

More Petroleum, Less Democracy

✓ The problem is that the good Lord didn't see fit to put oil and gas reserves where there are democratic governments.
—former vice president Dick Cheney, 2000

IN JANUARY 2011, prodemocracy protests broke out across the Middle East. For decades, the Middle East has had less democracy, and more oil, than any other world region. This is no coincidence: oil-funded rulers have long used their petrodollars to entrench themselves in power and block democratic reforms. Although protesters took to the streets in almost every Arab country, they found it much easier to overthrow rulers in oil-poor countries, like Tunisia and Egypt, than rulers in oil-rich states, like Libya, Bahrain, Algeria, and Saudi Arabia.

[Oil has not always been an impediment to democracy. Until the 1970s, oil producers were just as democratic—or undemocratic—as other countries.] But from the late 1970s to the late 1990s, a wave of democracy swept across the globe, bringing freedom to countries in virtually every region—except the petroleum-rich countries of the Middle East, Africa, and the former Soviet Union. From 1980 to 2011, the democracy gap between the oil and non-oil states grew ever wider.

This chapter explains how oil has kept autocrats in power by enabling them to increase spending, reduce taxes, buy the loyalty of the armed forces, and conceal their own corruption and incompetence. Petroleum does not *inevitably* block democratic freedoms: a handful of oil-rich developing countries have still made transitions to democracy—most recently, Mexico and Nigeria. Yet among the oil states—both in the Middle East and beyond—transitions to democracy have been exceedingly rare. Oil and democracy do not easily mix.¹

¹Students of Middle Eastern politics have long been familiar with oil's corrosive effects on government accountability. Important studies of oil and authoritarian rule in the Middle East include Mahdavy 1970; Entelis 1976; First 1980; Skocpol 1982; Beblawi and Luciani 1987; Crystal 1990; Brand 1992; Anderson 1995; Gause 1995; Chaudhry 1997; Vandewalle 1998; Okruhlik 1999; Herb 1999; Lowi 2009. Yet for many years, the largest and most influential studies of global democracy said little about oil, and often avoided the Middle East entirely. See, for example, O'Donnell, Schmitter, and Whitehead 1986; Diamond, Linz, and Lipset 1988; Inglehart 1997; Przeworski et al. 2000.

THE SOURCES OF DEMOCRACY

No topic receives more attention from political scientists than democracy. But there is no consensus on the answers to many key questions, including what causes dictatorships to become democratic, and what causes democracies to become dictatorships. Even simple questions, like how democracy should be defined and measured, are widely debated.

Still, scholars agree on some key things.

Most would probably agree with Adam Przeworski and his colleagues that to qualify as a democracy, a country minimally must meet at least four conditions: the government's chief executive, whether a president or prime minister, must be elected; its legislature must be elected; there must be at least two large political parties that can freely compete in elections; and at least one incumbent government must have been defeated and then replaced by an elected successor.²

Scholars also agree that the number of democracies has grown over time (see figure 3.1). In the 1970s, the world had three dictatorships for every democracy. By the early 1990s, the number of democracies surpassed the number of dictatorships. Today almost 60 percent of the world's countries are democracies.

Explaining this trend toward democracy is more difficult, and different studies emphasize different causes. Putting aside the issue of oil, some of the key factors are:

- *Higher incomes.* Many studies find that when authoritarian states have higher incomes, they become more likely to transit to democracy.³
- *Slow economic growth.* According to some researchers, autocratic governments are more likely to become democracies in the face of economic crises.⁴
- *Geographic and temporal proximity.* Samuel Huntington famously observed that democratic transitions have occurred in "waves": neighboring states have frequently moved toward (or away from) democratic rule at about the same time—like in Latin America in the 1980s, Africa and Central and Eastern Europe in the 1990s, and even parts of the Middle East today. More recent studies have documented and developed explanations for these clustering effects. Other things being equal, one country's transition to democ-

²Przeworski et al. 2000.

³Lipset 1959; Londregan and Poole 1996; Epstein et al. 2006.

⁴Haggard and Kaufman 1995; Przeworski et al. 2000; Epstein et al. 2006.

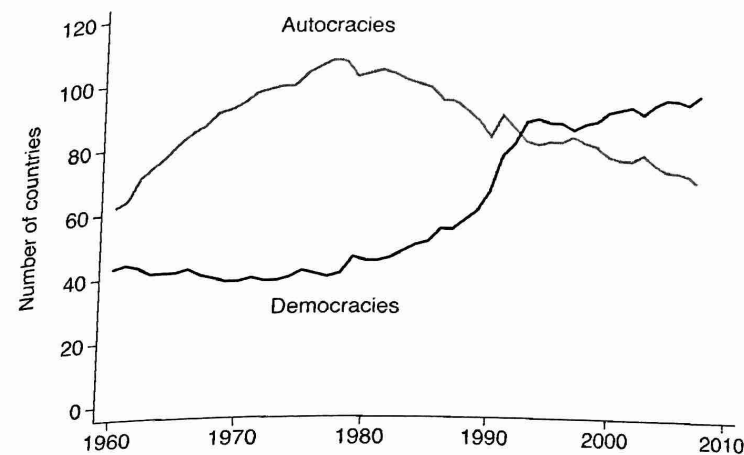


Figure 3.1. Number of democracies and autocracies, 1960–2008

The gray line is the number of autocratic countries in the world; the black line is the number of democracies.

Source: Calculated from data in Cheibub, Gandhi, and Vreeland 2010.

racy raises the likelihood that its neighbors will undergo a similar change.⁵

- *Islamic culture.* Many argue that Islamic culture and traditions are impediments to democracy, and that this explains why almost all countries in the Middle East and North Africa have long been undemocratic.⁶

Not all studies agree that these factors matter. Recent books by Carles Boix as well as Daron Acemoglu and James Robinson stress the role of inequality; a study by Acemoglu, Robinson, and their colleagues Simon Johnson and Pierre Yared emphasizes the quality of colonial rule and accumulation of historical idiosyncracies.⁷ Research on this issue is vibrant and controversial.

WHY SHOULD OIL MATTER?

Even after we account for all of the factors above, oil makes a difference: the more petroleum that an authoritarian country produces, the

⁵Huntington 1991; O'Loughlin et al. 1998; Gleditsch and Ward 2006.

⁶Salamé 1994; Hudson 1995; Midlarsky 1998; Fish 2002.

⁷Boix 2003; Acemoglu and Robinson 2005; Acemoglu et al. 2008.

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less likely it will make the journey to democracy. Chapter 2 shows that producing oil has a potent effect on government revenues, but why should these revenues affect government accountability? To answer this question, we need a theory of democracy that looks at the role of fiscal issues.

Social scientists already know a lot about how politicians manipulate government finances, and how citizens respond to this manipulation, thanks to the study of political budget cycles. Many studies demonstrate that the fiscal policies of governments tend to fluctuate in tandem with elections, as politicians boost spending and cut taxes to win voters' support. Scholars have observed these cycles in a wide range of democracies, including in the United States, the advanced industrialized states more generally, and in Latin America. Budget cycles also occur in authoritarian states: even when elections are not competitive, autocrats still use the budget to boost their popularity at election time.⁸

Collectively, these studies imply that citizens tend to support governments with larger budgets and lower taxes. But what does this tell us about democratization?

We can glean some additional hints from studies that link the collection of taxes to the emergence of democratic governments. Some scholars argue that when autocrats raise taxes, it tends to trigger popular demands for representative government.⁹ Evidence for this link comes from historians, who suggest that representative government arose in early modern Europe when monarchs in England, France, Spain, Austro-Hungary, and the Netherlands were compelled to relinquish part of their authority to parliaments, in exchange for the right to levy new taxes.¹⁰

Most US citizens are familiar with a different example. In the thirteen British colonies that became the United States, opposition to British taxes—especially the 1765 Stamp Act, which imposed a tax on many printed materials—catalyzed the movement for independence. Even though the tax was eventually repealed, the fact that King George had “impos(ed) taxes on us without our consent” was cited in the 1776 Declaration of Independence as one of the rebellion’s key grievances, and ultimately led to the foundation of a sovereign government that was pledged to democratic principles.¹¹

⁸On budget cycles in the United States, see Tufte 1978; Hibbs 1987. In the advanced industrialized states more generally, see Alesina, Roubini, and Cohen 1997. In Latin America, see Ames 1987. In authoritarian states, see Block 2002; Magaloni 2006; Blaydes 2006.

⁹Brennan and Buchanan 1980; Bates and Lien 1985; North 1990.

¹⁰See Schumpeter [1918] 1954; Hoffman and Norberg 1994; Morrison 2009.

¹¹See Morgan and Morgan 1953; Bailyn 1967. Although the phrase “no taxation without representation” is closely identified with the American Revolution—and is today printed on automobile license plates in Washington, DC—it is not found in the Declaration of In-

In a 2004 study, I showed that in a modified version, the same dynamic still holds. The original claim implies that citizens only care about keeping their taxes low and that a dictator who raises taxes will be forced to democratize. Looking at tax levels in all countries from 1971 to 1997, I found no support for this assertion. But my statistical analysis found evidence to support a modified contention: that citizens object to paying higher taxes if they do not receive commensurate benefits. *Summary of his 2004 paper on taxation and representation*

This suggests that citizens care about both their taxes and government benefits. They do not necessarily want to minimize their tax burden, regardless of the consequences for their benefits. Nor do they wish to maximize their government benefits, regardless of what they must pay in taxes. Instead, they wish to simultaneously minimize the taxes they must pay while maximizing the benefits they receive. If taxes rise but government benefits do not, or if government benefits fall but taxes do not, citizens will protest.

This implies that citizens do not want minimal government but rather an efficient government—one that provides them with the greatest “bang for their buck.” Authoritarian governments that kept taxes low as a percentage of government spending were more likely to avoid democratic transitions.¹²

The idea that a rise in taxes relative to government spending can produce democratizing rebellions is closely related to the notion of a political budget cycle. They both imply that citizens will support governments that provide them with more benefits and lower taxes, and try to replace ones that supply fewer benefits with higher taxes. If these tax rebellions occur in dictatorships, they can bring about transitions to democracy.

A FISCAL THEORY OF DEMOCRACY

These studies can tell us a lot about the impact of oil wealth on democracy. Since oil boosts the size of government revenues, it typically increases government benefits. Thanks to their unusual source—since

dependence or Constitution. John Adams used the phrase in what became known as the “Braintree Instructions,” an influential statement against the Stamp Act in 1765, but it had already been in use in Ireland for a generation (McCullough 2001). Ironically, in 1820 the US Supreme Court appeared to reject the no taxation without representation claim when it ruled in *Loughborough v. Blake* that the federal government had the right to impose taxes on US territories that had no representation in Congress.

¹²Ross 2004a. Bryan Jones and Walter Williams (2008) show that this pattern is true in the United States today: voters express greater support for the government when the benefits-to-taxes ratio rises, which unfortunately tends to encourage politicians to run budget deficits.

these revenues do not come from taxes—governments can keep taxes low. The secrecy of oil revenues is also important. Yet before examining its role, let us take a more careful look at the logic that connects a country's oil wealth to the accountability of its government.

To make the argument about oil and democracy more explicit, it is useful to employ an informal model—that is, to describe these links in a simplified imaginary world.¹³ The model includes a group of citizens who act collectively and can be treated as a single actor, and a ruler who controls the government. In each of the next three chapters I augment this model, using it to illustrate how oil revenues might lead to other outcomes, such as civil war, reduced opportunities for women, and inadequate economic policies.

Suppose that a ruler whose goal is to stay in power leads the government. To this end, the ruler uses his fiscal powers to build political support—by both spending money on patronage and public goods, and keeping taxes low. If the ruler fails to maintain enough support, a challenger will replace him, either through elections, if the country is a democracy, or a popular rebellion, if it is a dictatorship.

