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Oil Wealth, Winning Coalitions, and Duration of Civil Wars

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Abstract

New research has begun to underscore the complicated relationship between democratic institutions and the duration of civil wars. Specifically, greater constraints placed on executives often lead to considerably longer civil wars as leaders are limited in how they bargain with dissidents. This presents a puzzle as democracies are often seen as credible negotiators in international disputes. This article suggests that the size of the government's winning coalition represents a double-edged sword. Larger winning coalitions allow governments to bargain more credibly but also place constraints on what governments can offer since peace agreements may alienate coalition members. Fortunately, future access to postwar oil wealth provides the feasibility for the governments to compensate hard-liners who may lose out on any settlement, making them more likely to allow concessions to rebels. This combined credibility of large winning coalitions and the feasibility provided by oil wealth allows for peace agreements, therefore shortening the duration of civil wars. We test these propositions by examining the conditional relationship between oil wealth and coalition size on the duration of all civil wars between 1950 and 2009.

Keywords

winning coalition, civil war duration, oil wealth, civil war outcomes

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June 27, 2017, marked a significant milestone in the Colombian civil war.[1] As part of a fragile peace settlement, FARC guerrillas handed over their weapons to United Nations inspectors. The demobilization of FARC rebels is notable for the fact that this stage signified the end of a civil war that lasted for over fifty years. The civil war may have continued on due to the failure of a highly anticipated referendum vote against the peace agreement in October 2016 in which 50.2 percent voted against the peace agreement. The conflict in Colombia underscores a puzzling trend in civil wars. Given that democratic leaders often face high audience costs for reckless behavior in bargaining (Fearon 1994, 1997), democracies are perceived as more credible negotiators. This has led scholars to argue that democracies should be more capable of resolving disputes. Yet democratic governments including Colombia, the Philippines, Papua New Guinea, Sri Lanka, India's Nagaland, and the Palestinian territories all seem to face considerable challenges when it comes to negotiating an end to ongoing civil wars. As was the case with the Colombian civil war, governments are often hamstrung by supporters who have little interest in resolving disputes, making government offers of concessions to rebels unfeasible.

Building on Thyne (2012), we argue that part of the difficulty in ending civil wars is that leaders are often held accountable to their respective winning coalitions. The coalitions that exist during civil wars are often composed of veto players who may have little interest in settling the dispute (Cunningham 2006). As part of any potential compromise, the incumbent government must make meaningful concessions to members of the armed opposition. The offer of concessions to rebels who may have engaged in widespread violence should certainly anger segments of the population who were targets of insurgent attacks. Equally, meaningful concessions such as political power-sharing or territorial autonomy may undermine the authority of vested interests, which the government has relied on to stay in power. The larger the size of the national selectorate, the more likely the government is to compose its winning coalition of constituents who will have deep reservations with accommodating insurgents.

This is not always the case, though. Borrowing from the literature on international bargaining and conflict (Fearon 1994; Bueno de Mesquita et al. 1999, 2003), we contend that the size of the winning coalition combined with resource revenue influences the duration of civil wars. We argue that governments with large winning coalitions are more effective at ending civil wars when it is feasible to offset the costs of accommodating dissidents. This is opposed to governments with large winning coalitions that have credibility, but lack feasibility to offset costs, as well as small winning coalitions which lack credibility and may or may not lack feasibility.

When governments with large winning coalitions have substantial revenue that will allow for the provision of significant concessions—such as secure postwar access to resources like oil—they can leverage the offer of public goods provisions from such wealth to constituents who have reservations with agreeing to any settlement. During civil wars, existing oil reserves are often underutilized as rebels make

the extraction and transportation of crude oil difficult. The end of fighting allows oil reserves to be maximized providing an additional peace dividend (Collier 1999). We posit that revenue from oil wealth can allow elites to pay off opposition figures through public goods provisions (Smith 2004; Dunning 2008), and therefore, oil wealth plays a key role in influencing the duration of civil wars.

This work addresses a significant gap in the literature. Considerable steps have been taken to bridge the divide between theories of international and domestic politics. While theories on intrastate bargaining have benefited substantially from concepts in international relations, there remains a clear disconnect between how institutions shape political processes domestically versus internationally. While democracies (and large winning coalitions more broadly) are generally seen to be more credible when negotiating international disputes, they often are unable to effectively end domestic conflicts. Not only does our work address this disagreement in the literature, but we propose a novel theory to explore how large coalition governments have both the feasibility and credibility to bargain with dissidents.

The article is divided into the following three sections. First, we explore the previously researched determinants of civil war duration and type of postconflict outcome. In the second section, we discuss the conditional relationship of winning coalition size—which provides leaders with credibility, and oil wealth, which provides leaders with feasibility—on the duration of civil wars and the type of postconflict outcome. We test our proposition by examining the duration of civil wars from 1950 to 2009 using Cox proportional hazard models, and multinomial logistic regression models to test the type of postconflict outcome. We then present an evidence that the presence of oil wealth in states with large winning coalitions substantially reduces the length of civil wars and positively affects the likelihood of negotiated settlement between a government and rebels, and conclude with a discussion of theoretical and policy implications.

