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*Comparative Political Studies* 2010; 43; 379 originally published online Nov  
25, 2009;

DOI: 10.1177/0010414009352649

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# Endogenous Oil Rents

Comparative Political Studies  
43(3) 379–410  
© 2010 SAGE Publications  
DOI: 10.1177/0010414009352649  
<http://cps.sagepub.com>



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## Abstract

Oil rents may at times fall like “manna from heaven” into the fiscal coffers of the state. Yet politicians also make decisions that can increase or decrease the extent to which oil rents accrue to the central government. Though counterintuitive, various evidence suggests that politicians sometimes do not seek to maximize the state’s claim on rents. In this article, the author substantiates this observation with evidence from Venezuela and then develops a formal model of the relationship between electoral competition and rent choice. The author argues that the model can explain why politicians allowed the central government’s share of rents to decline in Venezuela beginning in the 1990s, even though a decline in rents plausibly contributed to the destabilization of Venezuelan democracy. The argument illuminates patterns of rent capture in other cases, whereas the model may be useful in many settings in which the gains from economic investment are realized over several electoral terms.

## Keywords

oil, petroleum, rents, Venezuela, PDVSA, electoral competition

## Introduction

A large literature emphasizes that oil revenues fall like “manna from heaven” into the fiscal coffers of the state. Spikes in world market petroleum prices, for instance, often provide windfall income to central governments in oil-rich states (Beblawi, 1987; Mahdavy, 1970).

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Yet politicians also make decisions that can increase or decrease the state's claim on revenues from oil. For instance, policy choices about how to assess taxes and royalties on the oil sector can influence the extent to which oil rents—the surplus of oil revenues, over production costs and the return to capital—accrue to the central government. The structural relationship of the central government to private resource companies or to oil parastatals can also shape the state's relative take, whereas the resource industry's structure may in turn depend on previous oil development strategies of politicians (Jones Luong & Weinthal, 2001, 2006).

Intuition might suggest that politicians would have strong incentives to maximize the state's claim on rents: After all, rents should benefit those who hold the reins of power. Yet there are theoretical as well as empirical reasons to think this intuition is incomplete. Choices about oil rents affect not just current but also future revenues. One of the key features of the oil industry is the extended temporal horizons required to discover and begin to produce oil; negotiation over the terms of contracts in the oil sector typically takes place years before any crude oil is extracted (Monaldi, 2002). How can politicians choosing to maximize rents today be sure that they will hold the political power necessary to enjoy them tomorrow? As described below, this consideration can have important consequences for whether and how politicians seek to maximize the state's claims on rents.

Indeed, various evidence is consistent with the idea that politicians may sometimes seek to structure the oil industry to limit, not maximize, the state's claim on rents. The Venezuelan case presents a striking example. In Venezuela, there has been substantial intertemporal variation in the share of oil revenues captured by the state. The state's percentage share of net as well as gross income in the oil sector rose sharply beginning in the late 1940s, reaching its apogee with the nationalization of oil in 1975. However, the central government's take declined markedly in both absolute and relative terms in the 1980s and particularly sharply during the 1990s, whereas this decline has been sharply reversed over the past few years.

What explains these puzzling outcomes in Venezuela, in particular, the sharp decline in the relative take of the central government after the nationalization of oil? I argue here that the character of political competition helps to elucidate why policies that promoted or inhibited the capture of rents were adopted by the central government. Like other recent work, my argument emphasizes that rents can provide an important incumbency advantage in electoral contestation (e.g., Wantchekon, 2002). Yet as the formal model I develop suggests, some incumbents may not have an interest in fostering this advantage. Under some conditions, forward-looking politicians or parties

may seek to limit rents because they anticipate a high probability of being out of power in the future, in which case rents would provide an advantage to other candidates or parties (the new incumbents). A key result of the theoretical model is that weak incumbents may seek to lock in lower rents, whereas strong incumbents will choose to structure the resource industry in a way that bolsters the central government's future access to oil revenues.<sup>1</sup>

I therefore argue that the relative take of the central government does not simply reflect world market price trends or other economic conditions, though these are certainly important as well. Instead, the government's take stems from policy decisions, which are motivated in part by the dynamics of electoral competition.

Though the logic is simple, the theoretical model illuminates puzzles posed by the Venezuelan case in ways that existing explanations have not. For example, the rise and fall of the central government's oil rents has been noted by many analysts (España, 1989; García et al., 1997), and the proximate policy decisions that contributed to them have been widely discussed (Mommer, 2004; Monaldi, 2002). However, the policy decisions themselves have not been satisfactorily explained. Some analysts suggest that managers at the oil parastatal *Petróleos de Venezuela* (PDVSA) faced incentives different from politicians in the central government and at times pursued objectives other than maximizing rent for the central government; because of the central government's difficulty in monitoring "subversive" managers at PDVSA during the 1990s, the parastatal managed to retain surplus income at the expense of the central government (Baena, 1999; Boué, 2003; Mommer, 2004). However, as I argue below, neither principal-agent problems nor economic conditions (e.g., the need to stimulate investment) can fully explain why the Venezuelan central government's proportional take of rents declined. Ultimately, such accounts ignore the fact that limits on the central government's take of oil rents—Venezuela's most important source of fiscal revenue—were approved by political actors inside the central government, including both the executive and legislative branches.<sup>2</sup>

In contrast, by highlighting the political incentives that have encouraged central-government actors to maximize rents, or to fail to do so, at different points in time, the theory developed here provides an explanation for the otherwise-puzzling failure of the Venezuelan government to capture a greater share of oil rents at various points during the 1990s—even though a decline in rents contributed to the destabilization of democracy in Venezuela, as highlighted by Dunning (2008). The theory thus complements other explanations by providing a more complete analysis of how political incentives shape the central government's interaction with the oil sector.

The argument is intended to be general, though I use the Venezuelan case to motivate the article's core puzzle and to test key implications of the theoretical model. In the closing section, I briefly evaluate the predictions of the model with comparative evidence from Mexico and Bolivia. Beyond endogenous oil rents, the model may also provide a general framework for thinking about political decision making in various contexts. Indeed, whenever the gains from economic investment may be realized only across several political or electoral cycles—that is, under very general conditions—the model may be useful for understanding political and economic outcomes.<sup>3</sup>

Despite the intended generality of the argument, scope conditions should also be made clear. The argument hinges on incumbents' trade-off between current and future electoral incentives and should thus be understood to apply to democratic polities in which the prospect of continued and regular elections is relatively high. Other background conditions, such as the possibility of reelection of individual politicians or the presence of relatively institutionalized parties that "act like" individuals who care about future election, may also be important for the argument developed here. I further discuss both the generality and specificity of the argument in the conclusion.

## **The Rise, Demise, and Renewal of Oil Rent Capture in Venezuela**

The size of government oil revenues among the major exporters is, appropriately, often taken to reflect world oil prices as well as production trends. For virtually all the world's major oil exporters, for example, the oil market boom of the 1970s resulted in a swelling of government oil revenues. Yet the absolute amount of government oil revenues also reflects the proportion of total revenues in the oil sector that accrue to the central government; and central governments may adopt policies that increase or decrease their share of the rents.

Venezuela provides a salient example. Figure 1 displays not the absolute amount of government revenues from oil but rather the share of total oil income that accrued to the central government from 1938 to 2006. The figure suggests dramatic variation in the central government's percentage take of oil revenues. For example, the government's take rose from less than 20% a few decades after the dawn of Venezuela's oil era to more than 80% at its peak in the 1970s. Rents then declined precipitously to less than 30% during the 1990s, before rising again at the start of the 21st century.<sup>4</sup> Note that world oil price trends cannot fully explain the patterns depicted in Figure 1: Using the fraction of total revenues in the oil sector that accrues to the state controls for prices because these affect both the numerator and the denominator.



**Figure 1.** Venezuelan central government's share of total revenues in the oil sector (%) and world oil price (2006 \$)

Moreover, the Venezuelan state's take rose dramatically during the 1960s, even as real world oil prices remained roughly constant until the early 1970s; the central government's share also remained relatively high during the 1980s, even as oil prices dropped precipitously, and during the 1990s the drop in the central government's take was even sharper than the fall in prices.<sup>5</sup> One might think that profits would be a better indicator to use in the denominator because the availability of rents depends on production costs. Yet the broad trends in the data are similar whether we measure the state's take of gross revenues in the oil sector, as in Figure 1, or instead the state's take of net oil income, as in a similar figure posted on the author's Web site.<sup>6</sup>

What, then, explains the trends depicted in Figure 1? I argue that policy decisions taken by various Venezuelan governments contributed to shaping the patterns depicted in the figures, whereas these policy decisions were themselves shaped in part by the character of electoral competition. In this section, I describe the contribution of various policy decisions to the evolution of rents, leaving analysis of the deeper political determinants of these decisions for Section IV below.