Citizens are concerned with their economic well-being, both now and in the future. Their support for the ruler is determined by the government's impact on their incomes: they favor governments that take little from them (in the form of taxes), but give them much (like patronage and public goods). If their government provides them with large benefits and low taxes, they will support the ruler; if it provides them with few benefits and high taxes, they will try to replace him.¹⁴

Under these conditions, what would happen to an authoritarian government in a country without oil? Assume for the moment that the government can run neither a surplus nor a deficit. Since all of the government's revenues come from taxes, there is a one-to-one ratio between the taxes it collects and the benefits it distributes. Suppose that when the economy is strong, the government is able to provide large enough benefits, with low enough taxes, to maintain public support; but when the economy slows, the government is forced to cut benefits or raise taxes, which causes the ruler to lose popularity.

If this imaginary country were a democracy, citizens could replace the ruling party through elections; but if it is an autocracy, they have no constitutional process for replacing a ruler they oppose—which means

¹³For a more formal treatment of this issue that differs from this account in important ways, see Morrison 2009.

¹⁴Theories of democracy and authoritarianism commonly focus on the distribution of patronage resources. See Gandhi and Lust-Okar 2009; Bueno de Mesquita and Smith 2010. Some also incorporate the autocrat's capacity to use violent repression—a factor that I omit. See Wintrobe 2007.

they must resort to strikes, demonstrations, or riots to force a leader from power.

Throwing out a dictator does not automatically turn a country into a democracy. But if we assume that citizens are forward-looking, they might look for ways to facilitate the removal of future governments should they become equally unpopular—in other words, to push for democratic reforms. Democratic reforms might also arise if a poorly performing dictator agrees to constraints on his powers to forestall his removal. Over time, the proclivity of citizens to overthrow low-performing autocrats, and their wariness about the performance of future autocrats, should lead to a process of democratization.¹⁵

Now consider the impact of oil. Oil production leads to a rise in nontax revenues—enabling governments to deliver more benefits to citizens than they collect in taxes. In countries without oil (or other sources of nontax revenues), governments can only push total benefits above total taxes by running budget deficits—a strategy that may work at election time, but is typically unsustainable over the long run. But oil-rich countries can indefinitely provide more benefits than they collect in taxes, allowing them to maintain popular support and avoid democratizing rebellions. While autocracies without oil gradually become democratic, autocracies with oil can remain autocratic.¹⁶

So far the model rests on an important assumption: that citizens care a lot about how their government uses its tax revenues, but are indifferent to how it spends its oil revenues. But is this true? Anyone familiar with oil-rich countries knows that their citizens care passionately about getting their fair share of these revenues. Chapter 2 notes that people in oil-rich states have strongly supported the nationalization of foreign oil companies to ensure that the oil rents are not sent abroad. As we will see in chapter 5, they sometimes take up arms to gain a larger fraction of these revenues. In his analysis of Persian Gulf monarchies, Michael Herb points out,

It is sometimes suggested that the citizens of the oil monarchies feel gratitude to their rulers for giving them the money, and that this gratitude translates into political support. Yet gratitude results from the

¹⁵There are other ways to explain how the overthrow of an unpopular dictator might lead to a democratic transition—for instance, if there was no alternative figure with enough popular support or coercive power to reestablish a dictatorship (see Olson 1993).

¹⁶It may seem odd that citizens would reward or punish their rulers for events beyond the government's control, like high or low world oil prices. Yet recent studies suggest this is how voters behave. Christopher Achen and Larry Bartels (2004) show that US voters are less likely to support incumbents after droughts, floods, and shark attacks—unfortunate events that incumbents had no control over.

Posited link
between oil and
authoritarian
stability

receipt of a gift. The Gulf Arabs, however, think that they themselves, as citizens, own the oil, *not* the ruling families. . . . Few are particularly grateful on receipt of something they think is theirs in the first place.¹⁷

Most people in oil-producing countries seem to recognize that they have a right to benefit from their nation's mineral wealth. It makes little sense to pretend that they do not care.

Perhaps people do not really care about their government's spending-to-taxation ratio but rather its spending-to-revenue ratio. In countries without oil, all of the government's revenues come from taxes—hence, its spending-to-revenue ratio is identical to its spending-to-taxation ratio, and the original model is unchanged. But citizens in oil-producing countries know that their governments have another source of revenue, and they care about how it is spent. If they believe their government delivers too few services, given the size of its revenues, they will rebel.

There is, however, a catch. Chapter 2 explains that oil revenues are unusually easy for governments to conceal, since they are set by secret contracts and often channeled through off-budget accounts. Citizens know their governments receive *some* petroleum revenues; they do not know *how much*.

So far I have assumed that citizens have “complete information” about their government. They have a good idea of what it spends, which is plausible, since they can observe its programs and projects, and they have a good idea of what it collects in taxes, which makes sense because they must pay these taxes.¹⁸

Citizens in oil-producing countries, though, cannot directly observe how much their government collects in oil revenues. They must rely on the government and media for their information. If they live in a democracy, this information is probably available.¹⁹ If they live in an autocracy, their government can conceal some of these revenues, and if citizens fail to realize the magnitude of their government's oil revenues, they will mistakenly conclude that it is performing well, using its relatively modest revenues to deliver a generous array of goods and services. By hiding some of their oil revenues, rich autocrats can increase their government's *perceived* spending-to-revenue ratio.

¹⁷ Herb 1999, 241.

¹⁸ While people cannot observe each other's income taxes, they can observe the general level of taxes on goods and services, which constitute a larger fraction of tax revenues in low- and middle-income countries. Public discourse about the shared tax burden is often part of both popular and political culture. See, for example, Scott 1976.

¹⁹ On the transparency of democratic governments, see Rosendorf and Vreeland 2006.

All autocrats, whether or not they have oil revenues, probably benefit from secrecy. But autocrats in the oil states have more to gain from secrecy, because it allows them to fool their citizens into underestimating the size of the government's revenues. This implies that autocrats in the oil states will be more inclined to camouflage their budgets and impose tight restrictions on the media than autocrats in non-oil states.

In short, rulers in general and autocrats in particular remain in power when citizens believe that their governments are delivering a lot of benefits relative to their revenues. In non-oil countries, this means that they are receiving sufficient benefits from their taxes. In oil countries, this means that they are receiving sufficient benefits from both their taxes and the government's oil revenues. Since citizens can observe taxes but not petroleum revenues, autocrats in oil-producing countries can boost their own popularity by concealing a portion of their oil revenues from the public.

What happens if governments lose their capacity to hide the flow of petrodollars? Greater transparency could spark democratic uprisings, if citizens start to notice that the ruler is squandering the nation's petroleum wealth. Whether or not these uprisings succeed may depend on an additional factor: the loyalty of the armed forces. Richard Snyder's 1992 study of uprisings against “neopatrimonial dictatorships” points out that the unity and loyalty of the military can determine the fate of popular revolutions.²⁰ Here again, the size of the state's oil revenues may help block transitions to democracy: when autocrats are better financed and directly control the distribution of benefits to the military, they are more likely to retain the backing of the armed forces and extinguish any rebellions.

A LOOK AT THE DATA

In this chapter's appendix, I use multivariate regressions to look at the statistical relationship between oil and democracy. But the basic links between oil and democracy can be illustrated with simple cross-tabulations and graphs.

There is strong evidence that when autocracies have more oil, they are less likely to transit to democracy. Table 3.1 shows the central pattern. The numbers in the cells represent the percentage of authoritarian states that transited to democracy in an average year. The first column

²⁰ Snyder 1992.

TABLE 3.1
Transitions to democracy, 1960–2006

These numbers show the percentage of authoritarian states that became democratic in an average year.

	Non-oil producers	Oil producers	Difference
All countries and periods	2.22	1.19	-1.02**
By income			
Low income (below \$5,000)	2.41	1.52	-0.89*
High income (above \$5,000)	1.35	0.73	-0.63
By period			
1960–79	1.13	1.33	0.20
1980–2006	3.18	1.14	-2.04***
By region			
Latin America	4.30	11.27	6.96***
All other regions	1.93	0.43	-1.50***

*significant at 10%, in a one-tailed t-test

**significant at 5%

***significant at 1%

Source: Calculated from data in Cheibub, Gandhi, and Vreeland 2010.

shows the non-oil states, the second depicts the oil states, and the third captures the difference.²¹

The first row shows that authoritarian states without oil had a 2.2 percent chance each year of transiting to democracy; authoritarian states with oil had just a 1.2 percent chance. The next two rows show that the pattern affects rich and poor oil producers alike, although it only reaches statistical significance among poor states.

Some studies argue that the net impact of oil wealth (or oil dependence) on democracy is ambiguous: while it may hinder democratic transitions through some channels, it promotes democratization through others.²² These numbers suggest that oil's net impact on democratization has been strongly negative.

²¹I use the database in Przeworski et al. 2000—updated in Cheibub, Gandhi, and Vreeland 2010—to determine whether a country is democratic or authoritarian, and when it transits from one to the other.

²²Herb 2004; Dunning 2008; Goldberg, Wibbels, and Mvukiyehe 2009.

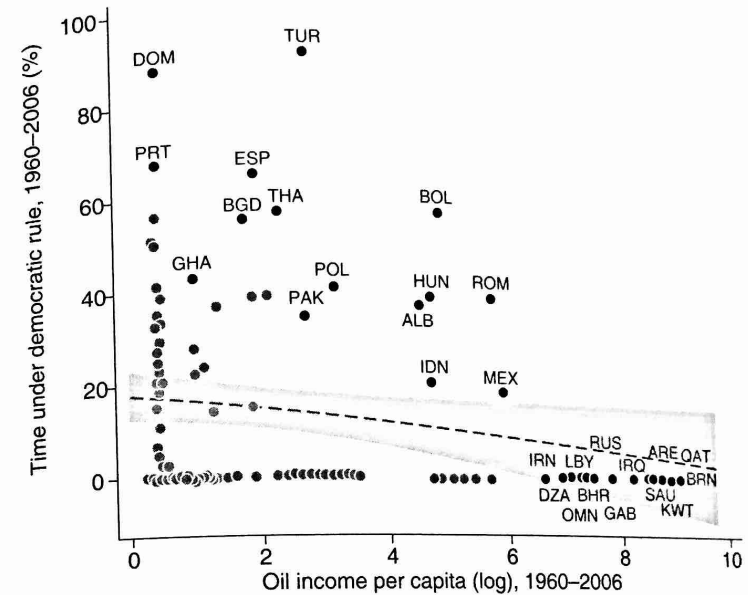


Figure 3.2. Oil and transitions to democracy, 1960–2006

Each point represents a country that was under autocratic rule in 1960, or if it achieved independence after 1960, was under autocratic rule in its first year of independence. The vertical axis represents the percentage of its subsequent history that it dwelled under democratic rule. Countries with higher percentages made early transitions to democracy, and remained democratic; countries at the bottom never made democratic transitions.

Source: Calculated from data in Cheibub, Gandhi, and Vreeland 2010.

Another way to look at the data is with a scatterplot that includes all countries that could have made transitions from authoritarianism to democracy between 1960 and 2008, including all 64 countries that were under authoritarian rule in 1960, plus the 50 countries that became independent after 1960 and were under authoritarian rule in their first year of independence. Figure 3.2 displays the petroleum income of these 114 countries, along with their progress—or lack thereof—toward democracy. The values on the horizontal axis represent their average oil income between 1960 and 2008; the values on the vertical axis denote the percentage of the time (since either 1960 or their first year of independence) that these initially authoritarian countries dwelled under a democratic government. Those that were continuously authoritarian have a score of zero; those that transitioned to democracy early and stayed democratic have scores approaching one hundred.

TABLE 3.2
Democratic transitions among oil-producing countries, 1946–2010

This table depicts the countries with the greatest oil wealth to make the transition from authoritarian to democratic rule since 1946. The transition is coded as a failure if the country subsequently reverted to authoritarian rule, and as a success if it remained democratic as of 2010. The oil income figures are for the year of transition.

Country	Year	Oil income	Outcome
Venezuela	1958	1,717	Success
Nigeria	1979	1,007	Failure
Ecuador	1979	773	Failure
Congo Republic	1992	563	Failure
Mexico	2000	442	Success
Argentina	1983	428	Success
Peru	1980	336	Failure
Bolivia	1982	307	Success
Ecuador	2002	280	Success
Bolivia	1979	264	Failure

Source: Calculated from data in Cheibub, Gandhi, and Vreeland 2010.

