

CHAPTER ONE

The Paradoxical Wealth of Nations

It is the devil's excrement. We are drowning in the devil's excrement.

—Juan Pablo Pérez Alfonso, former Venezuelan oil minister

I wish your people had discovered water.

—King Idris of Libya, on being told that a US consortium had found oil

SINCE 1980, the developing world has become wealthier, more democratic, and more peaceful. Yet this is only true for countries without oil. The oil states—scattered across the Middle East, Africa, Latin America, and Asia—are no wealthier, or more democratic or peaceful, than they were three decades ago. Some are worse off. From 1980 to 2006, per capita incomes fell 6 percent in Venezuela, 45 percent in Gabon, and 85 percent in Iraq. Many oil producers—like Algeria, Angola, Colombia, Nigeria, Sudan, and again, Iraq—have been scarred by decades of civil war.

These political and economic ailments constitute what is called the resource curse. It is more accurately a mineral curse, since these maladies are not caused by other kinds of natural resources, like forests, fresh water, or fertile cropland. Among minerals, petroleum—which accounts for more than 90 percent of the world's minerals trade—produces the largest problems for the greatest number of countries. The resource curse is overwhelmingly an oil curse.¹

Before 1980 there was little evidence of a resource curse. In the developing world, the oil states were just as likely as the non-oil states to have authoritarian governments and suffer from civil wars. Today, the oil states are 50 percent more likely to be ruled by autocrats and more than twice as likely to have civil wars as the non-oil states. They are also more secretive, more financially volatile, and provide women with

¹I use the term “oil” to refer to both oil and natural gas, and use “oil wealth,” “petroleum wealth,” “oil production,” and “oil income” interchangeably. In appendix 1.1, I explain how I define and measure the value of a country's oil and gas production. I classify countries as “oil producers” or “oil states” if they generate at least a hundred dollars per capita (in 2000 dollars) in income from oil and gas in a given year. In 2009, there were fifty-six oil states scattered across all regions of the globe (see table 1.1).

fewer economic and political opportunities. Since 1980, good geology has led to bad politics.

The most troubling effects of this scourge are found in the Middle East. The region holds more than half of the world's proven oil reserves. It also lags far behind the rest of the world in progress toward democracy, gender equality, and economic reforms. Much of its petroleum wealth lies beneath countries plagued by decades of civil war, like Iraq, Iran, and Algeria. Many observers blame the region's maladies on its Islamic traditions or colonial heritage. In fact, petroleum wealth is at the root of many of the Middle East's economic, social, and political ailments—and presents formidable challenges for the region's democratic reformers.

Not all states with oil are susceptible to the curse. Countries like Norway, Canada, and Great Britain, which have high incomes, diversified economies, and strong democratic institutions, have extracted lots of oil and had few ill effects. The United States—which for much of its history has been both the world's leading oil producer and the world's leading oil consumer—has also been an exception in most ways. Petroleum wealth is overwhelmingly a problem for low- and middle-income countries, not rich, industrialized ones. This creates, unfortunately, what might be called “the irony of oil wealth”: those countries with the most urgent needs are also the least likely to benefit from their own geologic endowment.

The resource curse was not supposed to happen. In the 1950s and 1960s, economists believed that resource wealth would help countries, not hurt them. Developing states were thought to have an abundance of labor, but a shortage of investable capital. Countries blessed with natural resource wealth would be the exception, since they would have enough revenues to invest in the roads, schools, and other infrastructure that they needed to develop quickly.²

Political scientists also believed in the virtues of resource wealth. According to modernization theory—the prevailing view in the 1950s and 1960s of political development, later revived in the 1990s and 2000s—increases in a country's income per capita would lead to improvements in virtually every dimension of its political well-being, including the effectiveness of its government, the government's accountability to its people, and the enfranchisement of women.³

In the 1950s, 1960s, and 1970s, the conventional wisdom was more or less correct. But in the 1970s, something went wrong in the oil states.

²See, for example, Viner 1952; Lewis 1955; Spengler 1960; Watkins 1963.

³Examples include Lerner 1958; Lipset 1959; Inkeles and Smith 1974; Adsera, Boix, and Payne 2003; Inglehart and Norris 2003.

Understanding the resource curse is important for countries that export petroleum, but it also matters for countries that import it to fuel their economies. Some argue that the location of oil in repressive, conflict-ridden countries is just an annoying coincidence. According to former vice president Dick Cheney, “The problem is that the good Lord didn’t see fit to put oil and gas reserves where there are democratic governments.”⁴ But the problem is not divine intervention. These countries suffer from authoritarian rule, violent conflict, and economic disarray *because* they produce oil—and because consumers in oil-importing states buy it from them.

Petroleum is the world’s largest industry. In 2009, \$2.3 trillion worth of oil and gas was pumped out of the ground; petroleum and its by-products made up 14.2 percent of the world’s commodity trade.⁵ The global demand for petroleum will almost certainly continue to grow in the coming decades, despite overwhelming evidence that burning fossil fuels is destabilizing the planet’s climate. To meet this demand, oil production is spreading to ever-poorer countries.

The 2001 US Energy Task Force, led by Cheney, called for the United States to diversify its sources of petroleum and reduce the country’s dependence on the politically troubled states of the Middle East. Yet finding new oil suppliers in Africa, Asia, or Latin America has not improved US energy security. Instead, it is causing the resource curse to spread to new countries. Energy importers cannot circumvent the oil curse; they must help solve it.

This book takes a comprehensive look at the political and economic consequences of petroleum wealth, especially in developing countries.⁶ Analyzing 50 years of data for 170 countries in all regions of the world, it finds little evidence for some of the claims made by earlier studies: that extracting oil leads to abnormally slow economic growth, or makes governments weaker, more corrupt, or less effective.⁷ On some fronts, like reducing child mortality, the typical oil state has outpaced the typical non-oil one.

Yet this book also shows that since about 1980, oil-producing countries in the developing world have become less democratic and more

⁴Quoted in David Ignatius, “Oil and Politics Mix Suspiciously Well in America,” *Washington Post*, July 30, 2000.

⁵BP 2010; UN Comtrade, database, available at <http://comtrade.un.org/db/>.

