CHAPTER EIGHT

TAKING DOMESTIC POLITICS SERIOUSLY:

EXPLAINING THE STRUCTURE OF OWNERSHIP OVER MINERAL RESOURCES

For reasons elaborated upon in Chapter two, the literature on the resource curse has heretofore viewed ownership structure as a constant rather than a variable. In particular, it is characterized by a prevailing assumption that mineral wealth is always and necessarily state-owned and centrally controlled (e.g., Auty 2001, Beblawi and Luciani 1987, Karl 1997). Consequently, this literature has not invoked ownership structure as either a possible explanation for the empirical correlation between mineral abundance and a myriad of negative social, political and economic outcomes -- i.e., poor economic performance, unbalanced growth, impoverished populations, weak states, and authoritarian regimes -- or a possible remedy.

Yet, the empirical reality is that ownership structures vary greatly both within and across mineral-rich states over time. If one takes a broader and more nuanced view, it becomes clear -- at least regarding petroleum-rich states -- not only that state ownership is not inevitable but also that it is accompanied by varying degrees of state control. Figure 8.1 provides such a view. It is based on our own analysis of ownership structure in petroleum-rich states from the late 1800s through 2005, in which we classify countries according to four different possible combinations of ownership and control: 1) state ownership with control (S_1); 2) state ownership without control (S_2); 3) private domestic ownership (P_1); and private foreign ownership (P_2).

FIGURE 8.1 ABOUT HERE

The variation in ownership structure over mineral resources over the course of the 20th century that we have identified not only bolsters our case for exploring the effects of ownership

structure in the preceding chapters, it also demands an explanation. Why has private domestic ownership been so rare for the past century -- particularly if we are correct that it offers a way for mineral-rich states to escape the alleged curse of their resource wealth? Conversely, why did private foreign ownership predominate during the first half of the twentieth century, and why did state ownership with and without control predominate during the second half?

Given the temporal trends in the data, the most obvious conclusion might be that this variation is due to international factors -- namely, the structure of the international oil market and policy convergence via diffusion. Indeed, these are the standard explanations for the predominance of private foreign ownership during the first half of the 20th century and its replacement with state ownership during the second half of the 20th century. As many have argued, the 1960s ushered in a new era for petroleum-rich states in the developing world (e.g., Klapp 1987, Yergin 1991, Philip 1994). Until then, a few major international oil companies (known as the "Majors" or the "Seven Sisters" -- Royal Dutch Shell, Esso, Mobil, Texaco, Standard Oil of California, British Petroleum, and Gulf) dominated the global oil market, leaving petroleum-rich states little choice but to accept foreign ownership and control over their reserves. The emergence of several independent oil companies (e.g., Occidental in Libya) that were willing to cede more revenue and managerial control in order to wrest some market share away from the Majors, however, enabled developing countries to design more favorable contracts with foreign investors, and eventually, to nationalize their respective oil sectors. At that time, international experts also encouraged resource-rich states to adopt state ownership, both to gain independence from foreign oil companies (e.g., Cardoso and Faletto 1979, Evans 1979, Tugwell 1975) and to better harness their export revenue for domestic economic development (e.g., Baldwin 1966, Hirschman 1958).

Yet, while the leaders of developing countries are undoubtedly subjected to enormous international constraints, they must also contend with some significant constraints at the domestic level. The above arguments are based on the premise that international constraints are more formidable and/or influential than domestic ones. But there is no a priori reason to assume this. And, in fact, the divergence in petroleum development strategies among the Soviet successor states in the early 1990s directly challenges the presumption that an international environment with similar constraints will lead to policy convergence. As described in the preceding chapters: Uzbekistan (as well as Turkmenistan) initially opted for state ownership with control (S_1);[1] Azerbaijan chose state ownership without control (S_2); Russia pursued private domestic ownership (P_1) until 2005;[2] and Kazakhstan encouraged private foreign ownership (P_2).

In contrast, we argue that one cannot understand this variation without taking domestic politics seriously. In particular, the conventional wisdom that emphasizes the role of international factors has led us to dismiss the ability of state leaders to make conscious choices, and thereby, to overlook the effect of domestic political and economic conditions on their decision-making calculus.

Although a few scholars' explanations have invoked domestic-level variables, they are either too deterministic or limited in scope. Sectoralists, for example, argue that the main characteristics of the mineral sector, such as capital intensivity and concentration, inevitably lead to state ownership (e.g., Auty 2001, Gelb and Associates 1988, Karl 1997, Shafer 1994). Thus, they cannot account for either domestic or foreign private ownership, both of which have

[1] Uzbekistan retained this ownership structure until 2001 when it opened its oil and gas sector to direct foreign investment, and thus, changed its ownership structure to S_2. Future versions of this chapter will include an explanation of that change as a further "test" of our argument.
[2] Future versions of this chapter will include an explanation of the change in ownership structure from P_1 to S_1 as a further "test" of our argument.

become more popular since the late 1980s. A slightly different version of this argument links resource endowments in general (including labor) to centralized, extractive institutions erected by European colonizers, but then assumes that these institutional legacies persisted (Acemoglu et al. 2002). Nationalism is another plausible explanation for why countries adopt state ownership (e.g., Klapp 1987), but it can explain only a fraction of the variation in ownership structures over the mineral sector across time and space. Nationalist sentiments may be entirely appropriate, for example, to explain Mexico's efforts to nationalize the oil industry after the 1911 Mexican Revolution (although it did not actually do so until 1938) or the nationalization of oil throughout the Middle East following the 1967 Arab-Israeli war. Nationalism does not, however, account for the trend toward private domestic ownership and private foreign ownership in the late 1980s and early 1990s, or, for that matter, the predominance of state ownership without control rather than state ownership with control. If nationalism was in fact the primary motivation behind the change in development strategies in the 1950s and 1960s, then we should find state ownership with control (i.e., low foreign involvement) more common than state ownership without control (i.e., high foreign involvement).

Taking Domestic Politics Seriously

Our explanation for the choice of mineral development strategies begins with two basic assumptions. First, we assume that all state leaders are sovereignty maximizers. *Ceteris parabus*, state leaders prefer more rather than less sovereignty, which translates into more rather than less control over their natural resources -- both because it can become an important source of revenue and as a matter of national pride. This is particularly acute in post-colonial states, wherein leaders aim to preserve their recently acquired ability to make independent decisions concerning their natural resource wealth. Accordingly, they will prefer to adopt an ownership structure that

grants the state the greatest amount of concentrated authority over both the daily operations of and rents accruing from the mineral sector. We can thus derive their preference rankings over the available set of policy choices:

1) State ownership with control (S_1)
2) State ownership without control (S_2)
3) Private domestic ownership (P_1)
4) Private foreign ownership (P_2)

These preferences, however, are secondary to their desire to remain in power. This is consistent with the widely accepted assumption that state leaders are concerned primarily with staying in office, and that in order to do so, they must satisfy those interests that support their rule and appease or defeat those that oppose it. More specifically, they must continue to satisfy the political and economic expectations that the state is expected to fulfill in the status quo. These expectations will vary according to the particular system of patronage and the particular cleavage structure on which patronage is dispensed in a given state.

In sum, state leaders in mineral-rich states will choose a form of ownership structure that enables them to achieve a maximum level of sovereignty over their mineral resources without threatening their continued rule.

The ability of state leaders to stay in power is based on the ratio of resources (R) to costs (C), where R is a function of the availability of alternative sources of revenue (i.e. other than the development of mineral reserves) and C is a function of the level of conflict over the basis for dispensing political and economic patronage that state leaders face (i.e., distributional conflict). Simply put, leaders can safely maintain their hold on power when they possess sufficient resources (R) to meet their costs (C). Their power becomes threatened, therefore, either when R

decreases relative to C or when C increases relative to R.[3] Under either of these conditions, the ability of state leaders to pursue their most preferred strategy is constrained because they must generate additional resources with which to appease or defeat their opponents.

Access to alternative sources of revenue determines whether or not the leadership can maintain current levels of domestic spending without immediately exploiting their oil and gas reserves. Simply put, a state with alternative sources of export revenue can postpone the development of its oil and gas reserves, whereas a state without alternative sources of revenue faces much greater time pressures to generate revenue from its oil and/or gas reserves. Since for most developing countries alternative revenue is primarily derived through exports, we operationalize this variable in terms of export potential. The degree of alternative sources of revenue in a given state is ascertained by whether or not: 1) it has already developed a commodity or product for export that is viable without either immediate or substantial capital investment; and 2) the export of this commodity or product is capable of providing a disproportionate share of total revenue in the status quo.[4]

The level of distributional conflict over the basis for dispensing political and economic patronage determines the amount of resources that current leaders need to maintain their hold on power. This is measured by recording whether or not: 1) there exists a cleavage structure that could function as a viable alternative to the current basis for dispensing patronage; 2) political parties and/or social movements based on such an alternative cleavage have emerged and gained some popular support; and 3) these parties and/or movements have in fact made demands for greater resources, including secessionist attempts and/or claims for greater autonomy.[5] In sum,

[3] In other words, state leaders must sustain a ratio of R to C is greater than or equal to 1 in order to retain power.
[4] Both criteria must be met in order for a country to be coded "high;" otherwise, it is coded "low."
[5] All three criteria must be met in order for a country to be coded "high;" otherwise it is coded "low."

the more intense the challenge to maintaining the existing system for dispensing patronage -- and hence, the dominant cleavage on which this system is based -- the greater state leaders' need to attain additional resources to maintain power. Particularly in developing countries, the emergence of a potential rival cleavage threatens the existing patron-client networks on which the economic and political system is based. In doing so, it directly challenges and may even undermine the dominant sociopolitical structure, which increases the likelihood for social and political instability. Groups based on this emergent cleavage seek to replace the existing patronage network so as to acquire a greater share of state resources. Where a high level of distributional conflict exists, then, state leaders must seek an immediate expansion in export revenue, such that the state can simultaneously reinforce the position of existing elites through whom they maintain political stability and successfully address or circumvent the interests of this rival cleavage. For leaders in newly independent states, this situation is especially difficult because it calls into question the basis for constructing the new state.

The interaction between these two key domestic variables -- the level of alternative sources of revenue and the level of distributional conflict -- influences which form of ownership structure leaders choose to adopt. These are summarized in Table 8.1.