Previous Research

The prolonged nature of some conflicts presents a puzzle for scholars of civil war. Given the costs associated with continued fighting, why do leaders within the government and dissidents not find a less costly compromise (Fearon 1995)? The last two decades of research on civil war duration and outcomes has shed considerable light on why continued fighting is often preferable for belligerents rather than seeking a settlement to hostilities. For instance, past research has underscored the complicated *cost*/*benefit* calculation made by combatants when weighing whether to agree to a settlement or continue fighting (Mason and Fett 1996; Mason, Weingarten, and Fett 1999; Powell 2006). Costs, in this instance, are typically conceived as civil war casualties. Combatants, for instance, rarely accept or adhere to a settlement if they believe that they may achieve a higher future payoff if they continue fighting (Mason, Weingarten, and Fett 1999; Werner and Yuen 2005). Equally, it is difficult for combatants to agree to a settlement if they fear that the other side will renege on any agreement (Walter 1997, 2002).

Part of the ability of belligerents to find an equitable solution is related to the grievances made by insurgent groups, affecting the duration of conflicts (Fearon 2004; Walter 2006). Specifically, civil wars fought over territory or the right to self-determination are often much longer than civil wars that are fought over control of the government (Fearon 2004; Walter 2006). Governments who are fighting self-determination movements are generally concerned with their reputation (Walter 2009b). By accommodating self-determination movements, governments run the risk of signaling that they are willing to negotiate when faced with a future armed insurrection. Walter (2006, 2009b) contends that when governments are faced with armed secessionist movements, they prefer to show resolve so as dissuade any other future challengers. This desire to demonstrate resolve stymies any efforts to negotiate an end to fighting, thereby prolonging the conflict.

Along similar lines, national characteristics often shape the duration of civil wars as well. Civil wars are often longer in countries with lootable natural resources, moderate degrees of ethnic fractionalization, high degrees of inequality, and low state capacity (Collier et al. 2004; DeRouen and Sobek 2004). For example, DeRouen and Sobek (2004) demonstrate that a strong national bureaucracy can often undermine the ability of rebel groups to capitalize on national grievances. Other research, presented in the resource curse literature, has found that the presence or access to oil wealth spurs the onset of civil war (Collier and Hoeffler 2004; Ross 2004; Lujala et al. 2006), not shortening duration of civil wars. Specifically, oil wealth has been shown to make governments more repressive as they are less reliant on the citizenry for rents (Ross 2001; Conrad and DeMeritt 2013) as well as more susceptible to *trade shocks*, leading to an increased risk of civil war onset when international oil prices fall (Humphreys 2005). The degree to which the government or the rebel group relies on a small winning coalition (such as ethnic minorities) also often shapes the duration and intensity of the civil war (Heger and Salehyan 2007; Metternich 2011). While oil wealth has occasionally been associated with civil war duration (Humphreys 2005), there has been no consistent evidence that the presence of oil or oil dependence shapes the duration of civil wars (Ross 2004; Fearon 2004).

Alhough institutional characteristics and the duration of civil wars has been relatively understudied, there has been considerable work on the role of institutions and the dynamics of interstate wars. For instance, while Thyne (2012) has noted that institutional constraints increase the duration of civil wars, democratic regimes tend to fight much shorter interstate wars (Bennett and Stam 1996), which may be the product of democracies unwilling to hold out for victory (Bennett and Stam 1998). While democracies may win wars early, autocratic regimes are more likely to continue fighting as opposed to settling. As the costs of war are borne out on the majority of citizens, democracies often cannot afford to fight prolonged conflicts. This point underscores one reason why democratic governments act strategically when deciding to enter into an interstate conflict (Reiter and Stam 1998), especially given the fact that leaders in democracies are likely to face electoral consequences for failure on the battlefield (Bueno de Mesquita and Siverson 1995; Goemans

2000), or unpopular decisions to settle a dispute (Huth and Allee 2002). These findings further underscore the puzzling relationship between institutions and the duration of civil wars. If the costs of war force leaders with large winning coalitions to sue for peace on the international stage, why do they hold out for victory against domestic opponents?

Theory

Government coalition size presents a double-edged sword in civil war bargaining. On the one hand, government leaders with large winning coalitions are seen as more credible by dissidents when they make meaningful concessions. On the other hand, these governments are hindered by their own constituents in the types of concessions that they can offer during the negotiation process. Democracies—the regime type with the largest winning coalition size and the one seen as most credible—often have social and institutional constraints that hinder the ability of leaders to effectively negotiate with dissidents so as to draw conflicts to a close (Thyne 2012). Similar to how leaders of states that cooperate against rivals without reciprocation could be removed out of office (Colaresi 2004), leaders giving concessions to rebels to end civil wars could be punished domestically. Leaders who are perceived as losing to the rebels through the promise of significant concessions, such as territorial autonomy or secession, may risk being removed from office by more hard-line domestic actors.

