ESCAPING THE RESOURCE CURSE

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Columbia University Press
NEW YORK

CHAPTER 1

Introduction

What Is the Problem with Natural Resource Wealth?

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There is a curious phenomenon that social scientists call the "resource curse" (Auty 1993). Countries with large endowments of natural resources, such as oil and gas, often perform *worse* in terms of economic development and good governance than do countries with fewer resources. Paradoxically, despite the prospects of wealth and opportunity that accompany the discovery and extraction of oil and other natural resources, such endowments all too often impede rather than further balanced and sustainable development.

On the one hand, the *lack* of natural resources has not proven to be a fatal barrier to economic success. The star performers of the developing world—the Asian Tigers (Hong Kong, Korea, Singapore, and Taiwan)—all achieved booming export industries based on manufactured goods and rapid economic growth *without* large natural resource reserves. On the other hand, many natural resource–rich countries have struggled to generate self-sustaining economic takeoff and growth and have even succumbed to deep economic crises (Sachs and Warner 1995). In country after country, natural resources have helped to raise living standards while failing to produce self-sustaining growth. Controlling for structural attributes, resource-rich countries grew less rapidly than resource-poor countries during the last quarter of the twentieth century. Alongside these growth failures are strong associations between resource wealth and the likelihood of weak democratic development (Ross 2001), corruption (Sala-i-Martin and Subramanian 2003), and civil war (Humphreys 2005).

This generally bleak picture among resource-rich countries nonetheless masks a great degree of variation. Some natural resource–rich countries have performed far better than others in resource wealth management and long-term economic development. Some 30 years ago, Indonesia and Nigeria

had comparable per capita incomes and heavy dependencies on oil sales. Yet today, Indonesia's per capita income is four times that of Nigeria (Ross 2003). A similar discrepancy can be found among countries rich in diamonds and other nonrenewable minerals akin to oil and gas. For instance, in comparing the diamond-rich countries of Sierra Leone and Botswana, one sees that Botswana's economy has grown at an average rate of 7 percent over the past 20 years while Sierra Leone has plunged into civil strife, its gross domestic product (GDP) per capita actually dropping 37 percent between 1971 and 1989 (World Bank Country Briefs).

The United Nation's Human Development Index illustrates the high degree of variation in well-being across resource-rich countries (Human Development Report 2005). This measure summarizes information on income, health, and education across countries worldwide. Looking at this measure, we find that Norway, a major oil producer, ranks at the very top of the index. Other relatively high-ranking oil-producing countries include Brunei, Argentina, Qatar, United Arab Emirates, Kuwait, and Mexico. Yet, many oil-producing countries fall at the other extreme. Among the lowest ranked countries in the world are Equatorial Guinea, Gabon, The Republic of Congo, Yemen, Nigeria, and Angola. Chad comes in close to the bottom at 173 out of 177.

Variation in the effects of resource wealth on well-being can be found not only across countries but also *within* them. Even when resource-rich countries have done fairly well, they have often been plagued by rising inequality—they become rich countries with poor people. Approximately half the population of Venezuela—the Latin American economy with the most natural resources—lives in poverty; historically, the fruits of the country's bounty accrued to a minority of the country's elite (Weisbrot et al. 2006). This reality presents yet another paradox. At least in theory, natural resources can be taxed without creating disincentives for investment. Unlike in the case of mobile assets—such as capital, where high taxes can induce capital to exit a country—oil is a nonmovable commodity. Since tax proceeds from the sale of oil can be used to create a more egalitarian society, one could expect less, not more, inequality in resource-rich countries. In reality, however, this is rarely the case.

The perverse effects of natural resources on economic and political outcomes in developing states give rise to a wide array of difficult policy questions for governments of developing countries and for the international community. For instance, should Mexico privatize its state-run oil companies? Should the World Bank help finance the development of oil

in Chad; if so, under what conditions? Should the international community have "allowed" Bolivia and Ecuador to mortgage future oil revenues to support deficit spending during the recessions they faced in the past decade? Should Azerbaijan use its oil revenues to finance a reduction in taxes or should it put the money into a stabilization fund? Should Nigeria offer preferential exploration rights to China rather than requiring open competitive bidding in all blocks? Should Sudan use the proceeds from oil sales to support oil-producing regions or spread the wealth more evenly across different regions?

The chapters in this volume lay out a broad framework for thinking about these issues, a framework that seeks simultaneously to help countries avert the natural resource curse and address the myriad of serious questions on how a resource endowment should be managed. While an extensive literature on the resource curse exists, few books attempt to tackle this issue by drawing on both theory and practice, as well as on both economics and politics. In undertaking this task, we have asked leading economists, political scientists, and legal practitioners active in research and policy making on natural resource management to write down the key lessons they have learned on best practice for managing these resources. For concreteness, we asked them to focus especially on oil and gas, which makes for cleaner and more focused analyses throughout. While some features of oil and gas economics are specific to these industries, much of the logic and many of the proposals presented here can be applied also to other forms of natural resources. The result of their studies is a rich collection of analyses into the causes and patterns of the perverse effects of oil and gas and the identification of a series of steps that can be taken to break the patterns of the past.