TABLE 8.1 ABOUT HERE

At one end of the spectrum, leaders in mineral-rich states with a high degree of alternative revenue and a low level of distributional conflict (i.e., a high ratio of R to C) face the least constraints on their strategic choices, and thus are most likely to adopt their first rank order preference -- state ownership with control (S_1). With the financial resources to maintain their status quo support from the dominant cleavage and without the added cost of overcoming a challenge to their rule from a rival cleavage, they can afford to postpone mineral development.

Under S_1, the development of the mineral sector will be decelerated in comparison, for example, to S_2 due to the more restricted flow of foreign capital and technology. Yet, the state will have both a greater degree of control over mineral secotr development in the short-term and a greater access to direct rents from mineral exports over the long term as the sector develops because it will not have to share its proceeds with foreign investors.

At the other end, leaders in mineral-rich states with a low degree of alternative potential and a high level of distributional conflict (i.e., a low ratio of R to C) face the greatest constraints on their strategic choices, and thus, are likely to adopt their least preferred policy choice -- private foreign ownership (P_2). In addition to a contraction in resources, they face domestic pressures to generate revenue immediately so as to both maintain status quo support and diffuse a potent challenge to their continued rule. P_2 priovides state leaders with the ability to do so, since foreign investors will not only pay the purchase price for shares in the mineral sector upfront but also offer huge royalties before the production process even begins and then slowly recover their costs.[6]

In between these two extremes, state leaders can also face a domestic environment in which the degree of alternative revenue and the level of distributional conflict are either both low or both high. A low degree of alternative revenue combined with a low level of distributional conflict enables state leaders to adopt their second most preferred policy outcome -- state ownership without control (S_2). Under this scenario, they can claim or retain state ownership over the mineral sector because the absence of demands for a redistribution of resources mitigates the need for the immediate revenue that privatization would provide; however, the

[6] As foreign investors recover their costs through "cost oil," however, governments will receive greater amounts of "profit oil" over time. Depending on the contract, level of production, etc, this can take 10-25 years.

international role is substantial because there is no alternative source of export revenue with which to maintain their status quo base of support.

Where state leaders have a high degree of alternative sources of export revenue and experience a high level of distributional conflict in the status quo, they can adopt their third most preferred policy outcome -- private domestic ownership (P_1). Under this scenario, leaders engage in extensive privatization as a means of maintaining support for their continued rule. By transferring ownership of resources from the state to private domestic actors, they can both bolster their support base in the status quo and appease or defeat any potential rivals. At the same time, they are able to minimize the role of foreign investors because they can rely on revenue from other sources. Excluding foreign investors from the privatization process, moreover, enables state leaders to sell off their mineral sector to domestic supporters and/or powerful rivals at below market value.

In order to test these propositions, we first analyzed the divergence in ownership structure across four of the five newly-independent petroleum-rich states that once made up the Soviet Union based on our own field research and other primary sources. We then constructed an original, cross-national dataset that includes all petroleum-rich countries over the course of the twentieth century based on secondary sources. We present both sets of empirical results in the sections that follow.

Explaining Ownership Structure in the Former Soviet Union (FSU)

Due to their shared experience under Soviet rule, Azerbaijan, Kazakhstan, the Russian Federation, and Uzbekistan hold in common many important social, political, and economic legacies, such as a nascent civil society, centralized policy-making and economic planning, and a regionally-based administrative-territorial system. Moreover, because all natural resources were

owned and controlled by the Soviet state, the leaders of all five newly independent states inherited the same political and institutional structure for the management of their petroleum reserves, as well as the negative consequences of this management structure -- i.e., gross mismanagement of resources, dilapidated infrastructure, and primitive technology, which culminated in an acute production crisis in the 1980s (Gustafson 1989). What then, accounts for the variation in ownership structure across these five petroleum-rich Soviet successor states? More broadly, why do states with similar starting points adopt divergent development strategies vis-à-vis their mineral sector?

These similarities enable us to exclude, or at least call into question, most of the standard explanations. That all four countries emerged from the same policy regime governing their petroleum resources suggests that the ownership structure prior to independence was not a decisive factor. Moreover, given the fact that all four countries chose different ownership structures within the same context of falling oil prices and trends toward privatization in the developing world, these international factors also clearly did not play a role. At the same time, a case could be made that other structural features mattered. After all, for all their similarities at independence, these countries' petroleum reserves exhibited many differences -- particularly concerning their level of development, size and degree of concentration, "quality" and/or difficulty of extraction, and access to foreign markets. None of these variables, however, help explain either why Azerbaijan, Kazakhstan, the Russian Federation, and Uzbekistan made different choices or why chose the particular ownership structure that they did.

First and foremost, one might argue that Russia adopted domestic privatization because it had the most well-developed petroleum sector, and thus, the domestic expertise to continue to manage its development whereas the other three did not. Although it is true that the Soviet

government prioritized oil production in the Russian Soviet Federative Socialist Republic (RSFSR) -- particularly when it switched from coal to oil as its major energy source in the 1950s and 1960s (Lydolph and Shabad 1960)[7] -- because these fields were both cheaper to exploit and more accessible to lucrative export markets in Western Europe (for details see Goldman 1980), Russia is not the only former Soviet republic in which the petroleum industry has a long history. In fact, Azerbaijan, has had a much longer history. The world's first oil well was drilled in 1848 near its capital (Baku) at Bibi-Heybat,[8] and by the late 1800s, Azerbaijan had become one of the world's leading suppliers of oil, successfully challenging Standard Oil's international grip on oil production at end of the nineteenth century (Nassibli 1998, Yergin 1991).[9] The Bolshevik Revolution and Azerbaijan's subsequent annexation into the Soviet Union in 1922 interrupted oil production around Baku, but output surged once more during World War II when Azerbaijan generated almost 75% of the Soviet Union's total production (Wakeman-Linn 2004, 8). Oil was discovered much later in Kazakhstan and Uzbekistan[10] -- at the end of the 19th century in Western Kazakhstan (Tasmagambetov 1999) and the Fergana Valley (Sagers 1994), respectively -- albeit still prior to the Bolshevik Revolution in 1917.

While it is also the case that Azerbaijan and Kazakhstan contributed a mere pittance to total Soviet oil production prior to independence,[11] this did not necessarily translate into a dearth of local expertise or *neftiyaniki* (oilmen). Many of the chief experts in the Soviet oil industry

[7] At this time, the Soviets also switched their emphasis from the Caucuses and Caspian region to the Volga-Urals region and to newer fields in Western Siberia (IMF 2003, Wakeman-Linn 2004, 8).
[8] Oil was known to exist in Azerbaijan for several centuries prior because of its widespread use in religious practices and medical applications (for details, see Nassibli 1998, Mir-Babayev 2002).
[9] According to Sagers (1994, 268), Baku's output accounted for half of the world's oil production in 1900.
[10] In Uzbekistan, oil was initially mined for kerosene in the 1880s, which was then used as fuel in the cotton processing factories and dairies in Andijan, Kokand, and Tashkent.
[11] Azerbaijan produced less than three percent and Kazakhstan produced just under six percent (World Bank 1993, 8). Uzbekistan was a net importer of oil, but the USSR's third largest producer of natural gas, most of which was either consumed domestically or exported to the other Central Asian republics (Pomfret 2004).

came from Azerbaijan. In fact, Vagit Alekperov -- the president of Lukoil, Russia's largest private oil company and largest producer of oil since its creation in 1993[12] -- was born in Baku and educated at the Azerbaijan Oil and Gas Institute. Those who either remained in or returned home to their native Azerbaijan after independence make-up the core management in the state oil company SOCAR (CITE interviews!!!). Kazakhstan also inherited its share of oil sector expertise -- enough, at least, to warrant the popular claim that "the Kazakhs have always been the *neftiyaniki*" in Central Asia whereas "the Uzbeks are the *vodniki*" (water people).

In any case, the availability of experts in the oil industry does not seem to have affected the choice of ownership structure, either in Russia or more broadly. As described in Chapter five, the beneficiaries of Russia's privatization process were not solely *neftiyaniki* but also bankers with little on no knowledge of the industry. If one looks at the pattern of ownership structure over the course of the 20th century, moreover, it suggests that domestic expertise is correlated with state ownership and the emergence of a powerful state oil company (hereafter, SOC) rather than with privatization to domestic owners.

Second, there is considerable variation in both the size and the degree of concentration of proven reserves across these four countries. Based on Western conservative estimates of oil reserves prior to the USSR's collapse (i.e., rather than Soviet estimates), about 85 percent were within Russia, 9 percent in Kazakhstan, 2.3 percent in Azerbaijan, 2 percent in Turkmenistan and 1 percent in Uzbekistan (Sagers 1994). Thus, Kazakhstan, Azerbaijan, Turkmenistan and Uzbekistan combined comprised only 13.5-14 percent of the USSR's "claimed explored reserves" (ibid). This is, of course, due in large part to the greater degree of exploration that took place in the RSFSR during the Soviet period. Estimates of "probable reserve additions" that

[12] Another private oil company that has since been dismantled -- Yukos -- overtook Lukoil briefly from 2002-2004 as the country's largest producer of oil.

emerged after it becomes independent in the early 1990s put Kazakhstan's at 12 billion barrels -- the same level as the United Kingdom and Qatar -- and around 20th place in the world (Sagers 1994). At this time, Azerbaijan as well as Uzbekistan were also suspected to have substantial "reserve additions" worthy of exploitation (ibid). That these estimates were taken seriously is evidenced by the influx of foreigner oil companies into Kazakhstan and Azerbaijan in numbers that rivaled and then surpassed the number in Russia (Jones Luong and Weinthal 2001).[13] Thus, size alone does not seem to account for either greater foreign interest or attempts at state control.