We contend that in order for leaders to make meaningful concessions to dissidents resulting in a settlement, elites that govern large winning coalitions must first co-opt their own supporters who may have reservations about a settlement. One way that leaders can ensure the support of their constituents in the bargaining process is to use the promise of future resource revenue or rents to offset the costs of negotiating with dissidents. While elites that govern large winning coalitions may be seen as more credible when negotiating with rebels, it may not be feasible for governments to offer meaningful concessions to rebels, given that their supporters may suffer costs from the concessions associated with a settlement. Therefore, as outlined in Figure 1, we posture that the bargaining process is defined by both the *feasibility* of governments to offer concessions and the *credibility* in which those offers are perceived by rebels.

Governments with small winning coalitions and no oil wealth face double barriers to offering concessions since they not only lack resources to use as side payments, but they particularly lack credibility since with minimal domestic accountability, there are no safeguards to ensure that elites will not backtrack on promises made to rebels during negotiations. Even if smaller winning coalitions have the feasibility of making side payments, they still lack commitment credibility since they lack sufficient domestic accountability. With large winning coalitions, governments are perceived as more credible, but it is not feasible for elites to offer concessions if they lack feasibility. On the other hand, we posit that access to oil wealth should make it

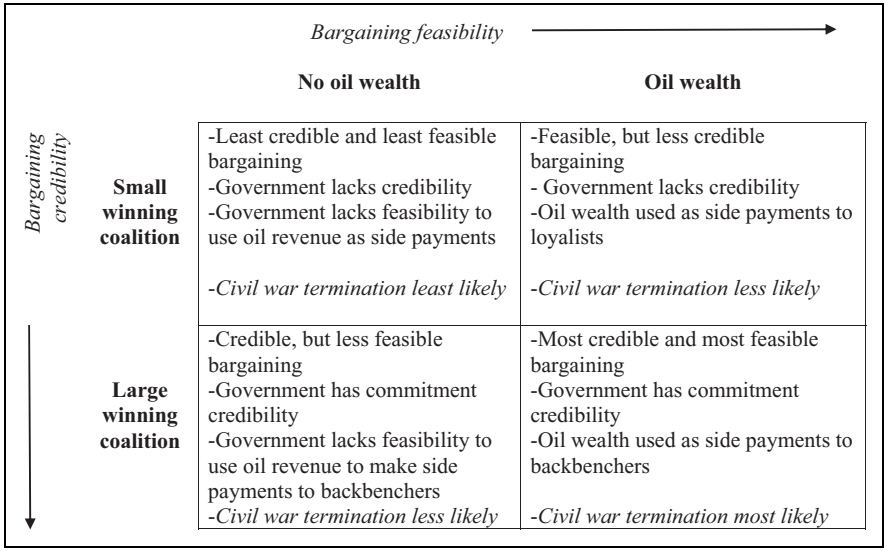

Figure 1. Theoretical predictions: bargaining credibility and feasibility.

feasible for elites in large winning coalitions to bargain with dissidents, as resource revenue can serve as side payments to backbenchers to shift their opposition of settlement to supporting settlement. Therefore, both credibility, based on the size of the winning coalition, and feasibility, based on access to postwar oil wealth make bargaining and settlement more likely, thereby shortening the duration of civil wars.

Credibility and the Settlement of Civil Wars

One critical barrier to peace in civil wars is the inability of combatants to credibly commit to any settlement (Wagner 2000; Walter 2002; Fearon 2004; Walter 2009a). Without a mechanism(s) to ensure that both sides abide by the terms of the agreement, it is difficult for belligerents to agree to stop fighting. Once their forces are demobilized, rebel leaders are likely to expect that they will be vulnerable in the postwar environment. While the promise of third-party monitoring as well as political power-sharing alleviates some of these concerns, disputant fears that government opponents will be unable to credibly abide by any settlement ensure that bargaining will fail (Fearon 2004). Governments therefore face a credibility barrier when bargaining with rebels.

We assume that elites that rely on larger winning coalitions should be perceived as more credible as compared to smaller coalition governments. When leaders who represent large selectorates fail to uphold domestic promises, their constituents are expected to hold them accountable (Downs 1957). As leaders with larger winning coalitions often face high audience costs for reckless decision-making, they need to

prevent such punishment from happening (Fearon 1994, 1997; Bueno de Mesquita et al. 1999). If concessions made in any civil war settlement generate popular discontent within the national leader's own winning coalition, then it is likely that the executive will have a short-lived political career. Given this point, concessions that are offered by governments with large winning coalitions should be perceived by rebels as much more credible than concessions made by governments with small winning coalitions.

Leaders that rely on larger winning coalitions are also less likely to renege on agreements as compared to smaller coalition governments. As the veto players within democratic institutions often ensure policy stability (Tsbelis 1995, 2002; Jensen 2008), it is unlikely that any commitments finalized in a peace process will be overturned later. On the other hand, governments that operate smaller winning coalitions have few barriers to reneging on any settlement. It is therefore difficult for rebel leaders to trust that their personal security will be honored in the aftermath of war when amnesty could be revoked at any time by a small coalition government lacking commitment credibility. Although democracies have the largest winning coalitions and several autocratic regimes have smaller winning coalitions, this is not simply a distinction between autocracies and democracies. The winning coalition size of autocracies varies depending on the autocratic regime type (Lai and Slater 2006; Weeks 2008; Chyzh 2014). Therefore, greater winning coalition sizes should reduce the credibility barrier that governments face in bargaining with dissidents. This may also underscore why large winning coalitions contribute to much more durable postcivil war settlements than conflicts that conclude with smaller winning coalitions (Hartzell and Hoddie 2007; Joshi and Mason 2011).

