# Short-Term Politics, Long-Term Policy: Developing Institutions to Combat the Resource Curse

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**Abstract**

While some governments use natural resources for immediate political gain, others create transparent institutions that promote sustainable long-term development. What explains this variation? Using novel data for 82 countries between 1975 and 2018, I show that incumbents are more likely to restrict their own discretion over the extractive sector at moderate levels of political competition. When rulers are safe in their seats, they can adopt long-run developmental strategies, rather than use public funds for short-term political survival. Still, there must be a credible opposition citizens can turn to if the incumbent produces bad policy. This middling range of competition, coupled with high public approval, provides space to implement long term-policy while generating enough short-term incentives to do so. These findings suggest that a balance between job security and electoral risk drives resource-rich governments to adopt policies that – at least on paper – are more efficient in the long run.

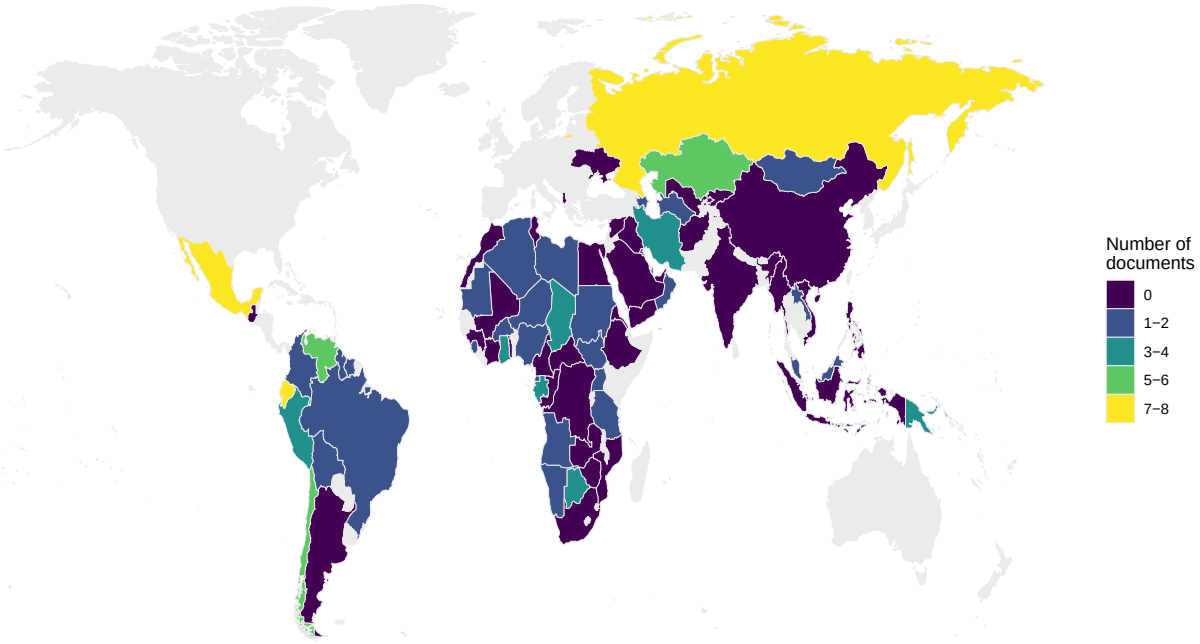
# 1 Introduction

In May 2015, ExxonMobil announced a significant oil discovery off the coast of Guyana, with production scheduled to begin in January 2020. Ahead of production, President David Granger signed into law the Natural Resource Fund Act "to manage the natural resource wealth of Guyana for the present and future benefit of the people in an effective and efficient manner."[1] The law stipulates that resource wealth should be saved in a fund and managed in a transparent manner. Given that Guyana is one of the poorest countries in the Americas, with high unemployment rates and low levels of investment in education, concerns about the *future* benefit of its people are laudable, but surprising. Citizens in Guyana and elsewhere have well-established preferences: they want high real income, high growth, low inflation, low unemployment, and are willing to punish any incumbent who fails to meet these expectations (Schultz 1995). In signing the Natural Resource Fund Act, the Guyanese government committed to saving most of its future oil revenue, instead of spending it immediately to meet citizens' demands. As shown in Figure 1, Guyana is not alone: several states have created formal institutions to promote long-term development through natural resource revenue. Why do some states take up such commitments, while others do not?

I examine variation in domestic legislation among countries that are rich in non-renewable resources like oil, natural gas, and minerals. Using novel data on extractive sector legislation for the countries shown in Figure 1, I show that incumbents are more likely to pass laws restricting their own discretion over resource revenue when they have high approval ratings and face moderate levels of political competition. In the short run, I attribute this to a lower danger of political sanctioning: when rulers are safe in their seats, they are less concerned about political survival and can make decisions that are at odds with popular demands for lower taxes and increased spending. In the long run, when rulers face moderate levels of political competition, it is more advantageous to institutionalize the distribution of extractive revenues than to deliver private benefits or co-opt the opposition. This is because highly competitive and highly uncompetitive systems generate similar disincentives to craft and

[1] Act No. 12 of 2019 – Natural Resource Fund Act, Article 3. 23 January 2019.

**Figure 1:** Number of legal documents regulating the natural resource sector, 1975-2018




This map depicts the 82 countries examined in this study. The color of each country represents the total number of legal documents passed at the national level to regulate the natural resource sector between 1975 and 2018.

enact long-term development policy. In competitive regimes, rulers need budgetary discretion to spend immediately, delivering broad benefits to secure public support for reelection; in uncompetitive regimes, rulers are not held accountable or pressured to develop transparent institutions, instead delivering narrow benefits to maintain their support basis. In contrast, moderate certainty about future political outcomes reduces incumbents' need for discretion over natural resources: these leaders are secure enough to adopt long-run developmental strategies rather than pay out short-term rents, but not so secure that they face no incentive to develop institutions in the first place. These findings are confirmed by an additional study of ten Latin American nations, with quarterly data from 1980 to 2018.

There is evidence that politically contested arenas produce larger quantities of public services, as incumbents fearing for their seats face a sense of urgency: they must deliver public goods to secure political support (Hobolt and Klemmensen 2008; Lake and Baum

2001). However, other studies indicate that competition has a countervailing effect on public services: in making legislative bargaining more difficult, competition might actually *worsen* public goods provision (Gottlieb and Kosec 2019). Given these mixed findings, it is difficult to make predictions for resource-rich states, where political competition tends to be lower to begin with: when political elites have access to oil, gas, and mineral wealth, they use these resources to strengthen their grip on power (**?**). My findings reconcile these seemingly disparate research agendas, showing that political opponents can push for public service delivery even in political arenas with limited contestation.

My findings also speak to an extensive literature linking natural resources to fiscal profligacy, rent-seeking behavior, and institutional failure (Ross 2015). I theorize natural resources as the product of political decisions over who owns and controls these resources, not just something a country is exogenously bestowed upon. Like Jones Luong and Weinthal (2006), Brooks and Kurtz (2016), and Mahdavi (2019), I recognize the existence of a "conditional resource curse:" countries adopt different patterns of extraction and production that condition whether resource wealth will be a blessing or a curse. To understand these patterns of extraction, I examine the origins of institutions that shape a government's relationship with its subsoil assets.

The remainder of this study is structured as follows. First, I present the puzzle in more detail. Second, I develop an argument of why and when political leaders choose fiscal restraint over fiscal profligacy. After discussing the research design and the data, I test the argument, discuss the findings, and conclude with implications for future research.

# 2 A Time Inconsistency Problem

Democrats and autocrats alike are motivated by political survival: they want to distribute spoils to allies, co-opt the opposition, and secure political support (Franzese 2002; Gehlbach, Sonin and Svolik 2016). In times of economic growth, the optimal political strategy is to enact policies that are immediately visible and clearly attributable to the incumbent, instead

of saving for future administrations or funding long-term projects that may be discontinued when windfalls fade away (Talvi and Végh 2005). Investment in the long run is risky, because individuals are impatient and do not trust the government to fulfill longer-term policy promises (Jacobs and Matthews 2012). This collective impatience pushes rulers towards allocation decisions that maximize short-run policy benefits, particularly ahead of elections (Nordhaus 1975). After all, any public servant can name the administration that increased their salary.

Some rulers can pursue this optimal political strategy by exploiting non-renewable natural resources, which increase the political capital of incumbents in four ways. First, they provide an alternative source of revenue that reduces the need to collect taxes (Besley and Persson 2014). This, however, has negative consequences for the quality of fiscal institutions. Since the institutions collecting revenue from natural resources are different from the institutions collecting revenue from taxpayers, investing in the former reduces the need to invest in the latter: resource-rich governments no longer need to incur the transaction costs of measuring citizens' income, bargaining over tax rates, or monitoring compliance. Taxation plays a crucial role in state building, so states that do not invest in fiscal institutions reduce their ability to implement a range of other policies (Besley and Persson 2010).

Second, natural resources reduce public demands for accountability and representation (Ross 2001). While taxation does not automatically generate demand for accountability, even complicated and less salient taxes are the product of a political bargain: taxpayers agree to pay taxes because they are confident that other taxpayers will also pay taxes and rulers will deliver the promised public goods (Levi 1988). In eliminating this bargaining process, natural resources remove the need for rulers to meet their side of the bargain. As a result, citizens lose any sense of ownership over public resources, are less prone to monitoring the budget, and less likely to demand good governance.

Third, natural resources generate demands and opportunities for increased public spending (van der Ploeg and Venables 2012). On the demand side, citizens have unrealistic expectations of what resource wealth can or cannot do, pressuring the government to share

its newfound riches by increasing short-term public consumption (Collier 2017). On the opportunity side, leaders often have the discretion to spend resource windfalls at will and circumvent budget constraints. This leads to the final mechanism through which natural resources increase the political capital of a ruler: they lead to greater spending on patronage (Ross 2001). In reducing citizens' demand for accountability and providing financial means to reward political allies, resource wealth weakens institutional checks and balances (Vicente 2010; Paler 2013; Caselli and Michaels 2013). Thus, any government – left or right, democratic or authoritarian, open or closed to international markets – likes resource rents and wants to spend them (Karl 1997; Ross 2015).

In brief, resource wealth leads to a time inconsistency problem: it erodes the quality of institutions over the long run, but also increases the political capital of incumbents in the short run – and, politically, the short run matters most. The puzzle is not why the resource curse exists; prioritizing tangible short-term benefits over uncertain future promises is a rational choice. The puzzle is why, despite all political benefits of increased current expenditure, the temptation of rent-seeking behavior, and the urge to disregard fiscal discipline, some incumbents escape the curse and act in a time consistent manner. *Time consistent* means that some governments tie their own hands, passing legislation that curtails their own discretion over natural resource revenue. Instead of spending this revenue as they please, pursuing policies that maximize present-day political support by delivering quicker social gains, rulers commit ahead of time to pursuing policies that deliver long-term gains, but at a slower pace (Jacobs 2016).

From a fiscal standpoint, time consistent policies are important because oil, gas, and mineral prices are difficult to forecast. Pandemics, commodity speculation, terrorist attacks on oil refineries, geological limitations, and time delays in extractive projects generate uncertainty about future prices (Hamilton 2009). Furthermore, global demand for fossil fuels is in decline, as the world's biggest markets are moving towards clean energy.[2] To prolong the benefits of resource wealth, resource-rich states need to make forward-looking decisions.

[2]Jillian Ambrose. "Rise of Renewables May See Off Oil Firms Decades Earlier Than They Think." *The Guardian.* 14 October 2019.

In the next section, I construct a typology of forward-looking policies and develop a theory of when states resort to these measures.