The variation in concentration of reserves also does not seem to affect the choice of ownership structure. On a scale from least to most concentrated, Azerbaijan is at the far end of the spectrum since its reserves are all located in the Baku region and primarily offshore. During the Soviet period, most of Azerbaijan's oil production was largely concentrated on-shore along the Absheron peninsula and off-shore in the shallow water oil complex known as *Neft Dashlari or Oily Rocks* that was constructed in 1947 (e.g., Hoffman 2000, Rach 2004).[14] This site -- extending more than 40 kilometers into the Caspian -- produced over half of Azerbaijan's total crude oil at independence (Hoffman 2000, 6). According to the conventional wisdom, then, this would suggest not only state ownership, but also the greatest degree of state control. However, Azerbaijan opted for S_2 -- state ownership with the lowest degree of state control. The others, moreover, are all near the middle of this spectrum; and yet, they each adopted very different forms of ownership structure. Russia's on-shore reserves are spread across more than a dozen regions (or republics),[15] although the bulk are concentrated in West Siberia. Similarly,

[13] Uzbekistan also received a fair share of foreigners interested in exploiting its reserves. See chapter four for details.
[14] This complex extracts oil from the shallow water portion of the Absheron geological formation.
[15] These include: the Tyumen, Khanty-Mansiysk, Yamal-Nenetsk and Novosibirsk Regions in West Siberia, the Orenburg and Saratov Regions and the Republic of Udmurtia in the Volga-Urals region; Irkutsk Region in East Siberia; and Sakhalin in the Far East.

Kazakhstan's on-shore reserves are largely in the western part of the country, but spread across five of its nineteen subnational units (regions),[16] one of which is located in the south-central part of the country. Both countries also have significant off-shore reserves in the Caspian Sea (ADD DETAILS IN FOOTNOTE!!!). Uzbekistan's reserves are located in two distinct parts of the country -- the Fergana Valley region and the Aral Sea basin.

Third, the petroleum reserves in these four countries also vary in terms of their "quality" and difficulty of extraction -- two factors which are often highly correlated. The petroleum reserves in Kazakhstan's largest on-shore field (Tengiz), for example, both have a high sulfur content and are very deep (ADD CITE!!!). These factors are also commonly associated with the need for high levels of foreign investment to provide the necessary capital and technology. But here again, the structural features of the oil sector alone do not tell the whole story. At first glance, Azerbaijan and Kazakhstan are probably tied for having reserves that are the lowest in quality and most difficult to extract. And indeed, both opted for a high level of foreign involvement. Yet, they opted for a different form of ownership -- state versus foreign, respectively. Considering the preference rankings over ownership structure, if the difficulty of extraction is the primary factor influencing ownership structure then it is especially curious why Kazakhstan chose P_2 -- private foreign ownership. A closer look at the variation in the difficulty of extracting petroleum reserves across the FSU, moreover, suggests that Russia is most in need of investment in advanced technology. Not only has the "easy oil" already been extracted from fields in western Siberia and the Volga-Urals region, but the largest projected source of future reserves -- offshore in the Far East (i.e., Sakhalin Island) -- is considered a challenge for even the large multinational oil companies (CITE INTERVIEWS!!!). Nonetheless, Russia chose to

[16] Note that the number of regions was reduced to fourteen in 1995. See Jones Luong 2003 for details.

privatize its oil sector to domestic actors and, as detailed in Chapter five, has actively sought to limit foreign investment in Sakhalin.

Finally, with the exception of Russia, at independence none of these countries had existing pipelines that provided ready-made access to foreign markets.[17] On the one hand, this might lend support to the widely accepted view that Russia was able to privatize because it did not require the same degree of investment in infrastructure that would require foreign capital. It does not help explain, however, why the other three former Soviet republics chose very different structures of ownership. On the other hand, a network of pipelines linking producing fields to international markets should facilitate maintaining state ownership with control.

So, what then explains the divergence in petroleum sector development strategies across the former Soviet Union? We argue that these countries adopted different ownership structures because the leaders of each state faced a different ratio of resources (R) to costs (C) in terms of their ability to stay in power and responded accordingly. In other words, interaction between the degree of alternative revenue and level of conflict over the basis for dispensing political and economic patronage in each country also diverged. Uzbekistan's leaders chose to maintain state ownership and minimize the role of foreign companies (S_1) because they enjoyed a high degree of alternative revenue and a low level of distributional conflict. Like Uzbekistan, Russia's leaders inherited a high degree of alternative revenue; yet, they also faced a high level of distributional conflict, and thus, chose to privatize their petroleum sector and minimize the role of foreign companies in this process (P_1). In contrast to both Uzbekistan and Russia, the state leaders of Azerbaijan and Kazakhstan were both bequeathed low degree of alternative revenue. Their respective levels of distributional conflict, however, diverged: low in the former and high

[17] Only Russia and Azerbaijan inherited an integrated (domestic) pipeline system connecting the major oil-producing regions with refineries.

in the latter. Thus, Azerbaijan's leaders chose to maintain state ownership and to invite a large and direct international role in the development of their petroleum sector (S_2), while Kazakhstan's chose to privatize their petroleum sector to foreign investors (P_2).

In the remainder of this section we demonstrate, first, that the degree of alternative revenue and the level of distributional conflict in each state varied in the ways specified above; and second, that these differences in domestic conditions directly influenced their respective leaders' decisions to adopt divergent structures of ownership.

Degree of Alternative Revenue

The Soviet system of economic specialization and interdependence left its newly independent successor states with varying degrees of access to alternative sources of export revenue. Those states that produced commodities that depended on basic inputs from other former Soviet republics, were intended primarily for inter-republican trade, and/or required huge capital investments, for example, were greatly constrained in their ability to develop these goods following independence -- particularly at a quality that was suitable for export outside the FSU.

High: Uzbekistan and the Russia Federation

Uzbekistan and Russia both inherited an economic resource base that provided an alternative source of export revenue to the petroleum sector. In the former state, this consisted of a well-developed agricultural sector, particularly cotton, and in the latter state of a large industrial sector and diversified economy. First of all, they each possessed the necessary inputs to produce their respective export commodities independently. Uzbekistan internally manufactured most of the basic inputs for the production and harvesting of cotton. During the Soviet period, it relied much less on inter-republic exchanges to sustain this sector than any other

Central Asian republic, including Kazakhstan (Weinthal 2002).[18] Similarly, Russia retained a large and well-developed industrial base, for which the most important inputs (e.g., cheap energy) were located on its own territory. Although Russia was the largest trading partner for all republics in the last few years of the Soviet Union, its economy was among the least dependent on the other republics for imports and exports (Kaufman and Hardt 1993, 135-36). It was also the most negatively affected by continued trade with the former Soviet republics, since it had the most to gain economically from shifting its main exports within the Soviet Union -- energy, metals, and manufactured goods -- to markets outside the former Soviet Union where it would receive their full world market value (ibid, 169).

Second, at independence each state could generate a disproportionate share of state revenue from the production and export of agricultural and industrial goods, respectively. Uzbekistan provided the bulk of the Soviet Union's cotton supply. Its cotton sector produced more than 65% of its gross output, consumed 60% of all resources, and employed approximately 40% of the labor force in the mid-1980s. Uzbekistan also accounted for about two-thirds of all cotton produced in the Soviet Union (Rumer 1989, 62). Nor did it need to secure immediate or large capital investments to export cotton. Thus, at independence, Uzbekistan became the world's fourth largest producer of cotton (World Bank 1993b). In the late 1980s, Russia alone accounted for more than half of the USSR's total industrial output, which included the largest republican production volume of metallurgy, machinery, chemicals, and construction materials, as well as fuels and electric power (Kaufman and Hardt 1993, 91). Due to its sheer size and diversity, this sector alone served as a viable source of additional revenue from exports following

[18] The exception here, of course, is water, for which they depended on Kyrgyzstan and Tajikistan. Yet the introduction of new borders did not fundamentally disrupt the flow of water from the upstream states, Kyrgyzstan and Tajikistan, to the downstream states, Turkmenistan and Uzbekistan; rather, it led to a series of agreements reinforcing the Soviet-era practice of bartering water for energy (Weinthal 2002).

the USSR's collapse, as well as from privatization and foreign investment (e.g., Dabrowski and Antczak 1996, World Bank 1992).

Third, both states were able to secure a viable export market for their respective commodities immediately after independence. During the Soviet period, cotton production in Uzbekistan was an important source of hard currency for Moscow, which paid well below market value for Central Asian cotton and then resold it abroad at market prices. Following the Soviet Union's collapse, Uzbekistan was easily substituted its reliance on Moscow as the "middleman" with foreign buyers, since those who had traditionally bought Soviet cotton from Moscow instead began to conduct business with Uzbekistan's new leaders directly. Thus, in 1991 cotton already comprised approximately 84% of Uzbekistan's foreign exports, and by 1992 provided over three-quarters of its total export revenue alone (International Monetary Fund 1992, 2; World Bank 1993b, 24). Russia's industrial sector provided a similarly strong base of foreign exports in the early 1990s. Many industrial enterprises had already formed their own trade links under the 1987 Law on State Enterprises, which facilitated the transition from intra-republican trade to extra-republican trade after independence (Dabrowski and Antczak 1996). Indeed, although Russia's industrial production fell sharply in the first few years after independence, its exports of raw materials, minerals, metals, chemicals, and other manufactured goods to non-CIS countries grew dramatically after 1993 (Illarionov 1994; Ofer 1999).[19] By 1994, metals and chemicals alone made up approximately 40% of all foreign (i.e., non-CIS) exports -- nearly the same percentage as mineral products (Goskomstat 1996).

Low: Azerbaijan and Kazakhstan

[19] Foreign exports declined slightly from 1990-1992 and then began a steady climb in 1993. Since 1991 only the Baltic states have had a higher trade liberalization index and reorientation indicator than Russia (Kaminski 1996, 399).

Azerbaijan shares with Kazakhstan the lack of a viable alternative to petroleum as a primary source of export revenue. At independence, neither country produced either an agricultural crop or manufactured good that it could use to generate hard currency earnings. Oil production was Azerbaijan's primary contribution to the Soviet economy. Although it produced cotton during the Soviet period, this was a minuscule amount of the USSR's total output (7%) in comparison with Uzbekistan (62%) and Turkmenistan (15%) (Gleason 1990).[20] Moreover, after independence, both Azerbaijan's small agricultural and industrial sectors required large capital investments and significant restructuring before either could compete on the world market (e.g., Hoffman 2000). These economic problems were compounded by a prolonged war with neighboring Armenia, which caused a virtual halt in production and drained any excess revenue from these two sectors. In Kazakhstan, agriculture was the second largest economic sector as of 1991, contributing 36% of its net material product (NMP) and employing 18% of the labor force (World Bank, 1993a, p. 130). Yet agricultural products accounted for only between 8 and 10% of total export revenues, ranking far behind projected income from petroleum exports (World Bank 1994a, 20, 1993a, 106). In the Soviet system of economic regional specialization, Kazakhstan was designated a main producer of grains, especially wheat, over 80% of which was intended for distribution within the former Soviet Union rather than for export (World Bank 1994a, 20). Approximately 82% of the 220 million hectares of agricultural land in Kazakhstan are grazing lands, pastures and rangeland; the remaining 35 million hectares are cultivated primarily for grains. Thus Kazakhstan lacked a well-established system of foreign buyers outside the former Soviet Union for its wheat.

