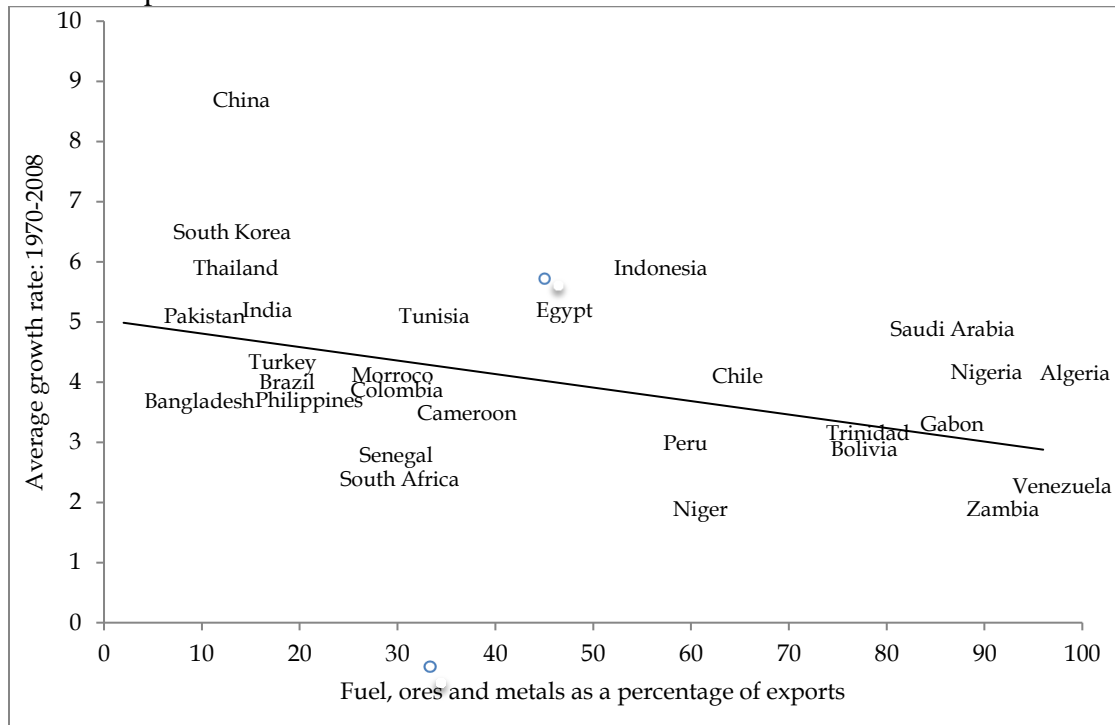
The term ‘resource curse’ refers to the idea that the possession of natural resources (particularly in the form of oil or minerals) does not necessarily lead to economic success, and that resource wealth can even have a structural negative impact on long-term economic development. While it seems strange to suggest that a country could be economically (as well as socially and politically) hindered by its possession of a valuable – and often essential – economic input, scholars who believe in the resource curse suggest that, more often than not, resource-rich or resource-dependent countries are worse off compared to countries with few natural endowments.

Since the Scramble for Africa began in the 19th century, Africa’s natural resources have attracted a lot of attention. It may come as somewhat of a surprise that the African continent was not the main supplier of any of the central raw materials of great importance in the 19th century global economy. For instance, of the natural resources coal, iron, oil, cotton, rubber and copper, only rubber was a primarily colonial product, and four-fifth’s of the world’s supply was derived in British Malay and the Dutch East Indies. More recently, many African countries are increasingly rich in oil, diamonds and minerals. Yet, African countries have and continue to experience low levels of economic growth and development.