The most straightforward link between policy and the state's take stems from the widely varying taxes and royalties levied on the oil sector under different Venezuelan governments (see Table 1). Until nationalization of the oil sector in 1975, with some exceptions, the state extracted an ever-growing

share of total oil revenues, primarily by levying greater taxes and royalties. Prior to 1945, the Venezuelan state's take of oil rents came predominantly from the sale of exploration and production concessions. After a coup installed the opposition party Acción Democrática (AD) in 1945, however, the income tax on the oil companies was raised from 12.0% to 28.5%.<sup>7</sup> A further reform of the tax code in 1948 sought to establish the principle of a 50–50 split of profits between companies and the state, though a coup d'état in 1948 temporarily halted the upward trend in tax and royalty rates.<sup>8</sup> After the return to democracy in 1958, during the government of Rómulo Betancourt, the tax rate increased from 28.5% to 47.5% (Pérez Alfonso, 1967/2003), whereas it rose to 52.0% in 1967, under Raúl Leoni, and to 60.0% in 1970, under Rafael Caldera. The Betancourt administration also saw the establishment of a "fiscal reference price" (*valor fiscal de exportación*), which gave the government discretion to set the export value of oil up to 20.0% above reported sale values for purposes of assessing royalty payments (Pérez Alfonso, 1967/2003); this was seen as a mechanism for countering transfer pricing, the practice by which multinationals allegedly sold discounted oil to their foreign affiliates to lower their tax and royalty burden in Venezuela.

Nonetheless, taxes and royalty rates provide just one channel through which central government policy affects the state's absolute and relative take of rents. Importantly for the argument developed below, other policies that increased the state's take were intended to be more difficult to reverse. Prior to nationalization, for instance, the Constitution of 1961 ensured the state's ownership of subsoil resources and made the sale of new oil concessions subject to the approval of Congress; aspects of the tax structure were also written into the Constitution or made subject to the approval of Congress, complicating any subsequent revision of terms. By the time of nationalization, the participation of the Venezuelan state in the oil sector was already profound: In 1975, the central government reaped more than 80% of total oil revenues and nearly 90% of pretax revenue, net of production costs. The nationalization of oil was seen as the strongest way to guarantee the continued reaping of oil rents and to "lock in," if only incompletely, the state's participation in the oil sector.

Paradoxically, however, nationalization marked the beginning of a long downward trend in the Venezuelan state's percentage take of rents, a trend that sharpened during the 1990s (Figure 1). Though the policies and institutional framework adopted before nationalization did show substantial stickiness, over time the state's capture of oil rent underwent a marked decrease. Changes in tax and royalty rates account for some of this more recent decline, especially

**Table I.** Oil Policies Under Venezuelan Executives, 1945 to Present (Democratic Periods)

President, Dates (Party)	Key Oil Policies
Rómulo Betancourt, 1945–1948 (AD)	<ul style="list-style-type: none"> <li>• Oil income tax raised from 12.0% to 28.5%</li> <li>• Royalty payments set at 16.67%</li> </ul>
Rómulo Gallegos, 1948 (AD)	<ul style="list-style-type: none"> <li>• Further tax reforms; principle of 50–50 split of profits</li> <li>• Steps toward “no more concessions”</li> </ul>
Rómulo Betancourt, 1959–1964 (AD)	<ul style="list-style-type: none"> <li>• Oil income tax raised from 28.5% to 47.5%</li> </ul>
Raúl Leoni, 1964–1969 (AD)	<ul style="list-style-type: none"> <li>• New concessions subject to approval of Congress</li> <li>• OPEC founded under Venezuelan leadership</li> <li>• Oil income tax raised from 47.5% to 52.0%</li> <li>• “Fiscal reference price” created</li> </ul>
Rafael Caldera, 1969–1974 (COPEI)	<ul style="list-style-type: none"> <li>• Oil income tax raised from 52.0% to 60.0%</li> <li>• No nationalization of oil</li> <li>• Oil income tax reached 72.0%</li> </ul>
Carlos Andrés Pérez 1974–1979 (AD)	<ul style="list-style-type: none"> <li>• Nationalization of oil</li> </ul>
Luis Herrera, 1979–1984 (COPEI)	<ul style="list-style-type: none"> <li>• First foreign refinery purchased by PDVSA</li> <li>• PDVSA required to convert funds to bolívars</li> </ul>
Jaime Lusinchi, 1984–1989 (AD)	<ul style="list-style-type: none"> <li>• Purchase of refineries and half-interest in CITGO</li> <li>• PDVSA’s foreign assets used to secure loans</li> </ul>
Carlos Andrés Pérez 1989–1993 (AD)	<ul style="list-style-type: none"> <li>• For marginal fields, 34.0% income tax, no royalties</li> </ul>
Ramón J. Velasquez, 1993–1994 (—) <sup>a</sup>	<ul style="list-style-type: none"> <li>• For heavy crude, 34.0% tax, 1.0% royalty</li> <li>• PDVSA receivables and assets guarantee tax policies</li> <li>• Alleged transfer pricing; costs imported and profits exported for tax purposes</li> <li>• Purchase of full interest in CITGO</li> <li>• For marginal fields, 34.0% income tax, no royalties</li> <li>• For heavy crude, 34.0% tax, 1.0% royalty</li> <li>• Decrease of PDVSA’s fiscal reference price</li> </ul>
Rafael Caldera, 1994–1999 (Ind.)	<ul style="list-style-type: none"> <li>• For marginal fields, 34.0% income tax, no royalties</li> <li>• For heavy crude, 34.0% tax, 1.0% royalty</li> <li>• Elimination of PDVSA’s fiscal reference price</li> <li>• Alleged transfer pricing; PDVSA pays dividends</li> </ul>
Hugo Chávez, 1999–present (MVR, PSUV)	<ul style="list-style-type: none"> <li>• Increased taxes to 50.0% and royalties to 33.5%</li> <li>• Migration of contracts to PDVSA majority role</li> <li>• OPEC strengthened</li> </ul>

Note: AD = Acción Democrática; COPEI = Comité de Organización Política Electoral Independiente; PDVSA = Petróleos de Venezuela S.A.; MVR = Movimiento Quinta República; PSUV = Partido Socialista Unido de Venezuela. a. Ramón J. Velasquez, an interim president, himself succeeded Octavio Lepage, an even shorter lived interim president.

beginning in the late 1980s. During the 1990s, for instance, foreign operators of certain “marginal” oil fields were taxed at 34.0%, instead of the 66.67% oil income tax required by existing legislation, and they did not pay royalties (Monaldi, 2001).



In addition, when the new parastatal PDVSA entered into associations with four consortia of foreign companies to produce heavy crude oil in Venezuela's Orinoco Belt, taxes on profits were also set at 34.0% rather than 66.67%. And in contrast to the usual rate of 16.67%, royalties for these heavy crude oil projects were set at just 1.0% of production for the first 10 years of operation of the consortia. Because loans and other project agreements were underwritten by PDVSA's offshore receivables and explicitly or implicitly collateralized with PDVSA's foreign assets, revising the terms of such agreements to increase the state's capture of oil rents was made very costly.

Importantly, these rent-limiting changes were by no means limited to the foreign investors who were lured back to Venezuela during the oil "opening" (*apertura*) of the 1990s. Beginning in 1993, the parastatal PDVSA was also allowed generous inflation adjustments that reduced the company's tax burden. Moreover, the fiscal reference price was reduced for PDVSA in 1993 and then eliminated in 1996, which also limited the central government's claim on oil rents (Mommer, 2004, p. 137).<sup>9</sup> As I argue below, the need to attract or retain investment, although important, cannot plausibly fully explain the reduction in the fiscal reference price for PDVSA or the extremely generous royalty terms offered to investors in the heavy oil fields of the Orinoco Belt.

