A Blessing and a Curse:
How Oil Impacts Center-Seeking and Separatist Civil Wars

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Abstract

Oil wealth may increase the probability of civil war initiation by raising the prize of capturing the state and by weakening governance institutions, or may decrease civil war propensity by providing the incumbent government with large revenues to spend on armaments and patronage. This paper presents a formal model and supportive empirical evidence that show how the heterogeneous effects of oil create a conditional relationship between petroleum wealth and different types of civil wars. Oil should dampen the propensity for center-seeking wars by enabling a government to invest in armaments to reduce a challenger's expected utility to fighting. But oil may increase the propensity for separatist conflicts when oil reserves are located in territory populated by groups that have historically been separated from the capital. The inability of the government to credibly commit to paying these groups creates a bargaining impediment that can be resolved by fighting. The combined theoretical and empirical evaluation defies the popular characterization of oil wealth as an unconditional "curse" for civil conflict initiation.

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1 Introduction

Policymakers' desire to capture the "prize" of oil has been linked to the onset of wars throughout the 20th and 21st centuries. These range from Britain's occupation of Mesopotamia and the Iraqi Revolt of 1920 that followed World War I, to Germany's and Japan's aggression prior to World War II, to expansionist U.S. foreign policy that has included forcible Middle Eastern interventions (Yergin 1991, Krasner 1978). Recent influential scholarship emphasizes that oil triggers a particular type of conflict, civil wars (Collier and Hoeffler 2004; Fearon and Laitin 2003, Fearon 2005; Ross 2003, 2004a,b, 2006, 2012).[1] The linkage between oil and civil wars resonates widely not only within academic disciplines such as political science and economics, but also among the policy community.[2] Oil wealth thus appears to be a "curse" that causes violent conflict—in addition to enhancing authoritarian governance (Ross 2001) and weakening economic performance (Sachs and Warner 1997).

A diversity of proposed mechanisms accompany the consistent empirical findings connecting oil wealth to a higher prevalence of civil war initiation. As noted, oil may induce a violent contest to capture a valuable prize (i.e., "state prize" arguments).[3] Rebel groups may be able to gain an upper hand in this contest by "looting" oil to fund their insurgency (Collier and Hoeffler 2004; Ross 2012, 147-53). Regarding the effect of oil on the government, "state

[1] According to Google Scholar these articles have a combined citation count of 10,937 (accessed 5/13/14). See Ross (2013) and Koubi et al. (2014) for recent review articles on this voluminous literature.

[2] For example, the Global Policy Forum's "Oil and Natural Gas in Conflict" page contains 342 newspaper articles and policy reports from sources such as *The New York Times*, *The Guardian*, and *Amnesty International* since 1999.

[3] For example, Fearon (2008, 8) states that "scholars in the civil war literature routinely 'explain' the association between oil production (or other natural resources) and civil war by arguing that these increase the value of winning." This argument is particularly prevalent among contest function models in the economics of conflict literature (see Garfinkel and Skaperdas 2007 for a review)—models that Ross (2013, 13) lists as providing the original theoretical insights linking oil wealth to civil wars—as well as in recent work by Besley and Persson (2011).

weakness" arguments contend that oil weakens governance institutions because a resource-rich ruler does not have to build strong ties with society to raise domestic revenues.[4] Yet another possibility is that oil decreases the government's ability to commit to a sufficient level of spoils for ethnic minorities (Ross 2012, 165-6; Sorens 2011, Hunziker and Cederman 2012).

Despite the pedigree of arguments linking oil to civil war initiation, the most prominent existing theories do not convincingly address three critical concerns. First, prevailing accounts do not clearly explain why oil wealth induces actors to destroy surplus by fighting, as opposed to reaching a peaceful settlement.[5] Even if oil raises the prize of winning, what inhibits the government from using oil spoils to buy off a rebel group and prevent costly fighting? In a related consideration, even if oil wealth does weaken governance institutions, it is not clear why this factor should trigger fighting if *all* oil-rich governments are afflicted by state weakness. Why would the state weakening effect not also decrease the desire of a forward-looking rebel group to govern? The core theoretical concern posed here for the state prize and state weakness arguments is that fighting does not appear to solve the problem that purportedly caused war in the first place—which begs the question of why oil should trigger civil war.[6]

Second, existing oil-civil war theories underemphasize how oil can *strengthen* a government's bargaining leverage, and instead address that oil-rich states are weak relative to their level of per capita income (Fearon and Laitin 2003) or focus entirely on rebel motivation (Ross 2012, 147-53). Oil wealth tends to accrue to governments rather than to rebel

[4]Tilly (1992; 207-8, 210, 218), Chaudhry (1997), and Karl (1997)—along with a misinterpreted argument by Fearon and Laitin (2003) and Fearon (2005) that the next section discusses—have been particularly influential in this line of reasoning.

[5]See Fearon (1995) for the seminal exposition of this consideration for international conflict.

[6]See Leventoglu and Slantchev (2007) for a similar theoretical consideration for commitment problem explanations in international relations.

groups and provides the state with revenues—often very large in magnitude—to spend on coercion and welfare programs. Small Persian Gulf emirates highlight the importance of state strengthening mechanisms. Modern states did not exist in this region prior to oil discoveries, which was among the poorest in the world. "The pearling industry was vital to the pre-war economies ... [and] suffered an almost total collapse after the Wall Street crash of 1929 ... It would have been almost impossible to overcome this crisis had the strange hand of fate not intervened: the oil companies arrived in search of concessions" (Zahlan 1989, 22). Subsequently, oil wealth has allowed rulers to build formidable state apparatuses (Gause 1994), and none of these countries have suffered a major civil war onset since becoming oil rich.[7]

Third, theories that invoke an oil-induced commitment problem tend not to clarify the precise source of the government's inability to commit to a sufficient level of spoils, nor why the government does not pursue policies to alleviate its commitment inability. In principle, granting regional autonomy or incorporating an excluded ethnic group into the ruling coalition may prevent costly fighting. This begs the question of why, empirically, governments tend not to pursue such policies for groups from oil-rich regions.

As a result, existing theories that posit an unconditional "resource curse" have masked the diversity of countervailing effects that oil exerts. This paper instead presents a formal model and empirical evidence that show how the heterogeneous effects of oil create a *conditional* relationship between petroleum wealth and *different types* of civil wars. The main insights arise from distinguishing between center-seeking civil wars (in which a rebel group fights to overthrow the government) and separatist civil wars (in which a rebel group fights for regional autonomy or outright secession). The formal model explains why oil should

[7]Research on the relationship between oil and authoritarian regimes focuses more heavily on how oil enhances state capacity, leading Morrison (2012) to ask why these related literatures have produced such divergent predictions for the effects of oil.

dampen incentives for a rebel group to attempt to fight a center-seeking war: oil wealth increases coercive capacity. In contrast—despite oil-induced incumbency advantages—separatist incentives may arise when historically rooted commitment problems prevent the government from buying off members of an oil-rich region. Sketching out the logic of the model will clarify these divergent implications.

In every period of an infinitely repeated game a government allocates its exogenously determined and constant per-period revenues among personal consumption, armament, and a welfare offer to a challenger. The challenger either accepts the offer or fights the government. Fighting destroys a fraction of societal wealth in the current period. If a fight occurs, the winner becomes (or remains) the governing actor, the loser is eliminated forever, and a new challenger is drawn in the next period. The model incorporates the "state prize" mechanism because a larger oil prize increases the expected gains from winning a fight. The model incorporates the "state weakness" mechanism by assuming that all governments face an institutional capacity constraint to translate oil wealth into patronage offers.

How oil impacts the likelihood of fighting depends on the types of bargaining impediments that are present. The baseline model focuses on state weakness and state prize arguments and shows that neither trigger fighting. Instead, large oil reserves *strengthen* the government's bargaining position. The government uses the large revenues to invest in armaments to reduce the challenger's expected utility to fighting. Assuming that oil weakens state institutions does diminish the amount the government can offer the challenger for a fixed amount of oil revenues. But a victorious challenger would inherit the same weak state, implying that the state weakness mechanism does not trigger civil war. Similarly, large oil revenues create a valuable prize, but large revenues also allow the government to make higher patronage offers and to build a bigger military.

These effects should be particularly pronounced for deterring center-seeking civil wars. Stronger states should be less likely to face center-seeking challenges because rebels will not choose to fight near the capital where the government's coercive capacity is higher (Buhaug 2006, 2010).

An extension to the model demonstrates circumstances in which oil can raise the probability of civil war. This extension allows the government and challenger to belong to different groups and assumes that the government has trouble efficiently distributing spoils to a group that lacks political influence in the capital. Without a presence in the cabinet, legislature, or military, it is difficult for a challenger from an oil-rich province to ensure that the government follows through on promised concessions. The government's weak ability to commit to lucrative offers to members of other groups diminishes the value of the status quo for the challenger, and may preclude the possibility of reaching a peaceful settlement.

This commitment problem-based explanation should be particularly pronounced for separatist wars. When inter-ethnic bargaining frictions are the source of the problem, then the challenger's utility increases in the probability that it will face a challenger from its own group in the future (recall that winning a fight is assumed to breed a future challenger). By definition, a separatist movement attempts to create an independent state outside the jurisdiction of the group that dominates its existing government.

The model extension addresses an important oversight by existing arguments that link oil to civil war via ethnic grievances—because it also incorporates oil-strengthening mechanisms from the baseline model—but does not engage why the government does not attempt to solve the inefficiency-induced commitment problem that leads to costly fighting. The final theoretical section discusses the possibility that the government either (a) grants regional

autonomy or (b) incorporates a politically excluded group from an oil-rich territory. The problem with the first solution is that regional autonomy costs the government valuable revenues, as illustrated by Iraqi ruler Saddam Hussein's attempt at "Arabization" of oil-rich Kurdish lands rather than to respect regional autonomy. The theoretical concerns with the second possibility highlight the empirical relevance of historically rooted separation: the government will question the loyalty of these groups and their ability to commit to not challenging the government were they to gain access to power at the center.

In sum, the theory implies that oil wealth should prevent center-seeking civil wars but may increase the probability of separatist wars fought by oil-rich groups that have historically been separated from the center. To demonstrate empirical support for these predictions, I show a large negative association between oil wealth and center-seeking war initiation across a large sample of non-OECD countries from 1960 to 2006—contrasting existing evidence that shows a positive effect (Buhaug 2006; Ross 2012, 184). Additionally, associational evidence shows that out-of-power minority groups are more likely to fight separatist wars when they are located in an oil-rich territory. A closer look at oil-rich onset cases shows that *all* these groups were historically separated from the capital. Finally, this paper's focus on the heterogeneous effects of oil are also consistent with the weak (and, in fact, *negative*) association between oil wealth and all types of civil war onset found below—contrary to a large body of empirical findings.