By contrast, in the second half the 20th century many East Asian economies have experienced very rapid economic growth and achieved Western living standards despite having no exportable resources. In 1993 Richard Auty, an economic geographer, coined the phrase ‘natural resource curse’ to describe this counter-intuitive phenomenon. Two years later, the economists Jeffrey Sachs and Andrew Warner initiated the big statistical literature on the subject. They found that dependence on natural resources was connected

to low levels of economic growth. As shown in Figure 1, the relationship between economic growth (measured by the average annual growth of per capita Gross Domestic Product) and resource dependence (measured by the share of natural resources in total exports), is negative: this means that, at least for the period 1970 to 2008, the economies of countries whose wealth consisted mostly of natural resources grew at a slower rate than those with a lower share of resource wealth. Many scholars have argued that this relationship holds, on average, over different sample periods and for different measures of resource wealth. Sachs and Warner, for example, claimed their findings are not easily explained by other factors or by alternative ways of measuring resource abundance or dependence. More recently, Frederick Van der Ploeg has pointed out the variety of experiences of resource rich countries, though noting that the resource curse is primarily a phenomenon of the last 40-50 years. He points to the benefits of natural resources for countries with “good institutions”, free trade and high levels of investment in extractive technology. A key lesson from American history, according to Van der Ploeg, is to invest in the technologies needed to explore and develop natural resources. Yet, he still acknowledges there is an apparent curse present for many resource dependent countries, and particularly in presidential democracies with underdeveloped financial systems.

Figure 1: Cross-country economic growth and resource dependence – a negative relationship



Sources: Penn World Tables and World Development Indicators

2. Five explanations for the resource curse

The resource curse is not universal. There are many examples of resource abundant and economically successful countries such as Norway and Australia. Within the African continent there are differences too. Furthermore, countries can experience turnarounds. Former successful countries such as Venezuela (rich in oil), have had downturns whereas Chile (rich in copper) has seen great improvement in the management of its natural resource wealth.

Historically, natural resources such as coal and iron were a geographic blessing. The Industrial Revolution in England and the subsequent economic development of the lower Rhine and the United States were achievable in part due to access to natural resources. There are many historical examples of countries that developed their resources as part of strong economy-wide growth. Examples of economic growth tied to natural resource wealth include:

- the United States during 19th century industrialisation period
- Venezuela from the 1920s to the 1970s
- Australia since the 1960s
- Norway since its oil discoveries of 1969
- Chile since adoption of a new mining code in 1983
- Peru since privatization in 1992
- Brazil since the lifting of restrictions on foreign mining firms in 1995
- Botswana (more on this later)

In spite of these success stories, the resource curse idea persists and has been a strong feature of the economics of developing regions since the 1960s. The dynamics of the curse are puzzling and several primary explanations have emerged.

Explanation 1: Long-term declines in commodity prices

The first major explanation for the economic hardship induced by natural resources emerged in the late 1940s by two economists, Hans Singer and Raúl Prebisch. The Singer-Prebisch hypothesis maintained that the terms of trade (the value of a country's exports relative to its imports) worked against countries that exported primary products (which include unprocessed natural resources). In other words, in the long run prices of primary products like cotton declined relative to manufactured goods such as cars. This led many development economists of the post-World War II era to recommend import substitution industrialization policies (ISI). ISI policies involve a rise of import tariffs in order to encourage domestic manufacturing and industry and, ultimately, long-term economic development. Economic historians and economists have tested the Singer-

Prebisch hypothesis with mixed results. The general conclusion is that there has not been an overall decline in resource prices.

As shown in Table 1, there is some evidence of what is often called “super cycles” in commodity prices: that is, long boom periods – lasting several years – in which prices rise, followed by similarly lengthy periods of decline. Over the long run, however, there is little evidence of the sustained fall in commodity prices Singer and Prebisch predicted. What is much clearer is that resource prices have been extremely volatile, something we discuss next.