At the same time, though, executive constraints that are commonplace in large winning coalitions often hinder the feasibility of leaders to bargain effectively with dissidents (Thyne 2012). While institutional mechanisms within large winning coalitions often make them more credible since it is difficult for elites to backtrack on deals made in a peace process, these same veto players also constrain the types of offers that government leaders can make during negotiations with dissidents. Equally, larger winning coalitions often include a diverse set of interests and preferences that national leaders must account for when negotiating a settlement with rebels. Institutional and social constraints are particularly troublesome when the government's constituents have vested interests in maintaining the status quo (Licklider 1995). Institutional and social constraints therefore increase the feasibility barriers to bargaining with dissidents.

As rebels may demand meaningful political reforms so as to address their grievances, it could be difficult for government leaders to meet those concessions without disrupting the status quo and creating costs. For instance, governments often abandon nascent peace processes when political power-sharing agreements threaten the distribution of power amongst the leader's political allies (DeRouen, Lea, and Wallensteen 2009; Thyne 2012), upsetting members of the winning coalition. The establishment of a political power-sharing agreement may limit the number of

ministerial positions available for the government's allies. In addition to upsetting the elites pushed out of government, key constituent groups in large winning coalitions may lose a representative that formally advocated for them in the national government. Similarly, following the decentralization of political power, local elites tied to the central government may find themselves as a new minority within the new administrative region, which is likely to anger them. Without the ability to offset these costs for elites and constituents who may suffer from any settlement, it may be unfeasible for leaders to bargain with rebels. Although a large selectorate may allow the leader to reshuffle their governing coalition, this is a difficult task to achieve without assets to bargain with. As noted by Mason et al. (2011), civil wars impose considerable economic damage on states, limiting the resources that states can draw on in order to bargain with different groups in society.

Without the feasibility of being able to assuage these and other concerns of the winning coalition, even leaders in large winning coalitions may have few options with regard to offering meaningful concessions during the negotiations with dissidents. A tangible and effective means of addressing concerns among members of the winning coalition is to use resource revenue and rents as side payments, a common feature of bargaining (Riker 1962), to offset costs resulting from concessions for rebels that are part of any negotiated settlement. Any source of significant revenue can be used as side payments, but we focus here on oil wealth as a way to make bargaining not just credible but also feasible. Specifically, we focus on the promise of new revenue from oil wells that become more productive at the end of the war.

Feasibility of Bargaining—Oil Wealth and the Provision of Public Goods

There are several ways that large winning coalitions can achieve the feasibility of side payments. Leaders may promise that revenue earned from foreign aid, the mining of rare metals, and taxes will be redirected from the battlefield to offset the costs of compromising with dissidents. International organizations may restructure aid packages to lower feasibility barriers by ensuring a peace dividend for reticent members of the government's coalition and access to mining resources could provide revenue for the government to use as side payments.[2] Equally, policy changes may be included in any peace agreement that allows for new economic benefits to flow to members of the government's winning coalition that may veto the settlement such as subsidies for local industries (Friman 1993). Access to oil wealth represents a clear, tangible application of the theoretical political process that we propose. Elites can easily point to underutilized oil wells as a tangible indicator of the economic costs of war and credibly promise that the eventual peace dividend in the form of greater revenues will be used to ameliorate the concerns of their constituents.

We argue that governments in oil states can take advantage of resource revenue, specifically from oil resources as payoffs, in the form of public goods, in order to appease members of large winning coalitions who may lose out or disagree with

government offers of concessions to rebels. As noted by the stabilization hypothesis, oil revenue can be directed to co-opt opposition figures and promote public goods to ameliorate social grievances (Dunning 2008; Fjelde 2009; Morrison 2009; Gurses 2009, 2011). Along with natural gas, oil deposits are often widespread in parts of a country but are not easily extracted. Gas and oil deposits also require significant investment for exploitation. Equally, once extraction is underway, oil has the potential to provide the government with a considerable increase in revenue (Smith 2004). For these reasons, we argue that governments can promise winning coalitions that they will use revenue from expected postwar oil resources as public goods provisions.

Ongoing civil wars make the production of petroleum difficult for state-run and private sector firms, creating the underutilization of existing wells. Rebels, seeking to impose high costs on the central government, often bomb pipelines, kidnap workers, and dissuade future exploration in oil-rich areas. For instance, oil exploration was effectively put on hold in Mozambique during the civil war there until after the government could ensure that foreign workers would be safe from rebel attacks. Similarly, the National Liberation Army of Colombia often targeted oil production pipelines to increase the costs on the government. In the Sudanese civil war (1983–2005), initial efforts at oil production were put on hold following the breakdown of the first peace agreement in 1983, and future efforts to gain access to oil revenues were halted when rebel groups occupied foreign drilling sites. While the government may extract oil during the conflict, oil revenues collected during civil wars are likely underutilized given political instability.