In addition, just as the rise of the state's share of rents before nationalization was partially because of nontax policies, so too was the decline in the 1980s and especially the 1990s because of commercial policies that limited the central government's claims on oil rents. Particularly important, according to a number of observers, was the strategic use of "internationalization," according to which the parastatal PDVSA transformed itself into a multinational company (Baena, 1999). PDVSA bought its first foreign refinery in Germany in the 1980s; the company soon also began to buy refineries in the United States and then retail outlets through the company's CITGO subsidiary. By the end of the 1990s, around 20% of PDVSA's consolidated assets were held outside of Venezuela, whereas its foreign holdings were valued at around \$7 to \$8 billion. PDVSA became the third largest refiner of oil in the United States, behind only Exxon Mobil and BP Amoco (Monaldi, 2002, pp. 26-27). The commercial rationale for some of the purchases made under PDVSA's internationalization appeared, at times, thin; for instance, refineries in the United States and Germany that were allegedly purchased to refine Venezuelan heavy crude oil (and thus bolster market share) did not, in the end, process Venezuelan heavy crude (Mommer, 2004).

Whatever the commercial rationale, internationalization plausibly decreased the share of both current and future oil income appropriated by the

central government in several ways. According to some observers, the purchase of foreign assets resulted in the transfer of profits and therefore tax liabilities to relatively low-tax jurisdictions such as the United States while various costs were imported into Venezuela for tax purposes (Baena, 1999; Boué, 2003; Mommer, 2004). Discounts on Venezuelan crude oil given to PDVSA's foreign affiliates under these supply contracts may also have amounted to transfer pricing, which also shielded the parastatal from tax liabilities in Venezuela.<sup>10</sup> Moreover, under second-term incumbents such as Carlos Andrés Pérez (1989–1993) and Rafael Caldera (1994–1999), the generous tax terms given to foreign investors in the oil sector were guaranteed by the presence of PDVSA's overseas assets; if any *ex post* renegotiation of terms occurred, investors could bring suits against PDVSA in U.S. courts and thereby lay claim to PDVSA's overseas assets as well as its receivables under long-term oil supply contracts. To alter the terms of these contracts, PDVSA would first have to repay all of its debts, which in 2003 had reached the sum of around \$10 billion (Mommer, 2004, p. 138; also see Monaldi, 2001, 2002). Finally, PDVSA minimized its cooperation with OPEC production quotas beginning in the 1980s and may therefore have weakened the state's absolute level of rent through a different channel.<sup>11</sup> Note that these policies were not easy to install, precisely because legislation passed around the time of nationalization made major changes in oil policy subject to the approval of Congress, at least in principle. The economic and political logic of the policies is considered in greater detail in Section IV.

Finally, during the most recent administration of Hugo Chávez, the decline in the state's share of rents has been substantially reversed. For instance, the tax treatment of companies producing oil in "marginal" fields and in the heavy oil fields of the Orinoco Belt has been substantially revised, as companies have been required to migrate to joint ventures with the Venezuelan state on terms that are much more favorable to the Venezuelan Fisc. It is important to note that despite the Chávez government's stated desire after 2001 to revise the terms of oil contracts, it moved rather slowly and pragmatically in doing so; these policies were quite costly to reverse, precisely because of those aspects of internationalization and of the oil *apertura* (e.g., long-term supply contracts secured by PDVSA's international assets) that were designed to "lock in" policies in the oil sector. Only rather extraordinary economic circumstances, because of the recent oil boom in Venezuela, have allowed the retiring of costly debts that were secured by PDVSA's offshore collateral and thus given the government greater latitude to revise oil policy. At the same time, as I argue in more detail below, the extent to which Chávez's oil policy has aimed to maximize rent has plausibly varied over his term, with initial

policies far less oriented toward rent maximization than policies adopted in the most recent years. In some recent revisions of terms projects, taxes have risen to 50.0% while royalties are at 33.5%. By 2006, the central government's share of Venezuelan oil revenues had risen to nearly 50.0%—a level of state take not seen in Venezuela since the 1970s.<sup>12</sup>

In sum, various policies have contributed to the rise, fall, and recent renewal of the state's take of oil rents in Venezuela. Moreover, these policies have often been structured to affect future as well as current rents. For instance, although tax and royalty policies affect current rents, institutional arrangements, such as writing aspects of oil policy into the Constitution of 1961, limited the capacity of future actors to renegotiate the division of the rent "pie" and implied that current policies would have implications for future rents as well. Under incumbents such as Carlos Andrés Pérez, meanwhile, PDVSA's overseas assets were used as foreign "hostages" (Monaldi, 2001), making it much more costly for future actors to increase the proportion of rents accruing to the state. Thus, although some incumbents made it more difficult for future actors to limit the state's claim on rents, other incumbents made it more difficult for future actors to increase the state's take.

Yet what explains the policies? The observation that some incumbents appear to have limited the state's claim on future rents presents a puzzle, for we tend to assume that states maximize their claim on rents. This puzzle motivates the development of the formal model in the next section.

## A Model

In the model, there are two political parties, A and B, and a measure one continuum of citizens. In each period of the infinite-horizon game described below, one party is the incumbent and the other is the challenger. The per period payoff of the incumbent is  $r$ , whereas the payoff of the challenger, who is out of office, is normalized to zero. As in many models of political competition, parties will choose policies optimally each period to maximize their probability of victory.

Following Baron (1994) and Grossman and Helpman (2001), citizens are swayed by campaign spending.<sup>13</sup> Here, campaign spending is financed by resource rents. The literature on resource-rich polities emphasizes that rents tend to accrue disproportionately to whoever holds political power and thus can provide an important incumbency advantage (Wantchekon, 2002). To capture this idea in a simple way, I assume that resource rents accrue only to the incumbent party. The size of the rents, however, is partially endogenous: At the beginning of the game, the incumbent in the initial period has the opportunity to structure the resource sector, which determines the size of the rents for the

rest of the game. For simplicity, in this model the choice is dichotomous: The structure of the resource sector is such that rents are either “high” or “low.” To capture the idea that policy choices influence future as well as current rents, here the chosen level of rents persists throughout the infinite-horizon game. This is only for analytic simplicity; the qualitative results obtained below are robust so long as the chosen level of rents in one electoral period has some effect on the level of rents in the subsequent (or any other future) period.

When Party A is the incumbent, citizens vote for Party A if,

$$I\{R = R^H\} \geq \sigma^i + \delta, \tag{1}$$

and for Party B otherwise, where  $I\{R = R^H\}$  is an indicator variable that takes on the value 1 when  $R = R^H$  and zero when  $R = R^L$ . When Party A is the challenger, citizens vote for that party if,

$$0 \geq I\{R = R^H\} + \sigma^i + \delta, \tag{2}$$

and otherwise vote for Party B. In Equations 1 and 2,  $\sigma^i$  is a mean-zero random variable, distributed uniformly on  $[-\frac{1}{2\phi}, \frac{1}{2\phi}]$  with density  $\phi > 0$ . Positive values of  $\sigma^i$  indicate an individual (“ideological”) preference of voter  $i$  for Party B. The random variable  $\delta$ , on the other hand, is an aggregate “popularity” shock distributed uniformly on  $[-\frac{1}{2\psi} + \mu, \frac{1}{2\psi} + \mu]$  with density  $\psi > 0$ . This aggregate popularity shock will have a nonzero mean whenever  $\mu \neq 0$ . For instance, if  $\mu$  is positive, there is an aggregate bias in favor Party B.

The timing of the infinite-horizon game is as follows. In the initial period of the game, Nature selects one of the parties to be the incumbent in the first round. The initial incumbent receives a payoff of  $r$  and chooses  $R \in \{R^H, R^L\}$  (where the  $H$  stands for “high” and the  $L$  for “low”); the chosen value of  $R$  will remain in place for the entire game. After the initial incumbent is selected and  $R$  is chosen, each period has the following timing:

1. The value of the random variable  $\delta$  is realized, and voters vote as described in Equations 1 and 2. The winning party is determined by plurality rule.
2. The preelection platform announced by the winning party is implemented, and the winning party receives a per period payoff of  $r$ .

The parties and citizens discount the future at the common per period discount rate of  $\beta \in (0,1)$ . The goal of the analysis is to identify the optimal choice of resource rents  $R \in \{R^H, R^L\}$  for initial incumbents of each party, as a function of the model parameters.