The new perspective that this paper offers on the relationship between oil wealth and civil war initiation complements a proliferation of responses to earlier and more sweeping claims about a universal "resource curse." Haber and Menaldo (2011) provide evidence that supports a blessing rather than a curse of natural resources on democracy, and Dunning (2008) and Andersen and Ross (2014) demonstrate important conditionalities in the oil-democracy relationship. Alexeev and Conrad (2009), Wick and Bulte (2009), and Ross

(2012, ch. 6) each present or summarize evidence that rejects the widespread belief that oil wealth leads to slow economic growth by depleting institutional quality. The current paper focuses centrally on (a) comparing prominent mechanisms posited to relate oil wealth to civil war initiation, (b) theoretically developing the relationship among oil, ethnicity, and conflict, and (c) presenting empirical evidence that supports a conditional relationship between oil and civil war while rejecting a strong "resource curse" claim. This paper therefore complements recent contributions to the oil-civil war literature that focus on important conditionalities (Ross 2012, 2013; Morrison 2012) and different types of civil wars (Sorens 2011, Morelli and Rohner 2010).

To advance these considerations, Section 2 examines existing theoretical arguments on oil wealth and civil war initiation. Section 3 presents the baseline model, which examines the state prize and state weakness effects. Section 4 extends the model to incorporate ethnic grievance arguments as well as distinguishes between center-seeking and separatist civil wars. Section 5 provides empirical evidence, and Section 6 concludes. A theoretical appendix and an empirical appendix provide supporting information.

2 Strength or Vulnerability? Existing Arguments on the Contending Effects of Oil

Oil wealth produces a myriad of contending effects. This section reviews five prominent mechanisms and argues that existing theories—while often highlighting compelling mechanisms when considered in isolation—do not make clear predictions about how contending effects of oil combine to produce *net* effects of oil wealth on civil war initiation. These concerns motivate why a convincing theory must evaluate the diversity of countervailing effects that oil exerts.

Although the game theoretic model is not introduced until the next section, the arguments in the current section proceed from a straightforward rationalist premise: a forward-looking challenger will fight when the expected utility of fighting exceeds the expected utility of accepting a peaceful bargain that perpetuates the status quo. Fighting occurs when (a) the probability that the challenger wins multiplied by (b) the value of winning exceeds (c) the value of peaceful bargaining. A compelling theory must address how oil affects all three of these different components of a challenger's calculus. Table 1 summarizes the theories reviewed below in terms of these three components.

Table 1. Summary of Prominent Theories

Name	**Predicted Effect of Oil**		
	Probability of rebel victory	*Value of winning*	*Value of peaceful bargaining*
State Weakness	Increases	Increases	Decreases
Coercion and Patronage	Decreases	Does not address	Increases
Rebel Looting	Increases	Does not address	Does not address
State Prize	Does not address	Increases	Does not address
Ethnic Grievances	Does not address	Increases	Does not address

Importantly, because most existing theories do not distinguish between center-seeking and separatist wars, this theme is largely absent from this section. The formal model scrutinizes the mechanisms presented in this section to derive differential implications for distinct types of civil wars.

2.1 State Weakness

One of the most influential arguments in the literature contends that oil causes civil war by weakening governance institutions. This section highlights three concerns with this mechanism. First, the two articles most frequently cited as supporting this claim—Fearon and Laitin (2003) and Fearon (2005)—do not in fact make this argument. Second, it is crucial to disaggregate the concept of state capacity to understand contending effects. Third, state weakness arguments do not clearly address how this mechanism would trigger costly fighting.

First, scholars frequently misinterpret Fearon and Laitin's (2003) and Fearon's (2005) prominent articles as arguing that oil weakens governance institutions.[8] Fearon and Laitin do not advance a causal claim. Instead, they propose an explanation for why oil wealth positively correlates with civil war onset in regressions that control for a post-treatment variable, per capita income:

> "[W]hile oil revenues help a state against insurgents by providing more financial resources, compared to other countries with the *same per capita income* they should tend to have markedly less administrative and bureaucratic capacity" [emphasis added] (Fearon 2005, 487).

To understand why this claim cannot be interpreted causally, it is necessary to understand how controlling for a post-treatment variable can lead to a biased regression coefficient. Because oil wealth tends to increase per capita income (Alexeev and Conrad 2009; Ross 2012, ch. 6), conditioning on per capita income will implicitly compare oil-rich countries to non-comparable countries that become wealthy through non-oil means. The magnitude of the coefficient estimate of oil on civil war onset will be biased upward from its true causal

[8] For examples, see Humphreys (2005, 512-3), Basedau and Lay (2009, 759), Glynn (2009, 1), Lujala (2009, 52), Morelli and Rohner (2010, 3), Hendrix (2010, 275), Sobek (2010, 269), Hunziker and Cederman (2012, 6), Morrison (2012, 18), Ross (2012, 162), Cotet and Tsui (2013, 52), Cederman, Gleditsch, and Buhaug (2013, 16), Waldner and Smith (2013, 21), and Koubi et al. (2014).

effect in a regression that controls for per capita if oil wealth is less effective at preventing civil wars than other types of wealth—which is exactly Fearon and Laitin's argument. Furthermore, the counterfactual assertion that wealthy oil-rich countries in Africa, Asia, and Latin America would have become wealthy in the absence of oil is generally not plausible. Instead, the relevant counterfactual comparison is to other poor countries—i.e., ones in which civil wars are relatively likely to occur. By conditioning on a post-treatment variable, Fearon and Laitin do not make a causal argument that oil weakens institutions, nor that oil causes civil war.

Second, closely examining Fearon and Laitin's argument also highlights the importance of disaggregating the concept of state capacity. In particular, it is necessary to distinguish between (1) "institutional quality," which can be defined as the ability to translate a given amount of revenues into a particular amount of arms and patronage; and (2) the state's overall bargaining leverage, which is affected by both institutional quality and the total amount of resources.

Even if oil does exert a negative causal effect on institutional quality—a claim that Alexeev and Conrad (2009) and Ross (2012, ch. 6) provide empirical evidence against—there is still no theoretical reason to believe that oil should weaken the government's bargaining position. As discussed below, oil revenues almost always flow directly to the government rather than to a challenger. It is far-fetched to believe that having *more* revenues could *decrease* the ability of a state to defend itself from a rebel attack, contrary to Lujala's (2009, 52) interpretation of Fearon and Laitin's argument. Because oil also increases the size of the prize, more oil could very well increase the expected utility of fighting (i.e., the probability of rebels winning multiplied by the value of winning). But this is a conceptually distinct argument than one that oil decreases the probability that a government will be able to defeat a challenger.

Similarly, it is far-fetched to believe that having more revenues could decrease the ability of the state to make offers that increase the utility of the status quo for the challenger. Vandewalle's (1999) study of oil in Libya provides a useful example. He argues that Libya became a "distributive state" after discovering oil. Distributive states' institutions are "created and relied upon purely for economic largesse and distributive purposes." As a result, "they tend to remain, for regulatory purposes, inefficient and weak" (8). Thus, in this case, oil may have caused state institutions to be weaker—in a per unit of revenue sense—than they otherwise would have been.[9] But oil still engendered huge rents for the state to distribute, compared to a counterfactual Libya that did not discover oil.

Third, even if oil does somehow weaken a state's bargaining leverage, existing arguments do not specify why this mechanism would trigger costly fighting. Under the prevailing assumption that *all* oil-rich governments are vulnerable because of state weakness, fighting does not eliminate the factor that purportedly caused fighting in the first place. Instead, permanent state weakness should decrease the incentives for a forward-looking rebel group to attempt to capture the state. This third consideration previews the logic from the formal model for why assuming that oil weakens state institutions does not trigger war in equilibrium.

2.2 Strengthening Effects: Coercion and Patronage

Oil possesses two types of properties that usually induce incumbency advantages. First, oil wealth provides a very large revenue base to spend on coercion (which decreases the

[9] As with Arabian peninsula countries, though, Libya was also extremely poor with a nearly non-existent state prior to the discovery of oil: "Until the discovery of oil in 1959 and its marketing in 1961, the country's major revenue sources were sales of scrap metal left behind by the belligerents during [World War II], sales of esparto grass, and rent from military bases leased by the United States and Great Britain . . . 80 percent of the country's population still lived at subsistence level in the hinterland" (Vandewalle 1999, 46).

probability with which the challenger would win a fight) and patronage (which increases the utility of the status quo for the challenger). However, the first property will only strengthen the *government's* bargaining leverage if the state actually controls the revenues. So it is crucial that, second, oil also possesses properties that tend to favor government rather than rebel control of the revenues, which Section 2.3 discusses.

Ross (2001) summarizes two state strengthening effects formulated in the "rentier state" literature, which argues that oil revenues stabilize authoritarian regimes.[10] First, oil facilitates considerable welfare spending opportunities that help a government to buy off potential rebel groups. Second, oil wealth allows a government to spend large amounts on internal security, which helps to deter potential rebel groups. Existing evidence supports the empirical importance of both these effects. For example, Ross (2012, 27-33) demonstrates that countries with high oil income per capita tend to have higher government revenues as a percentage of GDP. Cotet and Tsui (2013, 64-6) show that within-country changes in oil revenues positively correlate with changes in military spending.

One reason that oil promotes government patronage and coercion advantages is because oil revenues—compared to those from other natural resources—are often very large in magnitude. For example, in Haber and Menaldo's (2011) dataset on oil, natural gas, coal, and metals income for a global sample of countries from 1800 to 2006, oil and natural gas composed 69% of all global resource income. Furthermore, in 76% of country-years with more that $500 in resource income per capita in this global sample, at least half the income came from oil and gas. According to Colgan (2013, 12), "The global trade of oil generates revenues that are somewhere between ten and a hundred times larger than the next largest natural resource."

[10]Smith (2004), Basedau and Lay (2009), and Morrison (2012) also summarize similar arguments from the rentier state literature and apply them to studying civil wars.

It is critical to incorporate coercion and patronage effects into models that assess the net effect of oil on civil war onset, but it is equally important to note that *only* focusing on these mechanisms will not yield insight to conditions in which oil *can* trigger civil war.

2.3 Government Ownership versus Rebel Looting

Oil wealth only promotes incumbency advantages if the government actually possesses the oil revenues. The assumption in the formal model below that the government controls the oil revenues stands in seeming contradiction with Collier and Hoeffler's (2004) and Ross' (2012, 151-3) arguments that oil provides rebel groups with means to fund an insurgency. However, distinguishing between conflict onset and conflict continuation shows that "looting" may affect civil wars by affecting continuation, but without affecting initiation. Appealing to empirical evidence, there are few cases in which oil wealth plausibly helped to fund rebels' *start-up* costs for challenging the government—regardless of the empirical prevalence of oil looting for funding an *existing* insurgency. Ross (2004; 2012, 174-8) presents evidence of the looting-onset mechanism in only one case that involved a civil war onset, Congo-Brazzaville in the 1990s. Thus, rebel groups rarely reap greater benefits from oil wealth than the government prior to war initiation. Why might this be?

Oil production requires large capital investments,[11] which favors the government over challengers. Even if a rebel group controls an oil-rich area, it is very difficult for the group to both extract the oil and to construct a national distribution system to profit from it (Fearon 2005, 500). Compared to natural resources such as alluvial diamonds and drugs

[11] Ross (2012, 46) shows that the capital-to-labor ratio is much higher in the oil and gas industry than any other major industry for U.S. businesses operating overseas. Alnaswari (1994, 1) states that "Foreign capital and technology had to be called upon to develop oil resources since capital requirements for developing, producing, transporting, refining, and finally marketing oil products were well beyond the capabilities of [developing] countries."

that require little capital to extract, oil is a "less lootable resource" (Humphreys 2005, 523) and "is easily controlled by the central government" (Colgan 2013, 4). Additionally, any rebel group faces severe obstacles to using promises of future gains conditional on capturing the state in order to borrow funds from international organizations. This implies that actually possessing control over the oil is critical.