How specifically does oil revenue increase the feasibility for bargaining? Once a war ends, the maximization of oil production and revenue can provide a peace dividend for the government to use (Collier 1999). Assuming that the act of offering concessions imposes some cost on members of a leader's winning coalition due to resulting political change, we believe that the government can leverage increased postwar oil wealth to offset such costs. Prior to bargaining with rebels, governments with large winning coalitions can promise hard-liners within their government a greater share of the increased oil revenue, that is, expected at the end of the war in exchange for their support during negotiations. Thus, oil wealth can have a stabilizing effect on political regimes, allowing elites to pay off opposition figures with public goods provisions (Smith 2004; Dunning 2008).

Government leaders, seeking to assuage public concerns over negotiations with rebel groups, can tie the expansion in public expenditures with the peace process, promising to invest maximized oil revenue or rents in public works or human capital, which should assuage reluctant supporters in the winning coalition to support concessions to rebels. Even if hard-liners refuse to negotiate, the promise of increased oil wealth can also be used to reshape the leader's winning coalition. Absent oil wealth, it may be difficult for elites to overcome policy differences to form a new government, that is, amenable to negotiating with rebels. The promise of increased public goods that result from postwar oil wealth may overcome these differences,

freeing leaders to bargain with dissidents. In states with a small selectorate, if a significant portion of the government's winning coalition is against offering meaningful concessions during the negotiation process, the government's hands will be effectively tied. In effect, governments with larger winning coalitions and significant oil revenue have both credibility and feasibility to credibly commit to concessions in settlement, making the duration of civil war shorter.

The role of oil wealth together with a large winning coalition may explain in part how the Indonesian government was able to effectively negotiate with the Free Aceh Movement (or GAM) as a means of stopping the three decade-long civil war in Aceh. The insurgency, which ended in 1998, restarted with the resignation of Suharto (Bertrand 2004; Aspinall 2007). Suharto famously noted that the Indonesian government would never negotiate with the GAM as a means of generating peace in Indonesia (Walter 2009b). Following the 2004 tsunami, the democratic Indonesian government began to make overtures to the GAM to settle the conflict. The GAM approached these negotiations in good faith since they recognized an opportunity to credibly negotiate with the new democratic national government of Indonesia (Aspinall 2007).

However, members of the Indonesian government, legislature, and military held deep reservations about a peace deal, instead emphasizing resolution through counterinsurgency measures (Aspinall 2005, 2007). To assuage these concerns, government officials negotiating the deal refused to compromise on the issue of independence, ensuring that the island of Aceh (as well as its abundant resources) would remain in the hands of the Indonesian state (Aspinall 2005). As a product of the negotiation, revenue from the underutilized oil and natural gas derived from Aceh, which had been bombed by insurgents to prevent access during the war, could be redirected toward the national government of Indonesia in order to fund broader public goods. A major tool employed by the post-Suharto democratic government was the use of public spending to cajole backbenchers into cooperating with unpopular policy decisions, including the peace process with the GAM. The prospect to funnel throughout the country revenue from oil from Aceh unhindered by dissident violence created a clear opportunity for the state to negotiate a peace settlement with the GAM.

A similar process can be observed in Chad. Following the overthrow of Habre, President Idriss Déby began opening up the political process to incorporate opposition figures into the national government (Atlas and Licklider 1999). While operating a multiparty electoral system, Chad is far from a democracy. Rather, Déby operates a complicated multiethnic coalition government, where elites cooperate in order to divide limited goods and services. As noted by Atlas and Licklider (1999), this governing process has often generated considerable discontent from Déby's core supporters in the Zaghawa ethnic group, substantially increasing the risk that he may be forcibly removed from office. Despite this risk, Chad has signed more and more settlements, bringing opposition groups into the national government. It is notable that the major increase in these settlements came following the expansion of oil

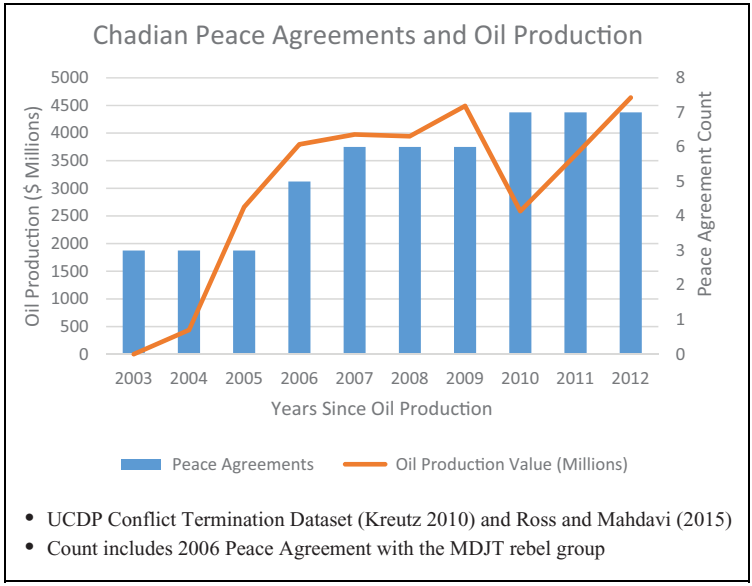

Figure 2. Peace agreements and oil production in Chad.

production in Chad in 2003. Chad has clearly been able to use oil revenues to offset the costs of negotiating with each rebel group. Figure 2 illustrates the connection between oil production and the cumulative number of peace agreements.