### Solving the Model: The Weak-Incumbent Effect

By standard arguments (see Persson & Tabellini, 2000), Party A's vote share, whenever Party A is the incumbent, is,

$$\pi_A^I = \frac{1}{2} + \phi[I\{R = R^H\} - \delta], \quad (3)$$

where the superscript *I* stands for *incumbent*. When Party A is the incumbent, the vote share therefore depends positively on rent-financed campaign spending: If rents are high, the indicator variable  $I\{R = R^H\}$  takes on the value of 1, so the vote share of the incumbent is higher than if rents are low and  $I\{R = R^H\}$  is 0. However, when Party A is the challenger, the party's vote share is instead,

$$\pi_A^C = \frac{1}{2} + \phi[-I\{R = R^H\} - \delta]. \quad (4)$$

Note that in Equation 4, unlike Equation 3, the indicator variable enters negatively. This is because rents create an incumbency advantage: If they have been set at a high level, they provide a source of campaign spending that the incumbent can use to sway uninformed voters. Rents therefore help the vote share of Party A when it is the incumbent and hurt the party's vote share when the party is the challenger.

The probability  $P_A^I$  that Party A wins the election, whenever Party A is the incumbent, is thus,

$$\begin{aligned} P_A^I &= \Pr\left(\left[\frac{1}{2} + \phi[I\{R = R^H\} - \delta]\right] \geq \frac{1}{2}\right) \\ &= \frac{1}{2} + \psi[I\{R = R^H\}] - \mu, \end{aligned} \quad (5)$$

where the second line of Equation 5 comes from rearranging terms and evaluating the probability using the cumulative distribution function of  $\delta$ . The probability that Party B wins the election when it is the challenger is then  $1 - P_A^I$ .

Similarly, the probability  $P_A^C$  that Party A wins the election when it is the challenger is

$$\begin{aligned} P_A^C &= \Pr\left(\left[\frac{1}{2} + \phi[-I\{R = R^H\} - \delta]\right] \geq \frac{1}{2}\right) \\ &= \frac{1}{2} + \psi[-I\{R = R^H\}] - \mu, \end{aligned} \quad (6)$$

and the probability that Party B wins the election when it is the incumbent is  $1 - P_A^C$

The strategy for solving the model is to write down value functions for the party selected by Nature as the incumbent at the start of the game and then use these expressions to analyze the optimal choice of  $R \in \{R^H, R^L\}$ . Suppose without loss of generality that Party A has been selected by Nature as the initial incumbent. Then we have,

$$V_A^I = r + \beta[p_A^I V_A^I + (1 - p_A^I) V_A^C], \tag{7}$$

where  $V_A^I$  gives the infinite-horizon payoff of Party A as a function of its initial choice of rents.

What is the interpretation of Equation 7? The instantaneous payoff of the party is  $r$  because Party A is the incumbent in the current period. The continuation payoff is given by the expression in brackets, which is discounted back to the current period by  $\beta$ . The first term of this bracketed expression reflects the fact that with probability  $p_A^I$ , Party A will win the election tomorrow and again be the incumbent. In this case, the future payoffs of Party A looking into infinite-horizon tomorrow look exactly as they do today, so the infinite-horizon payoff is again  $V_A^I$ . The second term captures the fact that with probability  $(1 - p_A^I)$ , Party B will win the election and come to power tomorrow. In this case, Party A's payoff looking into the infinite future is  $V_A^C$ , that is, the payoff to Party A when the party is the challenger.

To solve for  $V_A^I$ , however, we will need to know  $V_A^C$ . Using symmetric arguments as above, we have,

$$V_A^C = 0 + \beta[p_A^C V_A^I + (1 - p_A^C) V_A^C]. \tag{8}$$

Here, the instantaneous payoff is zero because Party A is not in office in the current period. The probability that Party A, now the challenger, wins the next election and becomes the incumbent is  $p_A^I$ , so the infinite-horizon payoff  $V_A^I$  when A is the incumbent is weighted by this probability. Similarly, the infinite-horizon payoff  $V_A^C$  when A remains the challenger in the next period is weighted by the probability  $(1 - p_A^C)$  that it loses the next election.

We now have two equations, 7 and 8, in the two unknowns  $V_A^I$  and  $V_A^C$ . Substituting terms and rearranging gives the following:

$$V_A^I = \frac{(1 - \beta(1 - p_A^C))r}{1 - \beta(1 + (1 - \beta)(p_A^I - p_A^C))} \tag{9}$$

The question of interest is Party A's optimal choice of  $R \in \{R^H, R^L\}$  when it is selected by Nature as the incumbent in the first period.<sup>14</sup>

Before answering this question, some further notation will be useful. Suppose that Party A chooses  $R = R^H$ . Then Equations 5 and 6, with  $I\{R = R^H\} = 1$ , imply that the equilibrium probabilities of election for Party A are,

$$\tilde{p}_A^I | R^H = \frac{1}{2} + \psi[1 - \mu] \quad (10)$$

and,

$$\tilde{p}_A^C | R^H = \frac{1}{2} + \psi[-1 - \mu], \quad (11)$$

where in Equation 10 Party A is the incumbent and in Equation 11 it is the challenger. (The notation  $\tilde{p}_A^I | R^H$  and  $\tilde{p}_A^C | R^H$  indicates that these probabilities are conditional on the choice of  $R = R^H$  in the initial period of the game.) When Party A chooses  $R = R^L$ , however,  $I\{R = R^H\} = 0$ , so the respective equilibrium probabilities are,

$$\tilde{p}_A^I | R^L = \frac{1}{2} - \psi\mu \quad (12)$$

and,

$$\tilde{p}_A^C | R^L = \frac{1}{2} - \psi\mu. \quad (13)$$

Notice that Equations 12 and 13 are the same: This is because when  $R = R^L$ , there is no incumbency advantage created by rents.

I state the main results of the model in the form of a proposition and two corollaries, after first introducing two useful definitions.

*Definition 1:* Party A is a *weak incumbent* if  $\mu > 0$  and a *strong incumbent* if  $\mu < 0$ . Analogously, Party B is a *weak incumbent* if  $\mu < 0$  and *strong incumbent* if  $\mu > 0$ .

*Definition 2:* Electoral competition is *balanced* when  $\mu = 0$ .

Then we have the following results.

*Proposition 1:* A weak incumbent may choose low rents.

*Proof:* Assume without loss of generality that Party A is initially selected by Nature as the incumbent. Then Party A chooses low rents whenever,

$$V_A^I(R^H) < V_A^I(R^L) \tag{14}$$

where  $V_A^I(R^H)$  is the value function of Party A when it chooses high rents and  $V_A^I(R^L)$  is the value function of Party A when it chooses low rents. We simply need to derive expressions for both sides of the inequality, evaluated at the equilibrium probabilities of victory for Party A. Using Equations 10 and 11, substitute  $\bar{p}_A^I |R^H$  for  $p_A^I$  and  $\bar{p}_A^C |R^H$  for  $p_A^C$  in Equation 9. This gives,

$$V_A^I(R^H) = \frac{(1 - \beta(\frac{1}{2} + \psi + \psi\mu))r}{1 - \beta(1 + (1 - \beta)(2\psi))}. \tag{15}$$

Now, using Equations 12 and 13, substitute  $\bar{p}_A^I |R^L$  and  $\bar{p}_A^C |R^L$  into Equation 9, which gives,

$$V_A^I(R^L) = \frac{(1 - \beta(\frac{1}{2} + \psi\mu))r}{1 - \beta}. \tag{16}$$

Using Equations 15 and 16, some algebra establishes that  $V_A^I(R^H) < V_A^I(R^L)$  as long as,

$$1 - \beta < 2\beta\psi\mu \tag{17}$$

If Party B is instead selected by Nature as the incumbent, the argument is analogous. Q.E.D.

The proof of Proposition 1 also suggests the following corollaries.

*Corollary 1:* A strong incumbent will always choose high rents.

*Proof:* Suppose Party A is the incumbent in the initial period. If  $\mu < 0$ , then Equation 17 can never hold because  $\beta \in (0,1)$  and  $\psi > 0$ . The argument when Party B is the initial incumbent is analogous.

*Corollary 2:* Under balanced electoral competition, every incumbent chooses high rents.

*Proof:* When  $\mu = 0$ , the right-hand side of Equation 17 is 0, and  $1 - \beta > 0$  implies that the incumbent will always choose high rents.