Furthermore, international actors have strong incentives to support the incumbent government's control over oil. The strategic and monetary importance of oil to great power governments and corporations has encouraged support for whomever can be used as a reliable ally to facilitate discovery and stable production. This is almost always the incumbent government.

In fact, historically, domestic government versus international oil corporation control of oil revenues has provided a far more important distinction than domestic government versus rebel group control. Prior to the 1950s, seven international oil companies controlled 98% of the world's traded oil, outside the United States and Soviet bloc (Ross 2012, 37). A wave of oil company nationalizations occurred between this time and the 1970s, which shifted the bulk of wealth from international oil companies to host governments. Ross cites Mommer's (2002) estimate that "expropriations raised the government's share of oil profits from 50 percent in the early 1960s to 98 percent by 1974" (Ross 2012, 39).

As a final consideration, a more viable option for a rebel group is to bomb oil fields and pipelines to prevent *anyone* from obtaining oil wealth. Sudan provides the most extreme example of this possibility. Sixteen years lapsed between the discovery of a giant oil well in the South in 1983 the country's initial oil production because fighting prevented the government from consolidating control over the oil-rich area. In most cases, however, rebels are unable to completely prevent the government from accessing oil wealth. Even

in a very weak state like Angola, which faced a major rebel threat at independence, the government was able to profit from oil amidst fighting because the main oil wells were located offshore.

Therefore, the possibility of rebel looting during an ongoing civil war is not sufficient to explain how oil affects the probability of conflict onset. Because oil tends to flow to a government rather than to a challenger, the formal model below does not incorporate the possibility of looting.

2.4 State Prize

Scholars commonly argue that oil triggers fighting by raising the value of overthrowing the government. However, arguments that focus *solely* on the size of the prize to connect oil to civil war initiation face a similar shortcoming as the looting-onset explanation: neither accounts for government ownership of oil.

In the economics of conflict literature, wars are conceptualized as a contest. Each side invests in arms to increase its probability of winning a fight for the "prize." A larger prize raises the marginal benefits of arming, and therefore induces actors to devote more resources to fighting.[12]

These types of models do not address the stylized fact discussed above that governments, rather than rebels, tend to control oil wealth. This stylized fact implies that the government has a much larger budget than the challenger to spend on the contest, contrasting the common assumption among economics of conflict models that every actor faces the same budget constraint. Instead, the standard contest function setup may be illuminating for

[12]However, in a more general setup in which a larger prize also increases the costs of participating, the net effect of the size of the prize on effort exerted in the contest is ambiguous. See, for example, Fearon (2008) and Dal Bo and Dal Bo (2011).

other types of natural resources that are more lootable than oil. For example, Olsson and Fors (2004) use this framework to explain the role of gold, diamonds, and coltan in the civil war that began in the Democratic Republic of the Congo in 1997. But focusing solely on the size of the prize does not tell us about the net effects of *oil*. A larger prize does not imply that fighting should occur because the larger prize also facilitates incumbency advantages.

Besley and Persson (2011, ch. 4) add an important nuance to the contest function formulation of fighting but still omit a crucial possibility. In their model, the government funds its military from taxes and natural resource revenue. The government faces lower marginal costs to arming than the challenger does, partly because the challenger cannot access the natural resource wealth. But even though natural resource revenues confer an incumbency advantage in their model, the model still predicts that more natural resources raise the probability of war (184). This finding arises from assuming the government cannot bargain with the challenger, which implies that the challenger can only benefit from natural resource wealth by fighting. In other words, they do not allow the government to use its resource revenue to increase the utility of the status quo for the challenger. By not addressing this important possibility, the factors highlighted by Besley and Persson do not inform us about the net effects of oil.

2.5 Ethnic Grievances and the Location of Oil

A variant of the state prize hypothesis argues that the location of oil matters in addition to the size of the prize. In particular, oil wealth can create grievances and separatist incentives when large oil reserves are located in regions populated by minority ethnic groups that lack political power (Ross 2012, 149-51; Sorens 2011; Hunziker and Cederman 2012).

The formal model below builds on these insights by clarifying three crucial issues that have yet to be addressed. First, as long as the oil from the aggrieved region flows to the center, oil should still strengthen the state—which should dampen incentives for fighting regardless of the amount of grievances caused by "exploited" oil wealth. Thus, a convincing theory must explain how separatist incentives can overwhelm state strengthening effects. Second, even if ethnic differences create bargaining frictions, fighting must create the possibility of eliminating this bargaining impediment in order for war to be rational. Third, to the extent that separatist incentives arise because of the government's inability to commit, at present we lack a concrete arguments for exactly why the government is unable to commit to a sufficient level of spoils, as well as why the government does not pursue policies to alleviate its commitment inability.

3 Baseline Model: State Prize, State Weakness, and the Absence of War

This section presents a baseline formal model that focuses on the state prize and state weakness effects. The model demonstrates that neither mechanism is sufficient to cause civil war. Instead, oil wealth has the net effect of enhancing the government's bargaining leverage. The next section incorporates ethnic grievance arguments and derives predictions that distinguish center-seeking from separatist civil wars. The theoretical appendix provides proofs for the results in the text.

3.1 Setup

I consider an infinite horizon environment in which two actors bargain over oil spoils in each period. Future consumption is discounted exponentially by an amount $\delta \in (0, 1)$.

There are an infinite number of possible players, and a new player is drawn in each period that follows a fight. The player controlling the government in period t is referred to as G_t, and its bargaining partner at time t is a challenger C_t. Players are referred to in terms of their period t position. For example, the period t challenger could become the government in period $t+1$. Therefore, the terms "government" and "challenger" refer to the actor's position in a particular period. In every period, G_t possesses exogenously generated revenues $R + \tau(R) \cdot y > 1$, where R is oil rents, y is non-oil societal income, and $\tau(R)$ is the tax rate. The tax rate is set exogenously and the purpose of this element of the model will be discussed below.

In any period, C_t can choose to fight G_t for control over the oil wealth in future periods. The baseline model focuses on how oil affects the incentives for a generic type of fight, whereas the extension in the next section derives differential implications for center-seeking and separatist wars. Thus, the decision to fight can be interpreted as either the challenger attempting to overthrow the government or seeking to create a new government.[13]

G_t has two policy variables at his disposal to attempt to prevent C_t from fighting. G_t chooses an amount m_t to allocate to armament spending. G_t also chooses an amount x_t to offer to C_t. x_t captures, in a reduced form manner, a more general decision over public good provision, transfers, public sector job provision, and other ways for the government to distribute a share of its revenues to the challenger. If C_t accepts, C_t consumes his offer, G_t consumes the remainder of the oil spoils, and the game moves to the next period with the same players as government and challenger; i.e., G_{t+1} is the same player as G_t and C_{t+1} is the same player as C_t. Each player has linear preferences over the share of oil revenues it consumes.

[13]For separatist fights, the setup implicitly assumes that the challenger is located in an oil-rich region of the country. Otherwise, winning a separatist war would not yield large oil spoils.

If C_t fights, C_t becomes the government in period $t+1$ with probability $\frac{1}{1+\alpha m_t} \in (0,1)$ for all m_t. G_t remains in control of the state in period $t+1$ with complementary probability $\frac{\alpha m_t}{1+\alpha m_t}$. The contest function assumes that C_t has an exogenous arms endowment of 1 and that each side wins a fight with a probability proportional to their share of arms. The government's level of arming efficiency, $\alpha > 0$, is a parameter that modifies the effect of G_t's armament spending on the relative probability of winning. A higher α implies a higher marginal benefit to arming for the government. The next section discusses why α should be higher for a center-seeking than a separatist civil war.

If a fight occurs, the government consumes $\phi(R - m_t)$ of the remaining revenues, implying that fighting destroys $(1-\phi)(R-m_t)$ resources. Fighting does not alter the size of oil revenues in future periods. The loser of a fight is eliminated forever, meaning formally that no future information sets require that player to choose an action, and that player receives a utility of zero in all remaining periods. After a fight, G_{t+1} bargains with a new player C_{t+1}. The idea here is that winning a fight does not eliminate political competition forever.[14] Instead, the loser of the fight gets eliminated and the victor bargains with a new challenger. Therefore, from the ex ante perspective of the two players at time t, fighting is costly not only because it decreases joint consumption in the period that the war occurs. In addition, one player will be eliminated but the winning player does not realize the full benefits of the other's elimination because it will face a new challenger in the next period.[15] Assuming the government will face a new challenger does not necessarily imply that war will recur.

[14] The challenger could be conceived of as an established rebel group, or as citizens that could potentially act collectively in response to inadequate welfare provisions. How oil wealth impacts rebel group formation and coalition dynamics is an intriguing question for future research.

[15] Without assuming that winning a fight breeds a new challenger, the status quo could actually be more costly than fighting for the following reason. Whenever a challenger is present, the government has to arm to deter the challenger. If a fight destroys all future challengers, then even though consumption is lost for the fighting period, the fight eliminates the cost of arms in the future. Thus, if the equilibrium amount of arms spending is high enough and the government is patient, it may be optimal to lowball the challenger and start a war. See Powell (1993) for an elaboration of this consideration.

Instead, this simply asserts that winning a fight does not eliminate all political competition forever. Furthermore, if new challengers do lead to additional fights in equilibrium, this finding would be supported by consistent empirical evidence that civil wars tend to be more likely in countries that have previously experienced them—and that resource-rich countries in particular tend to experience recurring wars (Rustad and Binningsbo 2012).

The model incorporates the state prize effect because larger oil spoils increase the amount of revenues the challenger would control if it deposed the incumbent government. The model also captures both a government services-provision weakness effect and a revenue-collecting weakness effect. Fearon (2005, 502) quotes Karl's (1997, 61) argument that reliance on oil wealth has tended to decrease states' "capacity to build extensive, penetrating, and coherent bureaucracies that could successfully formulate and implement policies." A natural way to capture this in the model is to assume that for every amount x_t offered to the challenger, the challenger only expects to receive θx_t, where $\theta \in (0, 1]$ is a percentage. The remaining $(1 - \theta)x_t$ is assumed to be lost to corruption that results from imperfect administrative capacity. Additionally, assume that θ is a decreasing function of the percentage of resource rents in the budget, which is expressed by $\frac{R}{R+\tau(R)\cdot y}$. Thus, higher resource dependence decrease the government's efficiency at translating revenues into welfare provision.

Specific attributes of oil support this formulation of the state weakness hypothesis. Ross (2012, 59-62) identifies the ease with which oil revenues can be concealed as a key "trouble with oil revenues." Oil-rich rulers tend to keep their budgets as opaque as possible to allocate without constraints, and face few effective pressures to increase transparency over an easily divertable resource that often funnels directly into a secret budget (see Ross 2012, 60 for examples). While this feature of oil is useful for many political purposes, it also decreases the government's ability to effectively provide services.

The theoretical appendix also incorporates a revenue-collecting weakness effect. Fearon and Laitin (2003, 81) argue that, "Oil producers tend to have weaker state apparatuses than one would expect given their level of income because the rulers have less need for a socially intrusive and elaborate bureaucratic system to raise revenues." A natural way to express this in the model is to assume that $\tau'(R) < 0$, that is, increases in oil rents lead to decreases in the amount of non-oil wealth the government is able to collect in taxes. Therefore, the higher R is, the lower government revenues are as a percentage of total (i.e., both oil and non-oil) income.