[20] Its primary agricultural product since the 1970s was not cotton, but grapes, the production of which declined in the 1980s under Gorbachev's anti-alcoholism campaigns.

Nor did Kazakhstan's mineral sector provide it with a viable alternative to developing its petroleum sector. With independence, Kazakhstan inherited significant deposits of minerals, copper, lead and gold. As part of the Soviet Union, it possessed 90% of the total chromium reserves, produced 18% of the iron ore, and was the largest copper producer, placing it tenth in the world after the Soviet Union's collapse (World Bank 1993a, 125). However, unlike the agricultural sector in Uzbekistan, the mineral sector in Kazakhstan required huge capital investments up front to develop them for export. Minerals and mining centers are located predominantly in the northern and eastern *oblasts*, and under Soviet rule they were closely linked to the RSFSR, which received 60% of Kazakhstan's total mineral exports. Even with large reserves of iron ore, the grades were low to mediocre, and as a result, their long-term comparative advantage in world markets was limited and entry costs for foreign investors were quite prohibitive (World Bank 1993a, 125). Finally, even those minerals and metallurgical industries that might enjoy a significant comparative advantage on world markets required investments in infrastructure to build basic transportation networks and repair others while also upgrading antiquated producing technologies (World Bank 1993a, 126). Thus Kazakhstan's mineral sector held much less promise and foreign interest than what were widely acclaimed as its immense oil and gas reserves. In fact, according to one expert, the international community "wrote-off Kazakhstan's mineral sector [long ago] as a bad investment" (Glen Catchpole, General Director, Joint Venture *Inkai* and President, Mining Association of Kazakhstan, personal communication, October 1999).

Level of Distributional conflict

Under the Soviet system, regionalism -- or identity with and loyalty to the region in which one studied, worked, and/or resided -- served as the primary basis for the dispensation of

political power and economic resources. Patronage networks based on regional affiliation developed over time and became institutionalized in the late 1960s and 1970s under Leonid Brezhnev (e.g., Jones Luong 2002, Clark 1989, Willerton 1992). Following independence, however, it became possible for other domestic cleavages to emerge and to challenge this regionally based patronage system. The most likely contender was nationalism, which many have argued was fostered throughout the Soviet Union by its administrative division into ethno-territorial units in which it designated a particular ethnic group as the titular nationality (e.g., Slezkine 1994).[21] Yet not all titular nationalities formed an absolute majority in their respective republics. Where they did form a majority, nationality did not sufficiently differentiate between the population to serve as an appropriate basis for dispensing patronage, since virtually everyone would be eligible for the same amount of political and economic resources. Where they did not form a majority, demands for the dispensation of patronage based on national distinctions were much more likely to provide a source of political mobilization for titular and non-titular nationalities alike (e.g., Jones Luong 2002).

Low: Uzbekistan and Azerbaijan

Uzbekistan and Azerbaijan both experienced a low level of distributional conflict in the first several years after independence, since neither faced any direct or significant challenges to regionalism as the basis for political and economic patronage (Jones Luong 2002; Hoffman 2000; Kechichian and Karasik 1995; Suny 1993). First, in both states the titular nationality -- Uzbeks and Azeris, respectively -- formed an absolute majority. In 1989, Uzbeks made up 71% of Uzbekistan's total population, and their presence vis-à-vis other nationalities increased after

[21] The notion that cleavages based on nationalism were more likely to emerge in the former Soviet Union is also consistent with the theory of collective action, which suggests that those seeking to organize will do so based on preexisting forms rather than by creating wholly new ones.

independence (Pomfret 1995, 5; Ochs 1997, 333). The titular nationality of Azerbaijan -- Azeris -- constituted an absolute majority of the population in the late 1980s and its dominance increased after independence, as the war in Nagorno-Karabakh drove out Armenians and spurred an influx of Azeris from neighboring republics (Kaiser 1994; USEIA 1998).[22]

Second, neither witnessed the emergence of social movements and/or political parties based on an alternative cleavage structure, including nationalism.[23] The leaderships of both countries moved fairly quickly to establish a politically repressive environment in which the central government formed its own successor to the Communist Party and used it to bolster existing regionally based patronage networks (Jones Luong 2002; Curtis 1995, 130-131).[24] Two vibrant opposition movements did emerge in Uzbekistan shortly after independence -- *Birlik* (Unity) and *Erk* (Freedom). Yet neither was based on national affiliation; rather, they garnered support along regional lines. Moreover, since 1992, both groups have been brutally suppressed (e.g., Fierman 1997; Jones Luong 2002). As a result, Uzbekistan's leaders faced very few demands for either greater autonomy or more resources based on nationality. Azerbaijan might seem somewhat of an exception here in that it did witness the emergence of a Popular Front that called for revitalizing the Azeri language and a secessionist movement in the Armenian enclave of Nagorno-Karabakh in the late 1980s. Yet neither directly competed with or threatened regionalism. President Heydar Aliev's political successes, for example, have been attributed to his origins in Nackhichevan, the most prominent region in the country, and his support from

[22] In 1989, Azeris represented 82.7% of the country's population; by 1997, their number increased to approx. 90%.
[23] Some might argue that the one exception here is the Islamic Renaissance Party (IRP). Yet, since Uzbeks and Turkmen are predominantly Muslim, religion also did not serve as a viable alternative to regionalism. In fact, the IRP was itself a regionally based party; its supporters were concentrated in the Namagan and Andijon Oblasts.
[24] These successors are the Peoples' Democratic Party of Uzbekistan and the Azerbaijani Communist Party "revived" by Heydar Aliev in 1993.

several "semi-democratic movements" is based on regional affiliation (Curtis 1995; Hoffman 2000; Kechichian and Karasik 1995).

High: Kazakhstan and the Russian Federation

In contrast, Russia and Kazakhstan faced a high level of conflict over the continuation of a regionally based patronage system. First, at independence, the ethnic composition of each former Soviet republic increased the potential for nationalism to emerge. In Kazakhstan, this consisted of the combination of near ethnic parity between Kazakhs and Russians along demographic lines and their division along geographic lines. Ethnic Kazakhs represented less than half the population in their titular state and were located primarily in rural areas and in the southern and western parts of the country. Russians and other Slavs comprised the other half of the population and were located primarily in the major cities and in the north along the border with Russia. Economic factors contributed to the salience of these ethnic divisions. On the one hand, the fact that northern Kazakhstan is tied to Russia economically reinforced its dual ethnic and political allegiances. On the other, the cotton economy in the South is connected more closely to the other four Central Asian states (e.g., Jones Luong 2002; Olcott 1993).

Russia inherited a similarly complex demographic situation in which no one nationality (or ethnic group) is absolutely dominant. Although Russians constituted 81.5% of the Russian Federation's entire population in 1989, ethnic minorities formed a majority in ten of the country's autonomous republics (*First demographic portraits of Russia* 1993, 24).[25] Moreover, the division of Russia into several administrative-territorial units based on nationality under Soviet rule created and reinforced a strong coincidence between national (or ethnic) identity and territory in these regions and several others.

[25] In the early 1990s the Russian Federation consisted of 89 constituent units, including 21 republics, 49 regions (oblasts), 6 territories (krays), and 10 autonomous districts (okrugs).

Second, before and after independence, both countries witnessed several social movements and political parties based on nationality. In Kazakhstan, several movements and parties representing ethnic Russians and other Slavs were founded in the northern and eastern *oblasts*, while those representing Kazakhs were formed in the southern and western *oblasts*.[26] Moreover, most of these organizations established their headquarters in the capital at the time (Almaty), where they could voice their demands directly to the Kazakhstani government or simply attract attention to their cause. Some Russian "nationalist" parties and movements, for example, called for the annexation of Kazakhstan's northern and eastern *oblasts* to Russia, or demanded outright secession from Kazakhstan; others claimed their right to greater political and economic autonomy within Kazakhstan. Meanwhile, Kazakh "nationalist" parties and movements called for greater linguistic and institutional privileges for Kazakhs, such as elevating the status of the Kazakh language over Russian and filling governmental posts with Kazakhs (Jones Luong 2002; see also Olcott 1993 and 1997).

Similarly, after independence Russia experienced a high level of distributional conflict between: 1) regional cleavages based on the country's primary administrative-territorial divisions and; 2) divisions based on nationality.[27] In the early to mid-1990s, these two cleavages often intersected in the form of separatist regional (*oblast*) and district (*okrug*) leaders who launched a drive for secession or greater autonomy based on ethnic and territorial claims (e.g., Gorenburg 1999; Lane 1999; and Treisman 1997). Many such movements have been in those areas which possess significant oil and gas reserves, such as the Republics of Bashkortostan, Chechnya,

[26] Russian and Slavic groups included the Cossacks of Uralsk, *Edinstvo* (Unity), Organization for the Autonomy of Eastern Kazakhstan, *Russkaya Obschina* (Russian Community), *Lad* (Harmony), and the Society of Slavonic Culture. Kazakh movements included *Alash*, *Azat* (Freedom), and Zheltoksan (December).
[27] Regional cleavages here are used to connote both administrative boundaries corresponding to republics and oblasts within the Russian Federation.

Komi, and Tatarstan, Tyumen Oblast, and Khanty-Mansi Autonomous Okrug, wherein regional- and district-level governments have demanded a greater degree of control over these reserves and/or used their petroleum wealth as a basis for threatening secession.