# 3 Theorizing Natural Resource Policy

## 3.1 A Typology of Natural Resource Policy

Incumbents typically constrain their own discretion over natural resources in three ways. First, they accumulate reserves in a sovereign wealth fund, which gives them enough liquidity to stay afloat in times of need. A sovereign wealth fund is a state-owned investment account that uses national savings to purchase international assets like private equity and real estate (Chwieroth 2014). While some sovereign wealth funds receive proceeds from privatization or central bank reserves, natural resource funds are financed only by oil, gas, or mineral rents. Different funds follow different mandates: some aim to save for future generations, others are used to mitigate budget volatility caused by unexpected fluctuations in resource prices, and others, still, finance socio-economic projects, pensions, or social welfare (IMF 2008). All funds share one characteristic: they put resource revenue beyond the government's reach to prevent misappropriation.

Second, incumbents earmark natural resources: instead of paying revenue from the extractive sector into a general account and allocating it according to discretionary needs, political leaders commit ahead of time to using this revenue for a particular budget item (Kiser and Karceski 2017). Earmarks counteract political pressures for increased current expenditure by channeling domestic investment into underfunded issue areas, like health, education, and infrastructure. Officeholders can diversify the economy by earmarking resource revenues for investment in non-resource sectors. Several nations also adopt revenue sharing systems, by which a share of resource revenue is transferred to states and municipalities and earmarked in advance: when local authorities receive their share of rents, they must spend it on priority areas identified by the central government.

Third, incumbents act in a forward-looking manner by passing fiscal rules, which are multi-year numerical targets on fiscal policy, like how much to save, how much to spend, or how much to borrow (Lledó et al. 2017). Fiscal rules prevent rulers from spending too much during price booms (or too little during price busts). When the economy is flooded by foreign currency, it is often unable to absorb this money all at once. Fiscal rules limit the amount of resource revenue that enters the public budget, delaying spending until policymakers design policies that allocate this revenue efficiently. Alternatively, these rules impose debt limits to prevent countries from borrowing excessively against their natural resource wealth. While fiscal rules exist in several nations with no relevant extractive sector, they fulfill a different role when resource revenue is large relative to total revenue: they are designed to mitigate the volatility of commodity prices and prolong the benefits of resource extraction (Baunsgaard et al. 2012).

These three strategies are complementary: governments can create a fund, earmark it for education, and constrain how much of this fund enters the budget every year. To ensure that rulers can respond to emergencies, these measures typically include escape clauses, allowing the government to withdraw money from its fund or engage in deficit spending under extraordinary circumstances. Still, funds, earmarks, and fiscal rules are costly to implement: they require laws, bureaucracies, and regulatory bodies that states with low institutional capacity are unable to develop. Not every state is able or willing to make a hard choice and act in a time consistent manner.

## 3.2 Hypotheses for the Long Term

When do rational, self-interested, office-seeking incumbents overcome the pressure of using natural resource revenue for short-term gain, instead pursuing policies that are costly in the short term but bring long-term rewards? The crux of my explanation is the following: some rulers make time consistent decisions because domestic politics allows them to do so. I argue that the decision to tie hands is more likely to arise at intermediate levels of political competition, because political competition represents two dimensions: the value of budgetary

discretion and the public demand for accountability. If competition is low, the ruler derives no electoral value from budgetary discretion, but faces no public demand for accountability. If competition is high, the ruler faces high public demand for accountability, but ascribes a high electoral value to budgetary discretion. For rulers to tie their hands, they must be secure enough to enact long-run policies without jeopardizing their future political prospects, but not so secure that they can afford to eschew institutional development altogether.

The central mechanism behind this argument is electoral sanctioning: citizens reward the incumbent for positive outcomes and punish the incumbent for negative outcomes (Ashworth 2012). Punishment is viable when there are political alternatives and today's winners might be tomorrow's losers. To illustrate this logic, suppose the head of state of an oil-producing country is up for reelection, and their challenger is a political outsider promising to use future oil revenue to cut taxes or increase public consumption. The incumbent has privileged information about the current state of the public finances and knows that cutting taxes or increasing public consumption will harm the economy. They would prefer not to distribute short-term benefits to buy off voters, since clientelism might have high electoral costs (Weitz-Shapiro 2012).

However, heads of state who say no to their constituency risk losing political support. If the opposition is strong, rulers cannot afford to lose votes and face no incentive to lock in policies that might work against them in times of need. Instead, they will use natural resource wealth to meet the expectations of the citizenry, delivering short-run policy benefits to key constituencies to boost political support and secure reelection. For example, they will increase personnel spending and distribute excludable goods, like food or medicine – even if these isolated allocation decisions worsen public service provision in the long run (Gottlieb and Kosec 2019). Short-term political survival is the main factor driving incumbents' behavior; secondarily, incumbents are willing to invest in long-term institutional development, but only if such an investment does not detract from their primary goal. This is how the time inconsistency phenomenon comes about.

If, on the other hand, rulers have comfortable winning margins and are confident about

their future electoral prospects, they can afford to institutionalize the allocation of natural resources. Job security prolongs the time horizons of politicians, allowing them to reform the extractive sector and lock in policies that are beneficial for the public finances in the long run, without risking political losses in the short run. The longer the time horizons, the lower the marginal benefit of manipulating resource revenue for immediate political gain. Instead of delivering excludable goods on an informal basis, a confident ruler can commit to institutionalizing the distribution of public resources.

Still, the incumbent cannot be too comfortable in their seat, or else they will face no incentives to tie hands. In the absence of a political alternative, the threat of electoral punishment is not credible; voters are not able to sanction the incumbent, even if they want to, because there is no exit option. Institutional development is costly: in developing extractive institutions, rulers must estimate the size of available reserves, establish rules for public procurement, stipulate the subnational distribution of resource rents, determine how much of these rents should be saved or spent, and create regulatory bodies that can enforce compliance, to name only a few tasks. When politicians are secure under the status quo, why should they make a public commitment to create institutions that are ambitious and difficult to implement? It is cheaper to deliver narrow benefits and distribute spoils, co-opting other political actors and precluding any potential opposition.

As the strength of the opposition grows, the ruler needs to co-opt and appease an increasing number of political actors to remain in power. If there is a political opponent who can credibly demand access to resource revenues, it is cheaper to deliver broad public services than narrow individual benefits, and it pays off to make public commitments institutionalizing the future allocation of natural resource revenue, rather than pay off important political opponents through patronage.[3] To institutionalize natural resource policy, rulers need to face "mild constraints" (Doner, Ritchie and Slater 2005: 329) that make it difficult for them to remain in power without improving institutional performance. If the constraints are too small, rulers can afford to make commitments, but are not pressured to do so. If the

[3]Bueno de Mesquita et al. (2002) make a similar argument: the larger the winning coalition (that is, the group of people whose support the ruler needs in order to stay in office), the bigger the incentives to provide effective public policy.

constraints are too large, rulers cannot afford to make commitments, even if the opposition pressures them to do so.

Consistent with this reasoning, Hypothesis 1 predicts that the relationship between political competition and policy adoption follows an inverted U-shape: at intermediate levels of competition, it pays off for rulers to tie their hands, instead of using rents to maximize electoral outcomes (which they would do if competition is high) or co-opt opponents (which they would do if competition is low). Governments are more likely to pass natural resource policy when they are confident that doing so will not jeopardize their tenure, but not so confident that they can pocket the money or buy political support without facing any kind of sanctioning. At intermediate levels of competition, the opposition does not pose a threat to incumbency, but is a nuisance that increases the opportunity cost of pure patronage. There is an optimal level of political contestation below which rulers will not be held accountable by the public, and above which rulers will overspend for electoral gain. This optimal level of contestation generates the necessary incentives to build institutions insulating the extractive sector from discretionary spending.

> **Hypothesis 1 (political competition):** *Incumbents are more likely to pass natural resource policy at intermediate levels of political competition.*

To illustrate the prediction of Hypothesis 1, consider the case of Botswana, where political elites built strong institutions to overcome the curse posed by diamond wealth. Acemoglu, Johnson and Robinson (2003) attribute these positive outcomes to the dominance of the Botswana Democratic Party (BDP), which has enjoyed a large and stable majority in the National Assembly since the country's independence in 1966. While Botswana has freely contested democratic elections, the main opposition party, the Botswana National Front (BNF), is not strong enough to threaten the lasting rule of the BDP. At the peak of its success, in the 1994 general election, the BNF won 37 percent of the vote, compared to 55 percent for the BDP. Botswana faces the optimal conditions for the creation of natural resource policies: indeed, it runs one of Africa's most successful funds (the Pula Fund, created in 1996) and has clearly defined fiscal rules (passed in 2003). The BDP can resist

short-term political pressures to spend more, instead saving income from diamond exports for future generations, because it knows with relative certainty that it will be the ruling party of these future generations. In committing to a balanced budget, the BDP ensures the future availability of public funds, knowing it will reap the benefits of fiscal prudence.

Separation of powers affects citizens' ability to make demands. When casting a ballot, voters condition their choice to the state of the economy. When the electorate can discern between political actors and identify who is responsible for the state of the economy, it rewards or punishes the responsible actor correctly (Powell and Whitten 1993). If the economy is doing well, voters reward the incumbent; if not, they punish the incumbent by voting for the opposition. However, this clarity of responsibility varies across political systems (Hellwig and Samuels 2007). When the executive and the legislative are elected independently, it is easier to assign policy responsibility and act based on this assignment. If there are conflicts between different branches of the government, these branches reveal more information to the public, allowing voters to identify correctly who is responsible for what (Samuels 2004). It is less easy to do so when the executive is appointed by the legislative and there are no fixed terms, as under parliamentarism. When there is a minority government or a ruling coalition, for example, it is difficult to single out the party responsible for bad economic performance. Since it is easier to identify the "guilty" political actor in presidential systems than in parliamentary systems, it is easier to hold incumbents accountable in the former than in the latter: presidents can serve as a focal point for electoral punishment. Consistent with this finding, Hypothesis 2 predicts that incumbents are and more likely to pass natural resource policy under presidentialism, as they are more afraid of electoral punishment.

> **Hypothesis 2 (presidentialism):** *Incumbents are more likely to pass natural resource policy in presidential systems than in parliamentary systems.*

## 3.3 Hypotheses for the Short Term

To what extent do short-term political changes affect the timing of natural resource policy? To answer this question, I return to the case of Botswana, where an established but non-threatening opposition (the BNF) generated incentives for a confident incumbent (the BDP) to pass natural resource policy. Since voters weight the recent past more heavily than the distant past, the general policy pattern is to see relative austerity at the beginning of a politician's term, followed by an increase in spending as election day approaches (Franzese 2002). Consistent with this pattern, the BDP should pass natural resource policy at the beginning of a five-year term, rather than at the end. However, Schultz (1995) finds that this spending pattern varies from election to election: governments do not always manipulate the economy ahead of elections, only when their incumbency is at risk. If the incumbent has broad political support and is likely to be re-elected, there is no need to induce business cycles that carry reputational costs and harm future economic performance. The BDP might pass natural resource policy ahead of elections, provided it has enough short-run political capital to implement these policy changes. For example, the BDP under President Festus Mogae was probably not concerned about setting limits to public expenditure in 2003, because it knew that this decision would not hurt the party's prospects for the 2004 election.[4] From this scenario, I derive Hypothesis 3: regardless of the electoral calendar, incumbents tie their hands when they have immediate political credit (in other words, high support from the public) that can be spent on unpopular measures.