The stage game for a generic period t can be summarized as follows:

1. G_t chooses how much revenue to allocate to arms (m_t) and to patronage (x_t), subject to the per-period budget constraint $m_t + x_t \leq R$.

2. C_t accepts x_t or fights.

   (a) If C_t accepts the offer, G_t consumes $R - m_t - x_t$ and R_t consumes θx_t. The game moves to the next round with G_{t+1} as the same player as G_t and C_{t+1} as the same player as C_t.

   (b) If C_t fights, G_t consumes $\phi(R - m_t)$ and C_t consumes nothing in the current period. In the next period, there is a $\frac{\alpha m_t}{1+\alpha m_t}$ probability that G_t retains its position (i.e., $G_{t+1} = G_t$) and a complementary $\frac{1}{1+\alpha m_t}$ probability that C_t becomes the government (i.e., $G_{t+1} = C_t$). The loser of a fight is eliminated forever, and C_{t+1} is a new player.

3.2 Equilibrium Analysis and Comparative Statics

I solve for the existence of a peaceful stationary subgame perfect Nash equilibrium. If one exists, this strategy profile requires (a) G_t to choose constant levels of arms (m^*) and

patronage (x^*) in each period t, (b) m^* and x^* to provide the highest lifetime expected utility for G_t from the perspective of each period, conditional on C_t accepting, and (c) C_t to accept. For clarity, (m^*, x^*) refers to the equilibrium armament and offer pair, whereas (m_t, x_t) refers to the period t choice of arms and offer. In equilibrium, $(m_t, x_t) = (m^*, x^*)$ for all t. To minimize notation I drop the t subscripts on G_t and C_t below. It is assumed that "G" and "C" refer to the government and challenger, respectively, in a generic period t. Finally, the body of the paper assumes that non-oil wealth $y = 0$, whereas the appendix relaxes this assumption.

To solve the game, I first assume that the equilibrium allocations m^* and x^* will be chosen in all future periods, and solve for the optimal current-period choices. I then set the current-period choices equal to the equilibrium choices to solve for the equilibrium amounts. For current-period allocations (m_t, x_t) and equilibrium future-periods allocations (m^*, x^*), C's average per-period utility to accepting an offer is $(1-\delta)\theta x_t + \delta\theta x^*$. C's expected per-period utility to fighting is $\frac{\delta}{1+\alpha m_t}(R - m^* - x^*)$. This term expresses the probability of winning a fight in the current period multiplied by the per-period utility of governing (oil revenues minus armament expenditures minus patronage offer), discounted by a period because fighting eliminates consumption in the period that the fight occurs. Conditional on m_t, G will optimally choose x_t to make C indifferent between accepting and fighting: $x_t = \frac{\delta}{(1-\delta)\theta}\Big[\frac{1}{1+\alpha m_t}\big(R - m^* - x^*\big) - \theta x^*\Big]$.

G's desire to maximize utility in a peaceful equilibrium is equivalent to the goal of minimizing expenditures on arms and expenditures in the current period, subject to making C indifferent between accepting or fighting. This sets up the following minimization problem:

$$\min_{m_t, x_t, \lambda} \mathcal{L}(m_t, x_t, \lambda) \equiv m_t + x_t - \lambda\Big\{x_t - \frac{\delta}{(1-\delta)\theta}\Big[\frac{1}{1+\alpha m_t}\big(R - m^* - x^*\big) - \theta x^*\Big]\Big\}$$

Equations 1 through 3, respectively, represent the first order conditions $\frac{\partial \mathcal{L}}{\partial x_t} = 0$, $\frac{\partial \mathcal{L}}{\partial m_t} = 0$, and $\frac{\partial \mathcal{L}}{\partial \lambda} = 0$:

$$\lambda = 1 \tag{1}$$

$$\lambda \cdot \frac{\delta}{(1-\delta)\theta(1+\alpha m_t)}(R - m^* - x^*) = 1 \tag{2}$$

$$x_t = \frac{\delta}{(1-\delta)\theta}\Big[\frac{1}{1+\alpha m_t}\big(R - m^* - x^*\big) - \theta x^*\Big] \tag{3}$$

The left-hand side of Equations 1 and 2 express the marginal benefit of increasing x_t and m_t, respectively. The right-hand side expresses the marginal cost, which is constant at 1 for both inputs. Increasing either m_t or x_t delivers a marginal benefit equal to the amount that it relaxes G's constraint. The first order condition for x_t states that the marginal utility to increasing the patronage offer is constant at 1.

In equilibrium, for all periods t the current-period choices will equal the equilibrium-level choices: $m_t = m^*$ and $x_t = x^*$. Substituting these terms into Equation 3 and re-arranging expresses the optimal patronage offer as a function of the optimal armament amount:

$$x^*(m^*) = \frac{\delta(R - m^*)}{\delta + \theta(1 + \alpha m^*)} \tag{4}$$

Substituting Equations 1 and 4, as well as $m_t = m^*$, into Equation 2 creates an implicit characterization of the optimal armament amount as a function of parameters:

$$\frac{\delta(R - m^*)}{(1-\delta)(1+\alpha m^*)[\delta + \theta(1+\alpha m^*)]} = 1 \tag{5}$$

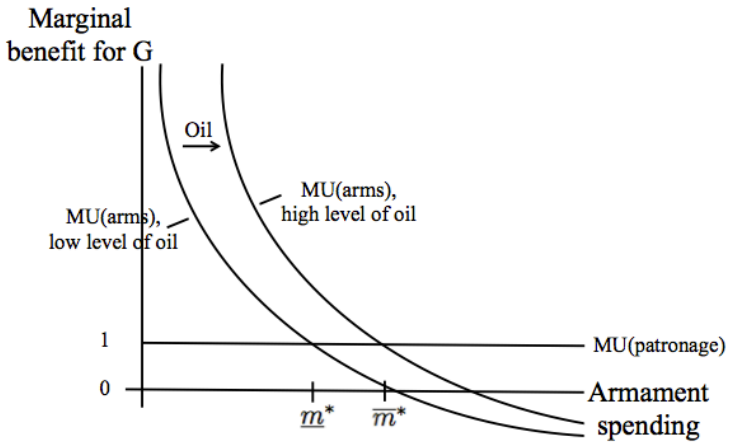
Equation 5 preserves the economic intuition of Equation 2 because the left-hand side is the marginal benefit to a higher m^* and the right-hand side is the marginal cost. Lemma 1 presents two properties of m^* that are used to solve for the equilibrium as well as the

main comparative statics result of the baseline model.

Lemma 1. (a) The marginal benefit of arming decreases in the amount of arms spending. (b) The marginal benefit of arming increases in the size of oil revenues.

Figure 1 illustrates both parts of Lemma 1. To understand part a, when m is low the marginal benefit of arms exceeds the marginal benefit of patronage because the marginal benefit of arming decreases in arms spending.[16] But when m is high the marginal benefit of patronage exceeds the marginal benefit of arms. The point at which the marginal benefit curves intersect denotes the optimal level of arms because G will devote all his resources to building military capacity until the level of arms is high enough that the marginal benefit of arming equals the marginal benefit of patronage. G spends the remaining funds needed to satisfy C's no-fighting constraint on patronage, yielding the equilibrium level of x^*.

Figure 1. Optimal Armament/Offer Allocations



[16]This claim assumes that the marginal benefit of arms exceeds 1 when $m = 0$. Substituting $m^* = 0$ into Equation 5 and re-arranging leads to the requirement that $R > \frac{1-\delta}{\delta}(\delta + \theta)$, which is assumed to be true in the proofs for all the results in this and the next section. To explain the intuition for the right-hand side of this inequality, when δ is very low the marginal benefit of arming is low because the challenger is too impatient to defer consumption by a period by fighting.

To understand part b of Lemma 1, more oil raises the marginal benefit to arming by increasing the challenger's expected utility to fighting. Thus, more oil shifts to the right the point at which the marginal benefit of arms equals the marginal benefit of patronage. In Figure 1, when the level of oil shifts from a low level to a high level, the equilibrium level of arms increases from $\underline{m}^*$ to $\overline{m}^*$.

Part a of Lemma 1 provides the intuition for why m^* and x^* have interior solutions, which Lemma 2 proves.

Lemma 2. There exist interior solutions for m^* and x^*.

Given the equilibrium levels of m^* and x^*, the first major finding can now be demonstrated: the state prize and state weakness mechanisms do not generate civil war in equilibrium. Lemma 3 states this finding.

Lemma 3. For all values of R and θ, war never occurs in equilibrium.

Lemma 3 follows from the results that (1) it is always *possible* for G to buy C off and (2) G will always *choose* to buy C off. Regarding the first result, the maximum feasible amount the government can transfer to the challenger (conditional on building the optimal level of military capacity), $\theta(R - m^*)$, always exceeds the challenger's expected utility of fighting, $\frac{\delta}{1+\alpha m^*}[R - m^* - x^*]$. Define Δ^* as the difference between these two terms: $\Delta^* \equiv \theta(R-m^*) - \frac{\delta}{1+\alpha m^*}[R-m^*-x^*]$. To see why this term is always positive, substitute the term in Equation 4 for x^* and re-arrange to yield $\Delta^* = \frac{\theta(R-m^*)}{1+\frac{\delta}{\theta(1+\alpha m^*)}} > 0$. Because $\Delta^* > 0$, it is always possible for G to buy C off.

The finding that G can always buy C off is puzzling from the perspective of existing "resource curse" arguments, which argue that oil will cause war by raising the prize of capturing the state and/or by weakening the state. The effect that a higher R has on

encouraging fighting by increasing the prize of winning is dominated because G can use a higher R for arming and patronage. Additionally, a victorious challenger would inherit a strategically identical position to the government it just deposed. The fact that $\theta < 1$ and that θ decreases in the amount of resource dependence does not affect the propensity for fighting because institutional weakness also afflicts a forward-looking challenger's calculus.[17] As discussed in the appendix, assuming that more oil rents decreases non-oil tax revenues does not imply that oil causes civil war for the exact same reason. Therefore, if G chooses the optimal level of arms, there always exists a feasible patronage offer that C will accept. The state prize and state weakness mechanisms do not generate civil war in equilibrium.

Regarding the second result that drives Lemma 3, G will always choose to buy C off for the following reason. Fighting is costly because (a) it lowers total consumption in the period that the war occurs and (b) one of the current players gets eliminated but the other player does not reap the full benefits of their elimination since the victorious player will face a strategically identical challenger in the future. Because G makes all the offers, it will choose an armament and patronage offer amount that makes C indifferent between accepting and fighting. G strictly prefers to prevent fighting whenever possible because G pockets all the surplus that is saved by not fighting.[18] This result is consistent with a large literature that studies the "inefficiency puzzle" in international warfare (e.g., Fearon 1995, Powell 2006).

This discussion provides all the elements needed to state the unique equilibrium strategy profile and outcome of the game.

[17] That is, as long as $\theta'(R)$ is not too large in magnitude.

[18] Assuming that $\phi < \theta(R)$ for all R is a sufficient condition for fighting to destroy more wealth than inefficient government services provision. It is reasonable to assume that fighting should be more costly.