Domestic Conditions and Ownership Structure

Did state leaders in Uzbekistan, Azerbaijan, Russia and Kazakhstan choose to adopt divergent ownership structures over their petroleum resources in response to the different set of domestic constraints documented above? If this is indeed the case, there should be a direct link between these strategies and their ability to retain their hold on power.[28] In other words, leaders in each of these five states should have adopted an ownership structure that supplied them with sufficient resources to bolster the cleavage structure that provided their primary base of support and appease or defeat rival cleavages that posed a challenge to their rule. More specifically we should find that: 1) the forms of state ownership adopted in Uzbekistan and Azerbaijan (S_1 and S_2, respectively) provided government officials with the financial as well as political means to sustain or reinforce regionally based patronage networks; and 2) the forms of privatization adopted in Russia and Kazakhstan (P_1 and P_2, respectively) enabled them to simultaneously bolster their regional support base and adequately respond to new claims on state resources from emergent nationalist movements.

In Uzbekistan, maintaining full state ownership of oil and gas reserves with only minimal foreign involvement was essential to the preservation of their status quo support base. In other words, a gradual approach to petroleum sector development ensured the continued economic dominance of the agricultural sector, particularly cotton, which is integrally tied to the regionally based patronage system. Under the Soviet system, cotton production served as the crucial

[28] There are several ways to ascertain the validity of this proposition. However, limited space allows us to explore only a single, albeit significant, empirical implication here for each case.

economic and political link between republic-level and regional-level elites on the one hand, and between regional elites and their local constituencies on the other (Weinthal 2002). To even begin to dismantle this sector would threaten the very foundation of state-societal relations, which depended on a delicate balance of power between the regions themselves. Moreover, since cotton cultivation is extremely labor intensive, shifting away from agriculture would increase unemployment, and hence also jeopardize the social and political stability that state leaders are eager to maintain (e.g., Gleason 1990, Weinthal 2002).[29] This sheds light on state leaders' reluctance to develop the petroleum sector simultaneously, since oil and gas production had the potential to displace agriculture as the basis for determining the distribution of political and economic rewards among regions. In fact, for this very reason, the central government encountered strong resistance to comprehensive petroleum sector development from both the Ministry of Agriculture and governors of cotton-producing regions after independence (TACIS representatives and Director and Academicians at Uzbekistan's Strategic Institute, personal communications, February 1997).

In Azerbaijan, state ownership ensured that traditional patronage networks were not disrupted, while the substantial involvement of foreign companies in Azerbaijan's petroleum sector provided the financial means to continue to dispense political and economic rewards accordingly. Similar to cotton in Uzbekistan, oil production has historically overlapped with political and economic influence in Azerbaijan. Moreover, the fact that the oil is located in the capital city, and not any particular region or regions, makes oil and the state so closely intertwined that the regional group that controls the oil also controls the state (Hoffman 2000). Privatization would have threatened this long-standing link between state leaders and regional

[29] This was the rationale for delaying the mechanization of agriculture under the Soviet period.

patron-client networks and, more importantly, undermined the dominance of the Yeraz and Nakhichevan regional elite, which are tied directly to the Azerbaijani President Heydar Aliev himself. Indeed, the State Oil Company of the Azerbaijani Republic (SOCAR) plays a fundamental role in ensuring that the state maintains control over the distribution of resources through existing patronage networks and hence in solidifying these regional groups' dominant position (Hoffman, 2000). The direct role of foreign companies in developing Azerbaijan's oil sector greatly facilitates this not only by providing desperately needed investment in the country's dilapidated oil industry, but also by channeling investment dollars directly into the central government's hands for redistribution at its sole discretion.

In the Russian Federation, privatization with only minimal foreign involvement enabled the central government to appease the demands and hence garner the support of both regional and nationalist leaders. In essense, this meant simultaneously providing regional governors, particularly the nationalist ones, with greater control over their petroleum reserves and regional industrialists with cheap energy to ensure continued production (e.g., Rutland 1997, 13). State divestiture in the petroleum sector made it possible for the central government to transfer ownership to regional governments and thus to guarantee them privileged access to revenue from oil production within and export from the territory under their administration. The absence of foreign competition in the bidding process to purchase previously state-owned shares in oil and gas enterprises, not to mention its lack of transparency, also enabled the central government to transfer ownership to its chosen "insiders" and/or close supporters, despite limited domestic capital, since petroleum reserves could be significantly undervalued. At the same time, the central government knew that it could more successfully "persuade" domestic companies than their foreign counterparts to continue to provide cheap energy to industry, often in exchange for

tax breaks and privileged export access (Jones Luong 2000a). Indeed, this helps to explain why Russia pursued what is seemingly an irrational economic policy. Although foreign involvement would have undoubtedly increased the selling price of Russia's oil and gas industry and improved its productive capacity through the introduction of new technologies, state leaders opted to forgo a greater financial payoff for political gain -- i.e., sustaining domestic support.

Similarly, the extensive role of foreign companies in Kazakhstan's petroleum sector privatization provided the necessary means to bolster the position of regional leaders as well as to address the demands of potent nationalist groups. Patterns of foreign investment reflect the government's conscious desire to maintain socioeconomic stability and political support in the regions. Kazakhstan's leadership not only has deliberately sold off oil and gas companies in those regions that have been hardest hit by the Soviet Union's demise, but also has expected foreign companies to assume full social and economic responsibility for the well-being of these regions (Representatives from British Gas, Chevron, Hurricane Hydrocarbons, Kazakh Caspishelf and members of OKIOC, personal communications, March and December 1997). The widespread practice of foreign companies assuming social costs at the local and regional levels has served not merely to relieve the government of its fiscal burdens in the regions, but to overcome the initial opposition to privatization from regional leaders and oil and gas enterprise managers. In fact, central authorities continually reassured both these groups that they would benefit directly from privatization, promising that the foreign companies would supply the necessary technologies to increase output, rebuild infrastructure, and in many cases guarantee employment and the payment of back wages (Jones Luong 2000b). Privatization has also served as a tool to acquire large sums of immediate cash and discretionary funds with which to counter nationalist forces. A particularly salient example here is the direct use of proceeds from oil and

gas industry sales to finance construction of the new capitol in Astana, which most experts agree is a major part of the government's effort to block secessionist movements in the Russian-dominated North and East (Jones Luong 2000b).

Explaining Ownership Structure in Petroleum Rich Countries

While the Soviet successor states provide compelling evidence to support our claim that ownership structure is the product of the interaction between the degree of alternative revenue and the level of distributional conflict that state leaders face, this alone is not a sufficient test of our hypotheses for several reasons. First, because a relatively short amount of time has passed since these countries gained control over their petroleum resources, we can only use their initial ownership structure over their petroleum resources (hereafter, initial development strategy) to test our hypotheses.[30] Second, while the fact that Azerbaijan, Kazakhstan, Russia, and Uzbekistan chose their respective ownership structure within the same international context allows us to control for the influence of the international environment and diffusion for these four cases, it does not fully test these crucial alternative explanations. A more robust test requires looking across various types of international environments (i.e., beyond a single type of international environment). It may be, for example, that the post-Cold War context is fundamentally different from other historical periods because it promotes policy divergence whereas other contexts (such as the period after OPEC is founded) are more likely to promote convergence. Finally, the small number of cases is conducive to establishing a high degree of *internal* validity for our argument through the use of original field research, other primary sources, and careful process-tracing, but not *external* validity.

[30] With the exception of Uzbekistan in 2003 and Russia in 2005, none of these countries have changed their initial ownership structure. This conforms to the global pattern we identify, which suggests that countries seldom change their ownership structure. Indeed, there are often long stretches of time (e.g., several decades) between changes.

To address all of these concerns, we constructed an original, cross-national dataset that includes the universe of cases -- i.e., all petroleum rich countries in the developing world from the time they adopted an initial development strategy vis-à-vis their petroleum secrtor through 2005 -- based on secondary sources.

The Dataset

To claim that our dataset includes the universe of cases, of course, demands some clarification, since which countries are included depends on one's definition and/or measure of what constitutes both a "petroleum rich country" and an "initial development strategy."

The standard and largely uncontested measure for petroleum (as well as mineral) wealth is exports as a percentage of total exports and/or government revenue. Once countries reach the 40 percent benchmark -- that is, once oil (or any other mineral) makes up 40 percent or more of either their total exports or total government revenues -- they are deemed "resource rich." We do not use this measure because we find it to be highly problematic. First and foremost, it deliberately conflates resource abundance with resource dependence. Yet, the two are distinct -- the former is "pure chance" while the latter is "at least in part, *a policy outcome*" (Dunning 2005, 275). Treating them otherwise, moreover, creates an inherent bias toward the presumption that there is a "resource curse" since analytically most problems associated with resource wealth actually stem from the hegemony of the mineral sector and its consequent influence on a given country's economy, political system, etc.. This, in turn, limits the number of cases and precludes the incorporation of developed countries alongside developing ones. As a result, there are automatically less "exceptions" or "success stories" in most databases of mineral-rich countries.

We use a measure of "petroleum rich" that distinguishes *wealth* from *dependence*. Thus, our database includes countries based on the size of a country's estimated petroleum reserves

over time relative to other countries with estimated petroleum reserves.[31] In order to do this, we created three different lists utilizing the *Oil and Gas Journal Database*[32] from 1952-2006: 1) country's position from averaging world rankings; 2) country's position from averaging quantities; and 3) country's position from weighting quantities.[33] (See Appendix 1 for details.) We then included those countries that were within the top 50 on two of these three lists. This enabled us to include several countries (e.g., India and Syria) that are not usually considered petroleum rich because they are not oil dependent as well as to exclude countries (e.g., Cameroon) that are usually considered petroleum rich solely because of their dependence on oil. We used estimated rather than proven reserves so as *not* to exclude those cases in which reserves might be sizable but little exploration has been under taken. We do this in order to avoid privileging any one form of ownership structure. For example, it allows us to separate the level of exploration, which is often highly correlated with the level of foreign involvement, from our measure of resource wealth.

As described in the Chapter three, we disaggregate the dependent variable (ownership structure) into four discrete categories -- state ownership with control (S_1), state ownership without control (S_2), private domestic ownership (P_1), and private foreign ownership (P_2) -- in order to capture the variation in both ownership rights over petroleum resources and the actual locus of decision-making power over their development (i.e., exploration and production). To

[31] We had initially considered using the average size of reserves per capita based on DOE estimates, but decided against this for two reasons: 1) these data are only available from 1980, thus biasing our sample towards the latter half of the 20th century and 2) during this period, population growth rates skyrocketed, thus biasing our sample toward countries with lower than average population growth. For example, by this criterion, Nigeria, Indonesia and even China, would all be considered petroleum poor countries while Belarus, Chile, and New Zealand would be considered petroleum rich.