Table 1: Historic Commodity Super Cycles (1788–2011)

| Start date | End date | Size of cycle (nominal price change) | Length of cycle (years) | Index |
|-----------------|-----------------|---|----------------------------|------------------------|
| Mar-1788 | Dec-1814 | 135% | 26.8 | Warren and Pearson |
| Dec-1814 | Feb-1843 | -62% | 28.2 | Warren and Pearson |
| Feb-1843 | Aug-1864 | 208% | 21.7 | Warren and Pearson |
| Aug-1864 | Jun-1896 | -70% | 31.8 | Warren and Pearson |
| Jun-1896 | April-1920 | 218% | 24.0 | Warren and Pearson |
| Apr-1920 | Jun-1932 | -80% | 12.2 | CRB monthly |
| Jun-1932 | Jan-1951 | 689% | 18.6 | CRB monthly |
| Jan-1951 | Jul-1968 | -40% | 16.6 | CRB monthly |
| Jul-1968 | Oct-1980 | 215% | 12.3 | CRB monthly |
| Oct-1980 | Oct-2001 | -31% | 21.0 | CRB monthly |
| Oct-2001 | June-2011 | 145% | 9.8+ | Spot Index (Bloomberg) |

Sources: Warren and Pearson (1933) and public data from Commodities Research Bureau and Bloomberg.

Note: based on US commodity price cycle. Contractionary cycles in bold.

Explanation 2: Volatility

The problem of volatility is the second major explanation for the resource curse. Volatility refers to the ups and downs of the price of a natural resource. The price of natural resources is, for the most part, set by world markets. In other words, resource-rich countries are price-takers not price-setters. Commodity prices are far more volatile than those for manufactured goods and services. Take oil for instance. James Hamilton argued in 2008 that the best predictor of future oil prices is the current oil price. Historically, oil prices have been completely unpredictable. The volatile price of a resource affects an economy through a number of channels. Governments of resource dependent countries collect a large part of their budgets from taxing natural resource exports. If the price of a resource drops considerably in a given year then the government will have less revenue. Because the government’s income can drop unexpectedly it does not allow for accurate long-term planning. Governments of resource dependent countries can also get into trouble when the prices of natural resources are high. During these boom times, these governments find it easy to borrow money (banks are willing to lend to resource rich

countries when prices are high), creating debt for their countries that becomes harder to pay when a downturn in prices occurs.

Economists have identified a tendency towards what they call a “procyclical” relationship between key economic variables and commodity prices in many resource-rich countries. This means that a number of key economic variables – like wages or government spending – tend to increase as the price of the commodity (such as oil) increases. Similarly, when the price of the commodity falls, so too do wages and government spending. The procyclical relationship between commodity prices and a range of other important economic variables reflects the fact that the economy’s fortunes are tied to the fluctuating price of the commodity it is dependent on. Van der Ploeg suggests that volatility is the central problem of the resource curse.

Explanation 3: Lack of diversification

The third explanation for the resource curse is that natural resource wealth undermines broad based economic development. From this perspective a country must diversify its economy in order to develop. In economics this phenomenon is referred to as the Dutch Disease (a term coined by *The Economist* in 1977 referring to the discovery of natural gas in the Netherlands in 1959). Dutch Disease is the observation that a country’s currency becomes more valuable (known as currency appreciation) as it is exporting lots of natural resources. As a result, the country’s other exports become more expensive, and so more likely to be undermined by cheaper competing goods from other countries. This hurts the resource exporting country’s manufacturing sector, whose development typically requires significant growth in exports. These problems are compounded and reinforced when economic input, such as labour and capital, are then allocated to non-tradable sector (because the tradable sector is no longer competitive and the non-tradable sector offers better wages and profits), further damaging the country’s ability to develop an export-orientated manufacturing. Again, this is connected to the idea that industrialisation is necessary for development. The lack of industrialisation is particularly problematic in the long run. Whenever resource prices drop or resources are depleted, these countries do not have another sector of the economy to rely on.