Proposition 1. In every period, for any history of the game G chooses $(m_t, x_t) = (m^*, x^*)$ as defined in Lemma 2. For any history of the game in previous rounds, C accepts the offer if $x_t \geq \frac{\delta}{(1-\delta)\theta}\left[\frac{1}{1+\alpha m_t}\left(R - m^* - x^*\right) - \theta x^*\right]$ and rejects otherwise. Civil wars do not occur along the equilibrium path.

Even though the amount of oil wealth does not impact the probability of fighting—which is zero regardless of the level of R—how oil impacts G's bargaining leverage relative to C is still of interest. An intuitive definition of G's bargaining leverage is the inverse of the percentage of G's maximum feasible offer that G actually offers C in equilibrium, given that the government chooses the optimal level of military capacity. That is, G can offer C up to $R - m^*$, and in equilibrium will choose to offer $x^* = \frac{\delta(R-m^*)}{\delta+\theta(1+\alpha m^*)}$. Thus, G only needs to offer $\frac{\frac{\delta(R-m^*)}{\delta+\theta(1+\alpha m^*)}}{R-m^*}$ percent of the maximum possible offer to induce acceptance, resulting in bargaining leverage of $1 - \frac{\delta}{\delta+\theta(1+\alpha m^*)}$.

Proposition 2. G's bargaining leverage increases in R.

Proposition 2 can easily be verified by noting that $1 - \frac{\delta}{\delta+\theta(1+\alpha m^*(R))}$ increases in m^*, and m^* is an increasing function of R. The reason is that more oil wealth increases C's utility to fighting, which increases G's marginal benefit to arming. As shown in Figure 1, the higher G's marginal benefit to arming, the more the government substitutes arms for patronage. This increases G's bargaining leverage because more arms decrease the value of C's option to fight.[19]

The term $1 - \frac{\delta}{\delta+\theta(1+\alpha m^*(R))}$ also demonstrates that the amount of oil *only* affects G's bargaining leverage through its effect on military capacity. If instead m were assumed to

[19] In principal-agent terms, the ability of the government to invest in military capacity resembles actions taken by a principal to relax an agent's participation constraint by lowering the agent's reservation value, as in Acemoglu and Wolitzky (2011). Powell (2013) refers to this possibility as "coercive power."

be set exogenously, R would not impact the equilibrium at all. The amount by which a larger R would raise G's offer to C would equal the additional amount of patronage that C would require to not launch a war.

4 Model Extension: Ethnic Grievances and the Conditional Effects of Oil on Different Types of Civil War

This section extends the baseline model by introducing ethnic grievance arguments. Specifically, it assumes that players belong to different "groups" and that group membership affects the government's ability to buy the challenger off. When both (1) the extent of ethnic frictions are high and (2) there is a high probability that a victorious challenger will only face future challengers from its own group, oil may trigger civil war. However, when either (1) or (2) is not true, the multiple group extension leads to qualitatively similar predictions as the baseline model. This section also suggests a viable empirical strategy for assessing the conditional effects of oil that the model predicts. It shows why oil should sometimes trigger separatist civil wars but should be unlikely to trigger center-seeking conflicts.

4.1 Setup

This section extends the baseline model by assuming there are two distinct groups. Whereas existing theories implicitly assume that oil-induced state weakness applies equally to *all* governments—which is why this factor is not sufficient to produce war in equilibrium—other factors may only cause bargaining frictions when certain types of players interact. The model assumes that every player belongs to one of two groups that reflect an ethnic, linguistic, religious, or another relevant cleavage. The core idea here is that the ability of the challenger to ensure it actually receives payments promised to it in part depends on

the challenger's influence in the central government. When the challenger belongs to the same group as the government, the challenger will presumably command a presence in the cabinet, legislature, and military. As a result, the challenger has means to ensure that the government actually delivers promised spoils. In contrast, if the challenger belongs to a different group than the government and if that group has minimal presence in the ruling coalition, it is more difficult for the challenger to effectively monitor the government.

The model incorporates this consideration by assuming that if the current-period government and challengers belong to different groups, there is a $\beta \in (0, 1]$ percent chance that an accepted patronage offer does not reach the challenger.[20] Thus, for an offer of x_t to a challenger from a different group than the government, upon accepting the challenger expects to consume $\beta\theta x_t$. Thus, $(1 - \beta\theta)x_t$ resources are wasted. In contrast, if the government and challenger belong to the same group, β is assumed to equal 1 and θ is the only source of bargaining inefficiency.

Building off the inefficiency argument from above that draws on the lack of transparency of oil revenues, the extent to which the government can shield oil spending from a challenger in part depends on the challenger's presence in the ruling coalition. For example, if the challenger's group controls the oil ministry, the fact that oil expenditures are not transparent should pose less of a bargaining impediment. This would correspond to a high value of β.

In addition to monitoring concerns, the government may face greater incentives to renege on promises to groups that lack political influence in the capital because these groups cannot threaten the government through organizations such as the cabinet, legislature, and military (however, the decision to renege is not specifically modeled below). Other

[20] In the proofs for the results below, I assume that β belongs to a closed set $[\epsilon, 0]$ with an arbitrarily small lower bound $\epsilon > 0$.

interpretations of β incorporate negative externalities that accompany oil production in regions not represented in the ruling coalition, such as environmental costs that are not internalized by the government, or unwanted migration by the government's group into the oil-rich territory. Over half of the separatist wars in oil-rich regions listed in Table 5 in Section 5.3 below are listed by Fearon and Laitin (2011, 201) as "sons-of-the-soil" conflicts, in which a group indigenous to a particular territory fights in response to migrants from other parts of the country. Thus, β is highly tractable yet flexible enough to capture a wide range of possible inter-group bargaining frictions.

The assumption that there are exactly two groups does not need to be interpreted literally. It is also possible to conceive of a country in which there are many groups, some of which are "compatible" with each other and do not experience inter-group bargaining impediments ($\beta = 1$) and others that are not compatible and do experience inter-group frictions ($\beta < 1$). The only consequential element of the multiple groups assumption is that some pairings of groups in society are more compatible bargaining partners than others—as is implicit in all ethnic grievance-based theories.

Even introducing only two different groups can potentially create immense complexity for solving the model. There are a boundless number of possible ways to assume which type of challenger will be drawn following a fight. To keep the model tractable, I impose the following assumptions. The government and challenger are assumed to belong to different groups in the first period of the game. It is assumed that if the initial government wins a fight, it will only ever face challengers from the other group in the future. Thus, as long as the initial government is in power, the β bargaining friction will always be present. If the challenger wins a fight and therefore becomes the government in the next period, there is a p probability that this new governing actor will only face challengers from its own group in the future. This absorbing state yields strategies identical to those in the baseline model,

in which β implicitly is 1.[21] There is a $1-p$ probability that conditional on winning a fight this new government will only face challengers from the other group, which places the new government in a strategically identical position as the government it just defeated.

The probability p also delivers an important substantive implication: as discussed below, p should be lower for separatist than center-seeking conflicts. Winning a separatist war creates an autonomous or independent state outside the jurisdiction of the government whom the challenger originally fought, hence lowering the probability of facing the other group conditional on winning.

4.2 Equilibrium Analysis

I again solve for the existence of a peaceful stationary SPNE. The government's equilibrium choices are denoted by $(\hat{m}, \hat{x})$ and the current period choices are (again) denoted by (m_t, x_t). If the challenger accepts an offer, it will receive a per-period average utility $(1-\delta)\beta\theta x_t + \delta\beta\theta\hat{x}$. In contrast, fighting leads to an expected per-period utility $\frac{\delta}{1+\alpha m_t}[R - p(\hat{m}+\hat{x}) - (1-p)(m^*+x^*)]$. In words, conditional on winning a fight, with probability p the victorious challenger only faces challengers from the other group in the future and therefore is in a strategically identical position to the government it just deposed. With probability $1-p$ the current period challenger will only face members of its own group in the future, which leads to the equilibrium per-period consumption amount solved for in the baseline model. G maximizes its utility by choosing a patronage offer (conditional on the level of arms) to make C indifferent between accepting and fighting. This yields $x_t = \frac{\delta}{(1-\delta)\beta\theta}\Big(\frac{1}{1+\alpha m_t}[R -$

[21] Assuming that subgames in which a government only faces challengers from his own group is an absorbing state is, of course, a simplification. The consequential implication of the assumptions discussed in this paragraph is that a challenger may choose to fight a government from a different group if there is a high enough probability that a victorious challenger will interact with members of its own group in the future.

$p(\hat{m}+\hat{x})-(1-p)(m^*+x^*)]-\beta\theta\hat{x}\Big)$.

The government solves the following optimization problem:

$$\min_{m_t,x_t,\lambda}\mathcal{L}(m_t,x_t,\lambda)\equiv m_t+x_t-\lambda\Big\{x_t-\tfrac{\delta}{(1-\delta)\beta\theta}\Big(\tfrac{1}{1+\alpha m_t}[R-p(\hat{m}+\hat{x})-(1-p)(m^*+x^*)]-\beta\theta\hat{x}\Big)\Big\}$$

This leads to the following respective first order conditions, $\frac{\partial\mathcal{L}}{\partial x_t}=0$, $\frac{\partial\mathcal{L}}{\partial m_t}=0$, and $\frac{\partial\mathcal{L}}{\partial\lambda}=0$:

$$\lambda=1 \tag{6}$$

$$\lambda\cdot\frac{\delta}{(1-\delta)\beta\theta(1+\alpha m_t)^2}[R-p(\hat{m}+\hat{x})-(1-p)(m^*+x^*)]=1 \tag{7}$$

$$x_t=\frac{\delta}{(1-\delta)\beta\theta}\Big(\frac{1}{1+\alpha m_t}[R-p(\hat{m}+\hat{x})+(1-p)(m^*+x^*)]-\beta\theta\hat{x}\Big) \tag{8}$$

Following similar steps as in the analysis for the baseline model, Lemma 4 solves the first order conditions for the equilibrium levels of armament and patronage.

Lemma 4. There exist interior solutions for $\hat{m}$ and $\hat{x}$.

Unlike in the baseline model, fighting may occur in the extension with multiple groups. The reason is that the maximum feasible amount the government can offer the challenger does not necessarily exceed the challenger's expected utility of fighting. When both (1) the extent of ethnic frictions are high and (2) there is a high probability that a victorious challenger will only face future challengers from its own group, civil war may occur. However, when either (1) or (2) is not true, the multiple group extension leads to qualitatively similar findings as in the baseline model. Lemma 5 formally characterizes a lower contour set in p and β that determines whether fighting will occur.

Lemma 5. When β and p are sufficiently low, G cannot make an offer that C will accept.