In sum, the promise of oil revenue provided as a public good from the government to members of large winning coalitions makes it more likely for (1) governments to offer credible concessions to the rebels, (2) governments to avoid potential domestic punishment by using oil revenue as a future public good benefiting constituents and offsetting concessions, and (3) rebels to agree to concessions because they see a government with oil wealth as credibly committed. Therefore, oil wealth as a public good can mollify constituents *and* rebels in negotiations since such oil wealth allows governments to make credible promises of concessions feasible, making settlement and war termination more likely.

> **Hypothesis 1:** During intrastate conflicts, as the size of the government's winning coalition rises in oil-rich states, so should the risk of civil war termination.

We also contend that the connection between oil wealth and winning coalition size should also shape the specific outcome of civil wars, whether negotiated settlement, continued fighting, or rebel or government victory. As noted by Conrad and DeMeritt (2013), governments with large winning coalitions are often constrained by both the ballot and the bank. Leaders are unwilling to engage in repression in

more democratic societies if they rely on the citizens for revenue (e.g., taxation) or to stay in power through electoral accountability. This may reduce the willingness of the government to engage in fiercer counterinsurgency tactics as part of their war efforts. Oil wealth, though, may provide the feasibility to alter this incentive structure. Absent the need to rely on civilian taxes for revenue, governments with large winning coalitions may have a freer hand in targeting rebel groups. Equally, oil revenue or rents may be promised to aggrieved civilians to offset the costs of brutal counterinsurgency tactics. Therefore, we posit that the presence of oil wealth should increase the likelihood that governments with larger winning coalitions should be victorious in civil wars.

A civilian population is only willing to accept so much state repression though (Mason and Krane 1989). If the government is unable to oust rebel groups through counterinsurgency efforts, we suggest that oil wealth should also provide governments with large winning coalitions a freer hand in negotiating an end to the conflict. Given that oil wealth provides feasibility to leaders who rely on large winning coalition sizes to offer dissidents meaningful concessions during the bargaining process, ongoing civil wars in oil-rich states should be more likely to end in a negotiated settlement as opposed to other civil war outcomes. While oil wealth can strengthen the government's military capacity, increased government strength is no guarantee that the state can effectively find and sanction rebel groups. In effect, oil wealth may stymie the ability of rebels to overthrow the government, but it is no proverbial *silver bullet* for the state. Rather, as future oil revenue or rents represents a fungible asset for state leaders, they should be able to transform oil wealth into a bargaining chip for any potential negotiations. As noted earlier, the greater the size of the government's winning coalition, the more credible their commitments will seem when negotiating with rebel groups. Equally, leaders who rely on large coalitions will only offer meaningful concessions to dissidents when they have the feasibility to mollify their own constituents. As access to oil wealth can be used to promise disaffected constituents future public goods in trade for political change, government leaders may reduce the potential audience costs for negotiating with dissidents, making it more feasible for leaders to seek negotiated settlements with rebels.

Hypothesis 2a: Civil wars that occur in oil-rich state with large winning coalitions are more likely to end in a government victory as opposed to other civil war outcomes.

Hypothesis 2b: Civil wars that occur in oil-rich states with large winning coalitions are more likely to end in negotiated settlements as opposed to other civil war outcomes.

Research Design

To investigate the effect of the conditional relationship between winning coalition size and oil wealth on the duration and outcomes of civil wars, we examine the termination of civil wars from 1950 through 2009. We use Thyne's (2017) updated version of the Uppsala Conflict Data Program (UCDP) Conflict Termination DataSet (Kreutz 2010) to measure the duration of civil wars. This data set includes the duration and outcomes of all civil wars from 1945 to 2009 in which there were at least twenty-five battle deaths. We rely on Thyne's (2017) updated version, given that the author has removed all instances of coup d'état's from the UCDP Conflict Termination DataSet, which could otherwise create the possibility of considerable bias in the results.

For the first part of our analysis, our primary dependent variable is the duration of the civil war. We estimate the duration of civil wars using a Cox proportional hazard model with the civil war country month as our unit of analysis. While many studies have incorporated the civil war dyad year as the unit of analysis (Cunningham, Skrede, and Salehyan 2009; Polo and Gleditsch 2016), given that our primary independent variables vary only with the state not involving analysis of rebel behavior, we believe that dyadic data are inappropriate for this analysis.[3] We specifically use monthly level data because it provides a more accurate estimation of civil war duration as compared to yearly observations given that civil wars rarely start and end on an annual basis.