The downward-sloping line shows the overall relationship between oil and authoritarian durability: the greater a country's oil income was, the less likely it transitioned to (and stayed) democratic.²³ Countries that transitioned to democracy early and remained democratic, like the Dominican Republic, Turkey, Portugal, and Spain, had little or no oil. A handful of countries with modest oil and gas wealth, such as Bolivia, Romania, and Mexico, had more recent (and sometimes more erratic) transitions to democracy. But no country with high levels of oil and gas income successfully became a democracy between 1960 and 2010.

Thankfully, oil wealth does not necessarily stop democratization. Table 3.2 lists the top-ten oil producers, ranked by oil income, to move from authoritarian to democratic rule since 1946. Venezuela's 1958 transition is at the top of the list. The next three oil producers to democratize were Nigeria (1979), Ecuador (1979), and the Republic of Congo (1992); all

²³ The shaded area represents the 95 percent confidence interval.

of these transitions were later reversed. Nigeria and Ecuador subsequently returned to democracy, but only after their oil income fell to much lower levels. This highlights the unusual quality of Venezuela's success. Since Venezuela's 1958 transition, no country with more oil income than Mexico in 2000 has become and remained democratic.

Oil and Democracy over Time

As chapter 2 showed, there was a dramatic rise in the size of oil revenues in the 1970s, thanks to both skyrocketing prices and the nationalization of foreign oil companies. The increase in oil revenues coincided with a drop in the likelihood that oil states would become democratic.

Let me return for a moment to table 3.1. When the whole forty-seven-year period in the first row is taken into consideration, the oil-producing states are about 40 percent less likely than the non-oil-producing states to transit to democracy. But if we divide the 1960–79 period from the 1980–2006 one (rows four and five), we see a striking difference. Before 1980, the oil states and the non-oil states were equally likely—or rather, equally unlikely—to become democracies; the difference between these two groups is not statistically significant. Since 1980, the democratization rate among non-oil producers has almost tripled; the democratization rate among oil producers has remained the same. The non-oil states are now almost three times more likely to become democracies.

We can also revisit figure 3.1, which shows the steady rise in the number of democracies since the 1970s. When we separate the long-term oil producers from the rest of the world—in figure 3.3—we see a much different pattern: while the rest of the world has democratized, there has been little change among the long-term oil and gas producers.²⁴ The celebrated “third wave” of democratic transitions in the 1980s and 1990s left most of the oil states untouched. Almost all the increase in global democracy since 1979 has come from the non-oil states.

²⁴ It is sometimes hazardous to generalize about the characteristics of “oil states,” since membership in this group changes over time. To get around this problem, I periodically focus on the thirty-five countries that can be classified as “long-term oil producers.” I focus on the thirty-five countries that can be classified as “long-term producers” if they generated at least a hundred dollars per capita (in constant 2000 dollars) in petroleum income for two-thirds of the years between 1960 and 2006, or if they became sovereign after 1960, for two-thirds of their sovereign years. These countries are marked with asterisks in table 1.1. In chapter 6, I look at the economic performance of these long-term producers.

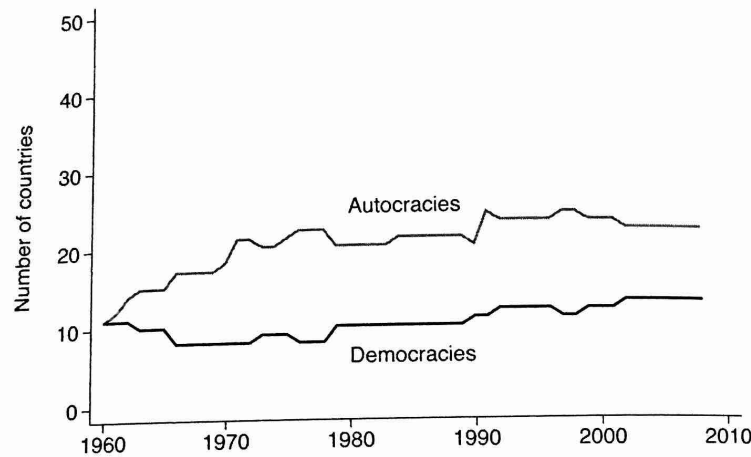


Figure 3.3. Number of oil-producing democracies and autocracies, 1960–2008. These lines show the types of governments in the thirty-five long-term oil producers.

Source: Calculated from data in Cheibub, Gandhi, and Vreeland 2010.

This means that petroleum-rich countries have made up a growing fraction of the world's remaining authoritarian states. In 1980, oil producers constituted just over 25 percent (27 of 103) of the world's autocracies; by 2008, they made up over 40 percent (30 of 74). For democracy advocates, the effects of oil have become increasingly salient.²⁵

Did oil have *any* antidemocratic effects before 1980? It is hard to be certain. According to the regression analysis in appendix 3.1, it depends on how you measure democracy. Using one indicator, oil had significant but milder antidemocratic effects between 1960 and 1980 once other variables are controlled for; using a different indicator, oil had no effect at all.²⁶

Perhaps figure 3.4 can provide a simpler answer. It compares the average democracy scores of long-term oil producers to all other countries over time. Democracy scores range from one to ten, with higher scores indicating greater democracy. The numbers are based on a widely used measure of democracy, called Polity IV.²⁷ Until the early 1980s, the oil and non-oil states had virtually identical scores; since then, the gap between the two has steadily grown wider.

²⁵See, for example, Diamond 2008.

²⁶Marshall and Jagers 2007; Przeworski et al. 2000.

²⁷Marshall and Jagers 2007.

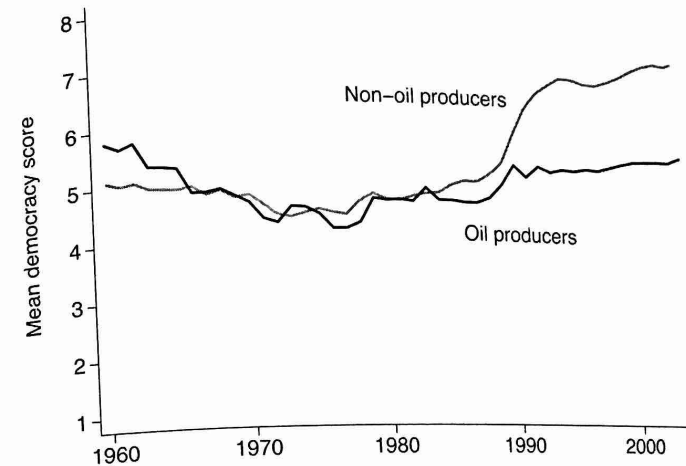


Figure 3.4. Democracy levels over time, 1960–2004

These lines show the mean Polity scores of long-term oil producers (black line) and non-oil producers (gray line). Polity scores have been rescaled to range from one to ten, with higher numbers indicating greater democracy.

Source: Calculated from data in Marshall and Jagers 2007.

Spending and Revenues

There is also *some* evidence that authoritarian governments with higher government spending-to-revenues ratios will be less likely to democratize. Unfortunately, accurate figures on spending and revenues are scarce, which makes this argument hard to evaluate. And according to the model, what matters most is the *perception* of the government's revenues, not the government's actual ones—and without surveys, these perceptions cannot be measured.²⁸

Still, the existing data on government spending and revenues is suggestive. Figure 3.5 compares the government spending-to-revenues ratios of authoritarian states that have never transitioned to democracy (the first column) with those that subsequently became democratic (the second column); countries that have never transitioned have ratios almost twice as high. The third column records the spending-to-revenues ratios of this second group in the year before their transitions to democracy; their ratios were even lower.

Do oil-backed dictators really spend these extra revenues to buy public support, or is it simply lost to corruption? The secrecy of oil

²⁸I discuss these data problems at greater length in the appendix to chapter 3.

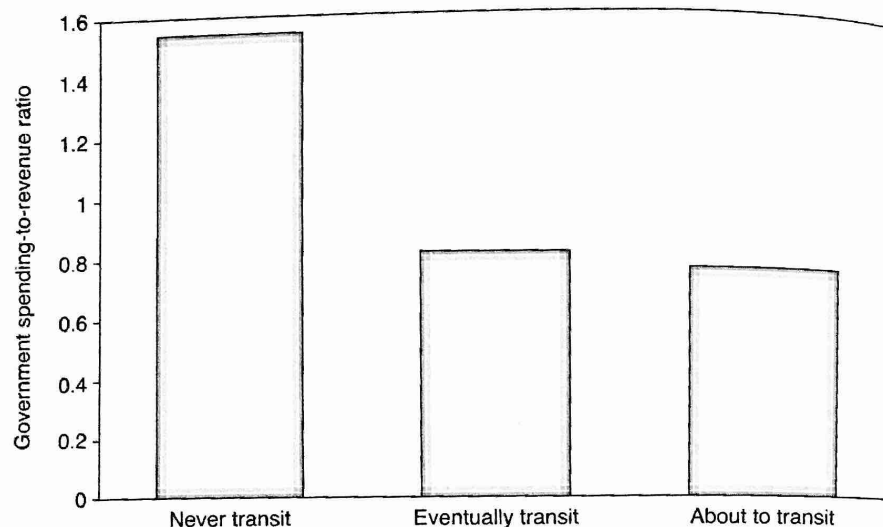


Figure 3.5. Government spending-to-revenue ratios in autocracies, 1970–2008

These bars represent a government's reported consumption spending as a fraction of its reported revenues. All measurements are for authoritarian countries, and compare countries that never transited to democracy (left bar), eventually transited to democracy (middle bar), and were one year away from transiting to democracy (right bar).

Sources: Calculated from fiscal data in World Bank n.d.; democracy data in Cheibub, Gandhi, and Vreeland 2010.

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revenues makes this a hard question to answer,²⁹ but there is considerable evidence nonetheless that oil-backed autocrats spend a lot of money to satisfy popular demands. Countries with great per capita oil wealth, like the oil-rich kingdoms of the Arabian Peninsula, provide their citizens with a remarkable portfolio of free benefits, such as free education through college, free health care, and subsidized food and housing. When oil prices crashed in the 1980s, the Saudi government tried to raise taxes and cut many subsidies, but after widespread public criticism, it withdrew both measures.³⁰ In response to the popular uprisings in 2011, almost all governments in the Middle East offered their citizens new subsidies. In the oil-rich states, these offers were more generous, and outside of Libya, appeared to be more effective.

²⁹Wasteful public spending—on expensive but useless “white elephant” projects—may have hidden political benefits. See Robinson and Torvik 2005.

³⁰Chaudhry 1997. Many other factors besides oil have contributed to the survival of the Saudi monarchy. See Herb 1999; Hertog 2010.

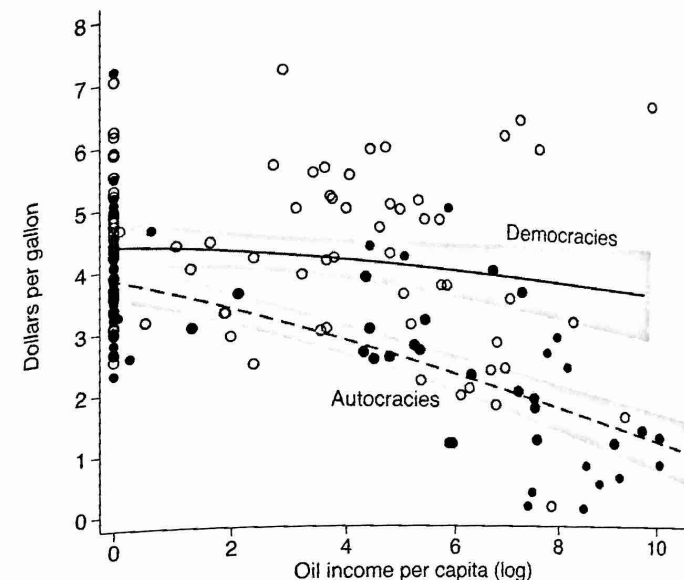


Figure 3.6. Oil income and gasoline prices, 2006

The hollow dots represent democratic countries, and the solid dots represent autocratic countries.