What determines when weak incumbents will choose low rents? If Party A is the initial incumbent, inspection of Equation 17 shows that the incidence of low rents is increasing in  $\mu$ . If Party B is the initial incumbent, the incidence of low rents is decreasing in  $\mu$ . Note that  $\mu$  is a measure of incumbent weakness when A is the incumbent; when B is the incumbent, it is a measure



of incumbent strength. Thus, the weaker (stronger) an initial incumbent is, the more (less) likely it is to choose low rents.

This is the key result of the model. What is the interpretation? Parties that are electorally weak stand to lose by locking in high rents: In the future, these rents will favor the incumbent, and an electorally weak party is more likely than an electorally strong party to be the challenger in future periods. So although strong incumbents will always choose high rents, weak incumbents may choose low rents; and they are more likely to do so the weaker they are.

The analysis also suggests several interesting ancillary results. First, note that if Party A is the initial incumbent and  $\mu$  is positive, the incidence of low rents is also increasing in  $\psi$  (see Equation 17). What is the interpretation? When the density  $\psi$  of the aggregate popularity shock is low, the distribution of  $\delta$  has greater variance. Thus, though Party B has an electoral advantage on average (when the mean of the shock is positive), the advantage might be large or small or even negative, depending on the realization of this random variable. On the other hand, a larger density  $\psi$  accentuates the disadvantage to Party A of the nonzero (positive) shock and makes any shock in Party A's favor less likely.<sup>15</sup> Second, notice that the incidence of low rents is weakly increasing in  $\beta$ , the common discount factor: If  $\mu > 0$ , then the right-hand side of Equation 17 increases as  $\beta$  grows, whereas the left-hand side goes to zero.<sup>16</sup> Here, a lower discount rate (higher  $\beta$ ) means the shadow of the future is more important; a weak incumbent who values future electoral returns more highly will be more likely to choose low rents, despite the cost in terms of foregone current rents.

## Electoral Competition and Rent Capture in Venezuela

Venezuela provides a useful case for testing key implications of the model. First, as discussed in Section II, there has been important intertemporal variation in both the competitiveness of electoral politics and the central government's take of rents during democratic periods in Venezuela. Second, Venezuelan democracy also appears consistent with the model's core assumptions about the structure of politics. For instance, under the 1961 Constitution, presidents were allowed to run for reelection after two terms out of office, plausibly heightening their individual interest in the character of future electoral contestation (indeed, two of Venezuela's presidents, Carlos Andrés Pérez and Rafael Caldera, return to the presidency after having relinquished it). Moreover, strong party discipline and control, particularly until around 1989, implied that party leaders (if not all chief executives) made decisions

**Table 2.** Electoral Competition and Rent Maximization in Venezuela

President (Party)	President's Electoral Margin <sup>a</sup>	President's Party or Coalition Had Majority in Lower House of Congress?	Strong Incumbent?	Rent Maximizer?
Betancourt/Junta, 1945–1948 (AD)	N/A	(Yes—Constituent Assembly)	Yes	Yes
Gallegos, 1948 (AD)	53.0%	Yes	Yes	Yes
Betancourt, 1959–1964 (AD)	13.9%	Yes	Yes	Yes
Leoni, 1964–1969 (AD)	12.6%	Yes	Yes	Yes
Caldera, 1969–1974 (COPEI)	0.8%	No	No	Mixed
Pérez, 1974–1979 (AD)	12.0%	Yes	Yes	Yes
Herrera, 1979–1984 (COPEI)	3.6%	No	No	Mixed
Lusinchi, 1984–1989 (AD)	22.0%	Yes	Yes	Mixed
Pérez, 1989–1993 (AD)	12.5%	No	No	No
Velasquez, 1993–1994 (—)	N/A	N/A	No	No
Caldera, 1994–1999 (Ind.)	6.9%	No	No	No
Chávez, 1999–present (MVR, PSUV)	16.2% <sup>b</sup>	Yes <sup>b</sup>	Yes <sup>b</sup>	Yes <sup>b</sup>

Source: Author's calculations based on data from the Consejo Nacional Electoral.

Note: AD = Acción Democrática; COPEI = Comité de Organización Política Electoral Independiente; MVR = Movimiento Quinta República; PSUV = Partido Socialista Unido de Venezuela.

a. Electoral margin is the difference between the president's vote share and the vote share of the second top vote getter in the preceding election.

b. Chávez's margin in the 1998 elections was 16.2%; his subsequent margins were 22.24% (2000), 16.0% (recall referendum, 2004), and 25.9% (2006). Chávez's coalition gained control of the National Assembly with the 2000 elections (gaining unanimous control in 2005); on this coding, he was a strong incumbent after 2000.

with the lack of myopia necessary for the mechanisms emphasized in the model to make sense.

I argue in this section that consistent with the theoretical model, electorally strong parties, and incumbents with strong prospects for future election, have sought consistently to maximize rents in Venezuela. On the other hand, electorally weaker parties and politicians have adopted policies that contributed to limiting the central government's claim on rents. Although this does not alone prove that electoral competition has driven patterns of rent capture in Venezuela, I argue that various alternatives discussed below do not suffice to explain the striking intertemporal variation depicted in Figure 1. My focus on political competition therefore complements previous explanations and provides a new way to understand patterns of rent seeking by the Venezuelan state.

To begin, I code each democratic period since 1945 according to whether the incumbent executive is strong or weak (Table 2).<sup>17</sup> This coding of the

strength of the executive is in turn determined both by the size of the incumbent's electoral margin and by whether the incumbent's party (or coalition) held a majority in the lower house of Congress.<sup>18</sup> In principle, an executive with a large electoral margin might not control the lower house, or the party of an executive who won only narrowly might have nonetheless retained control of Congress. In practice, during the period under consideration, no incumbent who won with a narrow electoral margin also held the lower house, facilitating the coding of incumbents as strong or weak.<sup>19</sup> Finally, drawing on the discussion in Section II, I also code whether or not the state adopted policies to maximize rents during each chief executive's term in office. (Intermediate cases are coded as "mixed.") Before turning to a more in-depth discussion of episodes of rent maximization (or lack thereof) in the section on alternative explanations below, here I simply discuss the relationship between incumbent strength and rent capture over time.

As Table 2 suggests, strong incumbents from an electorally dominant party, AD, promoted the sharpest increases in the state's take of rents prior to the nationalization of oil. In elections for a Constituent Assembly in 1946, for instance, AD won 137 of 159 seats; the party's candidate, Rómulo Gallegos, took nearly 75% of the vote in the presidential elections of 1947, and in the new Congress AD had 83 out of 110 deputies and 38 out of 46 Senators (Betancourt, 1956/1979, pp. 224-233). Indeed, during the so-called *trienio* from 1945 to 1948, the apparent electoral advantage of AD was so great that opponents were concerned that the party would monopolize political power (Hellinger, 1984, p. 49; Levine, 1978, p. 92; Myers, 1986, p. 122; Urbaneja, 1992, p. 168; also see Dunning, 2008, pp. 190-192). AD leaders thus had every reason to believe that it would be a likely incumbent in future electoral contestation and thus that increasing the central government's take of rents would provide electoral advantages in the future.

After the return to democracy in 1958, AD also retained significant strength relative to other parties. For instance, AD's Rómulo Betancourt (1959-1964) and Raúl Leoni (1964-1969) both won presidential elections by substantial margins, and the party controlled the Chamber of Deputies either on its own or in coalition. As Monaldi et al. (2005) note, presidents from AD enjoyed strong partisan powers during this period—and they also substantially increased the state's claim on oil rents.

Only in 1969 did AD lose the presidency, by a scant 33,000 votes, when Rafael Caldera of the Christian-Democratic party COPEI assumed power. During Caldera's administration, AD maintained a plurality of seats in the Chamber of Deputies (and a majority after 1973), making Caldera a weak incumbent according to my coding. Caldera's administration also provides a

mixed outcome from the point of view of the theory. On one hand, as the theory would predict, Caldera himself was ambivalent both about nationalization of the oil sector and about pushing for a greater state take of rents. He initially opposed a law that allowed him to unilaterally set the “fiscal reference price” as well as other measures that promised greater taxes on the oil companies (Monaldi, 2001); according to several accounts, rent-promoting reforms were promoted by opposition legislators and only reluctantly signed into law by Caldera. For example, this was the case with respect to a law that required physical assets such as wells, pipelines, and headquarter buildings to revert to the Venezuelan state once concessions expired and a law that reserved gas as well as domestic oil markets for the state.<sup>20</sup> On the other hand, when the AD-dominated Congress passed laws that allowed greater rent appropriation, Caldera did use them to increase the state’s take (Figure 1).