[32] This database is preferable to the other available sources, including the Department of Energy (DOE)'s database, because it extends the furthest back historically and is widely accepted in the industry as authoritative. In fact, the DOE relies heavily on this database to compile its own.

[33] The averages either by reserve or rank are simple averages. The weighted averages take into account that fact that different countries discovered their oil at different times and hence the numbers of years that we use to average them are different. Thus, the number of years is used as a weight.

code each country's ownership structure, we rely on their respective constitutions, official laws and regulations governing the mineral sector, and mineral contracts between the state and corporate entities (foreign and domestic) operating in the oil and gas sector.

But how do we determine when a country has actually chosen an ownership structure over their petroleum resources -- i.e., their initial development strategy? In other words, what determines the start date for each country included in the dataset? Considering the fact that most many of these countries were under colonial rule when they began to explore for and/or first discovered their petroleum wealth, this is not always self-evident. It often requires deeper probing than simply recognizing the first mineral sector law adopted after gaining independence, which might also have the disadvantage of privileging path dependency as an explanation. Indonesia -- where the Dutch had produced oil since the founding of the Royal Dutch Company in 1890 -- is a prime example. Although Indonesia officially became independent in 1949[34] and then maintained existing concessions until they expired by the mid-1950s, President Sukarno did not sign a new oil and mining law establishing state ownership without control until 1960 (Carlson 1977, 11-12).[35] There might also be a lag between independence and the adoption of an initial development strategy due, for example, to the exigencies of civil war, as was the case in Angola.[36] Determining the starting point for those countries that were not colonies when they began to explore for and/or first discovered their petroleum wealth can also be tricky. In many of these cases (e.g., Argentina, Peru, and Venezuela), states had broad laws governing concessions that were never intended to apply to petroleum (e.g., Wilkins 1974, Thompson 1921, and Lieuwen 1954). In others (e.g., Brazil, Ecuador, and Equatorial Guinea), no laws were actually

[34] Note that Indonesia actually pronounced independence from the Dutch in 1945, but they refused to recognize it until transfer of sovereignty in 1949.
[35] Sukarno appointed a commission to draft an oil and mining law in 1951 (ibid).
[36] Angola becomes independent in 1975, but does not have an oil development strategy (S_2) until 1978.

formulated but licenses for petroleum exploration were issued and then remained inactive for years and sometimes decades (e.g., Bates 1975, Martz 1987, and Frynas 2004).

To address these issues, we determine a country's initial development strategy vis-à-vis petroleum based on two criteria: the decision must be made both independently and deliberately. In other words, countries must be free of direct external interference in their policy-making process and their leaders must be conscious that they are in fact instituting such a policy. A key indicator of the latter, for example, is that when concessions are issued, they are actually monitored and/or there is some penalty for inactivity after a certain period of time. This criterion also applies to a change in strategy (i.e., ownership structure). At the same time, we want to avoid conflating a policy that is made deliberately with one that is immediately and/or successfully implemented.[37] Amending the constitution or passing a new law that signals the intent to alter current policy toward establishing one of the other three possible ownership structures, therefore, is sufficient to be considered a change in strategy. For example, we code 1951 as a change from P_2 (private foreign ownership) to S_1 (state ownership with control) in Iran because the parliament, under the guidance of newly-appointed Prime Minister Muhammad Mosaddeq, passed legislation that nationalized the country's petroleum reserves -- even though the Iranian government could never fully enforce this legislation (e.g., Daniel 2001, 150-51). Similarly, Mexico declared nationalization of its petroleum reserves in 1938, but it was not until 1951 that the state oil company (Petromex) was able to acquire the properties of the last foreign company (Gulf Oil Co.) still in operation (Meyer and Morales 1990).

The criteria for coding the explanatory variables -- the degree of alternative revenue and the level of distributional conflict -- in the dataset are the same as the criteria we used for the

[37] In other words, we are interested in explaining leaders' choice of ownership structure, rather than their ability to actually enforce this decision.

case studies in the previous section.[38] The degree of alternative revenue (**alt_revenue**) is coded "high" (i.e., given a value of "1") if: a) it has already developed a commodity or product for export that is viable without either immediate or substantial capital investment; and b) the export of this commodity or product is capable of providing a disproportionate share of total revenue in the status quoThe level of distributional conflict (**distr_conflict**) is coded as "high" (i.e., given a value of "1") if: a) there exists a cleavage structure that could function as a viable alternative to the current basis for dispensing patronage; b) political parties and/or social movements based on such an alternative cleavage have emerged and gained popular support; and c) these parties and/or movements have in fact made demands for greater resources, including secessionist attempts and/or claims for greater autonomy. In all other cases, both dummy variables are coded "low" (i.e., given a value of "0").

The key difference is that we were forced to rely on secondary rather than primary sources and to make inferences where there was insufficient information or hard data was simply not available. Where we needed information regarding export potential at the end of the 19th or beginning of the 20th century, for example, we could not rely on standardized indicators or data-gathering institutions (such as the IMF and World Bank), so we had to rely upon country data that was often based on self-reporting and given in local currencies, as documented by historians. Nonetheless, we made every effort to apply these criteria consistently across cases and across time. In order to ensure that our data is as accurate as possible, we cross-checked it with several secondary sources (when available) rather than relying on any one source.

To take into account the most salient alternative explanations, we included ten different control variables. (See Table 8.2 for a summary.) Two of these -- year and previous ownership

[38] Although we are interested not only in the independent effect of these two variables, but also in the *interactive* effect, we elaborate below as to why we did not use an interaction term.

structure -- are used primarily to take into account fixed effects. Four others serve as proxies for international level explanations: 1) international demonstration effect (i.e., policy diffusion), 2) regional demonstration effect, and 3) international market conditions. The remaining four are designed to capture arguments that emphasize path dependence, the country's overall economic development strategy, and regime type, respectively as the main causal factors. In each case, we attempted to code the variable so as to most accurately represent the explanation within the constraints of doing multinomial logistic regression with a relatively small sample size (n=2374). Some details concerning our rationale for including and coding each control variable, as well as their descriptive statistics, follow.

TABLE 8.2 ABOUT HERE

TABLE 8.3 ABOUT HERE

International Demonstration Effect (ide)

To control for the role of policy diffusion at the international level, we created a dummy variable that assigns countries a value of "0" if they adopted an initial development strategy *before* the formulation of the Organization of Petroleum Exporting Countries (OPEC) in 1960 and "1" if they did so *after* the formulation of OPEC. This serves as a good proxy for two related arguments that are often found (implicitly or explicitly) in the literature: first, that OPEC emboldened developing countries to nationalize their petroleum resources; and second, that state ownership is more prominent in the second half of the 20th century, whereas private foreign ownership is more prominent in the first half, because power shifted away from the foreign oil companies and toward the oil-exporting countries (ADD CITES!!!).[39] Another possible way to capture policy diffusion would have been to use the number of years between a given country's

[39] The founding of OPEC, of course, is viewed as emblematic of this power shift.

first strategy and that of the most recent country that had its first strategy before this particular country. But the gap between the two countries' strategies would indicate the "level" of the international demonstration effect and not the effect per se.

Regional Demonstration Effect (rde)

Policy diffusion occurs not only at the international level but also at the regional level. And, in fact, a more compelling case can be made for a regional demonstration effect -- particularly when it comes to foreign investment strategies and privatization (e.g., Brune and Garrett 2002). Therefore, we also include a control for regional demonstration effect. Each country was assigned to one of six regions: Africa, Asia, Europe, Latin and South America, the Middle East and North Africa (MENA), and North America. This index was then broken into 3 dummy variables: one for the MENA countries (**rde_me** = 1 if in MENA, 0 if not); one for Latin America (**rde_la** = 1 if in Latin or South America, 0 if not) and one for everything else. We use both **rde_me** and **rde_la** in the regressions because these are the two regions in which we see the strongest evidence of regional policy diffusion.

International Market Conditions

There are two features of the international marketplace for petroleum that are presumed to have an effect on ownership structure and, perhaps not surprisingly, they are closely related: the price of oil and the availability of technology. There are also two lines of argument concerning how each of these features affects state versus private (foreign) ownership.[40] On the one hand, higher oil prices enable countries to nationalize or maintain state ownership over their oil resources -- not only because the increased demand gives them greater leverage over foreign oil companies, but also because they can make the necessary investments (including purchasing

[40] As noted earlier, the existing literature equates private ownership with foreign ownership and does not distinguish between different levels of state control.

advanced technology) without direct foreign involvement (ADD CITES!!!). On the other, high oil prices are thought to signal that world oil supply has peaked, and hence, the need to develop more difficult fields that require the very technology to which only foreign oil companies have access, and thus, to force petroleum-rich countries to privatize their resources (ADD CITES!!!).[41] Given the close relationship between the price of oil and technology, we use the variable **oil_price** (in 2005 US dollars) to control for both.[42] In addition, oil price can serve as a proxy for the difficulty of extraction because, as the price of oil rises, so does the incentive to develop more problematic oil fields.

Path Dependency

Another probable alternative explanation is that ownership structures are path dependent. Initial development strategies, in particular, are likely to be influenced greatly by the colonial (or pre-independence) strategy. Since all colonial governments imposed the same ownership structure on their petroleum rich subjects -- private foreign ownership (P_2) -- to control for this, we include a simple dummy variable **for_colony** that takes on a value of "1" if the country in question was a former colony and "0" if it was not.[43] This variable also helps to control for the constraints imposed by colonial economic structures. In addition, we include the continuous variable **years_os** to capture the effect of the number of years that a given country has had a particular ownership structure in place.

[41] This line of argument is premised on the worldview (based on Hubbert's *Peak and Peak Oil*) that there is only very limited potential oil remaining and that this oil is much more expensive to exploit.
[42] This was widely suggested by experts at the DOE. We feel justified in doing this, moreover, because technology has actually changed very little, as compared to oil price which has fluctuated widely. The technology that is used today to conduct seismic surveys and drill offshore wells, for example, has been around since the 1960s and 1970s.
[43] Note: protectorates and mandates were treated as former colonies; North and South Yemen were treated as former colonies, but not unified Yemen.