⁶This book focuses on petroleum, not other minerals. Among mineral resources, oil seems to have the strongest impact on the politics of the host country. Whether or not other minerals carry a similar curse is an important question, but one that goes beyond the scope of this book.

⁷As noted in the preface: *mea culpa*. Some of my own previous studies supported several of these claims.

secretive than similar states without oil. These countries have grown more likely to suffer from violent insurgencies, and their economies have provided women with fewer jobs and less political influence. They have also been afflicted by a more subtle economic problem: while they have grown at about the same rate as other countries, most have not grown as quickly as they should, given their natural resource wealth.

Geology is not destiny. Some oil producers have escaped each of these ailments. Nigeria and Indonesia have made transitions to democracy; Mexico and Angola have drawn large numbers of women into the economy and government; Ecuador and Kazakhstan have avoided civil wars; and Oman and Malaysia have had fast, steady, and equitable economic growth. The goals of this book are to explain *why* oil is typically a curse, why some countries have escaped the curse, and how more countries can turn their natural resource wealth from a curse to a blessing.

WHAT CAUSES THE OIL CURSE?

Why does petroleum have such strange effects on a country's political and economic health? Some observers blame the foreign powers that intervene in oil-rich countries and manipulate their governments. Others fault the international oil companies that exploit these resources in pursuit of extraordinary profits.

Both arguments contain some truth, but neither stands up to scrutiny. The United States, Britain, and France have periodically invaded or supported coups in many oil-producing states—most recently, Libya. But they have been equally likely to invade countries without oil.⁸ In recent decades, many oil-producing states—like Iran, Venezuela, Russia, Sudan, and Burma—seem to be unusually *immune* to pressures from Western states, and actively defy them, yet they still suffer from the same problems as other, more docile petroleum-rich countries.

For much of the twentieth century, international oil companies like Shell, British Petroleum, Exxon, and Mobil had remarkable influence over the fate of oil-producing countries in the developing world, and could justifiably be faulted for many of those countries' problems. But the oil companies' role has sharply diminished since the early 1970s, when most developing countries nationalized their oil industries. If foreign companies were the source of the problem, then nationalization should have been the cure. This book, though, shows that the events of

⁸On this issue, see de Soysa, Gartzke, and Lin 2009; Colgan 2010b; Sarbahi 2005.

the 1970s, *especially* nationalization, made the problems of the oil states a lot worse.

Most social scientists trace the oil curse to the governments of petroleum-producing states, although they agree on little else. Almost all studies focus on just one of the problems that seem to be linked to petroleum—like poor economic performance, the lack of democracy, or the unusual frequency of civil wars. They offer many explanations for these problems, faulting oil's alleged links to corruption, rent seeking, inequality, shortsighted policies, and weakened state institutions. These and other theories—some well founded, and others not—are discussed over the course of this book.

The Oil Curse argues that the political and economic problems of the oil states can be traced to the unusual properties of petroleum revenues. How governments use their oil revenues—to benefit the few or the many—is certainly important. But whether governments spend these funds wisely or foolishly, oil revenues have far-reaching effects on a country's political and economic well-being.

Petroleum revenues have four distinctive qualities: their scale, source, stability, and secrecy.⁹ These qualities arose, or got worse, thanks to the rising power of state-owned oil companies.

The *scale* of oil revenues can be massive. On average, the governments of oil-producing countries are almost 50 percent larger (as a fraction of their country's economy) than the governments of non-oil countries. In low-income countries, the discovery of oil can set off an explosion in government finances. For example, from 2001 to 2009, total government expenditures rose by 600 percent in Azerbaijan and 800 percent in Equatorial Guinea. The sheer volume of these revenues makes it easier for authoritarian governments to silence dissent. It can also lead to violent insurrections, when the people who live in a country's oil-rich regions seek a larger share of these immense revenues.

The size of these revenues alone cannot account for the oil curse. Many peaceful, democratic European countries have bigger governments than many conflict-ridden, autocratic oil producers. The *source* of these revenues also matters. Oil-funded governments are not financed by taxes on their citizens but instead by the sale of state-owned assets—that is, their country's petroleum wealth. This helps explain why so many oil-producing countries are undemocratic: when governments are funded through taxes, they become more constrained by their

⁹Other scholars have also emphasized the importance of petroleum revenues, although they generally concentrate on different qualities. See, for example, Karl 1997; Jensen and Wantchekon 2004; Morrison 2007; Dunning 2008.

citizens; when funded by oil, they become less susceptible to public pressure.

Other problems can be traced to the *stability*—or rather, the *instability*—of oil revenues. The volatility of world oil prices, and the rise and fall of a country's reserves, can produce large fluctuations in a government's finances. Governments are saddled with tasks they are seldom able to manage because of this financial instability, which can help explain why they frequently squander their resource wealth. Revenue instability also aggravates regional conflicts, making it harder for governments and rebels to settle their differences.

Finally, the *secrecy* of petroleum revenues compounds these problems. Governments often collude with international oil companies to conceal their transactions, and use their own national oil companies to hide both revenues and expenditures. When Saddam Hussein was Iraq's president, more than half of his government's expenditures were channeled through the Iraqi National Oil Company, whose budget was secret.¹⁰ Other countries have similar practices. Secrecy is a key reason why oil revenues are so commonly squandered, why oil-fueled dictators can remain in power, since they can conceal evidence of their greed and incompetence; and why insurgents are generally reluctant to lay down their arms, because they distrust offers by the government to share their country's oil revenues more equitably.

Petroleum has other troublesome qualities. The extraction process typically creates few direct benefits, but many social and environmental problems for the surrounding communities. Oil and gas facilities have large sunk costs, making them vulnerable to extortion. And when produced in large quantities, petroleum can affect a country's exchange rates and reduce the size of the manufacturing and agricultural sectors, which in turn can shut off economic opportunities for women. These features can give us further insights into the paradoxical effects of oil wealth, and I discuss them in future chapters.

But the most important political fact about oil—and the reason it leads to so much trouble in so many developing countries—is that the revenues it bestows on governments are unusually large, do not come from taxes, fluctuate unpredictably, and can be easily hidden.

PUTTING OIL INTO HISTORY

Oil revenues have not always had these properties, and oil wealth has not always been a curse.

¹⁰Alnasrawi 1994.