But before we start exploring the solutions let us begin our study with an examination of the origins of the resource curse—why does oil and gas wealth often do more harm than good? The basic paradox calls for an explanation, one that will allow countries to do something to undo the resource curse. Fortunately, over the past decade, research by economists and political scientists has done much to enhance our understanding of the issues.

WHERE DOES THE RESOURCE CURSE COME FROM?

To understand the natural resource paradox we need first a sense of what makes natural resource wealth different from other types of wealth. Two

key differences stand out. The first is that unlike other sources of wealth, natural resource wealth does not need to be produced. It simply needs to be extracted (even if there is often nothing simple about the extraction process). Since it is not a result of a production process, the generation of natural resource wealth can occur quite independently of other economic processes that take place in a country; it is, in a number of ways, "enclaved."[1] For example, it can take place without major linkages to other industrial sectors and it can take place without the participation of large segments of the domestic labor force. Natural resource extraction can thus also take place quite independently of other political processes; a government can often access natural resource wealth regardless of whether it commands the cooperation of its citizens or effectively controls institutions of state. The second major feature stems from the fact that many natural resources—oil and gas in particular—are nonrenewable. From an economic aspect, they are thus less like a source of income and more like an asset.

These two features—the detachment of the oil sector from domestic political and economic processes and the nonrenewable nature of natural resources—give rise to a large array of political and economic processes that produce adverse effects on an economy. One of the greatest risks concerns the emergence of what political scientists call "rent-seeking behavior." Especially in the case of natural resources, a gap—commonly referred to as an economic *rent*—exists between the value of that resource and the costs of extracting it. In such cases, individuals, be they private sector actors or politicians, have incentives to use political mechanisms to capture these rents. Rampant opportunities for rent-seeking by corporations and collusion with government officials thereby compound the adverse economic and political consequences of natural resource wealth.

UNEQUAL EXPERTISE

The first problems arise even before monies from natural resource wealth make it into the country. Governments face considerable challenges in their dealings with international corporations, which have great interest and expertise in the sector and extraordinary resources on which to draw. Since oil and gas exploration is both capital and (increasingly) technologically intensive, extracting oil and gas typically requires cooperation between country governments and experienced international private sector actors. In many cases, this can produce the unusual situation in which the buyer—the international oil company—actually knows more about the value of the good

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being sold than the seller—the government of the resource-rich country. Companies can, in such instances, be in very strong bargaining positions relative to governments. The challenge for host countries is to find ways to contract with the international corporations in a manner that also gives them a fair deal. If, of course, there are large numbers of corporations that have the requisite knowledge, competition should be able to eliminate the rents associated with expertise, thereby allowing the resource-rich country to receive a larger fraction of the resource's market value. But countries cannot always rely on the existence of such competition.

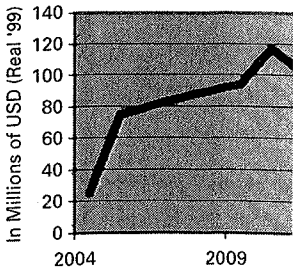
"DUTCH DISEASE"

Once a contract has been negotiated and the money begins to flow in, new problems arise. In the 1970s, the Netherlands discovered one of these problems. Following the discovery of natural gas in the North Sea, the Dutch found that their manufacturing sector suddenly started performing more poorly than anticipated.[2] Resource-rich countries that similarly experience a decline in preexisting domestic sectors of the economy are now said to have caught the "Dutch disease" (Ebrahim-Zadeh 2003). The pattern of the "disease" is straightforward. A sudden rise in the value of natural resource exports produces an appreciation in the real exchange rate. This, in turn, makes exporting non–natural resource commodities more difficult and competing with imports across a wide range of commodities almost impossible (called the "spending effect"). Foreign exchange earned from the natural resource meanwhile may be used to purchase internationally traded goods, at the expense of domestic manufacturers of the goods. Simultaneously, domestic resources such as labor and materials are shifted to the natural resource sector (called the "resource pull effect"). Consequently, the price of these resources rises on the domestic market, thereby increasing the costs to producers in other sectors. All in all, extraction of natural resources sets in motion a dynamic that gives primacy to two domestic sectors—the natural resource sector and the nontradables sector, such as the construction industry—at the expense of more traditional export sectors. In the Dutch case, this was manufacturing; in developing countries, this tends to be agriculture. Such dynamics appear to occur widely, whether in the context of Australian gold booms in the nineteenth century, Colombian coffee in the 1970s, or the looting of Latin America's gold and silver by sixteenth-century Spanish and Portuguese imperialists.