Sources: Calculated from data on gasoline prices in Gesellschaft für Technische Zusammenarbeit 2007; democracy data in Cheibub, Gandhi, and Vreeland 2010.

Many oil-funded governments subsidize fuel prices, even though these subsidies can be ruinously expensive, economically wasteful, and environmentally disastrous. In partially democratic Iran, gasoline and electricity subsidies cost the government—in revenues it would have otherwise collected, had the energy been sold at market prices—a remarkable 20 percent of the GDP in 2007–8, or the equivalent of about \$3,275 for a family of four.³¹

[It should be no surprise that citizens in oil-producing countries like cheap gasoline. But it is surprising that these subsidies tend to be larger in authoritarian states—where governments should be more insulated from public opinion—than in democratic ones.]

Figure 3.6 displays the correlations between oil income and gasoline prices for both autocracies and democracies. The horizontal axis shows a country's oil income, while the vertical axis shows the price (in dollars) of a gallon of gasoline in 2006. Solid circles represent undemocratic

³¹International Monetary Fund 2008.

countries, and hollow circles represent democratic ones. In both types of states, countries that produce more oil tend to subsidize the price of gas more heavily. But the trend is stronger among authoritarian states (bottom line), and they tend to have lower gasoline prices. The most extreme example is Turkmenistan, where a highly repressive government provides the public with gasoline at two cents a gallon, plus free electricity.

Why would dictators spend so heavily on fuel subsidies? One reason may be that the removal of these subsidies can trigger public demonstrations, which are more likely to endanger authoritarian leaders than democratic ones. The September 2007 protests in Burma began with rallies against the reduction of fuel subsidies; they quickly turned into demonstrations against the military junta. Cameroon's February 2008 riots started out as protests against the removal of fuel subsidies, but escalated into a campaign to stop a constitutional amendment that would allow the incumbent president to remain in office. In April 2010, crowds that initially gathered to protest higher fuel prices ultimately toppled Kyrgyzstan's president. Authoritarian leaders have good reason to keep gas prices low.

Secrecy

Even though it is hard to measure, government secrecy seems to play a special role in keeping oil-funded autocrats in power.

One way to gauge the secrecy of a country's finances is by using the Open Budget Index, which measures the fiscal transparency of eighty-five national governments, based on an analysis of ninety-one observable features of their budgets, including the frequency with which they disclose important budget documents, the comprehensiveness of these documents, and the role played by the government's auditors. Governments are scored on a scale that runs from zero to a hundred, with higher scores indicating greater budget transparency.³²

Table 3.3 shows the ratings of both oil producers and nonproducers in 2008. Overall, the oil countries have more or less the same ratings as the non-oil countries. But when democracies and autocracies are viewed separately, there is a conspicuous pattern: among autocracies, the oil-producing states have less budget transparency; among democracies, the oil states have somewhat greater transparency, although the latter difference is not statistically significant.

Figure 3.7 plots the budget transparency scores of the authoritarian states on the vertical axis, and their oil income on the horizontal axis.

³² The International Budget Partnership produces the Open Budget Index. For more on this remarkable index, see <http://www.openbudgetindex.org>.

TABLE 3.3
Budget transparency, 2008

Budget transparency scores range from zero to a hundred, with higher scores indicating greater transparency.

	Non-oil Producers	Oil Producers	Difference
All countries	39.6	39.9	0.3
Democracies only	43.3	56.5	13.2
Autocracies only	33.4	18.9	-14.5*

*significant at 5% in a two-sample Wilcoxon-Mann-Whitney test
Source: Calculated from the data in International Budget Partnership 2008.

The greater the oil wealth is, the more secretive the budget. The budget secrecy of the African oil producers is especially pronounced: four of the region's five most opaque governments—Angola, Chad, Nigeria, and Cameroon—are significant petroleum exporters. The five most transparent countries—South Africa, Botswana, Zambia, Uganda, and Namibia—have little or no petroleum.

But they have lots of other natural resources!

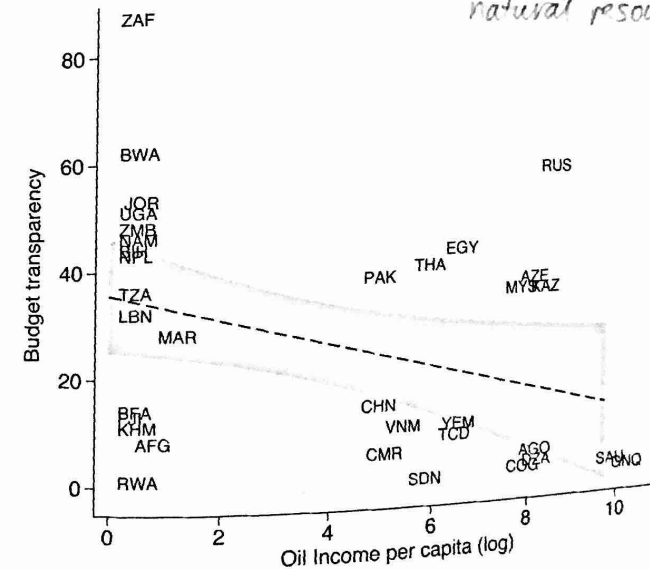


Figure 3.7. Oil and budget transparency in autocracies, 2008
Budget transparency scores range from zero to one hundred, with higher scores indicating greater transparency. This figure only includes autocratic countries.

Source: Data on budget transparency is from International Budget Partnership 2008.

TABLE 3.4
Press freedom, 2006

The press freedom scores range from one to a hundred, with higher scores indicating greater freedom of the press. The scale has been reversed from the original so that higher scores signify better outcomes.

	Non-oil producers	Oil producers	Difference
All countries	54.0	44.5	-9.5***
Democracies only	65.7	67.0	1.3
Autocracies only	35.5	25.8	-9.7***

*significant at 10%, in a one-tailed t-test

**significant at 5%

***significant at 1%

Source: Calculations from data in Freedom House 2007.

Restrictions on the media can be examined using the freedom of the press index, which ranks all countries on a scale of one (complete censorship) to one hundred (complete press freedom).³³ As table 3.4 shows, when all countries are pooled together—both democracies and autocracies—there is significantly less press freedom in the oil states. Yet when democracies are separated from autocracies, oil wealth has no obvious effect on press freedom among democracies (row two); among autocracies, however, oil is associated with greater censorship. Dictatorships funded by oil are more secretive than those funded by taxes.

There is one further piece of evidence on government openness. My argument about oil and democracy implies that governments will be relatively eager to report how much they spend (since expenditures are popular), but more reluctant to report how much they collect in revenues. It also implies that oil states will be especially reluctant to disclose their revenues. Table 3.5 displays the fraction of countries in 2006—the most recent year for which World Bank data are relatively complete—that produced information on their revenues and expenditures. Two patterns stand out: all countries were more likely to publicly disclose their expenditures than their revenues; and even though the oil producers published their expenditures at the same high rate as the

³³Georgy Egorov, Sergei Guriev, and Konstantin Sonin (2007) first established the link between oil and the lack of press freedom. Antoine Heuty and Ruth Carlitz (2009) carefully examined the tendency for resource-dependent countries to have less budget transparency. The freedom of the press index is compiled by Freedom House and available at <http://www.freedomhouse.org/template.cfm?page=16>. I have reversed the scale to make it consistent with other measures of government quality.

TABLE 3.5
Availability of fiscal data, 2006

These numbers show the percentage of countries that provided the World Bank with data on "Government Revenues" and "Government Consumption" for 2006.

	Non-oil producers	Oil producers	Difference
Data on government revenues	64	50	-14*
Data on expenditures	90	89	-1

*significant at 10% in a two-sample Wilcoxon-Mann-Whitney test

Source: Calculated from World Bank n.d.

non-oil producers, they were substantially more secretive about their revenues.

THE SOVIET PETROSTATE

The most widely recognized examples of oil-backed autocracies are found in the Middle East, North Africa, and sub-Saharan Africa. Less is known about the Soviet Union, which was the world's second-largest petroleum producer for much of its history, and whose government relied on oil revenues to boost popular support at critical junctures.

Chapter 2 explains how most oil-rich governments had little control over their petroleum industries before the 1970s. The Soviet Union, however, nationalized its oil industry just after the 1917 Russian Revolution. The resulting oil revenues helped the Soviet government to finance a vast array of social projects and subsidize the spectacularly inefficient Soviet economy. Yet oil production was unable to keep up with the expanding economy, and by the early 1950s, according to one expert, a limited oil supply had become the Achilles' heel of the Soviet economy.³⁴

In the 1960s, the discovery of productive new wells in Siberia turned the Soviet Union into a major oil exporter. When prices began to soar after 1973, the Kremlin was suddenly flooded with cash. Oil accounted for 80 percent of Soviet hard currency earnings between 1973 and 1985.

According to historian Stephen Kotkin, the Soviet leadership used the oil windfall of the 1970s and early 1980s to fund the invasion of Afghanistan, fortify its East European allies, and bankroll a vast military buildup. Domestically,

³⁴Hassmann 1953, 109.

oil money also went into higher salaries and better perks for the ever-expanding Soviet elite. And oil financed the acquisition of Western technology for making cars, synthetic fibres, and other products for consumers, as well as Western feed for Soviet livestock. In the future, the inhabitants of the Soviet Union would look back fondly on the [Leonid] Brezhnev era, recalling the cornucopia of sausages that had been available in state stores at subsidized prices. Oil seemed to save the Soviet Union in the 1970s, but it merely delayed the inevitable.³⁵

[After oil prices peaked in 1980, they fell by over 70 percent over the next six years; so did Soviet oil revenues, producing the economic and political crisis that ultimately led to the Soviet government's collapse.] As Clifford Gaddy and Barry Ickes suggest,

The entire Soviet system was built on the assumption of a persistent stream of available resource rents to keep it going. Once this fundamentally nonviable structure had been created, continued injection of resources was required to sustain it.³⁶

In 1985–86, Soviet leaders tried to boost revenues by boosting output, but the most productive wells had been overused, and despite increasingly desperate measures, oil production began to fall, compounding the crisis. From 1986 to 1991, oil production dropped 25 percent—offsetting a modest rise in prices, and leaving the government desperately short of hard currency.

The Soviet economic crisis helped convince Mikhail Gorbachev—who became general secretary of the Communist Party in March 1985—to adopt both economic reforms that relaxed state control of the economy (perestroika), and political reforms that allowed for competitive elections for many local and national offices, a freer press, and greater freedom of association (glasnost).

Yet without enough hard currency to provide citizens with key public goods, especially food, neither perestroika nor glasnost were enough to sustain the Soviet system.³⁷ At the September 17, 1990, meeting of the Council of Ministers, the government's highest officials implored each other to find ways to boost oil production to stave off economic and political disaster. Yuri Maslyukov, the chair of Gosplan (the state planning agency), explained,

³⁵ Kotkin 2001, 16.

³⁶ Gaddy and Ickes 2005, 569.

³⁷ Many scholars now believe that Perestroika itself led to the demise of the Soviet system. I am grateful to Daniel Treisman for pointing this out.

We understand that the only source of hard currency is of course oil, so I will make this proposal. I feel that we must . . . take the most determined measures to achieve additional oil production, whatever the conditions may be for the riggers. . . . I have the presentiment that if we do not make all of the necessary decisions now, then we may spend next year in a way that we haven't even dreamed of. . . . Things can end most critically in the socialist countries. This will lead us to a real crash, and not just for us, but for our entire system.³⁸

Without oil revenues to finance the socialist economy—providing citizens, however inefficiently, with virtually all their material goods—the government's authority dwindled until December 1991, when it collapsed altogether. At the industry's peak in 1980, the Soviet Union was producing about \$3,100 per capita in oil and gas income. This income had fallen by 1991 by about two-thirds, to around \$1,050 per capita.

Tragically, the end of the Soviet Union did not mean the end of the now-Russian economic crisis. When prices fell to \$10 a barrel in 1998, Russia's oil income fell to about \$475 per capita—down about 85 percent from its 1980 peak—and the government went bankrupt and defaulted on billions of dollars in domestic loans.