Until the 1970s, the oil-producing countries looked much like the rest of the world: they were just as likely to be ruled by dictators; they had civil wars at roughly the same rate as other countries; they offered women more or less the same kinds of opportunities; and their economic growth rates were both stable and well above the world average. After the 1970s, all of this changed.

This reversal was largely caused by a wave of oil industry nationalizations, in the 1960s and 1970s, which transformed the scale, source, and volatility of petroleum revenues. Before the 1970s, the world of petroleum was dominated by a handful of enormous companies—widely known as the “Seven Sisters”—that colluded to maintain control of world supplies.¹¹ In all but a few countries, the Seven Sisters owned or dominated the local subsidiaries that extracted and exported the host country’s oil. They also controlled the shipping and marketing of almost all the world’s petroleum, which enabled them to keep prices steady and capture most of the profits for themselves. The military and economic power of the United States and its European allies helped maintain this stable, highly unjust arrangement.

For the governments of oil-rich states like Iran, Iraq, Saudi Arabia, Libya, Algeria, Nigeria, and Indonesia, the power of these companies was intolerable, since it deprived them of control over their nation’s assets—siphoning off profits, and forcing them to extract less oil, or more oil, than they believed would serve their nation’s interests.

In the 1960s and 1970s, international petroleum markets were transformed by a series of closely related developments. Oil supplies begin to grow tighter, as rising demand outpaced new discoveries. The major oil exporters of the developing world started to collude through the Organization of Petroleum Exporting Countries (OPEC). The United States also became increasingly dependent on foreign supplies, as its domestic production began to decline while consumption soared. In addition, the Bretton Woods system of fixed exchange rates—which had contributed to keeping prices stable—fell apart.

Most importantly, virtually all oil-exporting countries in the developing world nationalized their petroleum industries, and then set up state-owned companies to manage them.¹² Everywhere nationalization was seen as a triumph, touching off glorious celebrations. The architect of Iraq’s nationalization, Saddam Hussein, who at the time was the

¹¹ The seven companies were Standard Oil of New Jersey (later Exxon), Standard Oil of California (later Chevron), Anglo-Iranian Oil Company (later BP), Mobil, Texaco, Gulf, and Royal Dutch Shell. By 2010, they had been consolidated into four firms—Exxon-Mobil, BP, Shell, and ChevronTexaco—and were still among the world’s largest publicly traded oil companies.

¹² Kobrin 1980; Victor, Hults, and Thurber 2011.

undersecretary general of the Revolutionary Command Council, became famous. The expropriation of Mexico's foreign oil companies—which occurred in 1938, before most others—is still commemorated with a national holiday.

In some ways, nationalization was a giant step forward for oil-producing countries. These countries gained greater control over their national assets. They began to capture a much larger share of the industry's profits. In the 1970s, they also were able to raise world prices to record levels, causing an unprecedented transfer of wealth from oil-importing states to oil-exporting ones.

Nationalization transformed the finances of oil-producing states. The size of government revenues grew dramatically, giving rulers access to unprecedented windfalls. Instead of collecting taxes and royalties from foreign companies, governments could fund themselves by selling oil through their national oil companies—which also helped them cloak these revenues in secrecy. World oil prices, and hence government finances, also started to fluctuate unpredictably.

The revolution in energy markets made the oil-rich governments larger, richer, and more powerful than they could have ever imagined. But for their citizens, the results were often disastrous. The powers once held by foreign corporations passed into the hands of their governments, making it easier for rulers to silence dissent and hold off democratic pressures. Ethnic minorities in oil-producing regions took up arms to fight for a larger share of the government's revenues. Moreover, in many states, the tidal wave of revenues produced new jobs for men but not for women. While citizens enjoyed booming economic growth in the 1970s, most of these gains disappeared after prices collapsed in the 1980s.

THE PETROLEUM FRONTIER

Changes in global energy markets are causing the oil curse to spread. In the next twenty-five years the global demand for oil and other liquid fuels will rise by an estimated 28 percent, and the demand for natural gas will increase by about 44 percent, if today's energy policies continue unchanged. While the United States is currently the world's leading petroleum importer, most of the new demand will come from developing countries, led by China and India.¹³

Companies are increasingly drilling in low-income countries in order to meet this rising demand. Historically, oil has been found in coun-

¹³Energy Information Administration 2010.

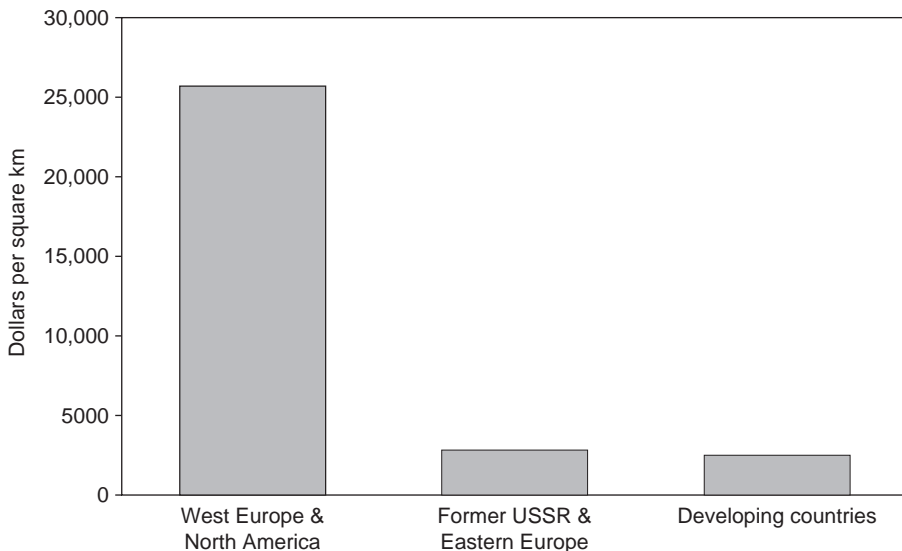


Figure 1.1. Foreign direct investment in extractive industries, 2007

These figures show the stock of foreign direct investment in “petroleum, mining, and quarrying” in 2007, expressed in dollars per square kilometer of territory.