> **Hypothesis 3 (public support):** *Incumbents are more likely to pass natural resource policy when they have strong public support than when they have weak public support.*

Citizens hold the incumbent accountable when they can identify the party responsible for economic conditions, but this clarity of responsibility becomes more opaque in contexts

[4]Indeed, the BDP increased its victory margin over the BNF in the 2004 election, winning 44 of the 57 seats in the National Assembly. The BNF won 12 seats.

of natural resource abundance. In Latin America, for example, presidents are punished for every short-term economic setback, because the electorate has limited information about global economic outcomes and is unable to discount exogenous shocks driving their country's economic performance (Campello and Zucco Jr. 2016). Thus, presidential popularity and reelection prospects depend on commodity prices and US interest rates, two factors that the presidents of Mexico or Brazil evidently cannot control. I theorize that this also has consequences for the allocation of natural resource revenue. There is evidence that governments spend on patronage when oil rents decline and on public services when rents increase (González 2018). In times of bust, rulers compensate citizens for job losses in the extractive sector to avert electoral punishment. In times of boom, rulers have more room to breathe: they can deliver better infrastructure and more social services to meet the booming sector's demands. In line with this argument, Hypothesis 4 predicts that incumbents are more likely to lock in natural resource policy (reducing the funds available to patronage) in times of bonanza, when they do not expect to be sanctioned by citizens because public support is already high.

> **Hypothesis 4 (resource revenue):** *The effect of public support on natural resource policy is stronger when resource revenue is high than when resource revenue is low.*

## 3.4 Competing Explanations

Natural resources could constrain political competition, and not the reverse: rulers might use windfalls to create entry barriers and increase participation costs for their rivals (**?**). Still, there is meaningful variation in competitiveness across the 82 resource-rich countries examined in this study. For example, in 2018, the largest party in the lower chamber of the legislative had an average 31.8 percent lead over the second-largest party, but this ranged from a 1.5 percent lead in Guyana to a 98 percent lead in Equatorial Guinea, with a standard deviation of 27 percent. In providing financial resources to the incumbent, natural resources pose challenges to the strength of the opposition, but few countries are like Equatorial

Guinea; in most regimes, the existence of a credible opposition is exogenous to the choice to spend or save rents.

Regime type might drive variation in natural resource policy. Sanctioning the incumbent is less risky, less costly, and more likely under democracy. Democracies produce higher levels of public goods than autocracies (Lake and Baum 2001) and are more willing to disseminate policy-relevant data (Hollyer, Rosendorff and Vreeland 2011). Since democratic institutions have more checks and balances, democracies may be more likely to tie their hands than autocracies, increasing transparency in an otherwise opaque sector. Yet sanctioning the incumbent is also possible under autocratic rule, as even dictators face some uncertainty (Weeks 2008). Stable autocracies rely on nominally democratic institutions to distribute spoils and bribe potential opposition forces, broadening the ruler's basis of support and lengthening their tenure (Gandhi and Przeworski 2007). This explains the proliferation of natural resource funds in absolutist monarchies like Brunei or Saudi Arabia: in developing extractive institutions, these monarchs delimit the scope of demands the opposition can make. Democrats may be more likely to tie their hands than autocrats, but the curvilinear effect of political competition should be orthogonal to regime type.

I posit that natural resource policy is more likely under presidentialism than under parliamentarism. However, since presidential systems are more widespread in Latin America and Africa than in the developed world (Shugart and Mainwaring 1997), policy variation might be a function of geography, rather than political system. In empirical tests, I disentangle the effect of geography from the effect of governing system.

Additional rival explanations raise the possibility of policy diffusion: governments might tie their hands to emulate their resource-rich peers. Mexico, Timor-Leste, Mongolia, and others modeled their natural resource legislation after Norway's, suggesting that countries tie their hands after their peers have done so (Chwieroth 2014). Alternatively, rulers might adopt certain natural resource management strategies because doing so was labeled a best practice by the World Bank and the IMF (Baunsgaard et al. 2012). These arguments are compelling, but incomplete. Why do countries emulate each other's behavior or comply with

international best practices? Diffusion is a necessary, but insufficient explanation for natural resource policy: peer pressure might motivate political leaders to tie their hands, but not every government succeeds in passing natural resource legislation. Theories of spatial policy dependence are conditional; institutional, political, economic, and social factors determine countries' susceptibility to policy diffusion (Neumayer and Plümper 2012). I investigate these factors in the next section.

# 4 Data

## 4.1 Dependent Variable: Natural Resource Policy

To understand why governments tie their hands, I examine all legal documents regulating the natural resource sector in 82 countries classified as resource rich by the IMF (Venables 2016), the Natural Resource Governance Institute (2017), or both.[5] I limit the analysis to resource-rich countries because discovering and extracting oil, gas, and minerals is a necessary condition for passing natural resource policy; we cannot observe this policy in countries that have not discovered any subsoil assets or have chosen not to develop the extractive sector.

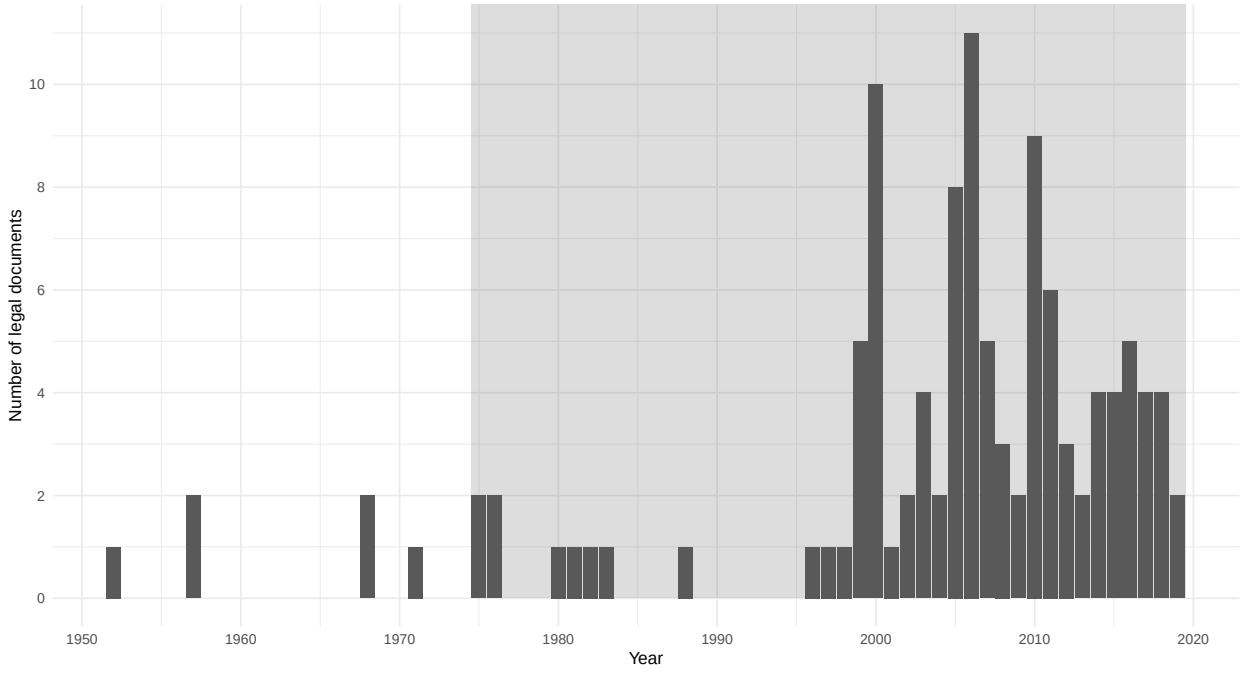
To collect this evidence, I proceed in two steps. First, using the Natural Resource Governance Institute (2017) and the IMF Fiscal Rules at a Glance Dataset (Lledó et al. 2017) as a starting point, I document all instances in which one of these 82 countries created a natural resource fund, earmarked natural resources, or set fiscal rules.[6] Second, I track the laws, executive decrees, acts, codes, and constitutional amendments associated with the creation and regulation of each measure.[7] These documents are published in Official Gazettes,

[5]This excludes developed countries (Australia, Canada, Norway, the UK, and the US), though results are identical if they are included. See Appendix A for full list.

[6]I only include fiscal targets related to natural resources. I discard rules referring to the general budget unless they make explicit reference to resource revenue.

[7]There are 34 documents passed by subnational entities in four federations (Australia, Canada, the United Arab Emirates, and the United States), and two documents adopted by members of the Central African Economic and Monetary Community. Since these subnational and supranational documents are not comparable to national-level legislation, I omit them from the analysis, though their inclusion returns identical results (see Appendix D).

**Figure 2:** Number of legal documents passed every year, 1952-2019




This figure depicts the temporal distribution of 114 legal documents regulating the natural resource sector in 48 countries. As the shaded area shows, most legal documents were passed after 1975; this is the period covered in the analysis.

available to the public through the Foreign Official Gazette Database (FOG) and the Global Legal Information Network (GLIN). The resulting corpus consists of 114 legal documents passed by 47 countries between 1952 and 2019. The remaining 35 countries, while included in the analysis, have no earmarks, funds, or fiscal rules at the national level.

I focus on measures enacted and regulated by written legal documents because this statutory character reflects a higher level of commitment than informal agreements. The existence of a written document indicates that the decision to institutionalize natural resource policy comes from politicians, not lower-level career bureaucrats. In this context, tying hands is a political (not just a technocratic) decision. While this only captures de jure policy, not de facto behavior, it is useful to understand when and why de jure policy is enacted because it is a necessary first step toward explaining the effects of law on behavior. Laws can be a good predictor of behavior: Amick, Chapman and Elkins (2020) find that both constitutional and statutory rules mandating a balanced budget are associated with higher fiscal discipline.

Figure 2 shows all legal documents passed at the national level. Andersen and Ross (2014: 998) warn that "using a very long time-series ... has an important drawback: It can open the door to misleading inferences, if the relationship between the independent and dependent variables has changed over time." Given how few legal documents existed until 1975, the relationship between natural resources and extractive institutions likely changed in the 1970s, when the real price for a barrel of crude oil jumped from 18.60 dollars to 59 dollars within months. Three shifts unsettled global markets at the time: OPEC's unilateral decision to increase oil prices, Richard Nixon's decision to close the gold window, and, a wave of nationalizations in the developing world that weakened the seven transnational companies controlling the global oil production until then. These shifts led to higher and more volatile oil prices. To ensure that the relationship between independent and dependent variables is orthogonal to these changes, I begin the analysis in 1975. Using the remaining 108 documents, I generate the dependent variable *Policy adoption*, which is a binary indicator of whether the government in question passed any legal document regulating the natural resource sector each year. *Policy adoption* is a rare event; Russia and Ecuador lead the list, having passed eight legal documents each (see Figure 1).

To illustrate the content of these legal documents, consider Tanzania's Oil and Gas Revenue Management Act, passed on 4 August 2015. This document creates the Oil and Gas Fund to maintain fiscal and macroeconomic stability, finance investment in oil and gas, enhance social and economic development, and safeguard resources for future generations. The Act includes earmarking provisions: every year, up to 3% of the GDP can be transferred from the fund to the consolidated budget, of which at least 60% must fund human capital development. Finally, the Act sets yearly limits for total public expenditure (40% of the GDP) and for the size of the fiscal deficit (which should not exceed 3% of the GDP once oil and gas revenue attains a level of at least 3% of the GDP). Tanzania's Oil and Gas Revenue Management Act restricts the government's discretion over natural resource revenue in all three manners identified in this study: through funds, earmarks, and fiscal rules. Like Tanzania, many other countries use one legal document to tie their hands in different ways. Overall, 46 countries have natural resource funds, 22 have fiscal rules, and 19 have earmarks.

In operationalizing the dependent variable as *Policy adoption*, rather than as a count of individual funds, earmarks or rules, I ensure that Tanzania's intertwined measures are not counted multiple times.

## 4.2 Independent Variables

Drawing from **?** and Berliner (2014), I measure political competition as the strength of the ruler relative to their potential challengers. *Seat difference* represents the difference in the share of seats held by the two largest parties in the lower (or only) chamber of the legislature. Narrower winning margins reflect higher levels of political competition. Regardless of whether the second-largest party is a member of the ruling coalition or not, a decline in *Seat difference* poses a threat to the largest party, signaling an increase in the relative strength of political alternatives. I choose this measure of political competition (calculated using V-Dem data) because it has the broadest coverage across countries and over time. It represents the actual distribution of power in the legislature, mitigating issues of malapportionment that would arise if I examined differences in *vote* share. To capture the curvilinear relationship predicted by Hypothesis 1, I include both *Seat difference* and its squared term, predicting that the former will have a positive effect and the latter will have a negative effect.