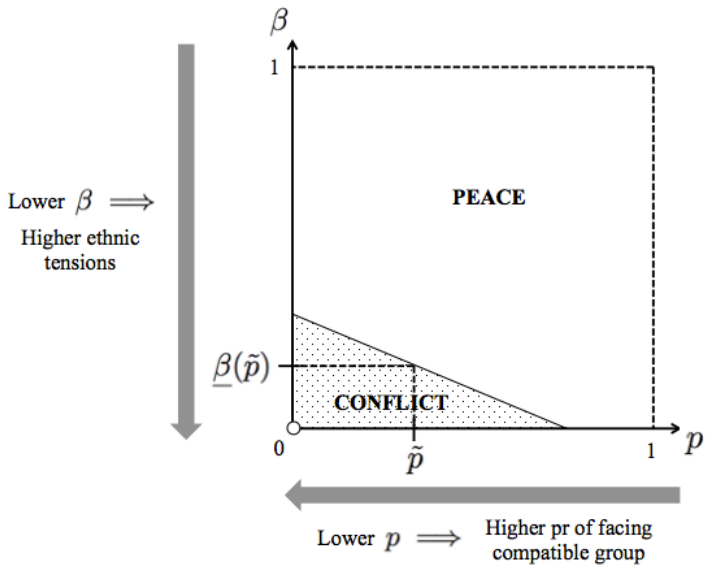
Formally, for every $\beta > \bar{\epsilon}$ (for $\bar{\epsilon}$ to be defined in the proof), there exists a function $\underline{\beta}(p)$ such that G is not able to choose a feasible $(\hat{m}, \hat{x})$ pair that induces C to accept when $\beta < \underline{\beta}(p)$.[22]

To understand the intuition behind Lemma 5, consider two limiting cases. If $\beta = 1$, the model with multiple groups is identical to the baseline game. This implies that costly fighting cannot be optimal. Similarly, if $p = 1$, the model with multiple groups is identical to the baseline game except that payments to C are multiplied by $\beta\theta$ rather than θ. For the same reason that $\theta < 1$ is not sufficient to trigger fighting in the baseline game, $\beta\theta < 1$ is not sufficient to trigger fighting in the multiple groups extension when $p = 1$—the low β that disadvantages the current incumbent will equally disadvantage all future incumbents.

In contrast, when p is sufficiently low conflict will occur if β is also below a certain level. Figure 2 depicts a generic value of p, $\tilde{p}$, and the corresponding $\underline{\beta}(\tilde{p})$ threshold from Lemma 5. If $\beta < \underline{\beta}(\tilde{p})$, then conflict will occur. Unlike the case when $p = 1$, when p is low there is an asymmetry between the government and challenger that can trigger fighting. Whereas the status quo entails inter-group bargaining impediments, if the challenger fights and wins there is a chance that this new governing actor will only face challengers from its own group in the future. Because winning may eliminate the inter-group inefficiency, fighting will occur in equilibrium when p and β are low.

[22] The dependence of these thresholds on R and other parameters is suppressed for notational convenience, but it is important to note that the following exposition assumes R is fixed.

Figure 2. Conflict and Peace Regions in (p, β) Space



Note: The parameter values $R = 10$, $\delta = 0.9$, $\theta = 1$, $\alpha = 1$ were used to generate this graph.

The crucial difference between θ (state weakness) and β (inter-group tensions) is that—following the implicit suggestions by state weakness theories—θ is assumed to be constant across all government-challenger pairs, whereas β only causes inefficiency when the government and challenger belong to different groups. This asymmetric attribute of β can trigger equilibrium fighting in the model with multiple groups, contrasting with the insufficiency of θ for triggering fighting in the baseline game.

Using the threshold from Lemma 5, it is possible to characterize the conditions under which a peaceful equilibrium exists (which is unique if it does).

Proposition 3. In subgames for which the government will only face challengers from its own group, Proposition 1 characterizes the equilibrium strategy profile. In subgames for which the current government will only face challengers from the other group, if $\beta \geq \underline{\beta}(p)$

then in every period G chooses $(m_t, x_t) = (\hat{m}, \hat{x})$ (as defined in Lemma 4) for any history of the game. C accepts the offer if $x_t \geq \frac{\delta}{(1-\delta)\beta\theta}\Big(\frac{1}{1+\alpha m_t}[p(R-\hat{m}-\hat{x})+(1-p)(R-m^*-x^*)]-\beta\theta\hat{x}\Big)$ and fights otherwise for any history of the game in previous rounds. Civil wars do not occur along the equilibrium path. In subgames for which the current government will only face challengers from the other group, if $\beta < \underline{\beta}(p)$ a peaceful equilibrium does not exist.

4.3 Comparative Statics

This section evaluates three comparative statics predictions for how the probability of civil war onset changes in parameter values. The first comparative statics prediction examines the effect of oil wealth and yields a conditional finding. Because the sign of the effect of oil on civil war depends on parameter values, the next two comparative statics predictions demonstrate why oil wealth should sometimes trigger separatist civil wars but should be unlikely to trigger center-seeking conflicts. Finally, this section discusses why the location of oil wealth should be more important for separatist than for center-seeking wars.

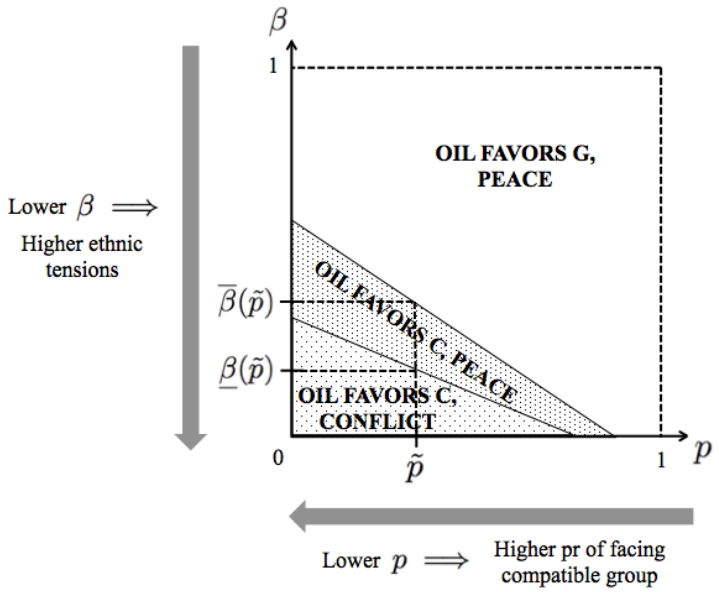
War does not occur in equilibrium when the maximum feasible amount the government can transfer to a challenger from the other group, $\theta\beta(R-\hat{m})$, exceeds the challenger's expected utility to fighting, $\frac{\delta}{1+\alpha\hat{m}}[R-p(\hat{m}+\hat{x})-(1-p)(m^*+x^*)]$. Define $\hat{\Delta}$ as the difference between these terms: $\hat{\Delta} \equiv \theta\beta(R-\hat{m})-\frac{\delta}{1+\alpha\hat{m}}[R-p(\hat{m}+\hat{x})-(1-p)(m^*+x^*)]$. Factors that increase $\hat{\Delta}$ decrease the probability of war, whereas factors that decrease $\hat{\Delta}$ increase the probability of war. Below, I refer to $\hat{\Delta}$ as G's *offer surplus*.

Proposition 4 demonstrates that the effect of oil on civil war is conditional on the amount of ethnic incompatibility (β) and the probability that a victorious challenger will only face members of an incompatible group in the future (p).

Proposition 4. When β and p are sufficiently large, $\hat{\Delta}$ increases in R. When β and p are sufficiently small, $\hat{\Delta}$ decreases in R, and this threshold is higher than the one from Lemma 5. Formally, there exists a threshold $\overline{\beta}(p) > \underline{\beta}(p)$ such that $\frac{\partial \hat{\Delta}}{\partial R} > 0$ if $\beta > \overline{\beta}(p)$ and $\frac{\partial \hat{\Delta}}{\partial R} < 0$ if $\beta < \overline{\beta}(p)$.

Proposition 4 characterizes an additional p and β threshold, depicted in Figure 3, that determines whether more oil increases G's ability to induce acceptance or increases C's expected utility of fighting by a greater amount. The effect characterized in Proposition 2, which was derived for the baseline game, is valid when p and/or β are high. However, when p and β are low, small increases in the amount of oil increase C's expected utility of fighting more than the expected utility of accepting. Because this p and β threshold is higher than the one from Lemma 4, there is an intermediate parameter range in which the government is able to buy off the challenger but small changes in oil wealth increase the value of fighting more than the ability of G to buy C off.

Figure 3. Effect of Oil Wealth on Civil War in (p, β) Space



Proposition 4 provides considerable insight into how countervailing effects of oil interact to produce a net effect when combined into a joint framework. Depending on parameter values, either the armament/patronage effects of oil or the ethnic grievances effect may dominate. This result contrasts with Lemma 3 and Proposition 2, which demonstrate that the state prize and state weakness effects never dominate the armament/patronage effects.

However, Proposition 4 is not helpful for deriving empirical implications from the model. It is possible to construct reasonably satisfying measures of oil wealth, but it is quite difficult to measure the variables that the model predicts should modify the effect of oil. It would be restrictively difficult to measure the extent of bargaining impediments created by ethnic differences. And it is even more difficult to directly assess actors' beliefs about the group membership of challengers they expect to face in the future conditional on winning a civil

war.

The remainder of this section discusses three factors that distinguish center-seeking from separatist wars. Hypothesizing that oil exerts differential effects on distinct types of civil wars can be empirically assessed because it is feasible to measure different types of civil wars.

The first consideration is that the probability the challenger will face members of the other group conditional on winning should be high for center-seeking wars but low for separatist wars. If this consideration is true, Proposition 5—which shows that a higher p enhances the positive effect of oil wealth on the offer surplus[23]—provides one reason to expect that oil wealth should decrease the prevalence of center-seeking wars but may increase the prevalence of separatist conflicts.

Proposition 5. The probability that the challenger will face members of the other group conditional on winning positively modifies the effect of oil wealth on the offer surplus. Formally, $\frac{\partial^2 \hat{\Delta}}{\partial R \partial p} > 0$.

By creating a newly sovereign or autonomous state, a challenger that wins a separatist conflict can eliminate future interactions with the group it fought against. Therefore, a victorious separatist group should have a high probability of facing a group with whom it has low bargaining friction.[24] In contrast, if a challenger seizes the capital, it is still located in the same jurisdiction as the group it just deposed. Therefore, the new government is

[23] More precisely, a higher p increases the magnitude of the positive effect of oil for parameter values in which oil makes war less likely, and a higher p diminishes the magnitude of the negative effect of oil wealth on the offer surplus for parameter values in which oil makes war more likely.

[24] Certainly, it is possible that fissures can emerge after winning a separatist conflict—for example, between the Dinka and the Nuer in South Sudan (van Dijken 2014)—but all that is required for the qualitative prediction to hold is that prior to initiating a separatist fight the rebel group must believe that it is less likely to face an incompatible group in the future.

likely to be challenged by the former governing group in the future—unless it expects that winning a center-seeking fight will break the power of the previous ruling group. The empirical appendix argues that the latter consideration helps to explain the Congo-Brazzaville center-seeking war in the 1990s.

The second consideration is that the government's level of arming efficiency should be higher for center-seeking conflicts than for separatist wars. If this consideration is true, Proposition 6—which shows that a higher α enhances the effect of oil wealth on the offer surplus[25]—provides another reason to expect that oil wealth should decrease the prevalence of center-seeking wars but may increase the prevalence of separatist conflicts.

Proposition 6. The government's level of arming efficiency positively modifies the effect of oil wealth on the offer surplus. Formally, $\frac{\partial^2 \hat{\Delta}}{\partial R \partial \alpha} > 0$.