Source: Calculated from data in United Nations Conference on Trade and Development 2009; World Bank, n.d.

tries that are already well off. Since the birth of the petroleum age in the mid-nineteenth century, rich countries have been about 70 percent more likely to produce oil than poor countries, not because they are sitting on top of more petroleum, but because they have more money to invest in locating and extracting it.¹⁴ Today the rich democracies of North America and Europe have attracted about ten times more foreign direct investment in mining, per square kilometer, than the rest of the world (see figure 1.1).

In the new millennium, this has begun to change: the petroleum frontier has moved to ever-poorer countries. After the oil price shocks of the 1970s, the number of oil-producing states was relatively steady—hovering between thirty-seven and forty-four countries from 1976 to 1998 (see figure 1.2). From 1998 to 2006, the number of oil states rose from thirty-eight to a record fifty-seven. Almost all of the new producers

¹⁴Between 1857 and 2000, 63 percent of all oil-producing countries had average or above-average incomes in the year they began production. See appendix 1.1.

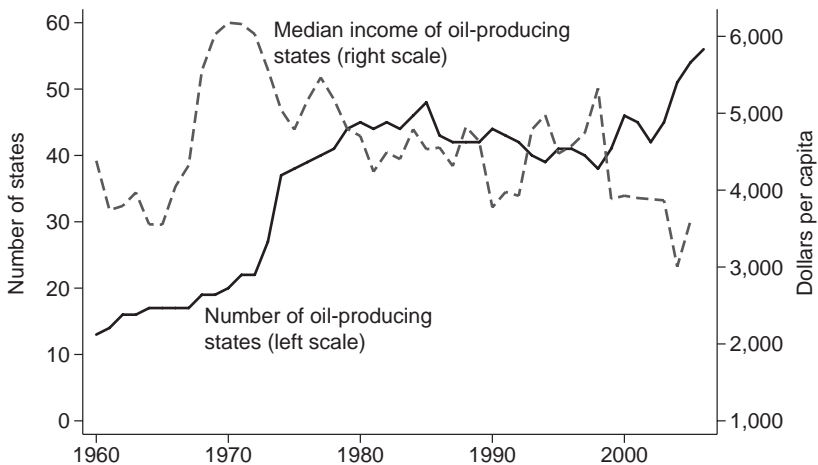


Figure 1.2. The number and income of oil-producing states, 1960–2006

These figures show the number of oil-producing countries (solid line), and their median income (broken line). States are defined as oil producers if they generate at least a hundred dollars per capita (in constant 2000 dollars) from oil and gas in a given year.

Source: Calculated from data in BP 2010; World Bank, n.d.

were low- and middle-income countries. As the number of producers rose, their median income fell sharply—from over fifty-two hundred dollars per capita in 1998 to just three thousand dollars in 2004—indicating that increasingly poor countries were joining the group.

In January 1999, oil was selling for just \$10 a barrel; by June 2008, it had risen to \$145 a barrel. Thanks to booming oil prices, companies found that the risks of working in poor, remote, and often badly governed countries were increasingly outweighed by the benefits of finding new reserves. Belize, Brazil, Chad, East Timor, Mauritania, and Mozambique have all become oil and gas exporters since 2004. In the next few years, as many as sixteen new countries—most of them in Africa, and almost all of them poor—are likely to join the list.¹⁵ The vast majority of the world's new hydrocarbon supplies will come from developing countries in the next few decades.¹⁶

¹⁵Countries that may become new oil or gas exporters in the coming years include Cuba, Ghana, Guinea, Guinea-Bissau, Guyana, Israel, Liberia, Mali, São Tomé and Príncipe, Senegal, Sierra Leone, Tanzania, Togo, and Uganda. Indonesia and Tunisia—former exporters that had become importers—may also once again become petroleum exporters. On the scramble for Africa's oil resources, see Klare 2006.

¹⁶Energy Information Administration 2010.

This means that a flood of new hydrocarbon revenues is just starting to hit some of the world's poorest countries. If there were no resource curse, this would be spectacularly good news—a historically unique opportunity to escape from poverty. Yet the low-income countries that most desperately need money are also the most likely to be struck by the resource curse. Unless something is done, these windfalls will hurt, not help, people who live on the petroleum frontier.

LOOKING AHEAD

My analysis begins in chapter 2 by explaining why oil revenues have such unusual qualities. Some of these characteristics can be traced to the industry's distinctive economic properties: the ownership of oil and gas reserves by governments; the fact that these reserves can be depleted; the enormous up-front investments that are needed to extract them; the extraordinary profits they can generate; the harmful effect that their extraction can have on other kinds of businesses, by causing the currency to appreciate; their capacity to operate as economic enclaves; and the sensitivity of oil prices to small changes in supply and demand.

Many of these features have characterized the oil industry since the nineteenth century. But oil revenues were also shaped by a series of developments in the 1960s and 1970s: the tightening of global fossil fuel supplies; the demise of the Bretton Woods system of fixed exchange rates; the declining power of international oil companies, and the rise of OPEC; and a wave of nationalizations that gave oil-producing governments unprecedented wealth and influence. These and other changes made petroleum revenues larger and less stable than ever before, and help explain why many features of the resource curse only emerged in the 1980s.

Chapter 3 shows how the scale, source, and secrecy of oil revenues have helped keep authoritarian governments in power. Part of this story will sound familiar to political scientists. When dictators must finance themselves through taxes, they are met with demands for greater accountability; when they can fund themselves by selling off state-owned assets, like oil and gas, they can elude democratizing pressures. To this standard account I add some new elements. I demonstrate that oil has only had antidemocratic effects since the nationalizations of the 1970s; that oil tends to both keep authoritarian regimes in power and undermine low-income democracies; that oil revenues fail to trigger democratizing pressures, in part, because of their secrecy; and that authoritarian leaders are paradoxically more eager than democratic ones to keep domestic fuel prices low.

To illustrate how oil can keep authoritarian governments in power, chapter 3 looks at the case of the Soviet Union. To show how it can lead to the erosion of accountability in weak democracies, I use the example of post-Soviet Russia. An appendix provides a more careful look at the statistical relationships that are summarized in the chapter.