Explanation 4: Poor institutions

The fourth explanation for the resource curse has become increasingly influential over the past two decades. For some economists, such as Dani Rodrik, “institutions trump everything else”, such as geographical factors or particular policies, as an explanation for development failures of resource-rich countries. One of the strands of this argument is that countries with few natural resources have a greater need to establish stable, market-based economies in order to raise government revenues. According to this view, governments in relatively resource-poor countries have a vested interest in ensuring

rising incomes on the part of citizens and private businesses, as this creates a tax base that government needs to finance itself. In contrast, government resource-rich countries face weaker incentives to promote this kind of economic development, as they can finance themselves (at least temporarily) by revenues derived from natural resources. Rather than promote sustainable income growth of businesses and citizens, resource-based economies can be characterized by an unproductive race to capture the profits and benefits from the resource sector.

There are a number of criticisms on the institutional perspective. For example, it is unclear whether “good” institutions are the *cause* of good economic performance, or rather the *result* of it – that is, the direction of causality is not evident. Or even more fundamentally, there is little certainty about what “good” institutions for economic development are. Economists often refer to general institutions, such as the rule of law, the protection of property rights, and constraints on the executive branch of government. Quantitative studies have argued that the general relationship between resource wealth and the quality of these institutions is negative. However, note that this negative relationship does not by itself tell us anything about the causal relationships between institutional quality, resource dependence and economic growth and development. Moreover, it is far from clear that these general institutions are powerful predictors of economic growth – many countries with “good” institutions (as per these measures) have failed to achieve sustained economic growth, while others with much poorer measured institutions achieved strong growth.

Explanation 5: Conflicts

A final explanation relates to the higher risk of conflicts in resource rich countries. Conflicts, disputes and wars arise from people contesting the ownership of natural resources. Some scholars also suggest that the risk of such resource-driven conflicts are accentuated in countries with greater ethnic diversity, particularly when resources are located in an area controlled or dominated by one particular ethnic group. Paul Collier has further argued that if resources are easily (or cheaply) accessed, like certain diamond deposits, they become a way to finance war and conflict. This is most clearly demonstrated by the tragedy of “blood diamonds” and “conflict minerals”. The most famous examples of the “blood diamonds” come from West Africa, particularly Sierra Leone and Liberia, where from the 1990s diamonds were mined, sold illegally and used to finance civil conflict. “Conflict resources” such as gold and titanium have been used to finance civil war in the Democratic Republic of the Congo, which since 1996 has been the deadliest conflict since World War II. Again, the relationship between natural resources and conflict has been questioned on the grounds of unclear causality and the ability to generalize about complex and often highly context-specific forms of conflict. However, what is beyond dispute is that many historic and current conflicts have either

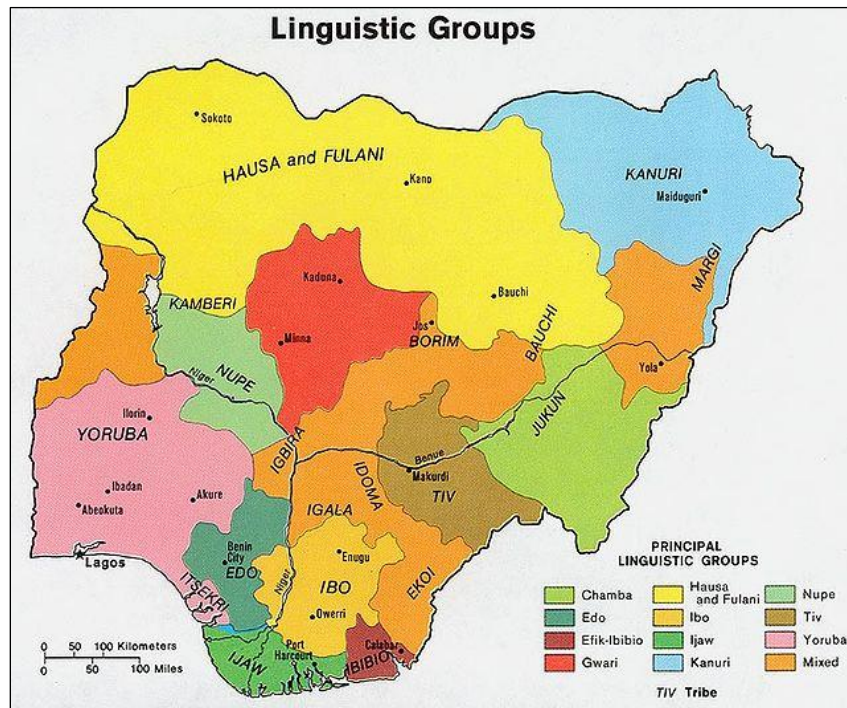
been fought over, or financed by, resource rents – and that these conflicts and wars are very costly in terms of economic performance.