Even if oil wealth helps to strengthen a government's coercive capacity, this capacity will be lower when the fighting occurs in peripheral areas (Buhaug 2006, 2010)—which is exactly where most separatist wars are fought (Fearon and Laitin 1999). As shown below in Table 5 in Section 5.3, separatist wars in oil-rich regions have been fought exclusively by groups with historically rooted differences from the capital. In many cases, the historical roots of the conflict correspond with terrain favorable for insurgency: geographically distant from the capital, located in mountainous areas, and/or physically disconnected from the capital. In contrast, the challenger must defeat the government in the capital in a center-seeking war, where the government's arming efficiency should be highest.[26]

[25] More precisely, a higher α increases the magnitude of the positive effect of oil for parameter values in which oil makes war less likely, and a higher α diminishes the magnitude of the negative effect of oil wealth on the offer surplus for parameter values in which oil makes war more likely.

[26] As an important exception that establishes how geography can also be important for center-seeking wars, see Fearon and Laitin's (2006) discussion of how mountains outside Algiers affected the conflict that broke out in Algeria in 1992.

A third difference between center-seeking and separatist wars relates to the importance of where oil reserves are located. When a group resides in a territory with large oil reserves, winning a separatist war would lead to control over oil wealth. The formal model does not apply to separatist conflicts in oil-poor regions, because a group from an oil-poor region would not capture oil spoils even if it won. In contrast, the location of the oil should be less important for triggering center-seeking conflicts. For example, all of Congo-Brazzaville's oil production is located offshore (Englebert and Ron 2004, 62). Lujala's (2010) and Ross' (2012, 162-4) arguments that offshore oil tends not to cause civil wars should explain the lack of separatist incentives in Congo-Brazzaville, but the offshore location of oil should not affect incentives for a center-seeking conflict. Regardless of the oil's location, rebels have to defeat the government in the capital.[27]

This third difference between center-seeking and separatist wars also reinforces the second difference. When the rebel group sits on oil, it is in a better position to attack pipelines and decrease the government's probability of winning. In South Sudan's second attempt to secede from Sudan, "stopping or disrupting oil production [was] the primary military and diplomatic strategy of the rebels" (Ali et al. 2005, 213). For example, a rebel leader posed the rhetorical question: "What do they expect us to do? . . . Do we wait until they have enough money to come and kill us? What we really have to do is stop that oil [by bombing pipelines]" (Fisher 1999).

[27]However, the location of oil may affect *which* groups challenge the government in a center-seeking war. Sorens (2011) provides evidence that ethnopolitical groups residing in natural resource-rich territory are less likely to fight center-seeking wars than resource-poor groups are.

4.4 Possible Ways to Solve the Commitment Problem

The extension shows how an inter-group commitment problem can lead to inefficient fighting. However, in principle there should be ways for the government to ameliorate its commitment inability. If inter-group animosity is intractable, one way to relieve tensions is by granting regional autonomy to a group that resides in an oil-rich region of the country. Or the government could attempt to raise β by incorporating the other group into the ruling coalition. The first option will tend to fail because of the high opportunity cost for the government, whereas the viability of the second option depends on group-specific characteristics.

A simple way to model the regional autonomy choice would be to assume that the government's oil revenues R are split into two components, revenues derived from the challenger's region R_C and revenues derived from other sources R_G. At the outset of the game, G can choose to allow R to consume R_C in every period in exchange for terminating interactions between the two parties. By permanently buying off the other group, in the future the government's main challenges will come from its own group. Thus, the government chooses between playing the baseline game with a smaller revenue base or playing the extended game with the full revenue base.

There are any number of reasons that such an arrangement could fail. This "solution" to the commitment problem in the extended model raises new commitment concerns of its own. How can the government commit to continually respect regional autonomy? How can the challenger commit to not using its revenues to build arms and demand greater concessions from the government? How can other groups in the country commit to not demanding regional autonomy for themselves in response to the government's failure to create a reputation for tough negotiating (Walter 2009)?

While important, this section sets these issues aside and instead focuses on a simpler problem with regional autonomy: if the region in question is sufficiently oil-rich, the government would rather arm against a hostile party and pay the costs of fighting rather than to divest a lucrative revenue source. Proposition 7 states this main result.

Proposition 7. There exists a threshold $\overline{R}_C$ (which is a function of parameters) such that the government grants regional autonomy if $R_C < \overline{R}_C$ and does not otherwise.

Another possible way for the government to prevent costly fighting is to directly raise β. In principle, this could be achieved by incorporating the challenger's group into institutions such as the legislature, cabinet, or military. For reasons discussed above, incorporation should increase the ability of the challenger to monitor the government's transfer promises, which raises β. Even without formally modeling how the government can affect β,[28] it is possible to highlight problems with this option for the government. Incorporation may decrease the challenger's desire to rebel against the government as an outsider (i.e., a civil war), but will increase its ability to rebel against the government as an insider (i.e., a coup). With few exceptions scholars have not studied how governments trade off between choices that affect the likelihood of coups relative to civil wars (although see Roessler 2011), but a common sense (non-formal) proposition would be that a government's fear of incorporation increases in the extent of historically rooted separation between the government and the challenger.

5 Empirical Evidence

This section assesses associational statistical support for four hypotheses. The first two derive directly from the formal model analysis:

[28] See Paine (2014) for a formal treatment of this choice.

H1: The effect of oil wealth on center-seeking civil war initiation should be negative.

H2: The effect of oil wealth on separatist civil war initiation should be positive when large oil reserves are located in a region of the country populated by ethnic groups with historically rooted separation from the center.

The next two hypotheses compare the implications from the formal model to results from the vast oil-civil war literature that tends to examine the unconditional effects of oil wealth at the country level. The contending effects incorporated into the formal model suggest a hypothesis that opposes the current consensus that oil wealth strongly increases the probability of civil war at the country level:

H3: The countervailing effects of oil may produce a null unconditional relationship between oil wealth and all types of civil war initiation.[29]

The model predicts that various contending effects may particularly complicate the relationship between oil wealth and separatist civil wars. When the conditionalities stated in H2 are not present, oil wealth should not be expected to trigger separatist conflicts. Thus, the unconditional relationship between oil and separatist civil war initiation is ambiguous.

H4: The countervailing effects of oil may produce a null unconditional relationship between oil wealth and separatist civil war initiation.

5.1 Data and Sample for Cross-National Regressions

I use datasets compiled by James Fearon and by PRIO to code binary civil war onsets. Each dataset codes whether a conflict was center-seeking or separatist (or both). I code a

[29] H3 and H4 are somewhat qualified (i.e., "may" rather than "should") because the model does not predict the empirical importance of the various, contending mechanisms that it incorporates.

civil war onset as the first year that a unique conflict begins. Therefore, even if the conflict lapses for several years, it is not coded as an onset unless either Fearon or PRIO code it as a distinct conflict. If multiple wars break out in a single country-year, it is coded as only one war. Many of PRIO's center-seeking conflicts are coup attempts, which I do not count as war onsets. The model analyzed above only makes predictions about the ability of a government to deter a rebel attack, not to deter a coup attempt by its own military.

I use Ross' (2012) annual logged oil income per capita data to measure oil wealth. All the regressions control for a country's log population and log population squared in 1950, with the data provided by Maddison (2013). Measuring population at this early date avoids concerns about post-treatment bias that arise from the fact that countries tend to experience large increases in population after becoming major oil producers (Cotet and Tsui 2010). The number of covariates is intentionally kept sparse to ensure that the findings do not differ from the existing literature by virtue of presenting ad hoc specifications that happen to support the hypotheses.

The sample consists of every country-year in Ross' (2012) dataset that meets two criteria. First, the country is not an OECD member. Second, the territory is sovereign. The latter criterion excludes colonized territories, occupied countries, and Soviet-dominated countries.[30]

I also scrutinized every country-year with oil income per capita of at least $100 (a common threshold in the literature for denoting an oil-rich state) and a conflict onset. The goal was to find oil-rich country-years with a civil war onset in which there is no evidence that

[30] In particular, former Western European colonies are included starting from their year of independence. Occupied territories, such as Afghanistan post-2001 and Iraq post-2003, are not included. Former Soviet colonies are included from 1991 onward. Non-Soviet former Eastern bloc countries are included starting in 1990. Former Yugoslavian countries are included from their recognized year of independence onward. Albania, Mongolia, USSR/Russia, and Yugoslavia/Serbia are included for the entire period.

oil triggered the civil war.[31] The specifications presented below with "modified" samples exclude four country-years with a center-seeking conflict onset for the following reasons. Civil wars broke out in Argentina in 1973 and Peru 1981 in two countries that barely and only recently crossed the $100/capita threshold. Qualitative sources do not suggest that oil incentivized the left-wing insurgencies in either case (see Skidmore and Smith 2005, 94-8 for Argentina, and pp. 214 for Peru). Additionally, the civil wars that began in the first year of independence in Algeria and Angola were continuations of anti-colonial struggles.[32] Oil likely played an important role in the *continuation* of conflict in Angola (Le Billon 2007), but this is distinct from oil contributing to civil war initiation.[33] For separatist wars, the modified sample excludes three country-years with a separatist conflict onset because the war did not occur in an oil-producing region of the country: : Azerbaijan in 1992, Croatia in 1992, and Thailand in 2004.

5.2 Cross-National Regression Results

This section examines H1, H3, and H4 using cross-national data. Table 2 presents associational bivariate regression results for all types of wars, center-seeking wars only, and separatist wars only. Columns 1 and 2 use Fearon's data for the dependent variable, and Columns 3 and 4 use PRIO data. Columns 2 and 4 drop between three and seven country-

[31] Excluding countries based on the criteria presented below resembles a "hoop test" from the process tracing literature. Such a test specifies necessary conditions for a hypothesis to be true for a particular case, implying that the absence of those conditions negates the hypothesis (Collier 2011). Thus, this paragraph constructs criteria for hoop tests to uncover oil-rich country-years for which it is very unlikely that oil triggered civil war.

[32] Since only Fearon's dataset codes the war onset in Algeria in 1962, this country-year is not dropped in the modified PRIO sample.

[33] Oil could have also have played a role in inducing France and Portugal to attempt to maintain colonial control of Algeria and Angola, respectively. This is an intriguing possibility to analyze in future research. Still, it is useful to consider how the results change when excluding these cases because—even if oil did contribute to the post-independence civil war onsets—it did so through a channel that lies outside the broad array of theories posited in the literature to connect oil to civil war initiation.

years, using the criteria discussed in the appendix for the modified samples.

Table 2. Oil Wealth and Civil War Initiation

	Dependent variable is:			
	Fearon	Fearon with modified sample	PRIO	PRIO with modified sample
	(1)	(2)	(3)	(4)
		Panel A. All Civil Wars		
Log oil income per capita	-0.005 (0.924)	-0.057 (0.323)	-0.057 (0.125)	−0.094* (0.021)
Population controls?	Yes	Yes	Yes	Yes
Observations	5648	5640	5648	5641
		Panel B. Center-Seeking Civil Wars		
Log oil income per capita	-0.068 (0.239)	−0.132^ (0.058)	-0.047 (0.291)	-0.077 (0.119)
Population controls?	Yes	Yes	Yes	Yes
Observations	5648	5644	5648	5645
		Panel C. Separatist Civil Wars		
Log oil income per capita	0.038 (0.530)	-0.008 (0.910)	-0.046 (0.463)	-0.092 (0.183)
Population controls?	Yes	Yes	Yes	Yes
Observations	5648	5644	5648	5644

Notes: Each cell displays the log odds ratio, and the p-value in parentheses. Standard errors are clustered at the country level.