Some dimensions of the resource curse are surprising. Chapter 4 explains how oil wealth has reduced economic and political opportunities for women in many low- and middle-income countries—most important, in the Middle East and North Africa. This is partly due to the scale of oil revenues, which governments spend in ways that discourage women from joining the labor force, and partly because oil production can “crowd out” industries that would otherwise hire women as well as open pathways toward greater economic and political rights. One result is that women in the Middle East have made less economic and political progress than women in other world regions. Some observers claim that Islam is the real impediment to women’s progress in the Middle East. I show that this cannot be the whole truth, since Middle Eastern women fare better in the region’s oil-poor countries than its oil-rich ones.

To illustrate this argument, I compare three countries that are similar in many ways—Algeria, Morocco, and Tunisia—but only one of which (Algeria) produces significant quantities of petroleum. Oil has slowed the economic progress of women in Algeria, while women in Morocco and Tunisia have made much faster gains. Again, a statistical appendix offers a more deliberate look at the evidence.

Since the 1980s oil revenues have also heightened the danger of civil war, as explored in chapter 5. Among low- and middle-income countries, oil producers are more than twice as likely to have civil wars as non-oil producers. Some of these conflicts have been small, like the independence movement in China’s Xinjiang Province or Mexico’s Zapatista uprising. Others—like the wars in Angola, Colombia, and Sudan—have been ruinous.

The chapter contends that there are two kinds of petroleum-fueled conflicts: separatist wars waged by disenfranchised minorities in oil-producing regions, and conflicts led by rebels who fund themselves by extorting money from the oil industry. To trace the pathways that connect oil to insurrection, I use case studies of recent or near conflicts in Colombia, Congo-Brazzaville, Equatorial Guinea, Indonesia, Nigeria, and Sudan. The statistical links between oil and violent conflict are more carefully described in the appendix.

Chapter 6 looks at the economic effects of oil revenues, and how governments manage them. Many studies assert that oil has led to abnormally slow economic growth in developing states, which oc-

curs because mineral wealth tends to damage state institutions—hurting bureaucratic efficiency, boosting corruption, and undermining the rule of law. Much of this “conventional wisdom” is wrong: while economic growth in the oil states has been unusually volatile, in the long run it has been neither faster nor slower than in the rest of the world. There is also little evidence that oil wealth tends to hurt state institutions. Claims to the contrary are typically based on what might be called the “Beverly Hillbillies fallacy” and the “fallacy of unobserved burdens.”

The real problem is not that growth in the oil states has been slow when it should have been “normal” but rather that it has been normal when it should have been faster than normal, given the enormous revenues these governments have collected. Two factors can help explain this disappointingly average growth: the failure of the oil states to generate more jobs for women—which would have lowered fertility rates and population growth, and boosted per capita income growth; and the inability of their governments to cope with the extraordinary challenges created by revenue volatility.

The existence of the oil curse has far-reaching implications, which I discuss in the final chapter. It offers new insights into one of the oldest puzzles in the field of political economy: How are nations shaped by their natural environments? Social scientists have argued that countries are deeply affected by their placement on the continents, disease environment, and access to the sea. This book shows how, under certain conditions, a country’s development path can also be shaped by its geologic endowment.

The oil curse should also remind us that more income is not always better, even for low-income countries: it depends on where the income comes from, and how it affects a country’s politics. And understanding the oil curse can give us special insights into the Middle East, the region with the greatest abundance of petroleum wealth, and the most glaring shortages of both democracy and gender equality. This does not mean that the region’s democracy and gender rights movements are doomed to failure. The effects of oil are formidable, but not immutable: much can be done to change the flow of petroleum revenues to governments, and reforms in the governance of oil can open the door to greater economic, social, and political rights.

The final chapter explains how countries might alleviate the oil curse by changing the troublesome qualities of their oil revenues. It describes an array of strategies to alter the size, source, stability, and secrecy of oil revenues, ranging from the simple (extracting it more slowly) to the exotic (using barter contracts, oil-denominated loans, and partial privatization). Since there are limits to what can be changed on the “revenue”

side of the ledger, I also look at how governments can reform the ways they spend these revenues.

There is one remedy that can help everywhere: greater transparency in how governments collect, manage, and spend their oil revenues. Improved transparency could force governments to become more accountable to their citizens, reduce the danger of violent conflict, and shrink the economic losses caused by corruption. Transparency reforms in the oil-importing countries—whose voracious demand for fossil fuels is at the root of the resource curse—could have a powerful effect as well.

Reforms are most urgent for countries on the cusp of petroleum booms. Every few months, new oil and gas deposits are discovered somewhere in Africa, Latin America, the Middle East, or Asia. Many are found in countries that are poor, undemocratic, and ill equipped to manage large revenues. For the citizens of these countries, this book is a guide to what has gone wrong in the past—and what can be done differently in the future.

APPENDIX 1.1: A NOTE ON METHODS AND MEASUREMENTS

This book makes a series of arguments about the impact of a country's oil revenues on its political and economic development. It supports these claims with a mixture of quantitative and qualitative evidence, and by drawing on the work of other scholars.

The quantitative analysis is based on observational data from all countries since 1960.¹⁷ There are important limits to the causal inferences that can be made using observational data, especially cross-national data. Since the book addresses questions that necessitate the use of observational data, I make a special effort to mitigate some of the problems that can compromise these inferences: the use of a causal variable that is itself affected by other variables in the model; statistical procedures that are unnecessarily complex and insufficiently transparent; correlations that are not robust but instead merely reflect quirks in the data, arbitrary methodological decisions, or the presence of a hand-

¹⁷I include all 170 countries that were sovereign in the year 2000, and had populations greater than 200,000. Countries enter the data set in either 1960 or their first year of independence, if in 1960 they were under colonial rule. Countries that disappeared between 1960 and 2000—South Vietnam, South Yemen, and East Germany—are excluded. I treat Germany as the successor state to West Germany, Vietnam as the successor to North Vietnam, Yemen as the successor to North Yemen, and Russia as the successor to the Soviet Union.

ful of highly influential observations; and a lack of clarity about the causal processes that connect the key variables.

MEASURING OIL

This book's most significant innovation is an improved measure of oil and gas wealth—one that overcomes the endogeneity problems of past measures, can be compiled in a reliable and transparent way, and is available for all countries and all years.