The resource curse is not universal but we do know that, on average, resources have been more of a curse than a blessing, especially since World War II. There are several ways of understanding why this is the case. Different explanations for the resource curse lead to different ways of solving the problem. A question we need to ask is can the resource curse be lifted? One way of answering this question is by looking at two real-world cases from the African continent, Nigeria and Botswana.

3. Nigeria: the ultimate example of the resource curse

Nowhere are all the pathologies associated with the resource curse as clearly manifested as in Nigeria. Oil was discovered in the Niger Delta region of Nigeria in 1956, four years before the country achieved its independence from Britain. Nigerian oil is relatively pure and easy to extract and refine. It is almost exclusively found in the Niger Delta region of the country. Nigeria, a country with a population of about 170 million people has over 300 ethnic groups as well as a substantial religious divide between Muslims in the north and Christians in the south. The Niger Delta, in particular, is an ethnically diverse part of the country, as shown in Map 1.

Map 1: Linguistic Groups in Nigeria

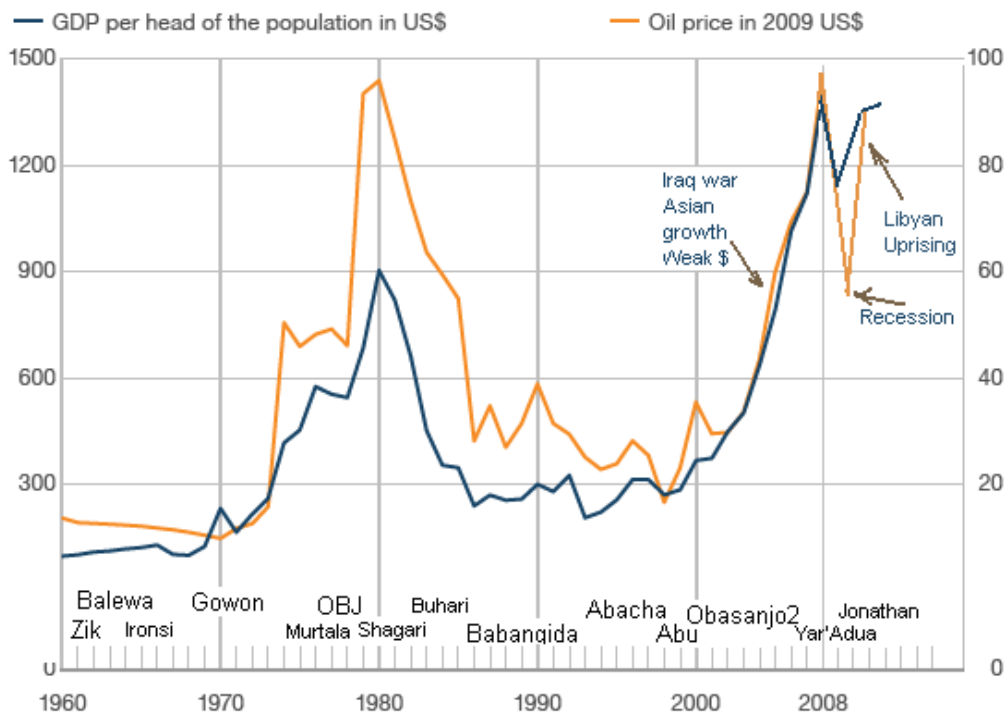


Source: Central Intelligence Agency (1979).