Globally, these shifts can have adverse effects on the economy through several channels. Any shift can be costly for an economy, as workers need to be retrained and find new jobs, and capital needs to be readjusted. Beyond this, the particular shifts induced by the Dutch disease may have other adverse consequences. If the manufacturing sector is a long-term source of growth—for example, through the generation of new technologies or improved human capacity—then the decline of this sector will have adverse growth consequences (Sachs and Warner 2001). Another channel is through income distribution—if returns to export sectors such as agriculture or manufacturing are more equitably distributed than returns to the natural resource sector, then this sectoral shift can lead to a rise in inequality. In any case, the Dutch disease spells trouble down the road—when activities in the natural resource sector eventually slow down, other sectors may find it very difficult to recover.

VOLATILITY

The Dutch disease problem arises because of the *quantity* of oil money coming in; other problems arise because of the *timing* of the earnings. Earnings from oil and gas production, if viewed as a source of income, are highly volatile. The volatility of income comes from three sources: the variation over time in rates of extraction, the variability in the timing of payments by corporations to states, and fluctuations in the value of the natural resource produced. As an example of the first two sources of variability consider figure 1.1, which shows one projection for Chad's earnings from the sale of oil over the period 2004–2034. We see a sharp rise, followed by a rapid decline, a second rise, and a second decline. This pattern emerges from two distinct sources. The first is the variation over time in the rate of extraction. A typical pattern is to have a front-loading of extraction rates since production volumes tend to reach a peak within the first few years of production and then gradually descend until production stops. In practice, risks exist in Chad—as in Nigeria and elsewhere—that this volatility will be compounded further by interruptions that result from political instability in the country and in producing regions. The second major source of volatility derives from the nature of the agreement between the producing companies and the government. In the Chad case, the oil consortium was exempted from taxes on earning for the first years of production. Since taxes constitute a major source of government earnings, the eventual introduction of taxes should provide a major boost to Chad's earnings.



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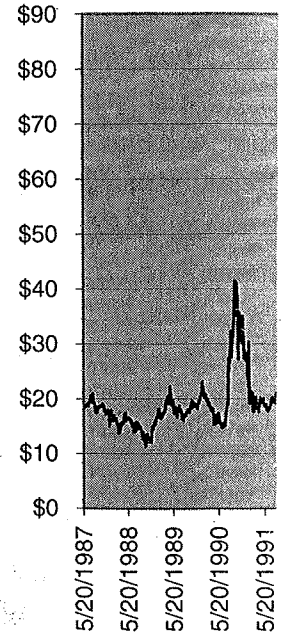

Figure 1.2 All Countri
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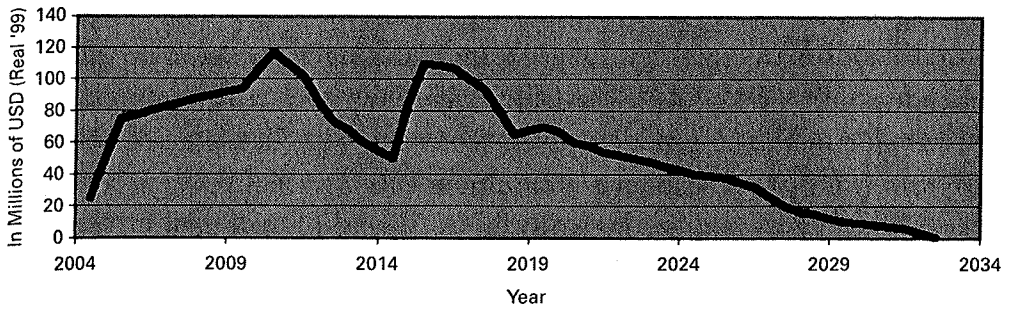

Figure 1.1 Revenues to Chad, Base Case 917 MM BBLs, US$15.25/BBL.

Source: Based on estimates presented in the World Bank Inspection Panel (2000).

The third major source of volatility—not even accounted for in Figure 1.2—arises from the highly volatile nature of oil and gas prices. The figure presented by the World Bank is based on prices of $15.25 a barrel, a number that now appears hopelessly out of date. Figure 1.2 shows the price of oil over the past 20 years. Note that while there is a very clear upward trend over these years, the variation around this trend is very great with week on week changes of plus or minus 5 to 10 percent relatively common.