Most of the earlier studies exploring the resource curse used a country's dependence on hydrocarbon exports—that is, the value of its petroleum exports as a fraction of its gross domestic product (GDP)—as their independent variable.¹⁸ But this variable has two key shortcomings—one conceptual, and the other a bias that may cause spurious correlations between oil and problems like authoritarian rule, civil war, and poor economic performance.

The conceptual flaw is that it only measures fuel that is exported, and it is hard to see why fuel that is sold domestically should not be counted. Governments earn oil revenues from both domestic and foreign sales. Even when fuel is sold domestically at subsidized prices, the true value of this oil—and hence the cost to the government of these subsidies—should be accounted for.

The measure may also be biased upward in poorer countries, which could produce spurious associations between oil export dependence and a variety of economic and political maladies that are highly correlated with low incomes. Even if two countries with the same population produce the same quantity of oil, the numerator—a country's oil exports—will be larger in the poorer country. Oil-producing countries typically consume a fraction of their oil domestically and export the surplus. Rich countries will consume more of their own oil, while poor countries will consume less of it, and hence export more of it. For example, on a per capita basis, the United States produces more oil than Angola or Nigeria, but Angola and Nigeria export more than the United States, because the United States is wealthier than Angola or Nigeria, and consumes all of its oil domestically. When we measure oil exports, we are indirectly measuring the size of a country's non-oil economy.

A similar problem occurs in the denominator. Even if two countries export the same quantity of oil, the poorer country will have a smaller

¹⁸For examples, see Sachs and Warner 1995; Collier and Hoeffler 1998; Ross 2001a.

GDP, and hence it will have a higher oil-exports-to-GDP ratio. This opens the door to several endogeneity problems. For example, having a high oil-exports-to-GDP ratio might cause slow economic growth (or corruption, or civil war), but it could also be a result of these ailments, since they tend to reduce a country's GDP. This makes it hard to interpret correlations between oil export dependence and conflict, for instance; both might be independently boosted by a country's poverty, producing a spurious correlation.

To surmount these problems, I measure the total value of oil and gas production instead of just exports, and divide it by a country's population, not its total exports or the GDP. The resulting variable, *oil income per capita*, can be used to evaluate a stark version of the oil curse: Does the value of a country's oil production—regardless of how well it is managed, and how it influences the rest of the economy—affect its politics?

The *oil income* variable also has a more intuitive meaning than the oil-exports-to-GDP ratio. If two countries with similar populations produce similar quantities of oil and gas—for example, Angola and Netherlands—they will have similar levels of *oil income* per capita (in this case, about five hundred dollars per capita in 2003). If we measured them by their oil-exports-to-GDP ratios, however, we would find that Angola's measure (0.789) is much higher than Netherlands' (0.056), because Angola is too poor to consume much of its own oil (making the numerator larger), and because its GDP is much smaller (making the denominator smaller).

The oil income variable has two important weaknesses. First, the distribution of values among states is highly skewed: most countries produce little or no oil, while a few produce enormous quantities, which can create problems when it is used in regressions. I take several steps to reduce this problem. I use the natural log of oil income in the regressions in chapters 3 and 5 (although not in chapter 4, for reasons I explain in appendix 4.1), to make the distribution of values less skewed. Since the log of oil income still has a nonnormal distribution, I retest all of my findings in chapters 3, 4, and 5 using a dichotomous measure of *oil income*, which identifies countries as oil producers when they have at least a hundred dollars per capita (measured in constant 2000 dollars) in income from oil and gas in a given year. In all the chapters, I employ cross-tabulations in which countries are again divided into oil and non-oil producers, to show that my inferences are not driven by extreme values in a small number of cases.

The second shortcoming is that *oil income* is not identical to the concept of oil wealth in my theory, even though it is closely related to it. Most of my arguments suggest that oil is politically harmful because of

the revenues it generates for governments.¹⁹ Unfortunately, the secrecy of these revenues makes them extraordinarily difficult to measure, except for certain countries in recent years. Even if complete and accurate information on oil revenues was available, this measure would have a disadvantage of its own: the size of a country's oil revenues is affected by the government's institutions and policies, and hence cannot be relied on to identify the causal effect of oil wealth on its governance. To obtain a measure of oil wealth that is more exogenous and available for more countries over a longer time period, I rely on the *oil income* measure.

Oil income can be readily calculated for all countries and years since 1960. Data on oil and gas production from 1970 to 2001 comes from the World Bank's Web site on environmental economics and indicators. Figures after 2001 are from the "BP Statistical Review of World Energy." Oil and gas production before 1970, and after 2001 for countries not covered by BP, are taken from the US Geological Survey's *Mineral Yearbook*. I take data on Soviet production—which is not well measured in the other data sets—from studies by Marshall Goldman and Jonathan Stern, and use data on oil and gas prices from the "BP Statistical Review."²⁰

ENDOGENEITY

If *oil income* was randomly distributed among countries—and hence truly exogenous to a country's economic and political conditions—causal identification would be easy: statistically significant correlations between oil income and governance would strongly suggest that the former was causing the latter.

Unfortunately, the distribution of *oil income* is not random, which makes it important to understand why it varies over time and from country to country. The *oil income* variable is a function of three underlying factors: a country's geologic endowment, which determines the physical quantity and quality of petroleum that can be exploited; the investments made in extracting it, which affect how much will be discovered and commercially exploited at any given time; and the price of oil, which determines both the rate of extraction, and the

¹⁹This is not a problem for all parts of my argument. In a few cases, I maintain that income generated by petroleum can cause problems whether or not it is translated into government revenues—when it crowds out industries that usually hire women (chapter 4) or facilitates armed rebellions through extortion (chapter 5).

²⁰Goldman 2008; Stern 1980.

amount of money that petroleum sales will generate. Both a country's geologic endowment and the global oil price should be unaffected by a country's economic and political features.²¹ A country's economy and government, however, will influence the investments made in oil exploitation. Countries that are wealthier, more open to foreign investment, and provide better legal protections for investors are likely to attract more petroleum-sector investment.²²

Although country-level data on petroleum investments are scarce and unreliable, regional-level data are available and informative. While the developing countries cover almost 60 percent of the world's landmass (outside Antarctica), they hold less than 20 percent of the world's stock of foreign direct investment in petroleum, mining, and quarrying. The rich democracies of Europe, North America, Australia, and New Zealand cover just 25 percent of the world's landmass, yet have almost 75 percent of the foreign direct investment stock in mining.²³ This indicates that the rich democracies have about ten times more foreign direct investment in all types of mining, per square kilometer, than either the developing states or those of the former Soviet Union and southeastern Europe (see figure 1.1). In fact, this understates the investment advantage of the rich democracies. While the developing countries are heavily dependent on foreign investment, including expensive Western technology, to develop their oil sectors, the rich democracies have more domestic investment available.