THE LATIN AMERICAN EXCEPTION

An important study by Thad Dunning shows that Latin America seems to be unaffected by the antidemocratic powers of petroleum.³⁹ Consider once again table 3.2, which displays the ten-top oil producers that have transitioned to democracy since 1950. [All five of the countries that made successful transitions were in Latin America: Venezuela (1958), Bolivia (1982), Argentina (1983), Mexico (2000), and Ecuador (2002). Conversely, all of Latin America's oil producers (like almost all of its non-oil producers) are now democracies.] The cross-tabulations in the bottom rows of table 3.1 tell the same story: in Latin America, countries *with* oil were more than twice as likely to democratize; in the rest of the world, countries *without* oil were more than four times more likely to democratize.

There are several ways to account for the Latin American anomaly. Dunning argues that oil only impedes democratization in countries with low levels of inequality. But in countries with high inequality levels, like those in Latin America, oil hastens democratization by *Dunning's theory*

³⁸ Quoted in Gaidar 2008, 164.

³⁹ Dunning 2008.

alleviating the concern of wealthy elites that democracy will lead to the expropriation of their private wealth.⁴⁰

Hard to measure inequality globally
The reasoning is compelling but hard to test with much precision, since global data on inequality are scarce, and inequality is measured in ways that differ from country to country. Moreover, inequality data are missing for many of the world's oil-producing countries. The greater a country's oil income, the less information it typically discloses about its inequality levels.⁴¹

* [An alternative explanation could be that oil only hinders democracy in countries with no previous democratic experience.⁴² According to the model earlier in this chapter, oil makes dictators more popular, in part because they can conceal the true scale of their government's oil revenues. Maybe if a country has been under democratic rule in the past, dictators will find it harder to hide these revenues: citizens will already know, from their previous access to a free press, the true scale of their country's petroleum wealth, making them more skeptical about a dictator's claims.]

If this were true, oil wealth would only block democratic transitions in countries whose citizens had never been exposed to democratic rule. Indeed, most of Latin America's oil producers, including Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, and Peru, had earlier spells of democracy. Mexico, which did not, was the slowest to democratize. The largest African oil producer to transit to democracy, Nigeria, had democratic experience in its early days as an oil producer. There is also statistical evidence in the appendix that the Latin America anomaly can be at least partly accounted for by the prior democratic experience of most Latin American oil producers.]

Whatever the cause, Dunning is right: oil is associated with more democracy in Latin America, but less democracy in the rest of the developing world.

DOES OIL WEALTH HURT DEMOCRACIES?

Does oil wealth cause democracies to become less democratic? At first glance, the model seems to suggest "no": if oil boosts the popularity of the government in place, it should reinforce both autocracies and

democracies. And several statistical studies find that oil revenues tend to help democracies stay democratic.⁴³

But a closer look suggests a more complicated answer. According to the model, oil helps empower *incumbents*, regardless of whether the country is authoritarian or democratic. We can assume that empowered autocrats want their countries to remain autocratic, since this helps them stay in power. Empowered democratic incumbents may not necessarily want their countries to remain democratic, however. In fact, they might try to remain in power longer by making their countries more autocratic.]

Not all democracies should be equally susceptible to this danger. Rich democracies tend to place more effective constraints on executive power, due to the greater influence of their parliaments and courts; less wealthy democracies typically have weaker legislatures, weaker courts, and weaker constraints on executive power. In wealthy oil-producing democracies, checks and balances that keep incumbents from accruing too much power should counterbalance the economic power that oil brings to the incumbent. But in poor and middle-income democracies, oil wealth may help incumbents accumulate enough political influence to dismantle the checks and balances that would otherwise keep their government democratic.]

This implies that oil wealth can make low-income democracies less democratic. There may be too few oil-producing democracies with low and middle incomes to test this claim with much confidence. Nevertheless, there is some weak evidence to support it in table 3.6, which shows the annual rate of democratic failures—meaning the annual likelihood that a democratic government will turn into a dictatorship—for all countries from 1960 to 2008. Overall, democratic failures were *less* common in oil-producing countries, although the difference is not statistically significant (row one). Even when we divide countries by wealth (rows two and three), democratic failures in the oil states are not significantly different from democratic failures in the non-oil states.

We still need to account for time. Earlier we saw that oil had stronger antidemocratic effects after the transformative events of the 1970s. Rows four and five show that democratic failures were dramatically less frequent in the oil states from 1960 to 1979. Since 1980, they have become slightly more frequent in the oil states, but again the difference is not statistically significant.

When we put these two factors together—looking at lower-income democracies since 1980 (row six)—democratic failures become notably more frequent among the oil states, although the difference falls just

⁴⁰ Ibid.

⁴¹ This is another feature of the unusual secrecy of the oil states.

⁴² I am grateful to Tulia Faletti for proposing this idea.

⁴³ Smith 2007; Morrison 2009.

TABLE 3.6
Transitions to authoritarianism, 1960–2006

These numbers show the percentage of countries that changed from democratic to authoritarian rule in a given year.

	<i>Non-oil producers</i>	<i>Oil producers</i>	<i>Difference</i>
All countries and periods	1.9	1.17	−0.72
<i>By income</i>			
Low income (below \$5,000)	3.32	2.97	−0.35
High income (above \$5,000)	0.28	0.46	0.18
<i>By period</i>			
1960–1979	3.7	0.74	−2.95**
1980–2008	1.08	1.3	0.21
<i>By income and period</i>			
Low income, 1980–2006	1.86	3.33	1.46

*significant at 10%, in a one-tailed t-test

**significant at 5%

***significant at 1%

Source: Calculated from data in Cheibub, Gandhi, and Vreeland 2010.

short of statistical significance in a one-tailed t-test. I show in the appendix that once we control for confounding variables, the link between oil and democratic failures—especially in lower-income countries, and especially after 1980—becomes statistically significant.⁴⁴

* [The number of oil-producing democracies outside the rich industrialized states is small, which makes it hard to be sure that these correlations are meaningful.] But at the case study level, there are indications that oil has strengthened the hand of democratically elected incumbents, and enabled them to roll back democratic constraints.

Some of the most surprising evidence comes from the United States. Much of the US oil industry is regulated by states, not the federal government, which means that state governments can receive substantial oil revenues. If oil and gas wealth has empowered US politicians, it would be most visible at the state level. [Studies by Ellis Goldberg, Erik

⁴⁴This is consistent with Nathan Jensen and Leonard Wantchekon's work (2004), which shows that oil has indeed led to democratic failures in sub-Saharan Africa. Perhaps this is because incomes in the region are relatively low.

Wibbels, and Eric Mvukiyehe as well as Justin Wolfers have found that in states with greater oil revenues, incumbent governors are more likely to be reelected, and tend to defeat their opponents by wider margins.⁴⁵

The most extreme case may have been in Louisiana beginning in the 1920s, where Governor Huey Long accrued unprecedented political influence through a kind of petropopulism. After raising taxes on oil companies, Long used the resulting revenues to fund new roads and hospitals, free textbooks for schoolchildren, and patronage for the legislators and local politicians who backed him. The state's largess gave Long great popularity and extraordinary powers, including the power to censor unsympathetic newspapers, financially cripple local governments in parts of the state that opposed him, and personally hire and fire state employees, all the way down to the level of deputy sheriffs and schoolteachers.⁴⁶ Thanks to Louisiana's oil revenues, Long—and his relatives who succeeded him—"more nearly matched the power of a South American dictator than that of any other American state boss."⁴⁷

The erosion of democracy in Louisiana in the 1920s and 1930s foreshadowed the deterioration of democracy in many lower-income democracies in recent years. [The 2000–8 boom in oil prices helped give popularly elected leaders in many oil-rich states the capacity to strip away restrictions on their power:]

- In Azerbaijan, President Ilham Aliyev sponsored a March 2009 referendum to remove term limits that would have otherwise forced him to step down. The opposition boycotted the referendum, which according to the government was approved by over 90 percent of the voters. Exs.
- Nigeria's 2007 elections gave the incumbent People's Democratic Party an overwhelming victory, including the presidency and large majorities in the house and senate. Both domestic and international observers reported widespread fraud in favor of the People's Democratic Party. According to the International Crisis Group, the elections were the most fraudulent in the country's history.⁴⁸
- The reelection of Iran's President Mahmoud Ahmadinejad in June 2009 was viewed by many observers—both foreign and domestic—as flawed by widespread voting irregularities. The Ahmadinejad government relied heavily on the Revolutionary Guards to put

⁴⁵Goldberg, Wibbels, and Mvukiyehe 2009; Wolfers 2009.

⁴⁶Williams 1969.

⁴⁷Key 1949, 156. For more on the history of oil politics in Texas and Louisiana, see Goldberg, Wibbels, and Mvukiyehe 2009.

⁴⁸The March 2011 elections were much cleaner. On other African cases, see Posner and Young 2007.

down the resulting protests. The government had given businesses owned by the guards a large number of government contracts, including a number of no-bid petroleum contracts worth billions of dollars.⁴⁹

- Over the last decade, Venezuelan president Chávez capitalized on rising oil prices to fund projects that increased his popularity among key constituencies, including low-income families and the military. He then took advantage of this support to eliminate independent checks on his authority—for example, by replacing disloyal judges on the Supreme Court and imposing new restrictions on the media.⁵⁰ In February 2009, Chávez won a national referendum to remove term limits on public officials, enabling him to remain in office indefinitely.

RUSSIA REVISITED

Just as the case of the Soviet Union shows how oil revenues can prolong authoritarian rule, the case of Russia since 1998 illustrates how oil revenues can endanger a weak democracy by boosting the popularity of an elected incumbent, who gradually removes checks and balances on their own authority.

In Russia, the drop in oil and gas revenues helped precipitate the government's 1998 bankruptcy. But the weakness of the government's finances also opened the door to greater civil liberties, freedom of the press, and meaningful political competition—if not quite a full democracy. Once the Russian oil industry began to recover in 2000, democracy began to deteriorate. The broad pattern is evident in figure 3.8, which displays the country's democracy level along with its petroleum income between 1960 and 2007.

Between 2000 and 2006, Russia's booming petroleum sector helped fuel a remarkable economic recovery: real incomes rose by 48 percent, unemployment fell from 9.8 to 6 percent, and the government's oil revenues rose by a factor of more than seven, from \$14.3 to \$107 billion (in constant 2000 dollars).⁵¹

Part of the petroleum sector's growth was caused by rising production: from 2000 to 2006, oil production rose by 43 percent and natural

⁴⁹Wehrey et al. 2009.

⁵⁰International Crisis Group 2007.

⁵¹International Monetary Fund 2007. Paavo Suni (2007) uses simulations of the Russian economy to show that rising oil and gas prices are responsible for much of Russia's economic boom. Without the leap in prices, Russia's GDP growth in 2006 would have been below 1 percent instead of greater than 6 percent.

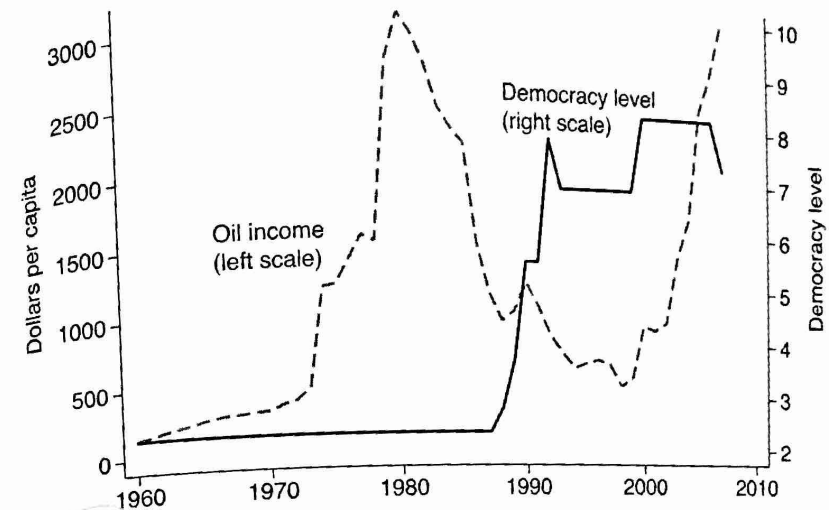


Figure 3.8. Oil and democracy in the USSR and Russia, 1960–2007

The solid line shows democracy levels in the Soviet Union and Russia, according to the Polity IV data set. The broken line shows oil income per capita, in constant 2000 dollars. Polity scores have been translated to a 1–10 scale, with 10 representing full democracy.