One potential criticism of *Seat difference* is that it focuses on legislative competition at the expense of executive competition. To mitigate such concerns, I estimate additional models with an alternative measure of political competition: *Polcomp*, the Polity index for political competition that ranges from 1 to 10, where 1 represents "repressed competition" and 10 represents "institutionalized open electoral participation" (Marshall and Gurr 2015). These models, which lead to identical results, are presented in Appendix D.

Hypothesis 2 identifies one factor that increases the odds of policy adoption: separation of powers. Assuming rulers are more likely to be rewarded – or punished – by their constituency under separation of powers, I include the dichotomous variable *Presidential system*, coded

one if the chief executive is directly elected and zero otherwise, based on data from Cruz, Keefer and Scartascini (2018).

## 4.3 Control Variables

To test the alternative explanation that regime type drives policy adoption, I use the Polity 2 index to generate the variable *Democracy*, ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). Partisanship (captured by the dichotomous variable *Left executive*) and *Term limits* might also be key factors driving variation in natural resource policy. To assess whether the choice to tie hands is motivated by election cycles, I control for *Election year*, which represents whether any election (legislative or executive) took place that year. Relatedly, *Turnover frequency* tracks the number of changes in the party controlling the legislative over the previous five years; more frequent turnover reflects higher political uncertainty (Cruz, Keefer and Scartascini 2018).

To capture the effect of policy diffusion, the spatial lag $W \times Policy\,adoption$ indicates how many other resource-rich countries have passed natural resource policy so far, weighted by the row-standardized spatial weights matrix $W$, which represents the minimum distance between any two countries in the dataset (Neumayer and Plümper 2012). To avoid distorting the spatial lags, I only include nations that are within 1,000 kilometers of each other (Genovese et al. 2017).

As the size of the extractive sector increases, the incentives to regulate it might increase. I operationalize the size of the extractive sector as *Resource rents* (as a percentage of the GDP, reported by the World Bank). *Field discovery* indicates whether a giant, supergiant, or megagiant oil and gas field – that is, a field with over 500 million recoverable barrels of oil or over 3 trillion cubic feet of gas – was discovered (Horn 2014). The discovery of such a field might compel governments to regulate their resource sector, as Guyana did. To assess whether tying hands is driven by overoptimism when commodity prices are high, I control for *Oil price* (West Texas Intermediate), which is the cost of a barrel of crude oil, in current

US dollars, on December 31. Though not all countries in the analysis are oil producers, I use oil as a proxy for all commodities because different prices tend to be correlated and follow similar trends over time (World Bank 2014).

To assess whether a country is more likely to regulate its natural resource sector as it becomes wealthier or in times of economic expansion, models include *GDP per capita*, in current US dollars, and *GDP growth*, in percent, reported by the World Bank. *IMF agreement* is a dichotomous variable indicating if the country-year in question was under an IMF agreement (using data from Bauer, Cruz and Graham 2012 and the IMF MONA Database). Finally, since policymakers might reform the extractive sector in years of economic downturn, the dichotomous variable *Crisis* is coded one in years of banking, debt, or currency crisis and zero otherwise (Laeven and Valencia 2020). To reduce simultaneity bias, all independent variables (including the spatial lags) are lagged at one year, apart from *Seat difference*, *Election year*, and *Turnover frequency*, which already refer to past political events.

# 5 Empirical Strategy and Results

## 5.1 Testing the Effects of Competition and Political System

Since the dependent variable *Policy adoption* is binary, I estimate logistic regressions,[8] with cubic polynomials instead of time dummies to avoid issues of quasi-complete separation (Carter and Signorino 2010). To control for unobserved unit-level heterogeneity, I include region-fixed effects. *Policy adoption* is a rare event, and fixed effects can be problematic for rare event binary time series cross sectional data: when units never experience the event, there is no variation in the dependent variable, so these observations drop from the sample,

[8] As a robustness check, Appendix D reports the results of Cox proportional hazards models predicting the time until a government passes its *first* law. This survival analysis omits all country-years following passage of the first law, as countries are no longer at risk once they pass their first natural resource policy. While the results of proportional hazard models are equivalent to those of logistic regressions, I focus on the latter for two reasons: first, governments are permanently at risk of passing new natural resource policy; second, logistic coefficients are easier to interpret.

generating selection bias. To overcome this issue, I use the penalized maximum likelihood estimator proposed by Cook, Hays and Franzese (2020), which includes fixed effects, but uses a modified score function to retain the units that have not experienced the event.

I predict that incumbents can afford to tie their own hands when they are certain that doing so will not jeopardize their political survival. Political competition should have a curvilinear effect on policy adoption: opposition parties must be weak enough that the government can afford to tie its hands, but strong enough that the government would rather institutionalize the distribution of benefits than distribute these benefits through patronage. Table 1 presents the results for three penalized logistic regressions with *Policy adoption* as the dependent variable, reporting the coefficients as log-odds. Model 1 supports Hypothesis 1: as the difference in the share of seats held by the two largest parties in the legislature increases, the odds of policy adoption increase significantly, but only up to a certain point. Figure 3 allows us to visualize this curvilinear effect, captured by the coefficients for *Seat difference* and *Seat difference* squared. According to Figure 3, there is an optimal margin of victory (between 40 and 60 percent) outside of which institutionalizing the regulation of natural resources is less beneficial. When victory margins are too small, incumbents want to retain full discretion over the allocation of natural resource revenue to maximize their immediate political survival; when margins are too high, there is no public pressure to institutionalize the distribution of spoils, as rulers can do so informally.

Model 2 supports Hypothesis 2: presidential systems are nearly three times more likely to pass natural resource policy than parliamentary systems. This finding is robust to the inclusion of region-fixed effects, disproving concerns that policy variation is a function of geography, rather than political system. I find support for Hypotheses 1 and 2 even after controlling for regime type, partisanship, timing of elections, and macroeconomic indicators in Model 3.

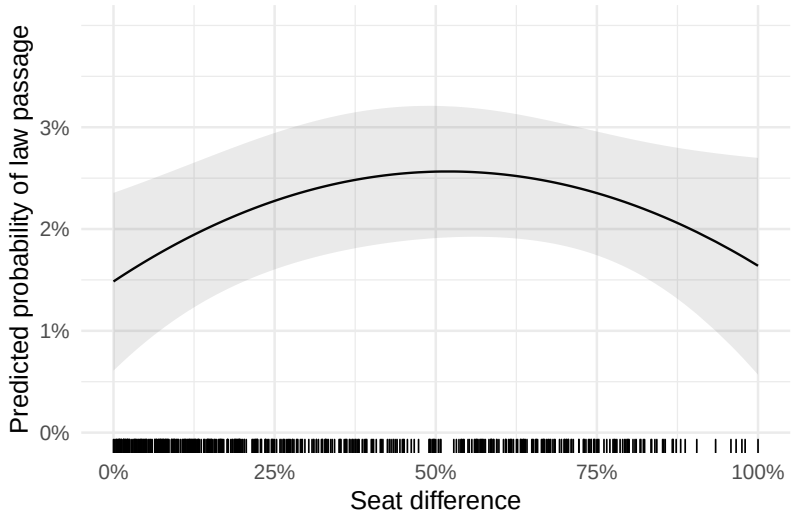
Having examined how slow-moving, long-term institutional characteristics explain yearly variation in natural resource policy, I proceed to test how rapidly changing, short-term variables affect a ruler's propensity to tie their hands. To do so, I turn to an in-depth

**Table 1:** Political determinants of policy adoption around the world, 1975-2018 (yearly data)

| | *Dependent variable:* | | |
|---|---|---|---|
| | Policy adoption | | |
| | (1) | (2) | (3) |
| Seat difference | 2.977** | | 3.050** |
| | (1.400) | | (1.399) |
| Seat difference$^2$ | −2.871* | | −2.993* |
| | (1.502) | | (1.501) |
| Presidential system | | 1.061*** | 0.836** |
| | | (0.339) | (0.346) |
| Democracy | | | −0.001 |
| | | | (0.029) |
| Left executive | | | −0.304 |
| | | | (0.267) |
| Term limits | | | −0.173 |
| | | | (0.384) |
| Election year | | | 0.395* |
| | | | (0.229) |
| Turnover frequency | | | −0.318 |
| | | | (0.325) |
| Resource rents | | | 0.018* |
| | | | (0.010) |
| Field discovery | | | 0.925*** |
| | | | (0.322) |
| Oil price | | | −0.011* |
| | | | (0.006) |
| GDP per capita | | | 0.043 |
| | | | (0.033) |
| GDP growth | | | 0.005 |
| | | | (0.013) |
| IMF agreement | | | −0.022 |
| | | | (0.268) |
| Crisis | | | 0.278 |
| | | | (0.415) |
| W × Policy adoption | | | −0.368 |
| | | | (0.617) |
| Constant | −2.945*** | −2.512*** | −2.960** |
| | (1.114) | (0.939) | (1.371) |
| Observations | 2,770 | 3,186 | 2,452 |
| Log Likelihood | −346.753 | −374.385 | −311.112 |

This table reports the results of penalized likelihood models with third-order polynomials and region-fixed effects. The reported coefficients are log-odds. *p<0.1; **p<0.05; ***p<0.01

**Figure 3:** The curvilinear effect of political competition on policy adoption




Based on Model 1, this figure represents the predicted probability of *policy adoption* at different values of *Seat difference*, with 90 percent confidence intervals. For better visualization, the y-axis is displayed on a log scale.

analysis of natural resource policy in presidential systems.

## 5.2 Testing the Effects of Public Support and Resource Revenue

Table 1 provides encouraging evidence connecting presidentialism and moderate competition to hand-tying mechanisms. However, *Seat difference* captures the seat distribution in the lower chamber after the *last* legislative election; it is a retrospective assessment of uncertainty. The political landscape of a country can change dramatically within a few years, or even months. *Seat difference* captures the strength of political alternatives between elections, but says nothing about public support for the ruler, which is a more immediate indicator of incumbent security. To measure incumbent security among comparable countries, holding regional characteristics constant, I examine the determinants of *Policy adoption* for ten Latin American nations in every quarter between 1980 and 2018. Latin America is a region known for its resource nationalism: citizens value popular sovereignty over the extractive sector and oppose agreements allowing foreign businesses to "steal" their resource wealth

(Weyland 2009).

Since nearly all Latin American nations have presidential systems,[9] these governments should be particularly wary of electoral sanctioning, which is more widespread under separation of powers. Latin American presidents have the final say about the content of laws and the timing of policy adoption (Tsebelis and Alemán 2005), so their decision to sign a law allocating the proceeds of the extractive sector might depend on short-term variations in political uncertainty.

I operationalize short-term incumbent security as the approval rating of the chief executive, that is, the percentage of support expressed for the president. *Executive approval* (Carlin et al. 2019) is the most direct measure of "the marginal benefit of winning additional votes" (Schultz 1995: 81), and hence the ideal measure to assess whether political uncertainty drives policy adoption. While *Seat difference* is a retrospective measure, *Executive approval* is forward-looking: it captures not only the incumbent's assessment of their current public support, but also their expectations of future electoral performance, conditioning how much room to move they have when setting natural resource policy. There is a temporal gap between proposing a bill and passing a law; laws coming into effect today have been under consideration for many months. Given that the chief executive must consider their approval rating throughout this entire period, I lag *Executive approval* at one quarter (3 months).[10]

If Hypothesis 3 is correct and incumbents are more likely to regulate the extractive sector when they have strong public support, increases in *Executive approval* will increase the odds of *Policy adoption*. Hypothesis 4 predicts that the effect of public support on natural resource policy is moderated by the availability of resource revenue. Since *Resource rents* are not available on a quarterly basis, I proxy for this variation using *Oil production (log)*, which measures the production of petroleum and other liquids (including natural gas) in millions of barrels per day, logged, as reported by the US Energy Information Administration.[11]

[9]Exceptions are Trinidad and Tobago (a parliamentary republic) and Guyana and Suriname (which have assembly-elected presidents). These countries are omitted from the analysis because no measure of executive approval is available for them.