Since there is a better investment climate in the advanced industrialized countries (which also tend to be more democratic, peaceful, and have more female participation in government), we should expect, *ceteris paribus*, to see higher levels of *oil income* in countries that also more democratic. This also implies that if higher levels of oil income are correlated with authoritarianism, civil war, or the absence of women's rights, these relationships are unlikely to be spurious, and may understate oil's true effect.

Another way to check for exogeneity is to look at whether oil is more likely to be extracted from countries that were rich or poor *ex ante*, before they started to produce oil. Figure 1.3 shows the initial incomes of all 103 countries that began to produce petroleum between 1857 and

²¹Saudi Arabia might be a partial exception. Due to its unique role as a "swing producer," it may have the capacity to unilaterally affect global prices, at least in the short run.

²²Christian Daude and Ernesto Stein (2007) find that countries with "better institutions"—including higher scores on measures of "government effectiveness" and "regulatory quality"—attract significantly more foreign direct investment, although they do not look separately at investment in petroleum. Rabah Arezki and Markus Brückner (2010) show that greater corruption tends to reduce oil production.

²³United Nations Conference on Trade and Development 2009.

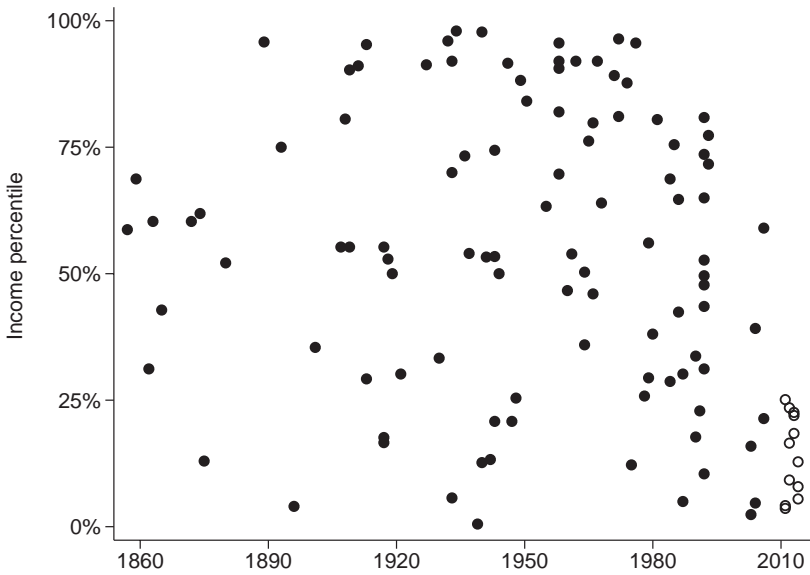


Figure 1.3. Incomes of new oil producers, 1857–2015

The dots show the per capita income of countries in the year they began to produce oil or gas, expressed as a percentile of all sovereign states in that year. Hollow dots in the lower-right corner represent countries that are expected to start production between 2010 and 2015.

Source: Calculated from data in Haber and Menaldo 2009; Maddison 2009.

2009, relative to other countries in the same year.²⁴ Countries above the fiftieth percentile, marked on the y-axis, had above-median incomes; those below the fiftieth percentile had below-median incomes.

Forty-one countries began to produce oil when their incomes were below the world median; four began production when they were at the world median; and fifty-eight countries began producing when their incomes were above the world median. This again suggests that oil and gas is more likely to be extracted from countries that are already rich, and hence more likely to be democratic and peaceful. Only since 2000 have low-income countries been more likely than high-income ones to start producing oil—reflecting the movement of the petroleum frontier to the poorest countries. In figure 1.3, hollow circles marks those countries that are expected to begin production between 2010 and 2015; all of them have low incomes.

²⁴I use the income of whatever country ruled the extractive region when production began, even if the territories later changed hands or became independent. I am grateful to Steve Haber and Victor Menaldo for sharing their data on initial production dates.

TABLE 1.1
Oil- and gas-producing countries, 2009

These numbers show the estimated value of oil and gas produced per capita in 2009 in current dollars.

<i>Countries</i>	<i>Oil income per capita (2009 dollars)</i>
<i>Middle East and North Africa</i>	
* Qatar	24,940
* Kuwait	19,500
* United Arab Emirates	14,100
* Oman	7,950
* Saudi Arabia	7,800
* Libya	6,420
* Bahrain	3,720
* Algeria	1,930
* Iraq	1,780
* Iran	1,600
* Syria	450
Yemen	270
Egypt	260
Tunisia	250
<i>Latin America and Caribbean</i>	
* Trinidad	6,250
* Venezuela	2,130
* Ecuador	820
Suriname	680
* Mexico	610
* Argentina	530
Colombia	430
Bolivia	270
Brazil	240
Cuba	110

TABLE 1.1 (continued)

Countries	<i>Oil income per capita (2009 dollars)</i>
<i>Sub-Saharan Africa</i>	
Equatorial Guinea	12,310
* Gabon	3,890
* Angola	2,400
* Congo Republic	1,940
* Nigeria	370
Sudan	260
Chad	230
Cameroon	100
<i>North America, Europe, Australia, and New Zealand</i>	
* Norway	13,810
* Canada	2,530
Denmark	1,270
* Australia	790
* United States	730
* Netherlands	670
New Zealand	430
* Romania	170
* United Kingdom	150
Croatia	140
Ukraine	110
<i>Southeast Asia</i>	
* Brunei	11,590
East Timor	1,910
* Malaysia	860
Indonesia	140
Thailand	150
Papua New Guinea	120

TABLE 1.1 (continued)

Countries	<i>Oil income per capita (2009 dollars)</i>
<i>Former Soviet Union</i>	
* Turkmenistan	1,810
* Russia	2,080
* Kazakhstan	2,370
* Azerbaijan	2,950
* Uzbekistan	340
Ukraine	110

*Defined as a “long-term petroleum producer.” This indicates that a country has produced at least a hundred dollars per capita in oil and gas income (using constant 2000 dollars) for at least two-thirds of the time since 1960, or if they became independent after 1960, for two-thirds of their sovereign years.