Nigeria is Africa's largest producer of oil and it is fifth globally. Despite the oil revenues, Nigeria's per capita Gross Domestic Product in 2000 was 30% lower than it was in 1965. In fact, Nigerians living below 1USD per day has risen from 27% in 1980 to 61% in 2012. Why has oil been more of a curse than a blessing in Nigeria?

The Nigerian example can be used to justify aspects of all of the arguments for the resource curse discussed above. One of these aspects is resource dependence. Rather than oil being one of many exports, the Nigerian economy is almost wholly dependent upon oil revenues. For example, in 2011, crude petroleum (or oil) accounted for 78% of all of Nigerian exports. Volatility increases with resource dependence. Nigeria's economy and government is reliant upon a source of income that fluctuates greatly depending on the international price of oil (see Figure 2). As a result, public investment has been stop-start (what we call procyclical) depending on the price of oil. This leads to problems such as large public investments in infrastructure that are left unfinished. During periods of oil price booms, the government initiated unsustainable levels of spending. When the price of oil dropped in the early 1980s, the Nigerian government borrowed a great deal leading to high debt levels that worsened with government debt mismanagement. Ultimately vast sums of money were spent on paying interest and penalties on loans (this has been more recently addressed with a debt relief programme initiated in 2006).

Figure 2: Oil price and Nigerian growth source



Note: The oil price from 1960 to 1983 is for Arabian Light posted at Ras Tanura. From 1984 onwards it is Brent dated.

Source: World Bank Development Indicators/BP/BBC

A related problem is that the revenue and public investment boom associated with and financed by a resource-revenue boom can lead to inefficiencies, wasteful spending and bottlenecks. In essence, the question is whether developing economies can absorb the rapid increase in spending associated with resource booms. Nigeria has a long-standing problem with poor institutions and the government has not acted responsibly with its oil revenues. An example of bad government investing is the Ajakouta steel complex constructed in the 1970s, which, until today, has not produced a single commercial ton of steel. While the causes of Nigeria's weak institutions are debated and run deep, economic historians will point to aspects such as ethnic diversity and fragmentation, the damage from its colonial legacy, and a system of rent-seeking and corruption.

Economic historians emphasize the role of "divide and rule" colonialism in Nigeria. Colonial powers emphasized ethnic divisions in order to maintain control. With the concentration of oil in one major ethno-geographic region, tensions have arisen. Furthermore, the government realizes that oil is an "exhaustible resource"; there is an increased race to capture rents in such a situation. The government is also less accountable to its citizens because it gains the majority of its revenue from oil rather than from taxes. The government does not need to appease the agricultural sector, for example, because it is not reliant on a diversified tax base. Nigeria has a history of successive military dictatorships that have plundered oil wealth. The country has witnessed the assassination of two leaders, had six successful military coups and four failed ones as well as 30 years of military rule. Conflict, often associated with the resource curse, has been prevalent in Nigeria's post-colonial history. The Biafran war of the late 1960s was Africa's deadliest civil war with anywhere from 1 to 3 million deaths. It was, in part, an attempt by the eastern, predominantly Igbo region to gain control over oil reserves. There has been almost continuous conflict in the Niger Delta regions between government officials and rebel forces since 1990, although the extent of the violence has declined in recent years.