However, Caldera refused to nationalize the oil sector, leaving that for his AD successor Carlos Andrés Pérez (1974–1979). Elected with a majority in Congress and a 12-percentage-point victory in the popular vote, Pérez was clearly a strong incumbent; and with nationalization, his administration saw the peak of rent appropriation by the Venezuelan state, with the central government reaping nearly 95% of net oil income. As discussed in Section II, several legal reforms also sought to lock in the Venezuelan state’s control over oil production or at least to make Pérez’s reforms more difficult to undo; for example, any association between PDVSA and foreign companies would be subject to the approval of Congress.

Electoral competition was more balanced during the subsequent administrations of Luis Herrera (1979–1984) and Jaime Lusinchi (1984–1989), and the mix of rent-maximizing and rent-limiting reforms may reflect this balance. To be sure, the organization of the new parastatal PDVSA after nationalization implied some greater retention of funds by the company; as a consequence, the central government’s percentage take of oil revenues fell somewhat immediately after nationalization, though it remained fairly constant (and high) through the Herrera and Lusinchi administrations. Under Herrera, who on my coding was a weak incumbent, the internationalization of PDVSA—which would later have important rent-limiting effects—began; PDVSA was also allowed to retain greater control over rents, in part because of various accounting devices.<sup>21</sup> On the other hand, Herrera also required PDVSA to convert its investment funds from dollars to *bolívares* during the banking crisis of 1983, which cost the company dearly when the national currency was subsequently devalued. Lusinchi qualifies as a strong incumbent on my coding; during his administration, taxation of the oil sector remained high, though the internationalization

program also deepened. In all, the impact of Herrera's and Lusinchi's policies on the reduction in rents was perhaps modest in the short term but more important in the longer term.

The reelection of Carlos Andrés Pérez (1989–1993) to a second term deepened the trend. Pérez's reelection marked a watershed in Venezuelan politics, ushering in a decade of weak incumbents who had only marginal party support bases (Corrales, 2002; Seawright, 2006). Neither Pérez, the interim president who succeeded him (Ramón J. Velasquez), nor the next elected president, Rafael Caldera, enjoyed a majority in Congress; indeed, the effective number of parties in the Chamber of Deputies rose from 2.6 in 1988 to 4.7 in 1993 and then 6.1 in 1998 (Villasmil, Monaldi, Rios, & Gonzalez, 2007).<sup>22</sup> Although Pérez was elected with a solid margin in the popular vote, his popularity with voters suffered a sharp decline almost immediately after his election because of his broader economic policies; he was then impeached in 1993. With no prospect of reelection and a fraught relationship with leaders of his party AD (Corrales, 2002)—a party that itself was in the midst of a sharp electoral decline—Pérez was clearly not a strong incumbent during his second term. Nor was Rafael Caldera, who ran for his second term not as a candidate of COPEI (which put forth a different candidate) but as an independent backed by a coalition of small parties; he was elected in 1993 with only 30% of the vote. Neither Pérez nor Caldera could reasonably expect that they or their parties would enjoy future electoral advantages, and both presidents thus plausibly lacked long political time horizons.

Strikingly, these weak second-term incumbents—who in their first terms in office had promoted rent-maximizing policies, especially Pérez—not only supported rent-minimizing reforms but also sought to “lock in” these reforms without the approval of a hostile Congress. As Monaldi (2001) puts it,

The administrations that designed and implemented the new investment regime, those of presidents Pérez (1989-1993), Velasquez (1993-94), and Caldera (1994-99), did not have a clear majority in Congress, thus they tried to maximize what could be done without going through a difficult legislative process. (pp. 20-21)

Instead of changing oil policy through legislation, for example, Pérez's government obtained from the Supreme Court favorable interpretations of existing law, which allowed PDVSA to sign contracts with foreign investors without congressional approval. In service agreements that allowed multinationals to produce oil in marginal oil fields at reduced tax and royalty rates, PDVSA, and not the Venezuelan state, was the legal entity that contracted with investors.

This meant that in the case of any revision of contractual terms, foreign investors could sue PDVSA in international courts, thereby laying claim not only to the foreign assets PDVSA had obtained during the internationalization process—which included the wholly owned subsidiary CITGO and refineries in the United States, Germany, and Scandinavia and which were valued at nearly \$6 billion—but also to receivables from PDVSA's oil exports under its long-term supply contracts (Monaldi, 2001). The consortia agreements that were established to upgrade heavy oil in Venezuela's Orinoco Belt required congressional approval under existing legislation, but only of the basic framework guaranteeing (in a rather lax way; see Mommer, 2004; Monaldi, 2001) PDVSA's "control" over consortia decisions. Both the definition of excess profits (which were subject to sovereign expropriation, in some cases) and the size of royalties to be paid by the projects were contractually determined, rather than approved by Congress. Because loan agreements were secured by PDVSA's overseas assets, undoing the terms of these contracts, at least in the medium term, would prove prohibitively costly to PDVSA and to the Venezuelan state.

Thus, many of the reforms adopted by weak incumbents promised to lock in low rents into the foreseeable future, serving as commitment devices against future rent seeking by the state. Other reforms would not necessarily be as difficult to reverse in the future but nonetheless also lowered the central government's take. In 1993, for instance, after Pérez's impeachment, PDVSA obtained from the provisional government of Velasquez a reduction in the company's own tax burden through generous exemptions for inflation. The "fiscal reference price" which set a high value for royalty sharing with the central government, was also reduced during the provisional government and then eliminated in 1996, during the Caldera administration (Mommer, 2004, p. 138). Such reforms are also consistent with rent limitation by weak incumbents—and, as I discuss further below, the rationale for these reforms in terms of attracting new oil investment was particularly weak.

Venezuela is again governed by a strong incumbent, Hugo Chávez. Are rent-seeking patterns in the most recent period also consistent with this article's argument? I suggest that they are. Interestingly, the strength of the incumbent has varied since Chávez's initial election in 1998: In the first years of his mandate, Chávez lacked a majority in either house of Congress. Only with the 2000 elections to the new unicameral National Assembly did Chávez become a strong incumbent, according to my coding criteria. And his power remained sharply contested, with a 3-month strike in the oil sector in 2002–2003, a failed recall referendum in 2004, and a failed coup d'état, also in 2004. Chávez's strength as an incumbent has most clearly consolidated since

around 2005, when Chávez gained an unanimous backing in the National Assembly (because of an opposition boycott of the vote). In 2006, Chávez won reelection with around 60% of the vote, and he later secured constitutional reforms to abolish term limits.<sup>23</sup>

There is corresponding intertemporal variation in the degree to which the Venezuelan central government has asserted claims to oil rents under Chávez. In the earliest years of Chávez's presidency, oil policy was not substantially revised from the policies of the early 1990s. Indeed, only with the Hydrocarbons Law of 2001 (promulgated by executive decree) did the central government begin to pass legislation that would allow it a greater share of rents. Extraordinary economic conditions—namely, the oil boom that began in 2003—eventually allowed the Venezuelan state to undo some of the rent-limiting effects of the policies of the 1990s, for example, by paying off debt securitized by PDVSA's offshore assets. The state's take has increased most sharply since around 2005 or 2006 (see Figure 1), as the joint-venture companies and foreign oil operators have been required to migrate to majority PDVSA ownership, Venezuela has sought to strengthen OPEC, and taxes on foreign operators and joint venture partners have been raised to 50.0% (though royalties were lowered to 33.3%). A striking illustration comes from the special windfall tax, indexed to the price of oil, which was levied on producers in April 2008.

Clearly, the Venezuelan state has again become a rent maximizer, but it has done so only as Chávez has become an ever stronger incumbent. Though there are other factors that contribute to these patterns (see the next section), the most recent events are thus consistent with this article's claims about the effects of political competition.