* Statistically significant at 5%

^ Statistically significant at 10%

In striking comparison to existing statistical results, eleven of the twelve regressions report a *negative* effect of oil on civil war initiation. In Panel A, the effect of oil on civil war ranges from noise (p-value of 0.837) to statistically significant at the 5% level, depending on the measure of civil wars and the sample used. Panels B and C disaggregate the Panel

A results to distinguish between different types of civil war. Fearon's dataset is largely consistent with the notion that oil decreases the probability of center-seeking wars and has no effect on separatist wars. The fact that one of the center-seeking correlations is negative and statistically significant at the 10% level is especially striking in contrast to existing theory, which predicts the sign should be positive. PRIO data is somewhat less supportive of H1, but suggests a stronger negative effect of oil on separatist wars than Fearon's dataset.

These findings are certainly surprising compared to a large literature that consistently reports a strong positive effect of oil on civil war initiation. One important difference between the present findings and earlier ones is that I depart from widespread practice by not including per capita income as a control variable. The discussion of Fearon and Laitin's misinterpreted state weakness hypothesis above explains the inferential dangers of controlling for per capita income to infer effects of oil. The results for center-seeking wars differ from those in Buhaug (2006) and Ross (2012, 184), which examine the effect of oil on center-seeking wars at the country level, because I exclude coup attempts and as well as only consider unique civil war initiations.

One concern is that Arabian peninsula countries with extremely high levels of oil income per capita and that have been free of civil wars—which certainly are countries that support the hypotheses listed above—drive the results. Logging oil income per capita guards against this possibility, but the appendix table A1 shows that the results are largely similar even when dropping all country-years with oil income per capita above $1000.

The effect of oil on separatist wars tends to be positive (although not statistically significant) when not using population controls, as shown in appendix table A2, but this is a highly warranted control variable. There is a strong U-shaped correlation between popula-

tion in 1950 and oil wealth. Additionally, countries with large populations are considerably more susceptible to separatist wars because a larger population increases the probability that certain groups have the secessionist risk factors described above that are likely to cause war—even when the group does not sit on oil reserves.

The remainder of this section examines the center-seeking and separatist results in more detail.

5.3 Center-Seeking Civil Wars

The findings from Table 2, Panel B support H1. To understand the Column 2 result in a more transparent manner, Table 3 presents a 2x2 tabulation for (a) whether or not oil income per capita is above $100 in income per capita in a given country-year, and (b) whether or not a center-seeking conflict onset occurs. There are only six country-years in the modified sample with an oil income per capita above the $100 threshold that experienced a center-seeking civil war onset in Fearon's dataset.[34] In this sample, oil-poor countries are twice as likely to experience a center-seeking onset as oil-rich countries.

Table 3. 2x2 Table of Fearon Center-Seeking Civil Wars

	Onset = 0	**Onset = 1**	**Percentage**
Oil = 0	4450 observations	46 observations	1.02%
Oil = 1	1225 observations	Algeria 1992 Congo-Brazzville 1997 Iran 1978 Iraq 1991 Syria 1979 Yemen 2004	0.49%

[34]Recall that the modified sample excludes four country-years listed above in which a conflict began for reasons seemingly unrelated to oil.

In addition to the stark finding that oil rarely coincides with major center-seeking civil war onsets, the empirical appendix discusses how four of the six oil-rich country-years with center-seeking civil war onsets support the argument from the formal model that oil provides coercive advantages to the government. Qualitative evidence on the Algeria, Iran, Iraq, and Syria cases do not suggest that the state was weak. Yemen was weak, but Yemen also had a long history of a weak state prior to discovering oil in the 1980s. Furthermore, Yemen is not particularly oil-rich. The conflict in Congo-Brazzaville in many ways resembles the factors posited above to trigger separatist wars, and represents a rare case of oil wealth weakening the incumbent government's bargaining position even though the rebel group did not sit on the oil.

In sum, empirical evidence supports the claim that oil wealth strengthens a government's leverage relative to challengers contemplating a center-seeking campaign.

5.4 Separatist Civil Wars

Country-level evidence defies predictions that oil wealth should unconditionally increase the propensity of separatist civil wars, which is consistent with H4. But cross-national data cannot properly assess H2, the model's main hypothesis about separatist wars. This section provides associational statistical evidence supporting the territory-specific ethnic grievances arguments, and argues that historically rooted separatism helps to explain why the government chooses not to solve its inefficiency-related commitment problem.

Recent empirical work supports H2. Sorens (2011) uses the Minorities at Risk project's ethnoregions as his unit of analysis, defined as "peripheral territories demographically dominated by ethnic groups out of power at the center, large enough to serve as the territory of an independent state" (576). He finds a negative correlation between local mineral

resource abundance and separatist conflict onset. Hunziker and Cederman (2012) find that groups that are excluded from positions in the central government and are located in oil-rich regions are more likely to fight civil wars, although these authors do not distinguish between center-seeking and separatist conflicts.

Table 4 replicates these results in a transparent manner and that directly relates them to H2. The sample consists of all sovereign group-years in Africa and Asia, therefore focusing on places that tend to experience variation in both the independent and dependent variable. Column 1 runs a bivariate logit regression using Sorens' logged measure of oil wealth as the independent variable. Column 2 runs a bivariate logit regression using a binary oil measure valued "1" if a giant oil well has been discovered in the group's territory and "0" otherwise,[35] limiting the sample to groups that lack power at the center. Thus, the sample in both regressions is limited to groups for which β should be low. Each specification uses a dependent variable that measures whether members of the group initiate a separatist war in that year. As Table 4 shows, the odds ratios are statistically distinguishable from 1 in both regressions, and the effect magnitude is quite large in Column 2.

[35] Following Hunziker and Cederman's analysis, (a) data on giant oil fields comes from Horn (2003) and (b) I used group location polygons provided by the Geographical Research on War unified platform (GROW^{up}) to match oil field data with group location.

Table 4. Oil-Rich Groups and Separatist Civil War Onset

	Dependent variable is: Separatist Civil War Onset	
	(1)	(2)
Log (estimated) oil income per capita	1.12* (0.027)	
Giant oil field dummy		3.74*** (0.000)
Original paper	Sorens	Hunziker and Cederman
Observations	6,443	19,218

Notes: Each cell displays the odds ratio, and the p-value in parentheses. Standard errors are clustered at the group level.

*** Statistically significant at 0.1%

* Statistically significant at 5%

While providing associational support for H2, even a more rigorous causal analysis for the effect of oil wealth on separatist wars would not address the questions raised in Section 4.4 regarding why the government does not pursue policies to alleviate its commitment inability. The first possibility considered was for the government to grant regional autonomy to the oil-rich region. As first cut support for Proposition 7, it is instructive that a non-European government has never peacefully heeded autonomy demands from an oil-rich region.[36] Iraqi Kurdistan provides an illustrative example that supports the claim that governments have tended to take actions that would knowingly induce fighting, rather than to grant regional autonomy. After Britain reversed its pledge to create an independent Kurdish state, a supergiant oil field was discovered in Kirkuk in 1927, which has been one of Iraq's most productive fields since its discovery. Despite provisions written into the orig-

[36]This claim uses Walter's (2006) dataset for government responses to autonomy demands.

inal Iraqi constitution to safeguard Kurdish rights, Ba'th governments from the 1960s until 2003 forcibly implemented an "Arabization" plan to consolidate control over the oil-rich area. The ability of Kurds to mobilize was obvious: benefiting from the mountains in the north, they frequently rebelled against British occupation and then what they considered to be Arab occupation when Iraq gained independence in 1932. The Ba'th party's second ascension to power produced a brief treaty with the Kurds in 1970, which conceded their regional demands (as well as provides evidence that granting regional autonomy would in fact halt fighting). However, after the new government had consolidated power, in 1974 it reneged on the autonomy agreement despite the obvious consequence that fighting would resume.

The second possible policy considered that would increase the government's commitment ability was to incorporate the challenger into the center. Table 5 provides evidence for why governments will often prefer to fight rather than to incorporate an aggrieved group. This table includes every separatist war fought by members of a region that had a major oil field prior to the war onset, which range from brief and/or low intensity struggles (Iran's Arabistan, China's Xinjiang, South Yemen) to long and devastating wars (Indonesia's Aceh and East Timor, Iraq's Kurdistan, South Sudan). Table 5 demonstrates that groups involved in every one of these struggles were historically distinguished in their territorial status from the group that controlled the government at the time of the struggle (see the empirical appendix for additional details). Some were ruled as separate colonies, some had established their own state prior to becoming oil-rich, and others have a natural claim for separation that stems from being geographically disconnected from the capital. The historical roots of these separatist movements suggests that attempts to incorporate them into the center would be at best difficult and at worst (for the government) lead these groups to try to overthrow the government were they to gain an insider position.

Table 5. Separatist Wars in Oil-Producing Regions in Africa and Asia

Country	**Region**	**Pre-oil regional cleavages**	**Discovery of first giant oil field**	**Conflict Onset Year(s)**
Angola	Cabinda	Separatist activity at onset of anti-colonial struggle; noncontiguous	1966	*1975*, 1991
China	Xinjiang	Briefly gained independence in 1933-4 and 1944-9	1958	*1991*
India	Assam	Colonial hinterland and distinct history as "hill peoples"; nearly noncontiguous	1953	*1956*, 1990
Indonesia	Aceh	Center reneged on pledge for regional autonomy at independence; noncontiguous	1971	*1976*, 1990, 1999
Indonesia	East Timor	Portuguese colonization until independence in 1975 and Indonesian invasion; noncontiguous	1971	1975
Iran	Arabistan	Petitioned League of Nations for separation from Persia in 1924 followed by fighting	1926	1979
Iran	Kurdistan	Briefly gained independence in 1918-22 and 1946	1963	1966
Iraq	Kurdistan	Britain reneged on pledge to create independent state in 1920s; rebellion throughout 1920s	1927	1961, 1974
Nigeria	Eastern Province	Distinct colony until 1914; "federal" colony	1958	1967
Nigeria	Niger Delta	Same preconditions as previous plus major separatist civil war from 1967-1970	1958	2004
Pakistan	Baluchistan	Autonomy during colonial era and at independence	1952	1974
Sudan	South	Distinct colony until 1946; major separatist civil war from 1955-72	1980	1983
Yemen	South	Sovereign state from 1967-1990	1990	1994

Notes: See Ross (2012, 165) for a similar table, to which this one adds historical information. The onset year is listed in regular font if it is included in PRIO, and in italics if it is listed in

Ross' table but not in PRIO. Multiple PRIO onset years are listed if Fearon codes them as distinct conflicts.

6 Conclusion

This paper argues that there are considerable theoretical and empirical reasons to believe that oil wealth exerts strongly contending effects on civil war initiation, resulting in a conditional relationship. When oil is located areas of a country that are already at high risk for a separatist rebellion, oil is likely to be a "curse" for civil peace. However, in most circumstances oil strengthens the government's bargaining leverage over challengers because oil provides resources for funding a military and welfare programs.

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