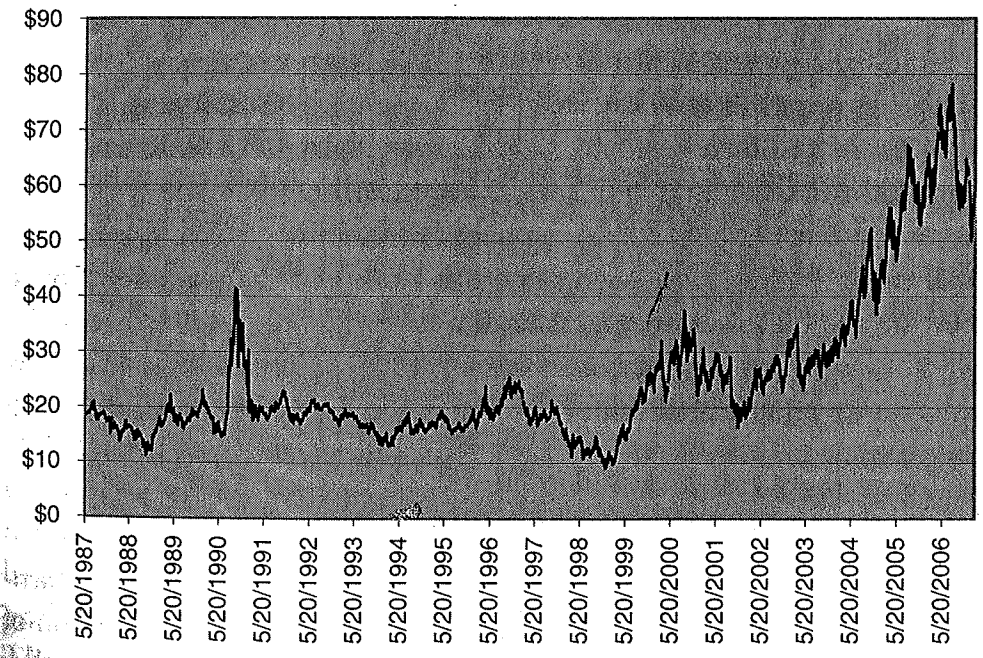

Figure 1.2 All Countries Spot Price FOB Weighted by Estimated Export Volume (Dollars per Barrel).

There are a number of difficulties with a highly volatile income source. Most obvious is the fact that longer term planning is rendered difficult by great uncertainty over future financing, especially as a result of fluctuations in the value of the commodity. Even when the volatility is not associated with uncertainty, with capital market imperfections, volatility in receipts often translates into volatility in expenditure. The result can be high levels of expenditure in good years followed by deep cuts in bad years. These in turn lead to "boom–bust cycles." All too often, the benefits in the good years are transitory whereas the problems generated during the bad years endure.

The magnitude of these fluctuations can be increased by international lending. When times are good (prices and output are high), the country borrows from abroad, exacerbating the boom. But when prices fall, lenders demand repayment, forcing expenditure reductions which increase the magnitude of the downturn. On some occasions, most famously in the oil price booms of the 1970s, several oil states mortgaged their futures by borrowing against booming oil revenues, only to end up in debt crisis when oil prices fell in the early 1980s. Mexico, Nigeria, and Venezuela typified the oil-debt boom and bust. This is not quite as irrational as it seems. Most poor countries are rationed in international borrowing, and may be unable to borrow to secure financing for infrastructure needed for growth. Oil can serve as collateral, or at least as an informal guarantee (since the oil earnings are easy to identify and direct toward debt servicing). Thus, an oil boom, either through higher prices or quantities, can unleash not only a higher cash flow but also increased access to international loans. If the infrastructure investments are indeed high economic priorities, it might make sense to borrow against future oil earnings in this way. However, that "if" has been a big one, since much international borrowing has been wasted or stolen, and international capital inflows have been subject to panic and sharp reversals, often throwing the borrowing countries into a deep debt crisis. This is true for non-oil as well as oil states, but the very nature of natural resource endowments makes resource-rich countries even more susceptible to this dynamic.

LIVING OFF YOUR CAPITAL

A new set of problems arises once governments start spending their earnings. Because oil and gas resources are nonrenewable, any consumption of revenues from sales should be viewed as a consumption of capital rather than a consumption of income. If all revenues are consumed in each period, then the value of the country's total capital declines. Ignoring extraction costs, an optimal strategy involves converting most of the natural resource

stock into financial assets, investing the assets in a diversified portfolio and treating the interest on the financial assets as income. With extraction costs, Hotelling's analysis (see chapter 6) provides a framework for determining the optimum time to undertake resource extraction. In principle, the portfolio composition problem can be fully separated from the expenditure decision. It may be optimal to convert oil below the ground into gold, apartment buildings, dollars, or some other assets above the ground. Indeed doing so—for example, by selling oil rights on futures markets—could entirely remove the income volatility associated with natural resources. Similarly, complete privatization of oil rights (with up-front payments) might—in perfectly functioning markets—serve a similar role. It turns out, however, that the implicit price governments pay for this conversion of a risky natural resource asset into a financial asset is extremely high, so that in general governments would be ill-advised to do so.[3]