[10]The results are robust to using *Executive approval* in the quarter of policy adoption or in the previous 6, 9, 12, and 15 months (see Appendix D).

[11]Not all countries in the sample are oil producers; for example, Chile produces modest amounts of oil, as

Table 2 presents the results of this disaggregated analysis. *Policy adoption* now varies on a quarterly basis, as do most independent variables, which are lagged at one quarter and not one year.[12] Again, the reported coefficients are log-odds.

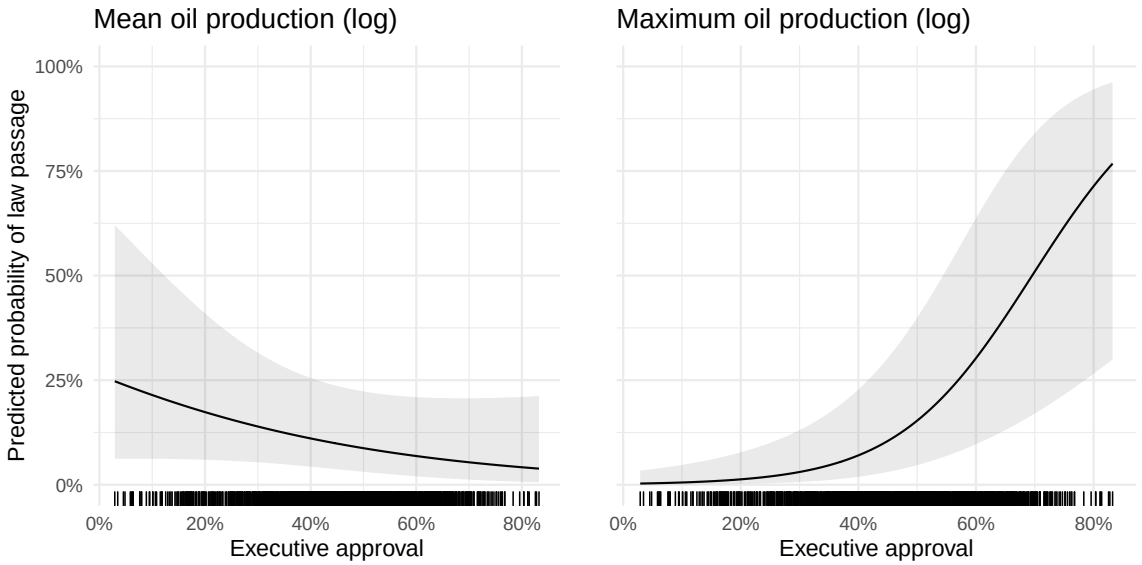
The region-specific results in Table 2 align with the cross-regional results reported in Table 1. There is a positive and statistically significant relationship between executive approval and policy adoption: according to Model 4, a one percent increase in executive approval is associated with a two percent increase in the odds of passing a law reforming the extractive sector. These results are robust to the inclusion of control variables in Model 5. The effect of *Seat difference* is still curvilinear, but no longer statistically significant – which makes sense: long-term variations in the composition of the legislative cannot explain short-term variations in the odds of law approval. This supports the prediction that incumbents tie their hands when they have public support in the short run and face moderate levels of political competition in the medium to long run. Job insecurity (due to low approval ratings) increases the perceived need for discretion over natural resources, as do very low or very high levels of structural political competition (because both extremes push the incumbent towards the delivery of particularistic benefits).

Models 4 and 5 provide compelling evidence that public support increases the odds of policy adoption, but is this effect unconditional? Model 6 investigates whether the relationship between approval ratings and policy adoption is mediated by resource revenue. The interaction between *Executive approval* and *Oil production (log)* has a positive and significant coefficient, which supports Hypothesis 4: incumbents are more likely to reform the extractive sector when they have surplus money from natural resources and do not need this money for short-term political survival. Figure 4 simulates the effect of this interaction at two different values of *Oil production (log)*. The average value of this variable (-2.9) corresponds to the production of 55 thousand barrels of oil and other liquids every day; at this

the foundation of its extractive sector is copper. *Oil production* offers a conservative estimate of the effect of resource wealth on policy adoption; robustness checks using *Resource rents* recover similar results.

[12]This excludes *Democracy*, *GDP per capita*, and *GDP growth*, which are only available on a yearly basis. Since Horn (2014) computes *Field discovery* on a yearly basis, I used LexisNexis to uncover the exact day each discovery was announced. *Seat difference*, *Turnover frequency*, and *Election quarter* are not lagged. *Term limits* drop out of the analysis, as virtually all Latin American countries have executive term limits.

**Figure 4:** Predicted probability of policy adoption at different values of executive approval, conditional on oil production



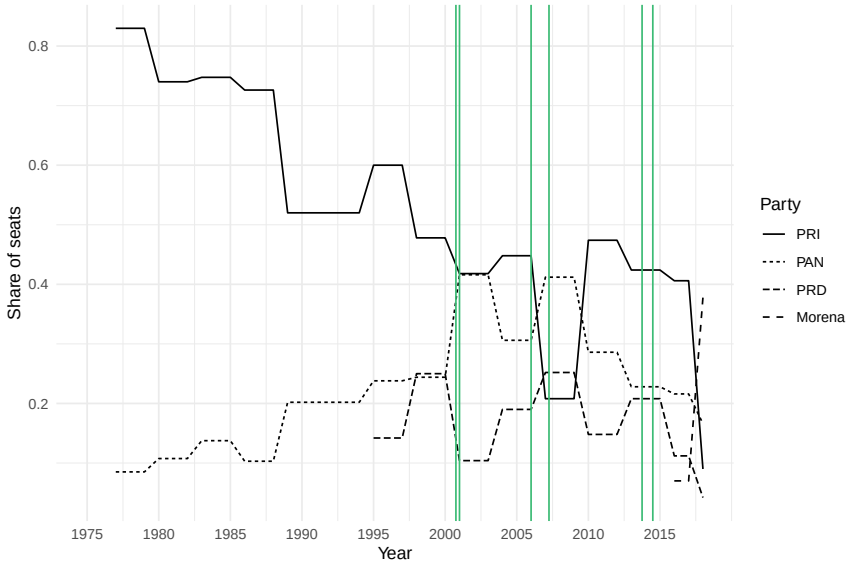

Based on Model 6, this figure simulates predicted probability of *Policy adoption* at different values of *Executive approval*, with 90 percent confidence intervals, conditional on *Oil production (log)* at its mean and maximum values (-2.9 and 1.3, respectively). The remaining variables are held at their means (with dichotomous variables held at zero).

point, an increase in executive approval is not associated with any meaningful change in the odds of policy adoption. As oil production increases, so does the effect of *Executive approval* on *Policy adoption*; when production peaks at 3.85 million barrels/day (as in Brazil, Mexico, and Venezuela during the early 2000s), it is all but certain that executive leaders with high popular approval will tie their own hands.

# 6 Natural Resource Policy in Mexico

I argue that moderate political competition, presidentialism, and high public support increase the odds that resource-rich governments restrict their own discretion over the extractive sector. To probe this causal mechanism, I follow Seawright and Gerring (2008) and a typical case that best illustrates the argument. In 1901, Mexico discovered its first giant oil field, Panuco (Horn 2014). In response to public pressure and following several other discoveries, President Lázaro Cárdenas seized the assets of foreign companies, creating the

**Figure 5:** Distribution of seats in the Chamber of Deputies, 1975-2018




Using data from Cruz, Keefer and Scartascini (2018), this figure depicts the share of seats in the lower chamber controlled by the three largest political parties in Mexico until July 2018: the Institutional Revolutionary Party (PRI), the National Action Party (PAN), and the Party of the Democratic Revolution (PRD). The PRD first ran in the 1994 election. The National Regeneration Movement (Morena) first ran in the 2015 election. Vertical lines indicate quarters in which natural resource policy was passed.

national oil company Pemex in 1938. Cárdenas's Institutional Revolutionary Party (PRI)[13] – which won every presidential election from 1929 to 2000, held the majority in Congress until 1997, and controlled every state government until 1989 (Greene 2007) – struggled with subsequent attempts to liberalize the oil sector, even though Pemex needed foreign capital to acquire technology and managerial expertise. The unionization rate in the Mexican oil sector is exceptionally high, and the Oil Workers Union (which has strong ties to the PRI) opposed reforms challenging popular sovereignty over the extractive sector (Jones Luong and Sierra 2015).

There was no political benefit to breaking with the status quo to modernize the oil sector, establish rules for public procurement, or determine the allocation of rents ahead of time. The PRI faced no oversight by opposition forces, international organizations, or the media, and had complete control over the Mexican bureaucracy. Consistent with my

[13]The PRI was initially known as National Revolutionary Party (1929-1938) and Party of the Mexican Revolution (1938-1946).

expectations, the PRI's dominance of all major political institutions generated little incentive to implement long-term, pro-development natural resource policies. Instead, the party used resource revenues to insulate itself from any real competition. Revenue from state-owned enterprises (notably Pemex) was used to buy off key supporters, and fraudulent elections eliminated credible political rivals (Cantú 2019). Politicians from the PRI were secure in their seats and saw no need to develop extractive institutions that would carry unnecessary political costs.

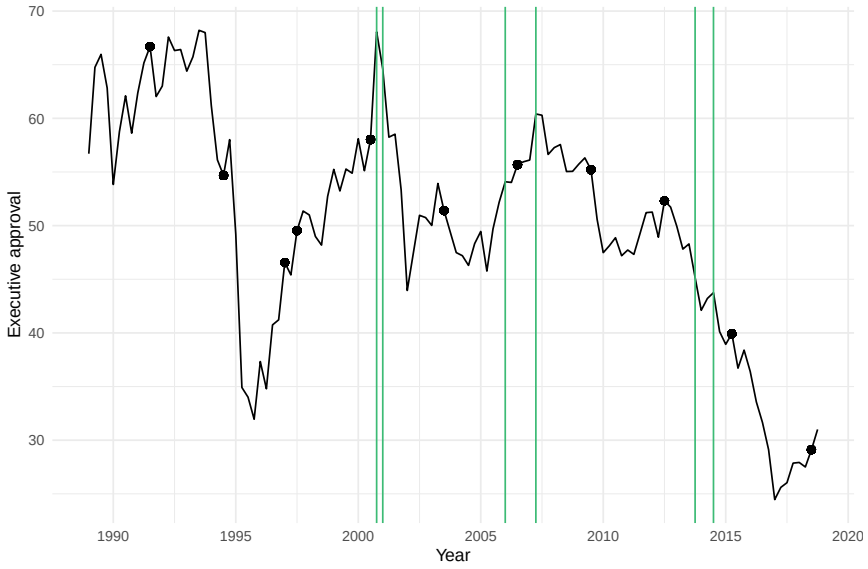
At the height of the PRI's dominance, in 1976, the party's presidential candidate ran unopposed and received 100% of the votes. As Figure 5 shows, this dominance declined in the 1980s and 1990s – partly because the 1982 debt crisis forced the government to privatize state-owned enterprises, reduce the size of the bureaucracy, and cut back on tariffs, depriving the PRI of funds for patronage (Greene 2010). In 1997, the party failed to win a majority in the Chamber of Deputies for the first time in history; in 2000, it lost the presidential election to the conservative National Action Party (PAN). Except for the 2007-2009 legislative period, the PRI continued to be the largest party in the Chamber of Deputies, but its dominance was no longer absolute. In line with my theory, this decline in single-party dominance coincided with a series of reforms in the oil sector.