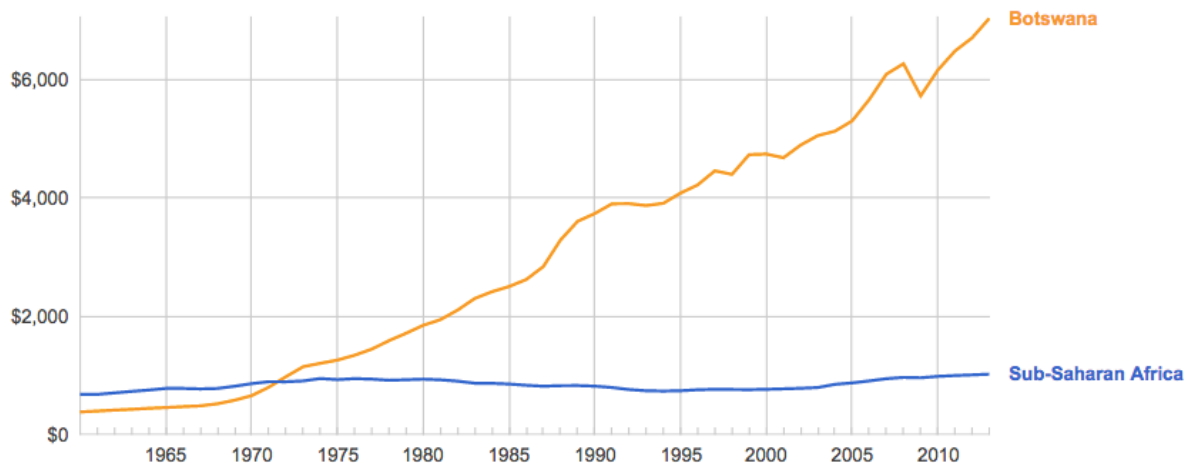
There is some reason for optimism, however. Recently, a decline in oil prices has renewed government focus on expanding other sectors of the economy such as agriculture and services. Nigeria has consistently ranked as one of the most corrupt countries in the world and it is making efforts to combat this. The country enjoyed a credible election and turnover of power in 2015. Over the past few years, there have been talks of government efforts to increase transparency and accountability, and even of investing the oil revenue rather than spend it immediately. However, few of these ideas have materialized yet. Production levels of oil are decreasing and there is an ongoing problem with oil theft where hundreds of thousands of barrels of oil from the Niger Delta are illegally siphoned off and sold. All of this means Nigeria is under increasing pressure

to be responsible with its oil wealth.

4. Botswana: a role model of resource-led development?

The case of Botswana demonstrates some positive ways to help overcome the natural resource curse in Africa. The first diamond mine came into operation in Botswana in 1972, 6 years after the country achieved independence. In 1966 Botswana, a landlocked and dry country, it was the third poorest country in the world with 12km of paved roads and only 22 university graduates. Since then, Botswana has enjoyed sustained, high levels of economic growth (averaging over 9% per year from 1966 to 1999), it has over 6000km of paved roads and adult literacy has increased to 81% by 2006. Botswana transformed from a largely livestock economy in 1967 when mining's contribution to GDP was a mere 1.6%. By 1989 mining accounted for 51% of the GDP, though this has declined in more recent years. The contribution of mining to government revenue skyrocketed to roughly 45-65% by the 2000s. Though this is still lower than Nigeria, it is substantial. Given these conditions, how did Botswana avoid the resource curse?

Figure 3: GDP per capita (constant 2000 US\$) of Botswana and sub-Saharan Africa, 1960-2013



Source: World Development Indicators

Economic historians have pointed to three sound economic policies that were adopted soon after the discovery of diamonds. First, the government committed to avoiding external debt and stabilizing its own spending. It avoided excessive spending when the price of diamonds was high on the international market. Instead, during these boom times it built up its savings. When the price of diamonds dropped and exports declined, the government did not have to borrow or cut public spending drastically. Instead, it could spend the money it had saved. The government budgeted for 6 year National Development Plans which were approved by parliament. These plans have controlled its

level of domestic spending and ensured projects are not started that cannot be sustained. The result of this approach has been that Botswana has largely been successful at avoiding boom and bust cycles. Additionally, its level of debt relative to the size of its economy is incredibly low (roughly 14%).

Second, the government has closely managed its exchange rate in order to avoid the Dutch Disease (when a currency appreciates due to increased resource exports crowding out other sectors of the economy). In other words, it used its exchange rate to help encourage diversification of its economy. Unfortunately these efforts have largely been unsuccessful. While manufacturing has grown in absolute terms, relative to the mining sector it has not, so the Botswanan economy is still heavily dominated by mining.