### *Alternative Explanations*

There are several possible objections to the argument presented above. First, even if we accept that policy—and not world oil prices or changes in production costs—is at least partially responsible for the government's shifting share of rents, policy might not be responding to the political incentives identified in this article. For some observers, the government's declining share of rents after the nationalization of oil simply reflects economic conditions and, in particular, the need to stimulate investment in the oil sector (Monaldi, 2002). A wave of foreign investment clearly followed the opening of the oil sector to foreign capital, whereas loans secured by foreign assets bought during the internationalization program also allowed PDVSA to access world credit markets on better terms.<sup>24</sup>

However, although policy changes in the oil sector clearly did attract increased investment, it is not plausible that all of the decline in the state's share can be attributed to the desire to attract investment, nor is it clear that Venezuela would have failed to attract investment under higher tax and royalty rates. For example, given that PDVSA's foreign assets served as collateral for offshore receivables under the heavy crude contracts, it is not at all clear that it was necessary to lower royalties to the exceedingly generous rate of 1% on the heavy crude oil projects in the Orinoco Belt to attract investment, and there was no mechanism through which these were keyed to increase as prices rose (Manzano & Monaldi, 2008).<sup>25</sup> Moreover, when the ambitious expansion plan was proposed for PDVSA in 1991, Venezuela had more than 80 years of accumulated oil reserves, at the prevalent rate of extraction (Monaldi, 2001, p. 19); it strains credulity to think that reserve depletions justified the tax and royalty terms offered under the expansion program.

As for the internationalization program, the stated objective of buying refineries abroad was to guarantee supply contracts for difficult-to-market Venezuelan heavy crude, yet the refinery bought in Germany in the 1980s has never since processed Venezuelan heavy oil, only light oil (Mommer, 2004). Finally, the economic or investment rationale for the progressive elimination of the fiscal export value for PDVSA in the 1990s is also far from clear. These examples suggest that at least some of the decline in the state's share of rents must be explained by economic factors other than the need to attract investment.

Next, however, even if we accept that the need to attract investment was not always the central motivation, factors other than the political incentives I emphasize here could have been key. In several recent accounts, the actions of company officials—whether executives at private multinationals before nationalization or managers at PDVSA afterward—have been the key focus of analysis. During the prenationalization period, for instance, multinational executives were accused of transfer pricing and other actions that tended to limit the state's take of rents (Betancourt, 1956/1979; Pérez Alfonso, 1967/2003). For many critics of oil policy during the 1980s and 1990s, meanwhile, the decline in the state's take during that period can be attributed to choices made by managers at PDVSA (Baena, 1999; Boué, 2003; Mommer, 2004).<sup>26</sup> According to such accounts, managers at PDVSA were in turn able to pursue objectives other than maximizing rent for the central government because of the substantial autonomy granted to the parastatal at the time of nationalization and because of the weak regulatory oversight by the Ministry of Energy and Mines.<sup>27</sup> In sum, according to these accounts, agency problems were at the center of the decline in rents: The central-government principal and PDVSA agents had divergent interests, and monitoring



problems contributed to the principal's inability to optimize policy in the direction of its interests.

Yet this focus on the actions of company officials neglects the important role of politicians in setting policy toward the oil sector. Indeed, major changes in oil policy had to be approved by the executive (and in some cases by Congress). Prior to nationalization, as discussed above, there was important variation in the desire of different democratic governments to maximize rents (i.e., when AD vs. COPEI held the executive branch). With respect to the decline in rents after nationalization, accounts focused on PDVSA managers also appear incomplete: Pérez's government obtained from the Supreme Court favorable interpretations of existing law, which allowed PDVSA to sign contracts with foreign investors without congressional approval, and during the 1990s executives helped to acquire a permissive reading from Congress of what PDVSA control over the heavy oil consortia required. Other important policies, such as the size of the fiscal reference price, were under executive control. The claim that PDVSA managers simply exploited agency problems to push their own agenda irrespective of the desires of the executive or legislative branches therefore lacks credibility.

Another possible objection to the framework developed here could be that secular trends in state take are highly correlated across countries. Perhaps the pendulum of bargaining strength between national states and multinational exporters swings back and forth over time, producing a graph such as Figure 1; in other words, perhaps international variables constitute the important factors (Jones Luong, 2004). Yet though such factors surely contribute to the explanation, they are clearly not sufficient. For example, a focus on the international balance of power between oil exporters and importers leaves unexplained both the decline in the central government's share of rents in Venezuela after the booms of the 1970s (which did not appear to occur in, e.g., the oil states of the Gulf, though of course absolute amounts of revenue declined precipitously) and the more recent rise in rents, in which Venezuela has been in front of the world curve on this issue.<sup>28</sup>

Finally, another important alternative explanation concerns the role of ideology. It appears to be the case, for instance, that many mass-based and leftist parties have promoted greater rent capture in Latin America—say, Michael Manley's People's National Party in Jamaica (see Stephens, 1987) or the Chilean Socialists. Yet in Venezuela, as described above, Rafael Caldera limited rents to a greater extent during his second term; during his first term, Caldera was the candidate of the right-leaning COPEI party, whereas for his second term he was backed by a coalition of left-wing parties, including the Movement Towards Socialism, the Electoral Movement of the People, and

the Communist Party of Venezuela. Carlos Andrés Pérez, meanwhile, adopted rent-maximizing reforms during his first term and rent-minimizing reforms during his second term, and during both terms he was the candidate of the center-left party AD.

## Conclusion

This article seeks to illuminate conditions under which political incumbents structure oil sectors in a way that produces greater or lesser rents for the central government. Intuition might suggest that most political incumbents would favor greater rents. Yet the Venezuelan case suggests otherwise. This article presents a model of political competition that helps to explain the striking intertemporal variation in the percentage take of the Venezuelan central government.

A cursory look at cases beyond Venezuela also suggests the broader relevance of the model. For instance, throughout the period of single-party dominance of the Partido Revolucionario Institucional (PRI) in Mexico, the state-owned company *Petróleos Mexicanos* (PEMEX) remained a “sacred cow” of the Mexican state; when the PRI was a strong incumbent, PEMEX was granted a monopoly on all petroleum activities by the Constitution, severely constraining private and foreign participation in oil and gas exploration, production, and refining (Brown & Knight, 1992; Haber, Maurer, & Razo, 2003). Although the oil sectors in Mexico and Venezuela faced similar world market conditions and structural constraints during the 1990s, in Mexico almost no attempts were made to privatize or partially privatize the oil sector or to open it to greater outside (foreign) investment, nor did the Mexican parastatal embark on the kind of internationalization strategy undertaken by PDVSA in Venezuela (Boué, 2003).<sup>29</sup> These contrasting outcomes have been substantially reversed during the past several years, however; even as a strong incumbent in Venezuela—Hugo Chávez—has attempted to boost the Venezuelan state’s take, a weak incumbent in Mexico—Felipe Calderón, who defeated Andrés Manuel López Obrador by well less than 1% of the popular vote—has inched toward reforms that would plausibly reduce the state’s take by liberalizing and partially privatizing PEMEX.<sup>30</sup> What is striking about the proposed Mexican reforms is that unlike the Venezuelan reforms in the 1990s they arose during a period of high world prices, when the state was flush with oil rents; in such conditions, retaining a relatively low share of earnings might allow PEMEX to undertake required investments, yet the proposed reforms would plausibly liberate more revenue for the petroleum sector rather than the central government.

Bolivia also suggests the potential usefulness of the argument. For example, it is striking to contrast the electoral margins of two presidents with sharply differing policies toward the oil and gas sector. Gonzalez Sanchez de Losada, who initiated a “capitalization” program during his second term as president (2002–2003) that clearly limited the Bolivian government’s claim on gas rents, was elected with just 22.5% of the popular vote, in a three-way race. On the other hand, the current president, Evo Morales, who has sharply increased the state’s taxation of gas projects in the context of a “nationalization” of existing projects, was elected in 2005 with 53.9% of the vote—a rather resounding victory in a country where presidents are typically elected with a plurality rather than a majority of the vote. Although this contrast does not prove that the model explains patterns of rent capture in Bolivia, it does suggest the usefulness of further empirical analysis along these lines.

Clearly, in these and other cases, there are typically several plausible alternative explanations. One of the advantages of adopting a case study approach in this article is that measuring the capture of rents by the state can be quite subtle; in-depth study of a single case or set of cases can facilitate measurement. On the other hand, the ability to adjudicate between all alternative explanations is necessarily limited. In Mexico, for example, the inefficiency of PEMEX as an organization is frequently cited by analysts as a force motivating reform; also, the bulk of Mexican oil production in the 1990s came from a single field (Cantarel) that may be nearing depletion, necessitating new investment in the sector. Again, ideology may also matter because elected governments of the right of center PAN party in Mexico such as Calderón may be more predisposed to liberalization on ideological grounds. The analysis I have presented here cannot prove that strategic rent maximization—and minimization—lies behind the patterns in the data, yet the case study of Venezuela suggests the strong plausibility of the argument and lays the ground for future analysis. This underscores the value of future cross-case empirical analysis, where careful comparisons might allow some potential relevant confounders to be identified and controlled.