Economic Development Strategy

Ownership structure might also be determined by the country's general economic development strategy. We would expect, for example, that countries that adopt a statist economic policy would also want to nationalize the petroleum sector -- either because it is consistent with their ideology of state-led development or because it is deemed necessary to fuel (quite literally) industrial growth. This variable (**eco_dev_stgy**) is also a dummy, for which a value of "0" indicates that the country had a statist (or closed) economic development strategy (e.g., adopted import substitution industrialization, nationalized industry, etc.) and a value of "1" indicates that the country did not have a statist (but rather, an open) economic development strategy.

Regime Type

Finally, we created a dummy variable to control for regime type (**reg_typ**) -- specifically, for whether or not a given country is a democracy. There are two main reasons for doing so. First, authoritarian regimes may be better positioned to centralize control over mineral reserves, given their arguably much lower levels of transparency and accountability. Second, one of our own explanatory variables -- distributional conflict -- might be highly correlated with regime type. In other words, it is widely accepted that democracies are likely to experience higher levels of popular mobilization. Based on POLITY (2004) indicators, the countries in our dataset are classified as non-democracies if they score between -10 and 0 and assigned a value of "0", and are classified as democracies if they score between 1 and 10 and assigned a value of "1".

<u>The Model and (Preliminary) Results</u>

As a first cut, we use the following model to test our hypotheses concerning the impact of alternative sources of export revenue and distributional conflict on ownership structure. Because

the dependent variable consists of four discrete categories -- one for each possible ownership structure (0 = S_1, 1 = S_2, 2 = P_1, and 3 = P_2) -- we use multinomial logistic regression.

$$\text{mlogit os} = a + b_1(\text{year}) + b_2(\text{prev\_os}) + b_3(\text{years\_os}) + b_4(\text{alt\_revenue}) + b_5(\text{distr\_conflict}) + b_6(\text{oil\_price}) + b_7(\text{eco\_dev\_stgy}) + b_8(\text{for\_col}) + b_9(\text{rde\_me}) + b_{10}(\text{rde\_la})$$

Overall, the results from this model specification lend strong statistical support to our main contention that domestic factors have equal if not greater influence on the choice of ownership structure in mineral rich states -- at least for the case of petroleum. (See Table 8.4) In particular, for each set of comparisons, our two primary variables of interest -- degree of alternative revenue (**alt_revenue**) and level of distributional conflict (**distr_conflict**) -- are in the right direction and significant where we would expect them to be.[44] We should find for example, that the likelihood of a country adopting state ownership without control (S_2) versus state ownership with control (S_1) increases when the degree of alternative revenue is low and the level of distributional conflict is high. Distributional conflict is significant throughout. Alternative revenue is not significant for the comparison between private domestic ownership (P_1) and state ownership with control (S_1) because a high degree of alternative revenue is associated with both outcomes.[45] Economic development strategy is also consistently significant and both former colony and Latin America are significant for two out of the three comparisons. In only one of the three sets of comparisons (P_1 versus S_1), however, are two of the variables controlling for international level effects significant. Both are in the direction that the conventional explanation

[44] Here, we include only the results for which the base of comparison is S_1, the category that not only has the largest number of observations and is theoretically most interesting, given the widespread assumption of state ownership with control. We find similar results regardless of which category is used as the base of comparison.
[45] It is also interesting to note that the red_ME variable drops out completely because there are simply no Middle Eastern countries who have adopted P_1. This in and of itself is telling since, according to our theory, P_1 requires both a high degree of alternative revenue and a high level of distributional conflict -- domestic conditions that are clearly absent in the Middle East.

for development strategies in mineral rich states would predict -- that is, the likelihood that a country will adopt P_1 versus S_1 decreases both if the country adopts its ownership structure after OPEC is formed and as the price of oil increases.

But, more importantly, what do these results mean substantively -- i.e., what can we say about the relative impact that each of these variables has on the outcome in question? As is well known, the substantive meaning of a multinomial logit regression coefficient is difficult to interpret because it does not translate directly into a change in probability. There are essentially three different ways to get around this inconvenient fact: odds ratios, marginal effects, and predicted probabilities.

Table 8.5 presents the coefficients for each of the variables on the odds ratio scale (a.k.a. relative risk ratios). It suggests, in sum, that (aside from previous ownership structure), the level of distributional conflict and whether or not a country was a former colony have the largest substantive effects on a country's choice of ownership structure while an increase in the unit price of oil has the smallest effect. A high level of distributional conflict, for example, multiplies the odds of a country pursuing S_2 over S_1 by 3.14 and being a former colony multiplies the odds of a country pursuing S_2 over S_1 by 3.19 (i.e., both more than triples the odds of S_2 versus S_1).[46] A one dollar increase in the price of oil, however, only decreases the odds of P_1 versus S_1 by 3.4%. Alternative revenue and economic development strategy also see to have a large effect on the choice of ownership structure. For example: a high degree of alternative revenue decreases the odds of P_2 versus S_1 by 95 percent and having a statist economic development strategy decreases the odds of P_2 versus S_1 by 77 percent.

TABLE 8.5 ABOUT HERE

[46] This does NOT mean, of course, that S_2 is three times more likely than S_1.

Table 8.6 and Table 8.7 present the marginal effects and predicted probabilities, respectively, of variables that (with the exception of oil price) are consistently significant.[47] Here, we also find that our two primary explanatory variables have a large substantive effect. Holding all other variables at their mean, we find that the degree of alternative revenue and the level of distributional conflict seem to have the most significant influence on whether countries adopt S_1 and P_2 and the second and fourth largest marginal effect, respectively, on whether or not counties adopt S_2.[48] When we examine the predicted probabilities of the degree of alternative revenue and the level of distributional conflict at different degrees and levels to ascertain whether they actually work together in the way that we hypothesize, we find similar results.

TABLE 8.6 ABOUT HERE

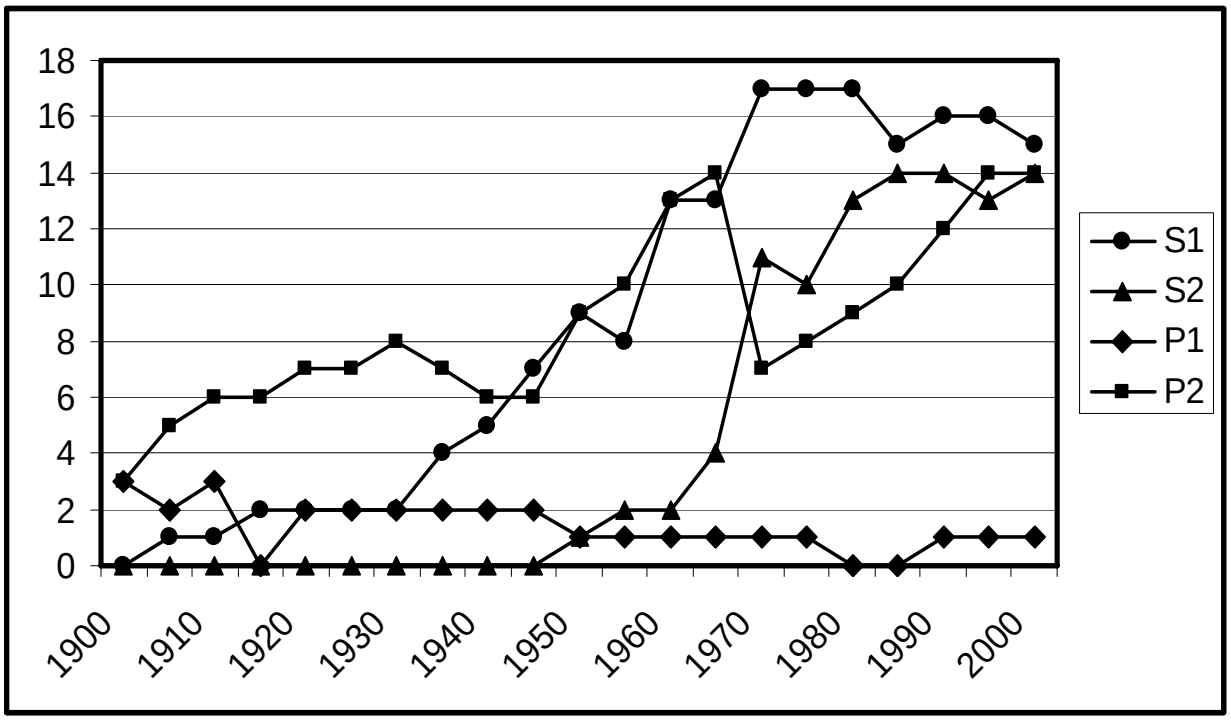
TABLE 8.7 ABOUT HERE

Conclusion

In summary, we find some empirical support for our hypothesis that the interaction between the degree of alternative export potential and the level of distributional conflict influences the choice of ownership structure in mineral rich states. This suggests that the global trends we have witnessed in the structure of ownership over time may be more accurately attributed to the coincidence of domestic processes across mineral-rich countries than to international pressures for policy convergence. It also suggests, moreover, that private domestic ownership may be such a rare strategy because the domestic conditions that drive states to adopt this strategy have also been rare in mineral-rich countries.

[47] Oil price is obviously included for important theoretical reasons.
[48] None of the variables seem to have a substantive effect on whether or not counties adopt S_2. This is most likely an artifact of the small number of observations that fall into this category (193).

Figure 8.1: Variation in the Structure of Ownership, 1900-2005[49]



S_1 = State ownership with control

S_2 = State ownership without control

P_1 = Private domestic ownership

P_2 = Private foreign ownership

[49] This graph is based on the authors' codings for each of the 49 petroleum-rich countries in the developing world (from the initiation of their oil development strategy through 2005): Algeria, Angola, Argentina, Azerbaijan, Bahrain, Bolivia, Brazil, Brunei, Cameroon, Chad, Chile, China, Colombia, Republic of Congo, East Timor, Ecuador, Egypt, Equatorial Guinea, Gabon, Guatemala, Imperial Russia, India, Indonesia, Iran, Iraq, Kazakhstan, Kuwait, Libya, Malaysia, Mexico, Nigeria, North Yemen, Oman, Peru, Qatar, Romania, the Russian Federation, Saudi Arabia, South Yemen, the Soviet Union, Sudan, Syria, Trinidad & Tobago, Tunisia, Turkmenistan, the United Arab Emirates, Uzbekistan, Venezuela, and Yemen. To code each country's ownership structure, we rely on their respective constitutions, laws and regulations governing the mineral sector, and mineral contracts.