In practice, the income and expenditure sides get linked. International advisers often emphasize that the country is not *wealthier* as a result of resource extraction; it has just changed the composition of its asset base. But this argument has only limited resonance. In practice, along with access to capital stock and rising income comes pressure to spend sooner rather than later. This pressure comes from many sources. As discussed in chapters 8 and 10, politicians with an uncertain hold on power have an incentive to spend sooner rather than to leave opportunities on the table for future political opponents. And their incentives are greater if spending can help ensure that they will remain in power longer. Other pressures may arise from populations demanding rapid and visible improvements in welfare or from constituents demanding favors in return for political support. Particularly compelling arguments can be made for the use of the resources (or even borrowing against future resources) when the economy is operating below full capacity and a small amount of pump priming will have large effects on national income. International Monetary Fund (IMF) rules of budgetary stringency make little sense in this context.

The far more difficult cases arise when a government has a worthwhile project that entails drawing on significant domestic resources. It can be tempting to use oil revenues to cover the costs of domestic resource mobilization. But unless paired with other policies, this approach would likely give rise to currency appreciation, reducing jobs elsewhere in the economy. The net benefits might be negative. Nevertheless, if a government can use resource wealth to cover foreign exchange needs while mobilizing domestic tax revenue to finance the domestic component, such investments can still enable growth *without* exchange rate appreciation. Indeed, as discussed in

chapter 7, in many cases, high levels of investment in the short run may be optimal, but the pressure to spend even beyond the optimum may still be very great.

INSUFFICIENT INVESTMENTS IN EDUCATION

Along with overconsumption comes underinvestment. Studies show that education as a form of investment especially suffers in resource-rich countries (Gylfason 2001). When states start relying on natural resource wealth, they seem to forget the need for a diversified and skilled workforce that can support other economic sectors once resource wealth has dried up. As a result, the share of national income spent on education declines, along with secondary school enrollment and the expected years of schooling for girls. While the costs of such declines might not be felt in the short term, as capital-intense activities take up a larger share of national production, their effects are likely to become more significant in the longer run as soon as economies start trying to diversify.

It is possible to understand this bias in terms of the nature of the sources of wealth. When a country's wealth depends on investments in manufacturing or other productive activities, human capital investment is an essential part of wealth creation. When a country's wealth arises from an endowment of natural resources, however, investment in a skilled workforce is not necessary for the realization of current income. Without a focus on wealth creation, or sustainability, insufficient attention will be paid to investments in human capital (or other productive investments.)

* * *

Beyond these economic and financial concerns, a series of political dynamics associated with oil and gas dependence can exacerbate adverse economic effects. As mentioned earlier, oil-dependent economies, for example, are considerably more likely to have limited political freedoms, to be governed by nondemocratic regimes, to have higher levels of corruption, and to suffer from civil wars within their boundaries. Evidence suggests that natural resource dependency causes these outcomes through a variety of mechanisms, as described in the following sections.

SPOLIATION

Higher levels of corruption present the most obvious political risk that can arise from large holdings of natural resources. The short run availability of

large financial assets increases the opportunity for the theft of such assets by political leaders. Those who control these assets can use that wealth to maintain themselves in power, either through legal means (e.g., spending in political campaigns) or coercive ones (e.g., funding militias). By some accounts, corruption is a hallmark of the oil business itself.[4] But oil and gas dependence can also affect corruption indirectly. As discussed later, the presence of oil and gas wealth can produce weak state structures that make corrupt practices considerably easier for government officials. These risks are also likely to be exacerbated if the growth of the oil and gas sector is associated with a concentration of bureaucratic power, which increases the difficulty of securing transparency and other constraints on those in power. Not surprisingly, statistical studies that seek to account for variation in levels of corruption across different countries find that natural resource dependence is a strong predictor (Leite and Weidmann 1999).

Corruption related to natural resources takes many forms. International mining and oil companies that seek to maximize profits find that they can lower the costs of obtaining resources more easily by obtaining the resources at below market value—by bribing government officials—than by figuring out how to extract the resources more efficiently. In other cases, the natural resource is sold to domestic firms at below full value, with government officials either getting a kickback or an ownership share. In practice, the risks of corruption in resource-rich environments are very large and the costs of such corruption to the national economy are enormous. By some accounts, for example, Nigeria's president Abacha was responsible for the theft of as much as US$3 billion (Ayittey 2006).