At the beginning of every fiscal year, the government calculates its expected future revenue based on a reference price for a barrel of crude oil. At the end of the fiscal year, 40% of the surplus (if applicable) must be deposited into a fund to offset the negative effects of oil price fluctuation on public finances.[14] To fulfill this purpose, the Oil Revenues Stabilization Fund (FEIP) was created in December 2000,[15] the same month President Vicente Fox took office. The fund's proceeds should be invested in low-risk financial instruments, and the government could withdraw up to 50% of the fund if the actual price for an oil barrel fell at least 1.50 US dollars below the reference price. Fox could afford to make such reforms: he rose to power during an increase in oil prices and had high approval ratings, being the first

[14]Presupuesto de Egresos de la Federación para el ejercicio fiscal del año 2000, Article 35. 31 December 1999.

[15]Acuerdo por el que se expiden las Reglas de Operación del Fondo de Estabilización de los Ingresos Petroleros. 31 December 2000.

**Figure 6:** Executive approval in Mexico, 1989-2018




Using data from Carlin et al. (2019), this figure depicts the approval ratings of Mexican presidents between 1989 and 2018. The round markers indicate presidential elections, while vertical lines indicate quarters in which natural resource policy was passed.

president in 71 years who was not a member of the PRI. Though the FEIP represented an important first step in curtailing policymakers' ability to use resource revenue for political gain, it did not have clear regulations. As a result, incumbents quickly rewrote the rules to meet their short-term needs: the share of revenue surplus to be deposited in the fund was reduced from 40% in 2000 to 33% and 25% in 2001 and 2003, respectively.

In March 2006, Fox signed a fiscal reform mandating a balanced budget for the federal public sector, including public enterprises like Pemex.[16] At the time, his approval rating was over 50% and his party faced meaningful competition – two conditions anticipated by my theory. In 2006, Fox's former Secretary of Energy and fellow member of the PAN, Felipe Calderón, won the presidential election by a narrow margin. Calderón continued the reforms of his predecessor, passing new regulation disclosing the FEIP's total asset value and creating a technical committee to manage the fund.[17] This regulation coincided with a period of high oil production and high executive approval. Between April and June 2007,

[16]Decreto por el que se expide la Ley Federal de Presupuesto y Responsabilidad Hacendaria. 30 March 2006.

[17]Acuerdo por el que se establecen las Reglas de Operación del Fondo de Estabilización de los Ingresos Petroleros. 31 May 2007.

Mexico produced 3.5 million barrels/day, selling each barrel for about 65 US dollars; during the same period, over 60% of all Mexicans approved of President Calderón's administration, as Figure 6 shows. His administration faced the optimal conditions to reform the extractive sector without risking the loss of public support.

The PAN controlled the presidency from 2000 to 2012, which could suggest that conservative presidents reform the extractive sector, rather than centrist or leftist presidents. But when the centrist PRI won the presidency in 2012 and regained its status as the largest party in the legislative, it deepened these reforms. In 2013 and 2014, President Enrique Peña Nieto signed legislation capping structural current spending, restructuring the oil sector, and replacing the FEIP with the Mexican Oil Stabilization and Development Fund (FMPED).[18] The FMPED is funded through revenue earned by Pemex from contracts for exploration and production of hydrocarbons. This revenue is managed by a technical committee that publishes monthly financial statements and meets at least five times every year; the minutes of each meeting are available online. By that point, oil prices and oil production were in decline, as was Peña Nieto's public approval, but the PRI was again the largest party in the Chamber of Deputies, with a 20% lead over the runner-up, the PAN. The timing of natural resource policy in Mexico suggests that administrations across the political spectrum can commit to tying their hands, provided there is credible competition in the legislature in the medium to long run and the executive has high approval rates in the short run.

# 7 Conclusion

This study finds that incumbents are more likely to pass natural resource policy under moderate levels of political competition. Given that natural resources boost the political capital of incumbents, rulers dispense with this boost when they are secure in their incumbency, but not so secure that they can ignore public demands for accountability. The odds

[18]Decreto por el que se reforman, adicionan y derogan diversas disposiciones de la Ley Federal de Presupuesto y Responsabilidad Hacendaria. 13 December 2013. See also Ley del Fondo Mexicano del Petróleo para la Estabilización y el Desarrollo. 11 August 2014.

of passing natural resource policy also increase under presidentialism and when public approval is high, particularly if increases in public approval coincide with increased resource production.

Tying hands does not impede patronage and corruption. In fact, natural resource policy may be an efficient way to institutionalize side payments. Rulers might create a natural resource fund and place political allies on the investment board; they might amend extant measures, replace old measures with new measures, engage in creative accounting, or simply fail to comply altogether, without formally untying their hands. There is a gap between de jure policy and de facto behavior; good policy cannot implement itself. I identify an optimal level of political uncertainty at which rulers are safe enough to tie their hands without risking their seats, but unsafe enough that they would rather institutionalize the distribution of resource rents than distribute these rents informally. The central implication is that incumbents are more likely to institutionalize commitments in first place – even if these commitments are hollow – when they are safe in the knowledge that such commitment will satisfy demands for accountability in the long term without costing them their office in the short term. This study does not investigate the gap between policy adoption and law enforcement, and my findings cannot predict whether these laws will truly be implemented.

Nonetheless, evidence from Brazil suggests that electoral uncertainty decreases not only the odds of policy adoption, but also of compliance. Melo, Pereira and Souza (2014) find that political volatility reduces compliance with fiscal rules: frequent turnover in the party controlling the state government and high party fragmentation in the legislative both motivate incumbents to resort to creative accounting to increase spending for electoral purposes. This suggests that incumbents facing low political uncertainty are both more likely to pass natural resource legislation and more likely to comply with it. Even when incumbents do not follow through (either because they do not want to or because they lack the state capacity to do so), hand-tying policy increases the cost of non-compliance by drawing attention to misbehavior (Amick, Chapman and Elkins 2020). Breaking rules to spend money freely carries economic and reputational costs; economic mismanagement may strengthen support for political alternatives, while non-compliance with fiscal rules might jeopardize the dis-

bursal of IMF loans or prompt bondholders to charge higher risk premiums (Kelemen et al. 2014). Future research can examine how these commitments are implemented and under what circumstances, if any, they are formally reversed.

My findings, combined with those of Melo, Pereira and Souza (2014), Amick, Chapman and Elkins (2020), and others, paint an intriguing picture. Governments might tie their hands when they know that nobody is watching too closely. When resource revenue increases, public support is high, and political competition is low, rulers can afford to redesign extractive institutions, because there is no sense of urgency; these institutions will not deprive the incumbent of much needed political capital in times of election. Under these circumstances, rulers can afford to comply with pre-established commitments, as there is no political reward associated with non-compliance. However, competition cannot be too low, or there will be no incentives to design institutions in first place. Only leaders facing a modicum of political competition will be accountable to their citizenry, thus committing to adopting forward-looking natural resource policies. These dynamics suggest that bad politics can lead to good policies: moderate public scrutiny can maximize government accountability by minimizing the incentives to retain budgetary discretion. These results encourage further research on the role of watchdog institutions, which document and enforce compliance even in the absence of political uncertainty.

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# Appendix

## A Countries Included in the Analysis

I collected data for the following 87 resource-rich countries:

Afghanistan, Albania, Algeria, Angola, Argentina, Australia, Azerbaijan, Bahrain, Bolivia, Botswana, Brazil, Brunei, Burkina Faso, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Congo, Democratic Republic of the Congo, Ecuador, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Ghana, Guatemala, Guinea, Guyana, India, Indonesia, Iran, Iraq, Ivory Coast, Kazakhstan, Kuwait, Kyrgyzstan, Laos, Liberia, Libya, Malaysia, Mali, Mauritania, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nauru, Niger, Nigeria, Norway, Oman, Papua New Guinea, Peru, Philippines, Qatar, Russia, São Tomé e Príncipe, Saudi Arabia, Sierra Leone, South Africa, South Sudan, Sudan, Suriname, Syria, Tanzania, Timor-Leste, Togo, Trinidad and Tobago, Tunisia, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe.

The main analysis excludes five developed nations: Australia, Canada, Norway, the United Kingdom, and the United States. Results including these five nations are reported below, in Appendix D.

## B Legislation Included in the Analysis

Table B.1 lists all country-years of policy adoption; these observations are used to generate the dependent variable for the main analysis. Table B.2 lists countries with supranational policies, while Table B.3 lists subnational entities with policies of their own; the observations in these two tables are included in robustness checks (see Table D.1). Note that countries might pass multiple policies in one same year.

**Table B.1:** Countries that adopted natural resource legislation at the national level, with years of passage

| Country | Year |
|---|---|
| Algeria | 2000 |
| Angola | 2010, 2011 |
| Azerbaijan | 1999, 2000 |
| Bahrain | 2006 |
| Bolivia | 2005, 2015 |
| Botswana | 1975, 1997, 2003, 2009 |
| Brazil | 2010 |
| Brunei | 1983 |
| Burkina Faso | 2015 |
| Chad | 1999, 2003, 2006 |
| Chile | 1976, 1981, 2006, 2019 |
| Colombia | 2011, 2012 |
| Ecuador | 1999, 2000, 2002, 2005, 2006, 2008, 2010, 2018 |
| Equatorial Guinea | 2006 |
| Gabon | 1998, 2010, 2011 |
| Ghana | 2011, 2016, 2018 |
| Guyana | 2019 |
| Iran | 2000, 2010 |
| Kazakhstan | 2000, 2005, 2010, 2014, 2016, 2017 |
| Kuwait | 1976, 1982 |
| Laos | 2018 |
| Liberia | 2009 |
| Libya | 2006, 2010 |
| Malaysia | 1988 |
| Mauritania | 2006, 2008 |
| Mexico | 2000, 2001, 2007, 2013, 2014 |
| Mongolia | 2010, 2016 |

| | |
|---|---|
| Namibia | 1996 |
| Nauru | 1968 |
| Niger | 2010 |
| Nigeria | 2007, 2011, 2017 |
| Norway | 1990, 2001, 2005 |
| Oman | 1980, 2006 |
| Papua New Guinea | 1975, 2000, 2012, 2014 |
| Peru | 1999, 2002, 2003, 2013 |
| Qatar | 2005 |
| Russia | 2003, 2006, 2007, 2008, 2009, 2017 |
| São Tomé and Príncipe | 2004 |
| Saudi Arabia | 1952, 1957, 1971 |
| Sierra Leone | 2016 |
| South Sudan | 2011, 2012 |
| Sudan | 2004, 2005 |
| Suriname | 2017 |
| Tanzania | 2015 |
| Timor-Leste | 2005 |
| Trinidad and Tobago | 2007 |
| Turkmenistan | 2014, 2018 |
| Uganda | 2015, 2016 |
| Venezuela | 1999, 2000, 2005 |

**Table B.2:** Countries that adopted supranational natural resource legislation, with years of passage

| Country | Year |
|---|---|
| Cameroon | 2001, 2016 |
| Central African Republic | 2001, 2016 |
| Chad | 2001, 2016 |
| Congo | 2001, 2016 |

| | |
|---|---|
| Equatorial Guinea | 2001, 2016 |
| Gabon | 2001, 2016 |

**Table B.3:** Subnational entities that adopted natural resource legislation, with years of passage

| Country | Year |
|---|---|
| Western Australia, Australia | 2012 |
| Alberta, Canada | 1976, 2013 |
| Northwest Territories, Canada | 2012 |
| Abu Dhabi, United Arab Emirates | 1976, 1981, 1984, 1986, 2002, 2017 |
| Dubai, United Arab Emirates | 2006 |
| Alabama, USA | 1982, 1985, 1992 |
| Alaska, USA | 1976 |
| Idaho, USA | 1890 |
| Louisiana, USA | 1978, 1986 |
| Montana, USA | 1976 |
| New Mexico, USA | 1927, 1976, 1983, 2010 |
| North Dakota, USA | 2010 |
| Texas, USA | 1854, 1876 |
| Utah, USA | 1894, 2016 |
| West Virginia, USA | 2014 |
| Wyoming, USA | 1974, 2000, 2015 |