Table 8.1: Domestic Determinants of Ownership Structure

		Level of Distributional Conflict	
		LOW	HIGH
Degree of Alternative Revenue	HIGH	S_1	P_1
	LOW	S_2	P_2

S_1 = State ownership with control

S_2 = State ownership without control

P_1 = Private domestic ownership

P_2 = Private foreign ownership

Table 8.2: Control Variables

Alternative Explanation	**Control Variable**	**Source(s)**
Demonstration effect/Diffusion		
⇨ International	Dummy for whether adopted strategy before or after the formation of OPEC (ide)	Authors' original case studies
⇨ Regional	Two dummies: one for whether or not located in the MENA (rde_me) and one for whether or not in Latin America (rde_la)	N/A
International (market) conditions		
⇨ Oil price	Oil price (oil_price)	WTRG Economics (www.wtrg.com)
⇨ Technology and Difficulty of extraction	Oil price (oil_price)	
Path dependency		
⇨ Colonialism	Dummy for whether or not a former colony (for_colony)	Authors' original case studies
⇨ Policy inertia	Number of years a particular ownership structure has been in place (years_os)	N/A
Economic development strategy	Dummy for whether or not pursued a "statist" economic development strategy (eco_dev_stgy)	Authors' original case studies
Regime type	Dummy for whether or not a democracy	POLITY IV Project dataset (2004)

Table 8.3: Descriptive Statistics

Variables	Range	Mean	Standard Deviation
OS	0-3	1.42	1.28
Year	1872-1905	1968.71	28.46
Alt_Revenue	0,1	.46	.50
Distr_Conflict	0,1	.41	.50
Prev_OS	0-3	1.41	1.28
Years_OS	0-70	18.57	14.83
Ide	0,1	.69	.46
Oil_Price	$7.05-$65.40	23.34	13.38
Econ_Dev_Stgy	0,1	.36	.48
For_Colony	0,1	.73	.44
Reg_Type	0,1	.26	.44
Rde_ME	0,1	.29	.45
Rde_LA	0,1	.39	.49

Table 8.4: Domestic versus International Effects on Ownership Structure

Multinomial logistic regression — Number of obs = 2374
LR chi2(36) = 5005.14
Prob > chi2 = 0.0000
Log likelihood = -507.185 — Pseudo R2 = 0.8315

os	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
S_2						
year*	.0930878	.0121542	7.66	0.000	.0692661	.1169095
alt_rev*	-1.954375	.308837	-6.33	0.000	-2.559684	-1.349066
distr_conf~t*	1.144078	.2970798	3.85	0.000	.561812	1.726343
prev_os*	3.912741	.2264102	17.28	0.000	3.468985	4.356497
__years_si~e*	-.062537	.0124179	-5.04	0.000	-.0868756	-.0381984
ide	-.1567368	.7267655	-0.22	0.829	-1.581171	1.267697
oil_price	-.0072639	.0079341	-0.92	0.360	-.0228144	.0082865
eco_dev_stgy*	.9853787	.2772472	3.55	0.000	.4419841	1.528773
for_col*	1.16066	.2782966	4.17	0.000	.6152083	1.706111
reg_type	.5806758	.3828541	1.52	0.129	-.1697045	1.331056
rde_ME	.2780075	.3023589	0.92	0.358	-.3146049	.87062
rde_LA*	-1.046299	.3680596	-2.84	0.004	-1.767683	-.3249158
_cons	-186.4729	23.6772	-7.88	0.000	-232.8793	-140.0664
P_1						
year*	.0528136	.0162178	3.26	0.001	.0210273	.0845998
alt_rev	-.362602	.5563093	-0.65	0.515	-1.452948	.7277442
distr_conf~t*	5.643064	.7577818	7.45	0.000	4.157839	7.128289
prev_os*	4.863576	.3550549	13.70	0.000	4.167681	5.559471
__years_si~e	.0180463	.0189281	0.95	0.340	-.019052	.0551446
ide*	-2.065145	1.055848	-1.96	0.050	-4.13457	.0042797
oil_price*	-.0338156	.0202539	-1.67	0.095	-.0735125	.0058814
eco_dev_stgy*	1.290086	.539522	2.39	0.017	.2326421	2.347529
for_col*	-6.332225	3.65112	-1.73	0.083	-13.48829	.8238394
reg_type	.2700751	.6569773	0.41	0.681	-1.017577	1.557727
rde_ME	-48.50404	.	.	.	.	.
rde_LA	3.656893	3.637745	1.01	0.315	-3.472957	10.78674
_cons	-110.2467	31.41933	-3.51	0.000	-171.8274	-48.66594
P_2						
year*	.0511102	.0169431	3.02	0.003	.0179024	.0843181
alt_rev*	-2.948631	.6202974	-4.75	0.000	-4.164391	-1.73287
distr_conf~t*	4.284883	.6214939	6.89	0.000	3.066777	5.502988
prev_os*	8.890503	.4251633	20.91	0.000	8.057199	9.723808
__years_si~e	.0279625	.0210545	1.33	0.184	-.0133037	.0692286
ide	-1.164662	1.094371	-1.06	0.287	-3.30959	.9802651
oil_price	.000535	.0217802	0.02	0.980	-.0421535	.0432235
eco_dev_stgy*	-1.456479	.5643242	-2.58	0.010	-2.562534	-.3504239
for_col	1.010143	.6995739	1.44	0.149	-.3609967	2.381283
reg_type*	1.927706	.7508417	2.57	0.010	.4560835	3.399329
rde_ME	-.9635995	.7480632	-1.29	0.198	-2.429776	.5025774
rde_LA*	-1.288743	.7400614	-1.74	0.082	-2.739237	.1617503
_cons	-115.1932	32.68393	-3.52	0.000	-179.2525	-51.13385

(S_1 is the base outcome)

Table 8.5: Odds Ratios

Multinomial logistic regression — Number of obs = 2374
LR chi2(36) = 5005.14
Prob > chi2 = 0.0000
Log likelihood = -507.185 — Pseudo R2 = 0.8315

os	RRR	Std. Err.	z	P>|z|	[95% Conf.	Interval]
S_2						
year	1.097558	.0133399	7.66	0.000	1.071721	1.124018
alt_rev	.141653	.0437477	-6.33	0.000	.0773291	.2594826
distr_conf~t	3.139544	.932695	3.85	0.000	1.753848	5.620065
prev_os	50.03593	11.32865	17.28	0.000	32.10415	77.9835
__years_si~e	.9393783	.0116651	-5.04	0.000	.9167911	.962522
ide	.8549291	.621333	-0.22	0.829	.205734	3.552663
oil_price	.9927624	.0078766	-0.92	0.360	.9774439	1.008321
eco_dev_stgy	2.678826	.7426971	3.55	0.000	1.555791	4.612515
for_col	3.192038	.8883335	4.17	0.000	1.850042	5.507501
reg_type	1.787246	.6842544	1.52	0.129	.8439141	3.785038
rde_ME	1.320496	.3992637	0.92	0.358	.7300772	2.388391
rde_LA	.3512352	.1292755	-2.84	0.004	.1707281	.7225882
P_1						
year	1.054233	.0170973	3.26	0.001	1.02125	1.088281
alt_rev	.6958633	.3871152	-0.65	0.515	.2338797	2.070405
distr_conf~t	282.3264	213.9418	7.45	0.000	63.9332	1246.742
prev_os	129.4864	45.97478	13.70	0.000	64.56554	259.6853
__years_si~e	1.01821	.0192727	0.95	0.340	.9811283	1.056693
ide	.1267999	.1338815	-1.96	0.050	.0160095	1.004289
oil_price	.9667498	.0195805	-1.67	0.095	.9291245	1.005899
eco_dev_stgy	3.633098	1.960136	2.39	0.017	1.26193	10.4597
for_col	.0017781	.006492	-1.73	0.083	1.39e-06	2.279234
reg_type	1.310063	.8606815	0.41	0.681	.3614698	4.748016
rde_ME	8.61e-22	.	.	.	.	.
rde_LA	38.74081	140.9292	1.01	0.315	.0310252	48375.25
P_2						
year	1.052439	.0178315	3.02	0.003	1.018064	1.087975
alt_rev	.0524114	.0325107	-4.75	0.000	.0155392	.1767763
distr_conf~t	72.59403	45.11675	6.89	0.000	21.47258	245.4243
prev_os	7262.674	3087.822	20.91	0.000	3156.435	16710.76
__years_si~e	1.028357	.0216516	1.33	0.184	.9867844	1.071681
ide	.312028	.3414744	-1.06	0.287	.0365312	2.665163
oil_price	1.000535	.0217919	0.02	0.980	.9587226	1.044171
eco_dev_stgy	.2330554	.1315188	-2.58	0.010	.0771091	.7043894
for_col	2.745994	1.921025	1.44	0.149	.6969813	10.81877
reg_type	6.873726	5.16108	2.57	0.010	1.577882	29.944
rde_ME	.3815171	.2853989	-1.29	0.198	.0880565	1.652976
rde_LA	.2756169	.2039734	-1.74	0.082	.0646196	1.175567

(S_1 is the base outcome)

Table 8.6: Marginal Effects

	S1	S2	P1	P2
Alternative Revenue	42%	-19%	0%	-23%
Distributional Conflict	-36%	9%	0%	27%
Former Colony	-16%	12.5%	0%	3.7%
Economic Development Strategy	3.1%	6.7%	0%	- 9.8%
Latin America	12%	-18.0%	0%	6.1%
Oil Price	10%	-3.4%	0%	- 6.5%

Table 8.7: Predicted Probabilities

	LEVEL OF DISTRIBUTIONAL CONFLICT	
	LOW	HIGH
DEGREE OF ALTERNATIVE REVENUE LOW	$S_1 = 12.7\%$ **$S_2 = 86\%$** $P_1 = 0\%$ $P_2 = 1.3\%$	$S_1 = 3.4\%$ $S_2 = 24\%$ $P_1 = 0\%$ **$P_2 = 72\%$**
HIGH	**$S_1 = 51\%$** $S_2 = 49\%$ $P_1 = 0.0\%$ $P_2 = 0.3\%$	$S_1 = 23\%$ $S_2 = 68.5\%$ **$P_1 = 0\%$** $P_2 = 8.5\%$