WEAK, UNACCOUNTABLE STATES

Although one might expect that the added resources available to states from oil and gas revenues might make them stronger, there are a number of reasons why, paradoxically, it can make them weaker (Karl 1997). States that are able to generate revenue from the sale of oil and gas are less reliant on citizens, which can result in weak linkages between governments and citizens. When citizens are untaxed they sometimes have less information about state activities and, in turn, may demand less of states. Even if they disapprove of state action, they lack the means to withdraw their financial support from states. As a result, states have less need to engage with civilians. Moreover, in relying on external income sources rather than on domestic revenue, states have less of a need to

develop a bureaucratic apparatus to raise revenue (Fearon and Laitin 2003). The need to collect taxes is widely thought to have contributed to the emergence of strong state and even democratic institutions in many Western countries (Ross 2004). The *lack* of reliance on tax revenue in favor of reliance on external sources of revenue is thus thought to hinder the development of effective states in many resource-rich developing countries (Moore 1998).

Further, since a resource-rich country's revenue is largely independent of the strength and success of the overall economy, the government of the resource-rich country has less of a need to engage in activities that support the economy. Without a broad support base in the economy, a government can instead invest its earnings in an oppressive capacity. Doing so does not, however, produce strong states. The structures that result are often not resilient and indeed, the capacity of repression can be turned against the incumbent. Even if such a strategy is successful at protecting leaders, it will not necessarily produce the capacity needed to engage productively with the national economy. In chapter 10, Terry Lynn Karl discusses these dynamics and suggests ways in which states may attempt to respond to the erosion of capacity.

THREATS TO DEMOCRACY

The adverse political effects associated with high levels of corruption and weak states ultimately have consequences for the political system itself. Countries rich in natural resources—in particular, in oil and gas—are less likely to have democratic political systems. Specifically, nondemocratic oil states are less likely to become democratic than states that do not export oil. This relationship has been found in cross-national studies that relate the discovery of oil in a given period to democratic changes over the coming decades (Tsui 2005). In effect, access to oil wealth can allow leaders to successfully repress or co-opt their oppositions, and thus avoid having to relinquish power through electoral competition.

These adverse political effects of oil are not just a problem for developing countries; such patterns have even been seen within the United States. One recent study examined the relationship between oil and coal production within each of the American states over the period 1929 to 2002 and related this to gubernatorial turnover. The study found that a 1 percent increase in state dependence on these resources is associated with a rise of approximately half a percent in the governor's margin of victory in these

states (Goldberg et al. 2005). Overall, at least three features of oil dependent states help to explain the relationship between natural resource dependence and the lack of democratization (Ross 2001). First, governments do not feel the same pressures to exchange political power for the rights to tax, since they can raise their revenues from other sources. Second, they can invest in coercive capacity that can be used to quell threats to their political power. Finally, citizens in these states are less likely to undergo the transformative effects of industrializing countries that have been associated with demands for democratization elsewhere.

GRIEVANCES IN PRODUCING REGIONS

The production of natural resources is liable to give rise to various types of political frustrations within a country and especially in producing regions. The extraction process itself may result in forced out-migration, new in-migration, and, with attendant population pressures, environmental pollution or degradation. Even if such changes to local conditions are minimal, resource-rich regions may feel that they have a particular claim on resource wealth and may be aggrieved if they see the wealth leaving their region and benefiting others. Such complaints have been raised in oil regions including Cabinda in Angola, Doba in Chad, and even in the small island of Principe in Sao Tome and Principe. The effect of grievances of this form and ways to try to manage them are discussed in chapter 9.

MILITARY CHALLENGES TO GOVERNMENTS

Oil exporters spend much more on their militaries even in the absence of civil war—between 2 and 10 times more. In the most difficult cases, the resource curse results not only in militarization but also in civil war. Civil wars are, statistically speaking, more likely to occur in oil-rich states (Humphreys 2005). Indeed, some oil-rich states such as Angola, Colombia, or Sudan have had civil wars within their borders for decades on end. There are a number of reasons for this. If oil and gas wealth accrues to political leaders simply by virtue of the fact that they maintain nominal control of a state, this increases the incentives of nonstate actors to attempt to capture the state in order to benefit from the resource wealth, often through the use of violence (Collier and Hoeffler 2000; Fearon and Laitin 2003). This can lead to secessionist bids in some countries—sometimes aided by the grievances that arise in producing regions—or to attempts to

topple the central government outright, as, for example, in the Republic of Congo (Englebert and Ron 2004). These incentives are all the stronger if the resource-rich state has weak capacity and lacks legitimacy. Because of the major international interest in these resources, outside actors—states, as well as corporations—may have an interest then in supporting threats to a central government in anticipation of special relations with the new regime. Foreign powers have often meddled shamelessly in the politics of oil-producing countries to try to maintain a hold on oil resources and revenue flows. The CIA-backed coup in Iran in 1953 is the most famous example (Gasiorowski 1987).