Sources: The calculations are based on BP 2010; US Geological Survey n.d.; World Bank n.d.

Some skeptics have suggested that authoritarian leaders, or the leaders of countries with civil wars, might be more desperate for revenues and thus likely to produce more oil than their more democratic and peaceful counterparts.²⁵ Yet outside Saudi Arabia, it is hard to find examples of leaders who have the capacity to adjust their country’s oil production at will. Production rates generally are determined by geologic conditions, which limit how quickly the petroleum can be drawn out of the ground; and by oil prices, which determine how much oil in commercially marginal fields can be sold at a profit. Even if rulers could control these factors, we should expect democratic leaders—who face regular political competition and have high discount rates—to be equally or more desperate for revenues than authoritarian leaders.²⁶

Oil income is not truly exogenous to a country’s economic and political features, but it should be biased upward in countries that are more democratic, peaceful, and stable—and therefore biased against finding an oil curse.

²⁵Haber and Menaldo 2009; Tsui 2011.

²⁶In fact, a study by Gilbert Metcalf and Catherine Wolfram (2010) finds that democratic oil producers tend to extract their reserves more quickly than nondemocratic oil producers.

TRANSPARENCY AND ROBUSTNESS OF THE ANALYSIS

I have tried to analyze the data using the simplest and most transparent appropriate methods, including scatter diagrams, cross-tabulations, and difference-of-means tests.²⁷ Whenever feasible, I use tables and graphs to display both the countries that are consistent with a given pattern, and those that are not. I make a special effort to minimize the use of terms that are ambiguous or opaque. All of my data are included on my Web site for others to scrutinize, available at <http://www.sscnet.ucla.edu/polisci/faculty/ross/>. This book argues that transparency can encourage governments to better manage their oil revenues; maybe it can also encourage social scientists to be more careful in their analyses.

In the appendixes to chapters 3, 4, and 5, I use regression analysis to show that the chapter's key contentions can also be illustrated with more sophisticated methods. Even here I try to keep my models simple, heeding Christopher Achen's warning that "with more than three independent variables, no one can do the careful data analysis to ensure that the model specification is accurate and that the assumptions fit as well as the researcher claims."²⁸

Scholars can make misleading inferences when their data sets are incomplete and the missing observations are "nonrandom." I make a special effort to construct complete or virtually complete data sets. Since it is often impossible to obtain data for all countries—economic data before 1980 for low- and middle-income countries are especially scarce—in the regression tables I report the fraction of observations in each estimation that are missing.

All of my key results are submitted to a battery of robustness tests to see whether the correlations depend on a small number of influential cases, the use of particular data sets, the omission of confounding variables (at least those that can be readily measured), or arbitrary methodological decisions. Since much of the world's oil is concentrated in the Middle East and North Africa, I report how my regression results are affected by both the inclusion of a dummy variable for the Middle Eastern region and, more drastically, dropping all Middle Eastern countries from the analysis. Most of my results survive these tests, but some do not.

Political scientists frequently report the "substantive" effect of their main explanatory variable on their dependent variable. Yet these figures

²⁷ According to Christopher Achen (2002, 442), "None of the important empirical generalizations in the discipline has emerged from high-powered methodological research. Instead, almost without exception, they were found with graphs and cross-tabulations." See also Shapiro 2005.

²⁸ Achen 2002, 446.

are only valid if we are estimating the true causal model, which we are not, and measuring our variables with great accuracy, which we often do not. Typically these numbers are sensitive to changes in our underlying assumptions, and can create a false impression of scientific precision. And since *oil income* is almost certainly biased upward in richer, more stable, and more democratic countries, my estimations will likely understate oil's true effect.

I find it more candid and transparent to report whether, for a given variable, the oil states have significantly different values than the non-oil states, and what those differences are. This should give readers a rough impression of the magnitude of oil's impact while avoiding misleading claims.

UNDERSTANDING CAUSAL PROCESSES

In chapters 3 through 6, I develop simple theoretical models to clarify my arguments about causal processes that connect oil to different outcomes. The model starts in chapter 3 with just two actors—a group of citizens who wish to improve their welfare, and a ruler who wishes to stay in office—to portray more explicitly how oil revenues should affect the ruler's ability stay in power. In chapter 4, I draw the distinction between male and female citizens, and show how a rise in oil income can discourage women from entering the labor force, and keep women economically and politically marginalized. The model in chapter 5 divides the population into two groups—those who live in a country's oil-producing region, and those who live outside it—and shows how oil wealth could increase the likelihood of an armed rebellion in the oil-producing region when incomes are low. Chapter 6 employs a somewhat looser set of models—mostly developed by other scholars—to highlight factors that can influence a ruler's capacity to make intertemporal trade-offs, and hence, manage a volatile flow of oil revenues over time.

When investigating causal mechanisms empirically, even the best statistical analysis can only take us so far. The problem is more acute when we use observational data, and our unit of analysis is as large and opaque as a country.²⁹ Hence, I also use brief case studies to show that the associations I report in the cross-national data can plausibly explain outcomes at the country level, and look more closely at causal processes that connect oil income to specific outcomes. The case studies

²⁹ For important discussions of these limitations, see Brady and Collier 2004; King and Zeng 2006; Przeworski 2007.

cover a wide range of countries, including Colombia, the Republic of Congo, Equatorial Guinea, Indonesia, Nigeria, South Korea, the Soviet Union and Russia, Sudan, and the US state of Louisiana.

In chapter 5, where I argue that a country's oil production can have a detrimental affect on women, I use the case study method more deliberately, comparing three countries that are similar in many ways (Algeria, Morocco, and Tunisia), but only one of which (Algeria) produces significant quantities of petroleum. I show how oil has slowed the economic progress of women in Algeria, while women in Morocco and Tunisia have made much faster gains.

Both the quantitative and qualitative analyses in this book have important limitations. I hope that making my analysis more transparent will help readers weigh the evidence for themselves.