Source: Calculated from data in Marshall and Jagers 2007.

gas production grew by 12 percent. Most of the revenue boom, however, was caused by higher prices: from 2000 to 2006, the price of oil doubled and the price of natural gas rose more than 150 percent. Thanks to the ensuing windfall, old debts were paid off and budget deficits were replaced by surpluses. The highest marginal tax rate on corporations was cut from 35 to 24 percent; the top rate on individuals was cut from 35 to 13 percent.⁵²

These higher budgets and lower tax rates reflected Vladimir Putin's ability to reassert state control over the oil sector, which had been largely privatized in the early 1990s.⁵³ Placing this colossal wealth in the private sector contributed to the weakening of the Russian state, which found it difficult to collect taxes from the largest corporations, and hence to fund public services and balance the budget. Privatization also brought great political influence to the owners of these firms. Boris Berezovsky, the head of the oil giant Sibneft, created a media empire

⁵²It may not be accurate to describe these changes as "tax cuts": due to better enforcement, these changes led to an increase in tax revenues. I am grateful to Dan Treisman for pointing this out.

⁵³Long before he became a politician, Putin developed strong ideas about how Russia should manage its natural resources. See Balzer 2009.

and was deeply involved in Kremlin politics. Mikhail Khodorkovsky, the head of the oil group Yukos and one of the world's wealthiest people, reportedly offered Russia's two liberal parties, Yabloko and Soyuz Pravykh Sil (Union of Right Forces), a hundred million dollars to jointly oppose Putin, and he successfully blocked efforts in the parliament in 2001 and 2002 to increase taxes on petroleum producers. The mayor of Nefteyugansk, the headquarters of Yukos' major production unit, was murdered after he criticized the failure of Yukos to pay taxes.⁵⁴

After splitting with Putin, Berezovsky fled to London in 2001. Two years later the Russian government arrested Khodorkovsky, and eventually sentenced him to an eight-year prison term for tax evasion and fraud. It also forced the sale of Yukos—at a heavily discounted price—to Rosneft, a state-run oil company.⁵⁵ In 2006, it coerced international oil companies to cede control over a major project on Sakhalin Island to state-controlled Gazprom. These and other measures brought a significant fraction of Russia's oil and gas wealth back under the state's influence, either directly through state-controlled companies or indirectly through more effective government regulation.

The Kremlin's greater control over the allocation of oil rents along with the skyrocketing size of those rents gave Putin sufficient popularity to rescind many of the political liberties of the 1990s. By the time he assumed the prime minister position in 2008—transferring the presidency to Dmitry Medvedev, his handpicked successor—Putin had curtailed freedom of the press, restricted freedom of assembly for government opponents, and weakened the parliament.

As Michael McFaul and Kathryn Stoner-Weiss suggest,

*With so much money from oil windfalls in the Kremlin's coffers, Putin could crack down on or co-opt independent sources of political power; the Kremlin had less reason to fear the negative economic consequences of seizing a company like Yukos (a leading private oil company) and had ample resources to buy off or repress opponents in the media and civil society.*⁵⁶

Russia's oil boom contributed to the deterioration of Russian democracy by increasing the government's financial resources, at least once Putin reasserted state control over the industry. The resulting cascade of revenues allowed Putin to simultaneously boost government spending and cut tax rates, which helped make him extraordinarily popular:

⁵⁴ Goldman 2004; Rutland 2006.

⁵⁵ Myers and Kramer 2007.

⁵⁶ McFaul and Stoner-Weiss 2008.

just before leaving office, polls taken by the highly respected Levada Center showed that 85 percent of the public approved of his performance.⁵⁷ With petroleum prices at record levels, Putin used his personal popularity to reverse many of the democratic reforms of the 1990s and draw Russia back toward one-party rule.⁵⁸

Despite its drift away from democracy, in one way Russia looked like an exception: until 2010 it had significantly greater budget transparency than any other oil-producing authoritarian state. In figure 3.7, Russia is the only country that is able to combine formidable oil wealth and meaningful budget transparency. Unfortunately, in April 2010 much of this transparency disappeared when now-Prime Minister Putin signed a decree that suspended the publication of information about the assets, revenues, and expenditures of Russia's two oil funds as well as the government's oil and gas revenues.⁵⁹ The suspension was to remain in effect until 2013—well after Russia's next elections.

In oil-producing countries, transitions to democracy are exceedingly rare. Petroleum wealth has not always been an impediment to democracy, and its antidemocratic powers could recede in the future. Over the last three decades, however, the political benefits of oil have been largely captured by dictators, not citizens.

APPENDIX 3.1: A STATISTICAL ANALYSIS OF OIL AND DEMOCRACY

This appendix uses multivariate regressions to illustrate the statistical association between oil income and three outcomes—democratic transitions, democratic failures, and support for democracy.⁶⁰

⁵⁷ See <http://www.russiavotes.org>.

⁵⁸ Scholars differ on the role of petroleum in contemporary Russian politics. M. Stephen Fish (2005) argues that Russia's oil, gas, and mineral wealth has made its government less democratic, but for somewhat different reasons: it caused high levels of corruption in the 1990s, which led citizens to favor a more autocratic government that was more effective at curbing corruption; and it has facilitated "economic statism," giving the government much stronger control over the economy. According to Treisman (2010), oil's impact on Russian democracy has been quite small.

⁵⁹ See <http://www.revenuewatch.org/news-article/russia/russia-suspends-most-oil-and-gas-disclosures>.

⁶⁰ This is a relatively simple analysis. For more innovative studies of oil and democracy, which use instrumental variables to estimate the effects of oil wealth on democracy, see Ramsay 2009; Tsui 2011. Another innovative study, by Eoin McGuirk (2010), uses micro-level data from public opinion surveys in fifteen African countries and finds that more

The model in chapter 3 implies the following five patterns, which can be stated as hypotheses:

Hypothesis 3.1: When authoritarian governments have more oil income per capita, they will be less likely to transit to democracy.

Hypothesis 3.2: Oil income should be more likely to impede democracy after 1980 than before 1980.

Hypothesis 3.3: When authoritarian governments have higher ratios of government spending to perceived government revenues, they will be less likely to transit to democracy.

Hypothesis 3.4: When oil-rich authoritarian governments place more restrictions on the media and have less transparent budgets, they will be less likely to transit to democracy.

Hypothesis 3.5: When low-income democracies have more oil income per capita, they will be more likely to transit to authoritarianism.

DEMOCRATIC TRANSITIONS

To see if a country's oil income is correlated with the likelihood that it will transit to democracy, I use two alternative measures of regime type: a dichotomous democracy-autocracy measure, which I examine with a logit estimator; and a twenty-one-point measure, which I look at with an ordinary least squares (OLS) estimator.

Maximum likelihood estimators like logit allow us to estimate the likelihood of a discrete event. This makes it an appropriate way to determine whether oil income is correlated with the probability that an authoritarian state will transit to democracy. I use the OLS model to see if petroleum income is correlated with more subtle changes in regime types. It is also useful as a robustness check. The disadvantage of the OLS model is that entails looking at the link between oil income and regimes of all types, ranging from fully democratic to fully authoritarian. Hence, we cannot use it to distinguish between oil's effect on democratic transitions and its effect on democratic failures.⁶¹

Dependent Variable

The dependent variable in the logit estimations is *democratic transition*, a dummy variable that takes the value "one" in the year that a country changes from authoritarian to democratic rule, and "zero" otherwise. It is taken from the dichotomous democracy-autocracy measure devel-

natural resource wealth has led to weakened tax enforcement, which in turn has reduced the demand for free and fair elections.

⁶¹ This shortcoming was first pointed out in Ulfelder 2007.

oped by Przeworski and his colleagues, and updated by José Cheibub, Jennifer Gandhi, and James Vreeland.⁶²

For the OLS estimations, the dependent variable is *polity*, which is drawn from the Polity IV data set, and ranges from -10 (full autocracy) to 10 (full democracy).⁶³ To simplify the interpretation, I have rescaled the values to run from 1 to 10, with higher values indicating greater democracy. Both the Cheibub-Gandhi-Vreeland and Polity data cover all 170 countries that were sovereign in the year 2000, and had populations greater than 200,000. The logit estimations cover the years 1960–2006, while the OLS estimations cover the years 1960–2004.

Independent and Control Variables

The independent variable of interest is the natural log of a country's per capita oil income. *Oil income (log)* denotes the value of a country's oil and gas production in constant 2000 dollars divided by its midyear population, and is described more fully in appendix 1.1. Since the distribution of oil income across countries is highly skewed—most countries in any given year produce no oil or gas—I instead take its log value.

In both the logit and OLS models, I include the variable *income*, which measures the natural log of income per capita based on data from the World Development Indicators, with missing observations filled in with figures from the Penn World Tables.⁶⁴ Most prior studies of democratization suggest that income is a critical factor: when incomes rise, so does the likelihood that a state will be democratic.⁶⁵

The logit model also includes a variable to account for duration dependence. *Regime duration* is the natural log of the number of continuous years since 1946 that a country has been under authoritarian rule; it represents the underlying hazard rate. In the robustness section, I show that the results are unaffected by differing assumptions about the hazard rate.

⁶² Przeworski et al. 2000; Cheibub, Gandhi, and Vreeland 2010. They define regimes as democracies if they meet all of the following conditions: the chief executive is elected, the legislature is elected, there are at least two political parties, and at least one incumbent regime has been defeated. My analysis in many ways follows that of Jay Ulfelder (2007), who uses an event history design to test a similar pair of hypotheses, but develops his own dichotomous autocracy-democracy measure. Our substantive results are similar.

⁶³ Marshall and Jaggers 2007.

⁶⁴ Heston, Summers, and Aten n.d.

⁶⁵ Londregan and Poole 1996; Boix and Stokes 2003; Epstein et al. 2006. Since a country's income is affected by its oil wealth, including it in the model can lead to biased estimates of oil's true impact. I describe a more general version of this problem in chapter 6 as the "Beverly Hillbillies fallacy." Because I have already illustrated the bivariate relationship between oil and democracy in chapter 3 (using difference-of-means tests and scatterplots), I am less concerned about this bias here.

To reduce serial correlation in the OLS models, I employ an AR1 process, include a lagged dependent variable as a control, and only use observations from every fifth year, beginning in 1960.⁶⁶

Both the logit and OLS models also include a series of period dummies—one for each five-year period, beginning in 1960—to control for temporal patterns and contemporaneous shocks.

After exploring a core model that includes just two control variables (adhering to Achen's "rule of three," at least if the period dummies are not counted), I add three additional controls to see if the results are robust to their inclusion.⁶⁷ The first is a variable to account for a country's prior history of democracy. Several studies suggest that when states have previous experience with democracy, it boosts the likelihood of a subsequent transition to democracy.⁶⁸ The dummy variable *prior democracy* takes the value "1" if a country was previously under democratic rule for at least one year since 1946.

The second is *economic growth*, which is measured as the year-to-year change in a country's income per capita. According to several studies, economic growth helps autocracies survive.⁶⁹

The third additional control is the variable *Muslim population*, which represents the Muslim fraction of a country's population, and is taken from David Barrett, George Kurian, and Todd Johnson's work, with values for missing countries taken from the CIA World Factbook online.⁷⁰ Several scholars argue that states with larger Islamic populations are less likely to become democratic.⁷¹

All of the right-hand-side variables (except for the period dummies, and *prior democracy*) are lagged either one year (in the logit models) or one five-year period (in the OLS models). The regressions were run with Stata 11.1.

Results

Table 3.7 displays the results of the logit estimations. To simplify the display, I omit the constants and period dummies.