POLITICAL AND ECONOMIC INTERACTIONS

There are strong interactions between the economic problems discussed in the first part of this section and the political problems discussed in the second. Even in democracies, when governments privatize natural resources they often receive less than their full market value. Firms in extractive industries care first and foremost about minimizing what they have to pay for access to the resources. They therefore seek to ensure that the deals are structured in a way that benefits them over the government. Often, this is achieved through political action such as campaign contributions and other forms of public–private alliances. Moreover, while selling access to natural rents is seen as a relatively easy way to reduce budget deficits, the possibilities for shortsighted deals and complicity in rent-seeking abound. Various administrations in the United States have, at times, practically given away natural resources to raise additional budgetary funds. Ronald Reagan, for example, designed a "fire sale" of oil leases, rapid auctions that resulted in a significant depression in the prices government received. Corporations in the extractive industries also have an incentive to limit transparency, to make it more difficult for citizens to see how much their government is getting in exchange for sale of the country's resources. In most cases, such corporations have an incentive to limit government regulations that would restrict environmental damage or that would force corporations to pay for the cost of the damage they inflict.[5]

WHAT TO DO?

The chapters in this book address the challenges posed by the many adverse effects of oil and gas wealth. They assume throughout that both

countries and companies can and should do something to more effectively and fairly develop oil resources. We assume in particular that governments are willing to take sometimes bold and difficult steps to try to succeed where most states have failed. If states are unable or unwilling to take such steps, then the best solution may well be to leave the oil and gas in the ground. The fact is that oil in the ground is a nonwasting asset.[6] Although leaving oil in the ground means that interest is forgone, the ground just might be the safest place for the asset, especially if there exists the risk that governments may use revenue for their purposes rather than for the good of society, as has happened so often already. In such cases, the people may benefit *some,* but clearly not as much as if the money were spent in ways that were directly intended to enhance their well-being. A judgment call is required, and not solely by the government of the host country, which often lacks the political will necessary to postpone extraction of natural resource reserves. In addition to governments and international corporations, civil society and the international community play an important role in influencing the extraction of natural resources. If the orientation of a government is such that there are likely to be few benefits to the people, then domestic groups and the international community should provide no help for extraction. Plausibly, the prospects of the money being used better later are greater than the prospects today, and so patience may be what is required.

Assuming, however, that a government is willing to take some of the difficult measures, what can be done? The chapters in Part I address a set of basic questions regarding how governments should interact with oil corporations. The first question that a country faces is: should the government get involved at all, or can the problem of extraction be left entirely in the hands of the private sector? Joseph Stiglitz considers this question in chapter 2. He argues that privatization is not the panacea that some advocates suggest;[7] rather, privatization can lead to a considerable loss of value for a state without necessarily resolving either the micro problems of good management or the macroeconomic problems that plague oil- and gas-rich countries. Stiglitz also discusses the design of the auction and contractual relationships between the government and the private sector, should the government decide to use private companies for resource extraction. These optimal auctions/contractual relationships are markedly different from those commonly employed, largely because of the political economy factors discussed earlier.

Some level of engagement with the private sector is, however, generally unavoidable and can be highly productive. Chapters 3 and 4 engage the

problem of ensuring that a resource-rich country gets the best possible deal from its negotiations with international oil corporations. In chapter 3, David Johnston provides key information for evaluating the fiscal terms of oil contracts. He demonstrates the weaknesses with the most common methods used for evaluating the returns to a country of an oil contract and identifies the elements of a contract that should be a key focus of analysis for assessing whether a country has struck a good deal. In chapter 4, Jenik Radon argues that the benefits that accrue to government can depend greatly on one often overlooked feature—the skills of the negotiators. In fact, oil contract negotiation is more complex than many governments believe. While Radon emphasizes the likely returns to investing in the hiring of an experienced negotiation team, he also identifies a key set of areas that should be followed closely by all parties to oil and gas negotiations. In most cases, competitive bidding is likely to be the best way to offer drilling rights; not only does it generally fetch the highest bidding price, but it also can protect the country from corrupt dealings. In chapter 5, Peter Cramton describes the lessons that can be learned from auction theory for the case of oil and gas. Certain auction designs can help countries gain knowledge about the extent and nature of the information companies have about their blocks while also encouraging competition. Such transparency and competition results in greater revenues and prevents collusion among companies. The merits of different auction designs are discussed and one new auction design—the clock-proxy auction—is described in detail.