The third aspect of Botswana's tackling the problems of the resource curse has been the government's ability to successfully invest part of the mining revenue it receives. It invests this money in the domestic and international markets. Domestically, its investments have been conservative and based on expected profits in the medium and long term. The government of Botswana has also invested its proceeds from mining internationally through something called the Pula Fund. The Pula Fund earns income from foreign investments and has become the largest government source of non-diamond revenue. It provides a relatively stable source for the government to rely on for its spending. It has also helped Botswana avoid the Dutch Disease. Even more importantly the Pula Fund will exist and generate government revenue after the last diamond is mined in Botswana.

These government policies have helped to address the problems of the resource curse. Why was Botswana able to implement these policies where Nigeria was not? One answer economic historians give is that Botswana has historically had better institutions. Botswana has been a constitutional multi-party democracy since 1966. The elections in the country have been largely free and fair as well as conflict free. Levels of corruption have been consistently measured as the lowest in Africa and amongst the lowest in the world by organisations such as Transparency International. These stable institutions extend beyond the federal government into an independent judiciary and central bank as well as a free and vocal media. Good institutions have allowed for a stable framework for taxing mining companies, a system of private property rights where the "rules of the game" do not change dramatically.

Again, we must ask why has Botswana been able to have such stable institutions? Acemoglu, Johnson and Robinson have pointed to the importance of understanding local historical contexts. Good policies were a result of good institutions which in turn stem from inclusive pre-colonial institutions that have constrained elite power. For example they point to the high prevalence of popular assemblies amongst the Sotho and Tswana

relative to other tribes. They argue that because Botswana was a protectorate, the effect of British colonialism was minimal in terms of altering the institutions and after independence, existing institutions such as private property were maintained. These scholars also attribute part of the continued success to forward-thinking post-independence leaders such as Presidents Seretse Khama and Quett Masire. In fact, President Masire is quoted as saying “we intend to conserve our resources wisely and not destroy them. Those of us who happen to live in the 20th century are no more important than our descendants in centuries to come”. Botswana has also benefited from a high level of cultural-linguistic homogeneity. Although largely constructed, it does differ dramatically from the fragmentation found in countries like Nigeria.

Nevertheless, Botswana still has many institutional failures and some have argued that the country, while growing at a rapid rate, has failed to develop. For example, by most measures Botswana has the highest infection rate of HIV/Aids in the world. It does have a democratic government but the country has been ruled by one party since independence. There are ethnic problems with the treatment of minorities such as the San in the Kalahari. Finally there are massive problems with inequality and unemployment. In fact, Botswana is one of the most unequal societies in the world. Due to the nature of diamond mining, the industry only employed around 4% of the labour force by 1990. According to official statistics unemployment is about 18%, but by some other measures, it is currently around 35-40%. Poverty has declined but it is still relatively high. Additionally, Botswana’s avoidance of the resource curse is also under threat. Although the government has tried to diversify the economy to other areas such as the service sector, the country is still reliant upon the export of diamonds. The state remains the largest employer of people, especially as diamond mining is a comparatively low labour intensive natural resource. Finally, the diamond supply in Botswana is dwindling and eventually the country will not be able to rely on the influx of new diamond revenues.

Concluding remarks

Since World War II, natural resources in Africa have been more of a curse than a blessing. However, the resource curse is not universal and inescapable. Different problems associated with the curse point to varying ways of solving the problem. As we saw, a unique historical and institutional setting in Botswana has allowed the country to escape many aspects of the resource curse, though it still has a lot to overcome. Nigeria’s history, on the other hand, represents a classic case of the resource curse. While African countries that have recently discovered resources (such as Angola, Ghana, Namibia, Uganda and Mozambique) have cause for concern, recognizing the dangers of the resource curse is the first important step in trying to combat it.

Study Questions

1. What are the 5 most important explanations for the resource curse?
2. What are the dynamics of the Dutch Disease?
3. How does Nigeria's institutional history relate to its suffering from the resource curse?
4. What policies did Botswana adopt to help fight the resource curse?
5. What is, in your view, the most challenging aspect of the resource curse to overcome? Why?

Suggested readings

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