The Cox proportional hazard model is preferable to other duration models as there are no theoretical reasons to make an assumption about whether the baseline risk of civil war termination increases or decreases over time. As compared to parametric duration models, the Cox Proportional Hazard model allows the baseline hazard rate to fluctuate rather than monotonically increasing, decreasing, or holding steady. Cunningham, Skrede, and Salehyan (2009) caution against using parametric models when the baseline hazard function is unknown, as those models may lead to misspecification in estimating the termination of civil wars. Using an Akaike Information Criterion/ Bayesian Information Criterion (AIC/BIC) test for model fit, diagnostic tests suggest that a Weibull model may be more fitting for our analysis, but the Cox model is appropriate theoretically. We therefore include a robustness check using both a Weibull and Exponential Hazard model to estimate the duration of civil wars. Our results remain robust and can be found in the Online Appendix in Tables 6a and 7a.

The second part of our analysis examines how the conditional relationship between winning coalition size and oil wealth shapes the different outcomes of civil wars. Drawing on the UCDP/Peace Research Institute of Oslo (PRIO) Armed Conflict Database, we use Cunningham, Skrede, and Salehyan's (2009) dyadic analysis of civil war outcomes. As opposed to conflict termination, where all parties must stop fighting in order to fully end the conflict, one civil war may have different outcomes for each actor involved. To account for this variation in the outcomes of

terminated civil wars, we examine how the conditional relationship between oil wealth and government winning coalition size shapes the likelihood of a negotiated settlement as compared to other civil war outcomes—government victory, rebel victory, or low activity (Kreutz 2010). Similar to Cunningham, Skrede, and Salehyan's (2009) analysis, we estimate a multinomial logit on the variation in outcome types, where the baseline category is continued fighting.[4]

To measure our primary independent variable, we rely on two operationalizations of coalition size. Our first measure of winning coalition size is the degree of institutional power concentration in different regime types as provided originally from Lai and Slater (2006) and updated by Chyzh (2014). The categories of regime types with different sized winning coalitions include democracies, party machines, juntas, strongmen, and bosses. Democratic government and party machine governments rely on larger winning coalition sizes as opposed to strongmen, bosses, and juntas. Our second measure is derived from Bueno de Mesquita et al.'s (2003) operationalization of winning coalition size (w). Our data on winning coalition size are derived from the modified formula provided by Bueno de Mesquita et al. (2003), determined by the competitiveness of executive competition, the openness of executive recruitment, the competitiveness of party competition, and the institutional restraints placed on the executive. The formula produces an interval measure of winning coalition size ranging from 0 to 1, where 0 indicates that the leader relies only on a tiny cadre of elites and 1 indicates that the national leader must rely on the majority of the population to stay in power.

We employ two different measures for oil wealth. Using an updated version of Fearon and Laitin's (2003) indicator, we estimate oil wealth as a dichotomous variable equal to one in years in which the civil war state derives a third or more of its gross domestic product (GDP) from oil revenues and a zero otherwise (Doyle and Sambanis 2006; Fearon and Laitin 2003; Joshi and Mason 2011). Because we assume that oil production is underutilized during a civil war, we also use a measure of the value of oil production as a total share of gross domestic product.[5] These data are drawn from the World Bank and from Ross and Mahdavi's (2015) data on oil and gas production. As our theory specifies a conditional relationship between oil wealth and winning coalition size, we interact these two constitutive variables to generate our primary independent variables.[6]

To isolate the effect of our primary independent variables, we include a number of control variables based on previous research on the duration of civil wars. As previous work has identified that secessionist conflicts are often longer than conflicts fought over control of the government, we include a measure from the UCDP data measuring whether the conflict is a secessionist civil war (*territory*). Additionally, we include a control for whether the civil war state experienced a *coup* during the conflict (Powell and Thyne 2011). As noted by Thyne (2017), coups often reshape the bargaining structure during civil wars, dramatically shortening the duration of the conflict. To account for the number of veto players in the conflict (Cunningham 2006), we control for the number of parallel wars being fought in the

civil war state (*parallel wars*) using the measure from Thyne (2017). Furthermore, we include a control for the *intensity* of the conflict to account for the costs of the war, as more brutal civil wars often force government officials to negotiate with dissidents (Zartman 2000; Mason, Weingarten, and Fett 1999; Greig and Regan 2008). Using data from Cunningham, Gleditsch, and Salehyan (2013), we include a control for whether any of the rebel groups in the conflict are at parity strength with the government of the civil war state (*rebels at parity strength*), since rebel groups who are at parity strength with the government often force leaders to negotiate with their demands (Cunningham, Skrede, and Salehyan 2009). Finally, we include a control for the *logged GDP* per capita of the civil war state (Gleditsch 2002) since GDP per capita often accounts for state capacity as well as the degree of wealth within society (Fearon and Laitin 2003).

Results

The first set of results, presented in Table 1, largely supports Hypothesis 1. Model 1 includes the results of our constitutive variables prior to interacting them. Model 2 includes the interactions of our oil wealth measure with each of Chyzh's (2014) different winning coalition types, using juntas as our reference category. In model 3, we present the results of our interaction between Bueno de Mesquita et al.'s (2003) measure of winning coalition size and oil wealth. Finally, model 4 estimates a similar interaction term, but uses our dichotomous measure for oil wealth as opposed to our interval measure. All models use robust standard errors clustered on the conflict.