# C Summary Statistics

**Table 2:** Political determinants of policy adoption in Latin America, 1980-2018 (quarterly data)

| | *Dependent variable:* | | |
|---|---|---|---|
| | Policy adoption | | |
| | (1) | (2) | (3) |
| Executive approval (3 mo.) | 0.030** | 0.023* | 0.053*** |
| | (0.013) | (0.014) | (0.018) |
| Oil production (log) | | 0.253* | −1.132** |
| | | (0.143) | (0.479) |
| Executive approval × Oil production | | | 0.029*** |
| | | | (0.010) |
| Seat difference | | 0.822 | −0.110 |
| | | (3.524) | (3.587) |
| Seat difference$^2$ | | −2.972 | −1.713 |
| | | (6.458) | (6.441) |
| Democracy (Polity) | | −0.051 | −0.083 |
| | | (0.101) | (0.100) |
| Left executive | | −0.276 | −0.280 |
| | | (0.507) | (0.532) |
| Election quarter | | 0.500 | 0.500 |
| | | (0.509) | (0.516) |
| Turnover frequency | | −0.844 | −0.560 |
| | | (0.671) | (0.650) |
| Field discovery | | −1.581 | −1.871 |
| | | (1.422) | (1.455) |
| Oil price (USD) | | 0.027** | 0.025** |
| | | (0.012) | (0.012) |
| GDP per capita (log) | | −0.166* | −0.184** |
| | | (0.089) | (0.091) |
| GDP growth (%) | | −0.003 | −0.012 |
| | | (0.047) | (0.048) |
| IMF agreement | | −0.795 | −0.825* |
| | | (0.489) | (0.498) |
| Crisis | | 1.376 | 1.353 |
| | | (1.029) | (1.049) |
| W × Policy adoption | | −0.974 | −1.483 |
| | | (0.920) | (0.955) |
| Constant | −51.056*** | −73.382*** | −70.127*** |
| | (17.206) | (20.394) | (20.181) |
| Observations | 1,265 | 1,229 | 1,229 |
| Log Likelihood | −131.013 | −121.765 | −117.977 |

This table reports the results of penalized likelihood models with third-order polynomials and country-fixed effects. The reported coefficients are log-odds. *p<0.1; **p<0.05; ***p<0.01

**Table C.1:** Summary statistics for all 82 countries

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Year | 3,409 | 1,997.684 | 12.910 | 1,975 | 2,019 |
| Policy adoption | 3,409 | 0.030 | 0.170 | 0 | 1 |
| Seat difference | 2,770 | 0.447 | 0.342 | 0.000 | 1.000 |
| Presidential system | 3,186 | 0.749 | 0.434 | 0 | 1 |
| Democracy | 3,238 | −1.418 | 6.552 | −10 | 10 |
| Left executive | 3,137 | 0.312 | 0.463 | 0 | 1 |
| Term limits | 3,145 | 0.735 | 0.441 | 0 | 1 |
| Election year | 3,327 | 0.234 | 0.423 | 0 | 1 |
| Turnover frequency | 3,327 | 0.166 | 0.397 | 0 | 3 |
| Resource rents | 3,035 | 15.083 | 13.883 | 0.000 | 89.004 |
| Field discovery | 3,392 | 0.074 | 0.262 | 0 | 1 |
| Oil price | 3,392 | 39.296 | 26.914 | 10.373 | 99.567 |
| GDP per capita | 3,104 | 3.855 | 7.691 | 0.085 | 85.076 |
| GDP growth | 3,073 | 4.071 | 7.678 | −64.047 | 149.973 |
| IMF agreement | 3,371 | 0.337 | 0.473 | 0 | 1 |
| Crisis | 3,392 | 0.066 | 0.249 | 0 | 1 |

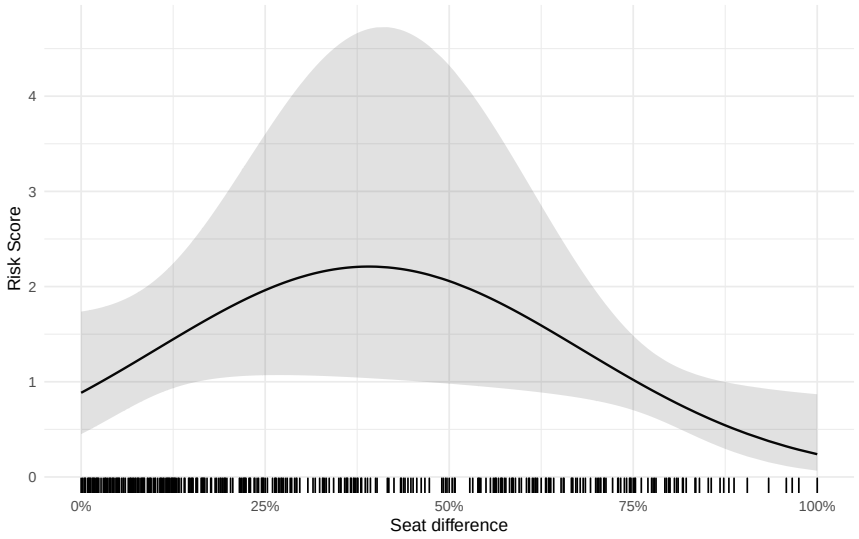
**Table C.2:** Summary statistics for ten countries in Latin America

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Year | 1,560 | 1,999.000 | 11.258 | 1,980 | 2,018 |
| Policy adoption | 1,560 | 0.021 | 0.144 | 0 | 1 |
| Executive approval | 1,265 | 44.972 | 14.758 | 2.903 | 83.235 |
| Seat difference | 1,560 | 0.180 | 0.154 | 0.002 | 0.667 |
| Presidential system | 1,510 | 0.979 | 0.144 | 0 | 1 |
| Democracy | 1,560 | 5.992 | 4.359 | −9 | 10 |
| Left executive | 1,536 | 0.328 | 0.470 | 0 | 1 |
| Term limits | 1,510 | 0.981 | 0.135 | 0 | 1 |
| Election quarter | 1,560 | 0.082 | 0.275 | 0 | 1 |
| Turnover frequency | 1,560 | 0.177 | 0.408 | 0 | 2 |
| Oil production | 1,550 | 0.913 | 1.126 | 0.003 | 3.848 |
| Field discovery | 1,550 | 0.032 | 0.175 | 0 | 1 |
| Oil price | 1,550 | 41.960 | 27.362 | 12.840 | 123.960 |
| GDP per capita | 1,548 | 4.232 | 3.482 | 0.627 | 16.054 |
| GDP growth | 1,560 | 2.877 | 4.196 | −17.040 | 18.287 |
| IMF agreement | 1,560 | 0.403 | 0.491 | 0 | 1 |
| Crisis | 1,550 | 0.023 | 0.149 | 0 | 1 |

# D Alternative Specifications

Table D.1 reports the results of three Cox proportional hazards models, which predict the time until a government passes its *first* law. This survival analysis omits all country-years following passage of the first law, as it assumes that countries are no longer at risk once they pass their first natural resource policy. To visualize the results of Model 7, Figure D.1 plots the predicted risk score of *Policy adoption*. While the results of proportional hazard models are equivalent to those of the logistic regressions, I present the logistic regressions in the main text, rather than the survival models, out of belief that governments are permanently at risk of passing new natural resource policy.

**Figure D.1:** Predicted risk score of policy adoption




Based on Model 7, this figure plots the risk score, $exp(x_i\beta)$, which allows us to understand how *Seat difference* and its squared term change the estimated hazard of *Policy adoption* $h(t_i)$ relative to the baseline hazard $h_0(t)$.

Table D.2 presents three alternative specifications of Model 2. Model 10 measures political competition not as *Seat difference*, but as the Polity indicator *Polcomp*, which ranges from 1 (no political organizations or oppositional activity) to 10 (stable and enduring groups regularly competing for political influence). In lieu of the Polity 2 index, Model 11 uses Boix, Miller and Rosato's (2012) dichotomous measure of regime type (with one if the coun-

try in question is a democracy and zero otherwise), while Model 12 uses Teorell et al. (2019 polyarchy measure (which ranges from zero to one). The results are robust to these specifications.

Table D.3 replicates the main results of this paper (Table 1), but including five developed nations (Australia, Canada, Norway, the United Kingdom, and the United States) that were omitted from the main analysis.

The main results were estimated exclusively with natural resource legislation passed at the national level: the dependent variable *Policy adoption* was calculated using the country-years listed in Table B.1. However, Table B.2 identifies two additional documents adopted by members of the Central African Economic and Monetary Community (CEMAC). Table B.3 identifies 38 additional documents passed by subnational entities in four federations (Australia, Canada, the United Arab Emirates, and the United States). The models in Table D.4 include these subnational and supranational laws and are very similar to the main results.

While Table D.4 groups all policies, Table D.5 distinguishes between earmarks (Model 18), funds (Model 19), and fiscal rules (Model 20). Recall Tanzania's Oil and Gas Revenue Management Act (passed on 4 August 2015), which created a fund, earmarked natural resources for strategic development expenditure, and set limits for the total public expenditure as well as the size of the fiscal deficit. For the Tanzania-2015 country-year pair, the values of *Earmark*, *Fund*, and *Fiscal rule* are all one. Table D.5 suggests that political competition and presidentialism matter most for the creation of earmarks and funds, less so for the creation of fiscal rules.

Finally, Table D.6 presents the results for Latin America using *Executive approval* for the quarter of policy adoption (Model 22) or averaging *Executive approval* over the 6, 9, 12, and 15 months prior to policy adoption.

**Table D.1:** Political determinants of policy adoption around the world: results of Cox proportional hazard models, 1975-2018 (yearly data)

| | *Dependent variable:* | | |
|---|---|---|---|
| | Time to policy adoption | | |
| | (7) | (8) | (9) |
| Seat difference | 4.686* | | 5.765* |
| | (2.288) | | (2.470) |
| Seat difference$^2$ | −5.994* | | −7.172** |
| | (2.686) | | (2.845) |
| Presidential system | | 1.169*** | 1.326** |
| | | (0.528) | (0.619) |
| Democracy | | | −0.013 |
| | | | (0.041) |
| Left executive | | | −0.388* |
| | | | (0.436) |
| Term limits | | | −0.096 |
| | | | (0.511) |
| Election year | | | 0.203 |
| | | | (0.382) |
| Turnover frequency | | | −0.171 |
| | | | (0.502) |
| Resource rents | | | 0.040*** |
| | | | (0.014) |
| Field discovery | | | 1.313*** |
| | | | (0.503) |
| GDP per capita | | | 0.347*** |
| | | | (0.069) |
| GDP growth | | | −0.056** |
| | | | (0.030) |
| IMF agreement | | | 0.519*** |
| | | | (0.409) |
| Crisis | | | 0.352 |
| | | | (0.647) |
| W × Policy adoption | | | −3.767*** |
| | | | (1.296) |
| Observations | 2,199 | 2,481 | 1,915 |
| Log Likelihood | −139.564 | −155.407 | −107.877 |

This table reports the results of Cox proportional hazard models, clustered by region. The coefficients are reported as hazard rates. *p<0.1; **p<0.05; ***p<0.01