Column one includes only the two control variables. While the coefficients are in the expected directions, neither variable attains statistical

TABLE 3.7
Transitions to democracy, 1960–2006

This table reports logit estimates of the likelihood that an authoritarian state will undergo a democratic transition in a given year. All of the variables except *prior democracy* are lagged a single year. Each estimation includes a series of five-year period dummies (not shown). The robust standard errors are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Income (log)	0.139 (0.150)	0.332* (0.171)	0.406 (0.254)	0.124 (0.134)	0.256 (0.168)	0.225 (0.162)
Regime duration	–0.00174 (0.178)	–0.0457 (0.181)	–0.122 (0.303)	–0.438*** (0.141)	0.00964 (0.181)	0.387* (0.229)
Oil income (log)	—	–0.179** (0.0787)	–0.0783 (0.114)	–0.129** (0.0594)	–0.292*** (0.0921)	–0.197** (0.0897)
Oil income (log)* Latin America	—	—	—	—	0.673*** (0.152)	0.415*** (0.143)
Prior democracy	—	—	—	—	—	1.915*** (0.465)
Economic growth	—	—	—	—	—	–0.0536*** (0.0168)
Muslim population	—	—	—	—	—	–0.720 (0.551)
Years	All	All	1960–79	1980–2006	All	All
Number of countries	125	125	89	121	125	125
Observations	3,639	3,507	1,297	2,210	3,507	3,422
Missing observations	10.5%	13.7%	23.5%	6.6%	13.7%	15.8%

* significant at 10%

** significant at 5%

*** significant at 1%

⁶⁶See Acemoglu et al. 2008; Aslaksen 2010.

⁶⁷Achen 2002.

⁶⁸See, for example, Gassebner, Lamla, and Vreeland 2008.

⁶⁹Haggard and Kaufman 1995; Przeworski et al. 2000; Epstein et al. 2006; Gassebner, Lamla, and Vreeland 2008.

⁷⁰See Barrett, Kurian, and Johnson 2001; <http://www.cia.gov/library/publications/the-world-factbook>.

⁷¹Midlarsky 1998; Fish 2002; Donno and Russett 2004.

significance. Column two includes *oil income*, which is negatively correlated with the likelihood of a democratic transition and statistically significant at the 0.05 level. This is consistent with $H_{3.1'}$ which states that higher levels of oil income will reduce the likelihood of a transition to democracy.

In columns three and four, I look separately at the 1960–79 and 1980–2006 periods. In the first period (column three), the size of the *oil income* coefficient drops sharply and loses all statistical significance. In the second period, the *oil income* coefficient regains its size and statistical significance. This is consistent with $H_{3.2'}$ which suggests that oil's anti-democratic effect has grown since the 1970s.⁷²

Column five includes a variable interacting *oil income* with a dummy for Latin America, to explore Dunning's finding that oil hastened democratization in Latin America while impeding it elsewhere.⁷³ The variable is statistically significant at the 0.01 level, consistent with Dunning's assertion. Moreover, its inclusion causes both the absolute value and statistical significance of the *oil income* variable to grow—implying that once oil's democracy-enhancing effects in Latin America are accounted for, oil's democracy-impeding effects in the rest of the world are larger than previously estimated.

Column six shows the model when the other three controls—*prior democracy*, *economic growth*, and *Muslim population*—are included. The *prior democracy* and *economic growth* variables are significantly correlated with *democratic transitions* in the expected directions, and their inclusion causes the *oil income* coefficient to drop by about one-third, but *oil income* remains significantly correlated with *democratic transitions*.

Table 3.8 shows the estimation results from the OLS models.⁷⁴ The first column includes only *income* and the lagged dependent variable;

⁷²Almost a quarter of the observations for the 1960–79 period are missing, mostly due to missing income data. The missing data problem is equally worrisome in table 3.8, columns three, six, and seven. Since these missing data are almost certainly nonrandom, they may bias my results in ways that are difficult to predict.

⁷³Dunning 2008. Since there is little reason to expect that the Latin American states are otherwise distinctive, I do not include a Latin America dummy in the model. If nonetheless placed in the model, or in the OLS model (table 3.8, column five), it is not statistically significant, and its inclusion has little or no effect on the other variables.

⁷⁴The OLS model is much like the generalized least squares model in Ross 2001a, which also had a lagged dependent variable, a similar set of control variables, a series of period dummies, and a five-year lag for the right-hand-side variables. There are three key differences: the data now cover more countries (170 instead of 113) and years (1960–2004 instead of 1971–97); the causal variable is now *oil income (log)* rather than oil exports as a fraction of the GDP; and instead of using annual observations, I take observations from every fifth year to reduce autocorrelation.

TABLE 3.8
Democracy levels, 1960–2004

This table shows OLS regression coefficients; the dependent variable is a country's polity score, rescaled to run from 1 to 10. Observations are made at five-year intervals. All estimates include a lagged dependent variable and a full set of period dummies (not shown), and use an AR(1) process. All of the other explanatory variables are lagged for a single period. The robust standard errors are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Polity (lagged)	0.652*** (0.0232)	0.620*** (0.0236)	0.698*** (0.0355)	0.697*** (0.0270)	0.616*** (0.0235)	0.432*** (0.0289)	0.151*** (0.0369)
Income (log)	0.348*** (0.0529)	0.508*** (0.0590)	0.487*** (0.0904)	0.354*** (0.0636)	0.518*** (0.0577)	0.439*** (0.0649)	-0.0628 (0.266)
Oil income (log)	—	-0.165*** (0.0287)	-0.100** (0.0455)	-0.152*** (0.0298)	-0.205*** (0.0297)	-0.136*** (0.0352)	-0.0755 (0.0832)
Oil income (log)* Latin America	—	—	—	—	0.223*** (0.0515)	0.0961 (0.0590)	0.570*** (0.199)
Prior democracy	—	—	—	—	—	1.474*** (0.192)	—
Economic growth	—	—	—	—	—	-0.858 (0.807)	—
Muslim population	—	—	—	—	—	-1.022*** (0.256)	—
Fixed effects?	No	No	No	No	No	No	Yes
Years	1960–2004	1960–2004	1960–80	1985–2004	1960–2004	1960–2004	1960–2004
Number of countries	170	170	124	170	170	170	167
Observations	1,032	1,032	414	618	1,032	903	862
Missing observations	14.1%	14.1%	21.1%	8.7%	14.1%	24.9%	28.3%

*significant at 10%

**significant at 5%

***significant at 1%

both are highly significant, as are the period dummies (not shown). In column two, I add *oil income*; it is also highly significant and negatively correlated with *polity*, consistent with $H_{3.1}$.

Columns three and four cover the periods 1960–80 and 1985–2004, respectively. *Oil income* is significantly correlated with *polity* in both periods, although the size of the *oil income* coefficient is about 50 percent larger in the latter period. This is consistent with $H_{3.2'}$, which suggests that the antidemocratic effects of oil grew after the 1970s.

The model in column five includes the interaction term *oil income*Latin America* to once again show the Dunning effect. It is positively correlated with *polity*, and its inclusion once more increases the size of the *oil income* coefficient. In column six, the addition of three further control variables reduces the size of the *oil income* coefficient by about one-third, but *oil income* remains significantly associated with lower *polity* scores. The inclusion of the other controls—notably, *prior democracy*—also causes the *oil income*Latin America* coefficient to drop by more than 50 percent and lose statistical significance. This is consistent with my argument that oil may have hastened democratic transitions in Latin America because these states had prior democratic experience, which undermined the revenue secrecy that is essential to oil's democracy-inhibiting effect.

When country fixed effects are introduced (column seven), *oil income* loses statistical significance—as does *income* and the period dummies. There are several ways to explain this result. *Oil income* may have long-term effects on regime type, which are readily apparent in cross-national comparisons, but harder to detect in the short term, and hence do not appear in the within-country correlations.⁷⁵ This reflects a well-known drawback of fixed-effects models: they make it difficult to detect correlations when the dependent variable changes slowly—as does the *polity* variable.⁷⁶ To address this problem, Silje Aslaksen suggests using the system generalized method of moments (GMM) estimator developed by Richard Blundell and Stephen Bond, which outperforms the more-common first-difference GMM estimator in Monte Carlo simulations when the key variables change slowly.⁷⁷ Using this estimator, Aslaksen finds that a country's oil income is indeed correlated with authoritarian rule, even in the presence of country fixed effects.

⁷⁵ A study by Jeffrey Colgan (2010b) suggests that while oil income hurts democracy in the long run, short-term fluctuations in oil income have little immediate effect.

⁷⁶ Beck, Katz, and Tucker 1998.

⁷⁷ Aslaksen 2010; Blundell and Bond 1998. Charlotte Werger (2009) and Treisman (2010) also find that oil is linked to less democracy in fixed-effects models.

A paper by Stephen Haber and Victor Menaldo finds that the relationship between oil wealth and democracy disappears in models that include country fixed effects along with a lagged dependent variable, and employ the Arellano-Bond GMM estimator.⁷⁸ Aslaksen suggests that when the key variables—like oil income and democracy—are highly persistent, the Arellano-Bond estimator suffers from a weak instruments problem and is inferior to the Blundell-Bond system GMM estimator.

DEMOCRATIC FAILURES

The variables in the model for democratic failures are similar to those in the model for democratic transitions. The dependent variable, *democratic failure*, is a dummy variable that denotes a transition from democratic to authoritarian rule, and is once again taken from the Cheibub-Gandhi-Vreeland data set. The core model includes controls for the log of income per capita and a variable to account for duration dependence (*regime duration*), which is the natural log of the number of continuous years (since 1946) that a country has been under democratic rule.

Since democratic failures are rare events—there were just fifty such transitions from 1960 to 2006, out of 2,816 possible country years—using a standard logistic estimator could produce biased estimates. I thus use the rare-events logit estimator developed by Gary King and Langche Zeng, and cluster the standard errors by country.⁷⁹

In the estimates reported in table 3.9, column one shows only the control variables. Both *income* and *regime duration* seem to reduce the likelihood that democracies will break down. Column two includes the *oil income* variable, which is positively correlated with *democratic failures* and statistically significant at the 0.05 level.

According to $H_{3.5'}$, oil should be linked to the likelihood of a democratic breakdown in low-income, but not high-income, countries. To demonstrate this pattern, in columns three and four I look separately at countries with incomes below (column three) and above (column four) five thousand dollars per capita. *Oil income* is only correlated with the likelihood of *democratic failure* in lower-income countries.

If the antidemocratic powers of oil grow over time, as $H_{3.2}$ suggests, *oil income* should have a stronger effect after 1980 than before 1980. I

⁷⁸ Haber and Menaldo 2009.

⁷⁹ King and Zeng 2001. Rare-events logit might also be appropriate for estimating the likelihood of democratic transitions, which are comparably infrequent. When the models in table 3.7 are reestimated with rare-events logit, the results are virtually identical.

Table 3.9
Transitions to authoritarianism, 1960–2006

This table portrays rare-event logit estimates of the likelihood that a democratic state will undergo a transition to authoritarian rule in a given year. All explanatory variables are lagged for one year, and standard errors are clustered by country. The robust standard errors are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Regime duration (log)	-0.342** (0.168)	-0.342** (0.169)	-0.240 (0.164)	-0.892** (0.452)	-0.417* (0.242)	-0.280 (0.209)
Income (log)	-0.641*** (0.142)	-0.717*** (0.144)	-0.580*** (0.177)	-2.480*** (0.651)	-0.689*** (0.172)	-0.960*** (0.218)
Oil income (log)	—	0.121** (0.0564)	0.113* (0.0630)	0.129 (0.174)	0.0949 (0.117)	0.242*** (0.0752)
Income group	All	All	Below \$5,000	Above \$5,000	All	All
Years	All	All	All	All	1960–79	1980–2006
Number of countries	105	105	76	46	60	103
Observations	2,673	2,673	1,301	1,372	728	1,945
Missing observations	1.6%	1.6%	~2%	~1%	4.7%	0.4%

*significant at 10%

**significant at 5%

***significant at 1%

estimate the model in column five using only data from 1960 to 1979, and the same model in column six using data from 1980 to 2006. Consistent with the hypothesis, *oil income* is only correlated with democratic failures since 1980.