As we have seen, however, once oil and gas monies start coming into a country, new problems arise. The chapters in Part II address the macroeconomic and political economy issues associated with managing intertemporal expenditures of this form. In chapter 6, Geoffrey Heal describes the economic logic underlying the economically optimal way to divorce the pattern of earnings from expenditure patterns. Optimal expenditure paths typically require much higher levels of expenditure smoothing than would occur if expenditure tracked revenues closely. In his analysis, Heal further emphasizes the problems associated with treating revenues as income without taking into account the depletion of natural resource stocks, and offers a better method for factoring natural resource extraction into national accounting. A country's optimal expenditure path depends on how well it can balance the adverse macroeconomic consequences of large inflows of foreign exchange earnings with the need to invest in other sectors in order to achieve higher growth rates in the long run. This difficult trade-off is taken up by Jeffrey Sachs in chapter 7. Sachs shows the

conditions under which natural resources are likely to have adverse effects on other sectors of an economy. These effects can be avoided, however, and indeed reversed, with appropriate investment strategies. The optimal investment strategy might involve much higher levels of front-loaded expenditure than many analysts suggest. A problem arises, however, in that—for any given optimal expenditure path, whether or not it is front loaded—there will generally exist political pressures to spend too much too soon. The reasons for these pressures are discussed in chapter 8 by Macartan Humphreys and Martin Sandbu. Some solutions to this problem can be found in the deployment of Natural Resource Funds, but only if these funds actually alter the incentives facing political actors. Incentives can be influenced in at least three key ways: by broadening the set of actors who play a role in expenditure decisions; by giving these actors a way to make commitments to particular expenditure paths; and by making it costly for them to deviate later from earlier decisions.

The chapters in Part III then turn to examine the political economy and legal issues associated with good revenue management. In chapter 9, Michael Ross examines the options available to states to manage the thorny distributive questions associated with resource wealth. The chapter looks at how mineral wealth can affect vertical and horizontal inequality, and what governments can do about it. Ross explores the advantages and disadvantages of the decentralization of mineral revenues and offers a series of guidelines for states that seek to better manage the distributional problems caused by mineral booms. Direct distribution of revenues to the citizens of a producing country, although attractive, raises a series of problems of its own. Similarly, the decentralization to local government authorities of responsibilities for raising revenues is highly problematic, while the decentralization of expenditure—once smoothing is undertaken by a more centralized structure—offers a number of benefits. Chapter 10 by Terry Lynn Karl turns to the problem of state–society linkages. Karl asks: If natural resource dependence has historically resulted in weaker links between states and their societies, can anything be done to stop this, going forward? She examines a number of the options that have been proposed and focuses especially on one key prerequisite for strong state–society linkages: public information regarding the state's finances and its operations in the oil and gas sectors. This, she argues, is a prerequisite for all other attempts to escape the resource curse. The final chapter by Joseph Bell and Teresa Maurea Faria examines the legal options that exist to help overcome the problems that have been identified. Their chapter—supported by appendices

that provide abridged versions of innovative oil and gas revenue management laws—provides a set of very practical next steps for governments aiming to implement the recommendations of previous chapters.

Collectively, these chapters take us full cycle from the initial difficulties inherent in negotiating a deal with international corporations to the hard economic and political decisions that need to be made on when and how to spend natural resource earnings. Plaguing all well-meaning prescriptions, however, is the problem that the resource curse is such that many individuals in governments and in the private sector fare quite well in the short run when resources are misused. Even if such behavior does not benefit them in the long run, changing this behavior unilaterally may be too costly in the absence of reform by other actors. The challenge is to find ways to alter the incentives facing these actors to make it in their interest to do a better job. A theme running throughout the chapters in this volume is that this can be done only if greater light is shed on the industry so that publics are provided with much better information with which to evaluate the choices of their political leaders. Absent changes to the structure of oil and gas politics that can ensure much greater access to information about how deals are made, who gets what, and how resources are managed by incumbents, the lost opportunities that we see on a daily basis in oil- and gas-rich countries are set to continue for a long time to come.

NOTES

1. Natural resource extraction is therefore sometimes referred to by social scientists as "enclaved" (Hirschman 1958; Seers 1964).

2. See "The Dutch Disease" (1977).

3. Bonus (upfront) payments can be viewed as a loan from the corporation to the government; but the interest rate on this loan is the cost to capital of the corporation, which is typically much, much higher than the rate at which government can borrow.

4. In one testimony before French magistrates, the former Africa manager of Elf Aquitaine argued that "All international oil companies have used kickbacks since the first oil shock of the 1970s to guarantee the companies' access to oil." ("Oil Firm ELF" 2001).

5. They even have an incentive to restrict the use of accounting frameworks (like green GDP) that would call attention to the costs of resource depletion and environmental degradation. During the Clinton Administration, there was an attempt to develop and implement green GDP accounting, but congressional pressure, especially from coal mining states, led to a cutoff of funding. There is a vicious circle: extractive

industries have an incentive to maintain political systems or administrations which allow them to have greater voice.

6. According to Hotelling (1931), in perfectly functioning markets, on average, prices of natural resources will increase—in an amount just sufficient to offset the loss of interest. In such perfectly functioning markets, it would pay for those with high extraction costs to leave their resources in the ground; global efficiency would, for instance, focus current extraction on the low cost producers (probably in the Middle East).

7. For a recent study that argues in favor of privatization of the oil sector, see Weinthal and Luong (2006).

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