The discussion here has focused on the substantive arena of oil, where the central government’s rents are often taken to be exogenous “manna from heaven.” Although thinking of oil rents in this way is sometimes a useful analytic simplification, it does not accord with reality in many settings, where exploration and production decisions are made by private actors as well as governments and where governments must make policy and institutional decisions that shape how much of the rent they capture. The model provides a way to explain variation across countries and across time in the extent of

capture by the state, and it illuminates the political incentives that may lead governments in fact to fail to maximize rent capture.

Yet beyond the issue of endogenous oil rents, the article also provides a model that is general and may be useful in a number of settings. Indeed, the model may help explain political and economic outcomes whenever the gains from economic investment may be realized only across several political or electoral cycles. For example, weak incumbents with a small probability of reelection in highly clientelistic systems—for instance, parties that lack large patronage networks—may have strong dynamic incentives to introduce electoral reforms that strengthen the role of programmatic politics at the expense of clientelism. The model might thus be adapted to study transitions from clientelistic to programmatic politics as well as the political dynamics of other substantive areas where executives seek to tie the hands of their successors. Future work may be geared toward identifying and exploiting the broader insights that a focus on dynamic rent maximization and rent minimization may provide.

### **Author's Note**

Previous versions of this article were presented at the American Political Science Association meeting and the Comparative Politics Workshops at the University of Chicago and Columbia University.

### **Acknowledgments**

For their helpful comments, I am grateful to seminar participants at Columbia University and The University of Chicago and to Lauren Duquette, David Epstein, Justin Fox, John Huber, Macartan Humphreys, Pauline Jones Luong, Fabiana Machado, Marcelo Nazareno, Alberto Simpser, Dan Slater, Susan Stokes, Lisa Wedeen, Steven Wilkinson, and the anonymous reviewers. I especially thank Francisco Monaldi and James Robinson for their detailed comments. Professor Asdrúbal Baptista and Bárbara Lira, Graciela Urdaneta, and Stefania Vitale at the Instituto de Estudios Superiores de Administración in Caracas graciously helped me obtain data.

### **Declaration of Conflicting Interests**

The author declared no potential conflicts of interest with respect to the authorship and/or publication of this article.

### **Financial Disclosure/Funding**

The author received no financial support for the research and/or authorship of this article.

## Notes

1. The logic is similar in some ways to the idea that electorally weak parties in legislatures lock in policy changes by delegating authority to bureaucracies (see, e.g., de Figueiredo, 2002).
2. Although the need to attract investment is clearly part of the explanation for patterns of rent capture, it is just as clearly an insufficient explanation for several policies adopted by the central government that limited the state take.
3. As I discuss in the conclusion, the basic structure of the model may help illuminate such disparate topics as bureaucratic delegation, the origins of rentier states, and even switches from clientelistic to programmatic forms of party competition.
4. Figure 1 includes dividends, which were first paid by *Petróleos de Venezuela S.A.* (PDVSA) beginning in 1994, as well as PDVSA's social expenditures and off-balance sheet spending on social funds such as FONDEN (after 2002). It does not include spending on domestic fuel subsidies, though doing so would tend to support the argument made below: It was weak incumbents such as Carlos Andrés Pérez in 1989 who sought to reduce them.
5. Price data used in Figure 1 come from Baptista (2006) and from British Petroleum's Statistical Review of World Energy, various years.
6. See <http://research.thaddunning.com>.
7. The authoritarian government of Medina Angarita passed a major reform of oil legislation in 1943, prior to the coup. However, the biggest revisions to policy came once *Acción Democrática* (AD) was in power. Moreover, pressure from AD legislators appears to have been a key instigator of the changes to oil legislation under Medina Angarita (see Betancourt, 1956/1979).
8. During the authoritarian government of Pérez Jiménez, the absolute amounts of rents accruing to the government increased impressively, but this reflected price movements as well as increased production by the companies; the central government's relative share of revenue remained nearly constant during this period.
9. In addition, some heavy crude oil from the Orinoco Belt was also classified, perhaps inappropriately, as bitumen, a resource taxed at a lower rate in Venezuela (Mommer, 2004).
10. Boué (2003) estimates that transfer pricing accounted for an average of \$500 million in foregone profits annually; if this claim were correct, such transfer profits would clearly have removed revenues from the Venezuelan Fisc even if they increased consolidated profits of PDVSA, as the company did not pay any dividends from 1976 to 1994.
11. The accounting classification of some heavy crude oils as bitumen, mentioned in a note above, may have contributed to this tendency; bitumen was not subject to OPEC quotas, whereas some heavy crudes would have been (Mommer, 2004).

12. Although reliable data are not readily available, the state's percentage take likely increased even further during 2007 and 2008.
13. In the model presented here, parties do not choose policy platforms, other than the initial choice of rents. In a previous, richer model (Dunning, 2007), I allowed for policy choice; the salient results of that model are identical to those presented here.
14. I assume that if the party is indifferent between choosing high and low rents, it chooses high rents.
15. Indeed, if  $\mu \geq \frac{1}{2\psi}$ , the realized shock never favors Party A.
16. If  $\mu \leq 0$ , then Equation 17 can never hold and Party A always chooses high rents, whatever the value of  $\beta$ . This is why the incidence of low rents, over a sequence of different games in different parts of the parameter space, is only weakly increasing in  $\beta$ .
17. My focus is on Venezuela's democratic periods, for these are the periods for which the explanation developed in this article should have the most relevance. For instance, authoritarian governments are not likely to take into account the effect of rents on future electoral prospects.
18. Until 2000, the lower house was the Chamber of Deputies; thereafter, a unicameral National Assembly was established.
19. However, although Carlos Andrés Pérez won his second term as president in 1988 with an impressive margin of 12%, his party did not have a majority in Congress; see the discussion below.
20. Interview, Álvaro Silva Calderón, former secretary general of OPEC and minister of energy and mines and opposition legislator from the Movimiento Electoral del Pueblo during Caldera's administration, Caracas, Venezuela, February 28, 2005.
21. Interview, Ramón Espinasa, former chief economist of PDVSA, Caracas, Venezuela, February 24, 2005.
22. The effective number of parties is a Herfindahl-type measure that weights the number of parties by their vote share or number of seats.
23. Chávez's first attempt to do this was bundled with a number of other constitutional reforms and was rejected by voters in December 2007; a more narrow referendum that abolished term limits was passed by voters in February 2009.
24. From 1997 to 2001, average annual oil foreign investment (\$7.1 billion) was 463% higher in real terms than the annual average of 1950 to 1959 (a period of high investment growth) and 900% higher than the annual average from 1960 to 1975 (Monaldi, 2002, p. 51). This is in part because of the highly capital-intensive nature of heavy crude oil extraction relative to lighter crudes.
25. Indeed, oil executives will confess (off the record) that with price increases in 2003–2004, heavy oil projects essentially paid for themselves in 1 year—which underscores the point that 1% royalties for 10 years were likely unnecessary to attract investment.

26. From the perspective of PDVSA managers, as Bernard Mommer (2004)—who was later to become vice-minister of energy and mines—puts it,

Why generate fiscal revenues that would be squandered anyway? Why maximize profits when the state would inevitably siphon them into the treasury? Instead, the company concentrated on its own agenda: the development of the oil sector in real terms, maximizing volume, turnover, and sales (not profits) in all the segments of the industry...at the same time that fiscal revenues were disregarded. (p. 132)

27. According to the former chief economist of PDVSA, Ramón Espinasa, who helped oversee the opening of the oil sector to foreign capital in the 1990s, there was a “distributive struggle” within the state, between the central government and managers at PDVSA. Interview, Ramón Espinasa, Caracas, Venezuela, February 24, 2005.
28. Manzano and Monaldi (2008) argue that world oil price is most important in shaping variation in the state take over time. Yet they also highlight substantial cross-sectional variation across Latin American oil exporters, so price is not a sufficient explanation.
29. There was some limited reform and opening of investment in the petrochemical sector, but no program such as that embarked on in Venezuela was contemplated in Mexico during the 1990s.
30. At the time of this writing, President Calderón has sent to the Senate a reform that gives *Petróleos Mexicanos* greater freedom to contract work to private companies, manage its own revenues, and issue company debt finance.

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## Bio

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