Robustness

Table 3.10 summarizes a series of robustness tests for each of these three models: the logit model predicting democratic transitions (column one), the OLS model predicting *polity* scores (column two), and the rare-events logit model predicting democratic failures (column three).

TABLE 3.10
Democracy: Robustness tests

These figures are the coefficients of the *oil income* variable in each of the models described. See the text for details.

	Transitions to democracy	Democracy levels	Transitions to authoritarianism
Core model	-0.292***	-0.205***	0.242***
Simple regime duration	-0.293***	—	0.255***
Add regime squared	-0.294***	—	0.265***
Dichotomous oil income	-1.88***	-1.04***	1.03**
Drop key countries	-0.229**	-0.152***	0.216**
Drop all Middle East	-0.179*	-0.123***	0.242***
Add regional dummies	-0.160*	-0.138***	0.230**

*significant at 10%

**significant at 5%

***significant at 1%

Each column displays the values and statistical significance of the *oil income* coefficient under different conditions.

The first row shows the *oil income* coefficient in each of the core models. The core model for predicting *democratic transitions* is drawn from table 3.7, column five, and includes controls for *income*, *regime duration*, *oil income***Latin America*, and a set of period dummies. The core model for estimating *polity* is taken from table 3.8 column five, and is nearly identical to the logit model, but includes a lagged dependent variable in place of *regime duration* to offset duration dependence. The rare-events logit model estimating the likelihood of *democratic failures* is taken from table 3.9 column six, and includes controls for *income* and *regime duration*, and is restricted to the 1980–2006 period.⁸⁰

In both the core logit and rare-events logit models, I have used a base hazard rate (*regime duration*, measured as the natural log of the number of years of continuous authoritarian or democratic rule) that is some-

⁸⁰ When tested with the full 1960–2006 data set, the correlation between *oil income* and *democratic failures* is less robust. Restricting the other two models to the 1980–2006 period increases the size of the *oil income* coefficients, and has no effect on their robustness.

what arbitrary. Hence, in row two I replace the previous *regime duration* variable with the simple number of years of continuous authoritarian or democratic rule; in row three I add another variable to each model, measuring the square of the number of continuous authoritarian or democratic years, to account for a possible nonlinear effect. The *oil income* coefficients remain large and statistically significant.

These results could be biased by the nonnormal distribution of the *oil income* variable, even though I am always using its log value. In row four, I therefore try a dichotomous version of *oil income*, which takes the value "1" when countries earn more than a hundred dollars per capita in oil income (using constant year 2000 dollars) and zero otherwise. In all three models, the dummy variable is significantly correlated with less democracy. Perhaps the links between oil and democracy are driven by a handful of oil-rich countries and do not represent a broader, global pattern. To see if this is true for the models predicting *democratic transitions* and *polity*, in row five I drop all observations of the seven oil-producing authoritarian states on the Arabian Peninsula: Saudi Arabia, Kuwait, Qatar, the United Arab Emirates, Bahrain, Oman, and Yemen. *Oil income* remains statistically significant in both models, although the coefficients drop by about 25 percent.

For the model predicting *democratic failure*, I drop the three countries with the largest oil incomes where democracy has failed since 1980: Congo-Brazzaville (where democracy failed in 1997), Ecuador (2000), and Nigeria (1983). The size of the *oil income* coefficient drops by about 15 percent, yet remains statistically significant at the 0.05 level.

It is still possible that the association between oil and dictatorships is not causal but instead produced by the concentration of oil wealth in the Middle East, where democracy also happens to be rare. In row six, I check for this possibility by dropping all Middle Eastern countries from the data set. All of the oil variables remain statistically significant. In row seven I use a different approach, adding to the models a series of dummy variables for six world regions: the Middle East and North Africa, sub-Saharan Africa, Latin America, Asia (including East, South, and Southeast Asia), the former Soviet Union, and the traditional Organization for Economic Cooperation and Development (OECD) states (Western Europe, North America, Japan, Australia, and New Zealand). *Oil income* continues to be significantly associated with less democracy, although in the *democratic transitions* model only at the 0.10 level.

These tests suggest that the correlation between *oil income* and a country's regime type is robust in several important ways: it is unchanged by plausible modifications in the underlying hazard rate, the removal of influential countries from the data set, the use of a dichotomous measure of *oil income*, and the inclusion of regional dummies.

Causal Mechanisms

Chapter 3 indicates that oil income is tied to authoritarianism through two pathways: by causing a high ratio of government spending to perceived government revenues, and by leading to greater government secrecy, including a lack of budget transparency and restrictions on the media.

The first mechanism is the most difficult to measure. High-quality data on both government revenues and expenditures are scarce, especially for oil-rich states, and the model suggests that *perceived* government revenues, not *actual* ones, are what matter—yet these perceptions cannot be gauged without contemporaneous surveys. Official figures on government consumption spending and revenues are available for many countries from the World Development Indicators, although their accuracy is questionable, and observations are missing for a substantial number of countries and years.

Still, looking at these flawed data might be instructive. I showed in figure 3.5 that countries that eventually transitioned to democracy had higher spending-to-revenue ratios than those that did not. Unfortunately, the *spending-to-revenue ratio* variable cannot be employed in the logit model because the data are too scarce. In the reduced sample of countries and years for which the variable is available, *oil income* is no longer correlated with democratic transitions.

It can be used in the OLS model, although only with a cross-section (not a panel) of countries. To increase the number of country observations, I take the mean values for the spending-to-revenue ratio from 2000 to 2004, using only those years where data are not missing. For consistency, I also use the mean 2000–2004 values for the other variables (*income*, *oil income*, and *polity*). The resulting *spending-to-revenue ratio* is available for 111 of 170 possible countries; about one-third of the data are missing. The scarcity of these indicators is still a problem. As table 3.5 depicts, oil states are especially reluctant to release their revenue data, which implies that the missingness is nonrandom and likely to bias my estimations.

Table 3.11, column one, shows the baseline model, including only observations for which the *spending-to-revenue ratio* is not missing. The *spending-to-revenue ratio* is added to the model in column two, and is significantly and negatively correlated with *polity*: the more a government spends, relative to its revenues, the less democratic it is. While this is consistent with $H_{3.3}$, another feature of the estimation is not: adding the *spending-to-revenue ratio* to the model does not reduce the size or significance of the *oil income* coefficient. While this could indicate a flaw in the model, the *spending-to-revenue ratio* is too weak an indicator

TABLE 3.11
Transitions to democracy: Causal mechanisms

This table shows OLS regression coefficients; the dependent variable is a country's Polity score. In columns one and two, country values are averaged over the 2000–2004 period; in columns three and four, they are for 2004 only. The estimations in columns five and six, which use time series cross national data, the explanatory variables are lagged for a single year, and include a lagged dependent variable (not shown). The robust standard errors are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Income (log)	0.756*** (0.118)	0.630*** (0.132)	0.988*** (0.171)	0.595*** (0.191)	0.0549*** (0.0151)	0.0527*** (0.0151)
Oil income (log)	–0.248** (0.110)	–0.253** (0.111)	–0.260** (0.103)	0.441*** (0.156)	–0.0240*** (0.00824)	0.0156 (0.0155)
Government spending-to-revenues ratio	—	–1.949** (0.916)	—	—	—	—
Oil income (log)*budget transparency	—	—	—	–0.0100*** (0.00199)	—	—
Oil income (log)*press freedom	—	—	—	—	—	–0.772*** (0.255)
Years	2000–2004	2000–2004	2004	2004	1990–2004	1990–2004
Number of countries	111	111	83	83	168	168
Observations	111	111	83	83	1,658	1,658
Missing observations	34.7%	34.7%	51.2%	51.2%	33.9%	33.9%
R-squared	0.195	0.223	0.240	0.405	0.954	0.954

* significant at 10%

** significant at 5%

*** significant at 1%

to draw strong inferences—especially since the estimate is based on a cross-section of countries.

It is also hard to measure government secrecy. According to $H_{3.4}$, oil-backed dictatorships are less likely to transit to democracy because their budgets are more opaque and they place greater restrictions on the media.

The best-available measure of revenue transparency is the Open Budget Index, described in chapter 3, which ranks countries on a scale of zero to one hundred based on the transparency of the central government's budget documents. Unfortunately, it is only available for up to eighty-three countries, for just one or two years, beginning in 2006. Again, the scarcity of these data should make us cautious in our inferences.

Table 3.11, columns three and four, show a pair cross-national OLS estimations looking at the relationship between a variable interacting oil income with budget transparency, and a country's polity score. I use an interaction term since the hypothesis suggests that a lack of transparency in the presence of oil wealth has special, democracy-inhibiting effects. To make the results easier to interpret, I have reversed the scale of the original Open Budget Index so that higher scores indicate less transparency. Rising values of the interaction term thus indicate more oil and less transparency, both of which should have antidemocratic effects.

Column 3 portrays the core model before adding the interaction term, using only observations for the eighty-three countries rated by the Open Budget Index in 2008. Column 4 shows the same model and observations, after adding the interaction term. Consistent with the hypothesis, the interaction term is negatively correlated with polity, and its inclusion has a powerful effect on the oil income coefficient—causing it to change signs from significantly negative to significantly positive. This implies that oil income only hurts democracy when it coincides with greater budget secrecy.⁸¹

A different type of political transparency can be gauged with the Freedom of the Press Index developed by Freedom House, which evaluates the freedom of the print, broadcast, and internet media on a scale of one to one hundred. Unlike the spending-to-revenue ratio and oil income*budget transparency variables, data on media freedom are available for virtually all countries in the data set and include annual figures

⁸¹ Adding budget transparency separately, as an additional control variable, has no substantial effect on these results.

beginning in 1990. This makes it possible to use a cross-national time-series OLS model.⁸²

Like above, I reverse the Freedom of the Press Index so that higher scores indicate less freedom and then interact this with *oil income*. In table 3.11, column five, I show an OLS regression that includes just the control variables—*income* and *oil income*, and a lagged dependent variable—and uses an AR1 process to cope with autocorrelation; the data cover 168 countries from 1990 to 2004. In column six, I add the interaction term. It is negatively correlated with *polity*, and its inclusion once more has a large impact on the *oil income* measure, causing the coefficient to reverse signs and lose statistical significance. This again implies that *oil income* is only linked to less democracy when it is paired with exceptional government secrecy.⁸³

These estimations offer limited support for hypothesis 3.3, which highlights the importance of a country's government spending-to-revenue ratio. They provide somewhat stronger support for hypothesis 3.4, which emphasizes the role of government secrecy. Still, the poor quality of the spending and revenue indicators, and the large number of missing countries in both these and the budget transparency data, make it hard to be confident about these results. The data on press freedom are more extensive and more complete, and can be interpreted with somewhat greater confidence: when placed in a simple OLS model, the results are consistent with the claim that in oil-producing countries, government secrecy plays a special role in hindering democracy.

These estimations suggest that most of the hypotheses in chapter 3—all but $H_{3.3}$ —are consistent with patterns in the data:

- In authoritarian states, greater oil income is associated with a lower chance of transiting to democracy.
- In *lower-income* democracies, greater oil income is correlated with an increased chance of transiting to authoritarianism.
- Both of these patterns have only been evident since about 1980.
- Latin America is an exception; in this region, oil income is correlated with a higher likelihood of transiting to democracy.
- Government secrecy seems to account for a significant portion of oil's democracy-inhibiting effects.

⁸²Since the data only cover fifteen years (1990–2004), I use annual observations in this model rather than taking observations from every fifth year, as I do in the core model (table 3.8). While this increases the number of observations for each country, it also becomes harder to mitigate serial correlation.

⁸³Adding *press freedom* as an additional control has little effect on these results.

The most important correlations—between oil income and measures of democracy—are also reasonably robust, especially when we account for the anomalous status of Latin America, and focus on the post-1980 period.

There is also limited support for the remaining hypothesis: countries with higher ratios of government spending to government revenues tend to be less democratic, although this pattern cannot be linked to the oil-autocracy correlation. The scarcity and low quality of data on government spending and revenues, and the absence of measures of perceived government revenues, make it difficult to draw strong inferences—either favorable or unfavorable—about this hypothesis.