**Table D.2:** Political determinants of policy adoption around the world, 1975-2018 (yearly data), with alternative measures of political competition and regime type

| | *Dependent variable:* | | |
|---|---|---|---|
| | Policy adoption | | |
| | (10) | (11) | (12) |
| Polcomp | 0.409* | | |
| | (0.228) | | |
| Polcomp$^2$ | −0.040** | | |
| | (0.019) | | |
| Seat difference | | 2.908* | 3.424** |
| | | (1.554) | (1.487) |
| Seat difference$^2$ | | −2.880* | −3.207** |
| | | (1.641) | (1.577) |
| Presidential system | 0.964*** | 0.945** | 0.840** |
| | (0.360) | (0.372) | (0.339) |
| Democracy | 0.044 | | |
| | (0.045) | | |
| Democracy (Boix et al) | | 0.291 | |
| | | (0.348) | |
| Democracy (Polyarchy) | | | 0.865 |
| | | | (0.842) |
| Left executive | −0.480* | −0.549* | −0.375 |
| | (0.273) | (0.290) | (0.270) |
| Term limits | −0.486 | −0.323 | −0.316 |
| | (0.364) | (0.389) | (0.397) |
| Election year | 0.386* | 0.461* | 0.392* |
| | (0.229) | (0.236) | (0.229) |
| Turnover frequency | −0.442 | −0.313 | −0.357 |
| | (0.313) | (0.339) | (0.323) |
| Resource rents | 0.029*** | 0.018* | 0.019* |
| | (0.009) | (0.010) | (0.010) |
| Field discovery | 0.823*** | 0.964*** | 0.930*** |
| | (0.317) | (0.333) | (0.322) |
| Oil price | −0.011** | −0.011* | −0.012** |
| | (0.006) | (0.006) | (0.006) |
| GDP per capita | 0.009 | 0.047 | 0.043 |
| | (0.017) | (0.033) | (0.033) |
| GDP growth | 0.012 | 0.007 | 0.006 |
| | (0.012) | (0.013) | (0.013) |
| IMF agreement | −0.088 | 0.009 | −0.066 |
| | (0.260) | (0.276) | (0.269) |
| Crisis | 0.389 | −0.046 | 0.280 |
| | (0.411) | (0.470) | (0.415) |
| Constant | −2.990** | −2.715* | −3.147** |
| | (1.247) | (1.414) | (1.385) |
| Observations | 2,630 | 2,331 | 2,455 |
| Log Likelihood | −323.768 | −286.887 | −310.852 |

This table reports the results of penalized likelihood models with third-order polynomials and region-fixed effects. The coefficients are reported as log-odds. *p<0.1; **p<0.05; ***p<0.01

**Table D.3:** Political determinants of policy adoption around the world, 1975-2018, including developed countries (yearly data)

| | *Dependent variable:* | | |
|---|---|---|---|
| | Policy adoption | | |
| | (13) | (14) | (15) |
| Seat difference | 2.974** | | 2.920** |
| | (1.372) | | (1.433) |
| Seat difference$^2$ | −2.739* | | −2.783* |
| | (1.467) | | (1.547) |
| Presidential system | | 1.172*** | 0.853** |
| | | (0.314) | (0.340) |
| Democracy | | | −0.001 |
| | | | (0.029) |
| Left executive | | | −0.421* |
| | | | (0.255) |
| Term limits | | | −0.171 |
| | | | (0.385) |
| Election year | | | 0.465** |
| | | | (0.223) |
| Turnover frequency | | | −0.442 |
| | | | (0.320) |
| Resource rents | | | 0.021** |
| | | | (0.010) |
| Field discovery | | | 0.916*** |
| | | | (0.308) |
| Oil price | | | −0.010* |
| | | | (0.005) |
| GDP per capita | | | −0.002 |
| | | | (0.013) |
| GDP growth | | | 0.004 |
| | | | (0.013) |
| IMF agreement | | | −0.099 |
| | | | (0.262) |
| Crisis | | | 0.313 |
| | | | (0.412) |
| Constant | −3.023*** | −2.517*** | −3.223** |
| | (1.123) | (0.926) | (1.349) |
| Observations | 2,990 | 3,401 | 2,667 |
| Log Likelihood | −363.996 | −389.363 | −324.835 |

This table reports the results of penalized likelihood models with third-order polynomials and region-fixed effects. The coefficients are reported as log-odds. *p<0.1; **p<0.05; ***p<0.01

**Table D.4:** Political determinants of policy adoption around the world, including subnational and supranational policies, 1975-2018 (yearly data)

| | *Dependent variable:* | | |
|---|---|---|---|
| | Policy adoption | | |
| | (16) | (17) | (18) |
| Seat difference | 2.965** | | 3.853*** |
| | (1.207) | | (1.319) |
| Seat difference$^2$ | −2.871** | | −3.664*** |
| | (1.274) | | (1.398) |
| Presidential system | | 1.248*** | 1.053*** |
| | | (0.277) | (0.301) |
| Democracy | | | 0.008 |
| | | | (0.026) |
| Left executive | | | −0.358 |
| | | | (0.224) |
| Term limits | | | −0.069 |
| | | | (0.350) |
| Election year | | | 0.534*** |
| | | | (0.199) |
| Turnover frequency | | | −0.463* |
| | | | (0.273) |
| Resource rents | | | 0.029*** |
| | | | (0.009) |
| Field discovery | | | 0.739*** |
| | | | (0.280) |
| Oil price | | | −0.012** |
| | | | (0.005) |
| GDP per capita | | | 0.002 |
| | | | (0.012) |
| GDP growth | | | −0.006 |
| | | | (0.014) |
| IMF agreement | | | −0.176 |
| | | | (0.242) |
| Crisis | | | 0.149 |
| | | | (0.403) |
| Constant | −5.171*** | −2.508*** | −3.362*** |
| | (0.763) | (0.812) | (1.188) |
| Observations | 3,320 | 3,401 | 2,667 |
| Log Likelihood | −457.442 | −500.132 | −397.095 |

This table reports the results of penalized likelihood models with third-order polynomials and region-fixed effects. The coefficients are reported as log-odds. *p<0.1; **p<0.05; ***p<0.01

**Table D.5:** Political determinants of policy adoption around the world, 1975-2018 (yearly data), by kind of policy

| | *Dependent variable:* | | |
|---|---|---|---|
| | Earmark | Fund | Fiscal rule |
| | (19) | (20) | (21) |
| Seat difference | 4.757** | 4.100*** | 3.567** |
| | (2.252) | (1.533) | (1.772) |
| Seat difference$^2$ | −4.739* | −4.404*** | −2.675 |
| | (2.451) | (1.707) | (1.850) |
| Presidential system | 2.345*** | 1.072*** | 0.420 |
| | (0.759) | (0.334) | (0.369) |
| Democracy | 0.0004 | 0.024 | 0.014 |
| | (0.044) | (0.029) | (0.035) |
| Left executive | 0.179 | −0.241 | −0.313 |
| | (0.349) | (0.248) | (0.295) |
| Term limits | −0.858 | −0.087 | −0.385 |
| | (0.550) | (0.416) | (0.449) |
| Election year | 0.566* | 0.493** | 0.478* |
| | (0.324) | (0.224) | (0.268) |
| Turnover frequency | −0.666 | −0.406 | −0.624 |
| | (0.486) | (0.299) | (0.394) |
| Resource rents | 0.012 | 0.027*** | 0.033*** |
| | (0.016) | (0.010) | (0.011) |
| Field discovery | 0.348 | 0.720** | 0.729* |
| | (0.463) | (0.303) | (0.379) |
| Oil price | −0.002 | −0.006 | −0.011* |
| | (0.008) | (0.005) | (0.006) |
| GDP per capita | 0.017 | 0.001 | 0.001 |
| | (0.022) | (0.013) | (0.015) |
| GDP growth | 0.019 | 0.008 | 0.0004 |
| | (0.016) | (0.012) | (0.015) |
| IMF agreement | 0.699* | 0.002 | 0.223 |
| | (0.399) | (0.275) | (0.322) |
| Crisis | 0.284 | 0.184 | 0.288 |
| | (0.623) | (0.457) | (0.553) |
| Constant | −4.489** | −2.990** | −3.514* |
| | (1.902) | (1.262) | (1.807) |
| Observations | 2,667 | 2,667 | 2,667 |
| Log Likelihood | −143.301 | −321.716 | −228.946 |

This table reports the results of penalized likelihood models with third-order polynomials and region-fixed effects. The coefficients are reported as log-odds. *p<0.1; **p<0.05; ***p<0.01

**Table D.6:** Political determinants of policy adoption in Latin America, 1975-2018 (quarterly data), with executive approval at different periods

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Policy adoption | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| Executive approval (same quarter) | 0.018 | | | | |
| | (0.014) | | | | |
| Executive approval (6 mo.) | | 0.030** | | | |
| | | (0.015) | | | |
| Executive approval (9 mo.) | | | 0.033** | | |
| | | | (0.015) | | |
| Executive approval (12 mo.) | | | | 0.034** | |
| | | | | (0.016) | |
| Executive approval (15 mo.) | | | | | 0.035** |
| | | | | | (0.016) |
| Seat difference | 1.170 | 0.697 | 0.687 | 0.726 | 0.805 |
| | (3.552) | (3.502) | (3.490) | (3.487) | (3.483) |
| Seat difference 2 | −3.522 | −2.779 | −2.739 | −2.798 | −2.944 |
| | (6.522) | (6.395) | (6.364) | (6.365) | (6.366) |
| Democracy (Polity) | −0.059 | −0.046 | −0.043 | −0.041 | −0.041 |
| | (0.099) | (0.103) | (0.104) | (0.105) | (0.105) |
| Left executive | −0.209 | −0.357 | −0.401 | −0.420 | −0.432 |
| | (0.508) | (0.512) | (0.515) | (0.517) | (0.520) |
| Election quarter | 0.473 | 0.510 | 0.516 | 0.513 | 0.506 |
| | (0.508) | (0.510) | (0.510) | (0.510) | (0.510) |
| Turnover frequency | −0.895 | −0.818 | −0.810 | −0.820 | −0.836 |
| | (0.674) | (0.668) | (0.666) | (0.664) | (0.663) |
| Oil production (log) | 0.256* | 0.250* | 0.248* | 0.247* | 0.249* |
| | (0.143) | (0.143) | (0.144) | (0.144) | (0.144) |
| Field discovery | −1.620 | −1.557 | −1.498 | −1.457 | −1.417 |
| | (1.425) | (1.423) | (1.424) | (1.418) | (1.420) |
| Oil price (USD) | 0.027** | 0.027** | 0.026** | 0.026** | 0.025** |
| | (0.012) | (0.012) | (0.012) | (0.012) | (0.012) |
| GDP per capita (log) | −0.168* | −0.163* | −0.162* | −0.163* | −0.165* |
| | (0.090) | (0.089) | (0.089) | (0.089) | (0.089) |
| GDP growth (%) | 0.002 | −0.006 | −0.008 | −0.008 | −0.008 |
| | (0.046) | (0.047) | (0.048) | (0.048) | (0.048) |
| IMF agreement | −0.834* | −0.772 | −0.755 | −0.746 | −0.746 |
| | (0.489) | (0.489) | (0.490) | (0.490) | (0.490) |
| Crisis | 1.386 | 1.399 | 1.387 | 1.370 | 1.334 |
| | (1.025) | (1.026) | (1.027) | (1.028) | (1.029) |
| W × Policy adoption | −0.922 | −1.034 | −1.063 | −1.072 | −1.078 |
| | (0.914) | (0.931) | (0.937) | (0.938) | (0.940) |
| Constant | −75.450*** | −73.910*** | −73.905*** | −73.698*** | −73.976*** |
| | (21.076) | (20.275) | (20.199) | (20.147) | (20.186) |
| Observations | 1,234 | 1,219 | 1,209 | 1,199 | 1,189 |
| Log Likelihood | −122.002 | −121.061 | −120.704 | −120.656 | −120.606 |

This table reports the results of penalized likelihood models with third-order polynomials and country-fixed effects. The coefficients are reported as log-odds. *p<0.1; **p<0.05; ***p<0.01