Although some of our constitutive terms, in and of themselves, appear to have no statistically significant effect on the duration of civil wars, when we interact our coalition size variables with our measures for oil wealth in models 2 and 3, the interaction terms are statistically significant and in the predicted direction. This is especially true of Chyzh's (2014) measure for democracies, party machines, as well as the interval measure of winning coalition size.[7]

As noted by Licht (2011), the coefficients of duration models are often misinterpreted. Specifically, the effects of variables may shift over time. In order to accurately assess the conditional relationship between oil wealth and regime type on the termination of civil wars, we employ a similar procedure set out by Licht (2011), as well as Jones (2017), which interprets international intervention shaping civil war termination and outcomes. Specifically, we measure the effects of combined coefficients from the start of the war to the end of the conflict. This procedure measures the magnitude of our variables of interest at different points during the war. To simplify the interpretation of the combined coefficients over time, we present our results over years as opposed to months. Figure 3 provides a comparison between democracies that have access to oil wealth as compared to democracies that lack access to oil wealth. The results demonstrate that within the first year, oil wealth radically increases the risk that civil wars will terminate for democratic regimes. As

Table 1. Risk of Civil War Termination—Cox Proportional Hazard Model.

	Regime Type (No Interaction)	Regime Type (Chyzh 2014)	*w* Size (Bueno de Mesquita et al. 2003)	*w* Size, Oil Dummy
Civil War Termination	Model 1	Model 2	Model 3	Model 4
Democracy × oil wealth		4.772***		
		(1.156)		
Party machines × oil wealth		3.276***		
		(1.268)		
Party boss × oil wealth		6.179***		
		(1.325)		
Strongmen × oil wealth		1.820		
		(1.530)		
Coalition size × oil wealth			3.325**	
			(1.537)	
Winning coalition × oil wealth				1.054*
				(0.541)
Democracy	−0.347	−0.558**		
	(0.231)	(0.224)		
Party machines	−0.0811	−0.251		
	(0.206)	(0.205)		
Party bosses	−0.624***	−0.996***		
	(0.234)	(0.248)		
Strongmen	−0.352	−0.398*		
	(0.218)	(0.230)		
Winning coalition size			−0.367	−0.353*
			(0.231)	(0.200)
Oil wealth (interval)	0.576	−2.196**	−0.342	
	(0.526)	(0.993)	(0.787)	
Oil wealth (binary)				−0.157
				(0.224)
Successful coup	0.919***	0.872***	0.791***	0.595**
	(0.278)	(0.277)	(0.265)	(0.292)
Territorial incompatibility	0.0509	0.0297	0.0970	0.0912
	(0.150)	(0.152)	(0.147)	(0.143)
GDP per capita	0.0424	0.0457	0.0727	0.0845
	(0.0609)	(0.0585)	(0.0685)	(0.0665)
Parallel civil wars	−0.00776	0.00269	−0.0209	−0.0306
	(0.0363)	(0.0362)	(0.0320)	(0.0367)
Intensity	−0.935***	−0.904***	−0.803***	−0.569***
	(0.185)	(0.194)	(0.180)	(0.172)
Rebels at parity strength	−0.0573	−0.0538	−0.00133	−0.00431
	(0.192)	(0.196)	(0.182)	(0.170)
Democracy × time	−0.004	−0.004		
	(0.002)	(0.002)		

(continued)

Table 1. (continued)

	Regime Type (No Interaction)	Regime Type (Chyzh 2014)	*w* Size (Bueno de Mesquita et al. 2003)	*w* Size, Oil Dummy
Civil War Termination	Model 1	Model 2	Model 3	Model 4
Strongmen × time	−0.003	−0.004		
	(0.001)	(0.001)		
Observations	15,459	15,459	15,459	17,286
Log-likelihood	−1,137.8491	−1,131.0932	−1,148.5284	−1,287.9184
Number of subjects	274	274	274	298
Number of failures	253	253	253	276

Note: Robust standard errors are in parentheses.
*$p < .1$.
**$p < .05$.
***$p < .01$.

underscored by the significant increase in the combined coefficient, democracies that have access to oil wealth are much more likely to end the conflict as the civil war drags on. On the other hand, democracies that lack access to oil wealth appear to have a negative relationship with civil war termination over time.

In order to isolate the impact of oil wealth and coalition size on the duration of civil wars, we calculated the hazard ratios for our interaction term. Looking only at the first year of the civil war, setting oil wealth to zero, the hazard ratio for a government that relies on a large winning coalition is .703, indicating that the variable reduces the risk of civil war termination by 29.7 percent. On the other hand, a similar government that has access to oil wealth increases the risk of civil war termination by roughly 186 percent above the baseline risk within the first year of fighting.

Looking at Chyzh's measure of regime type, our results appear to be mixed. As expected, access to oil wealth significantly increases the likelihood that civil wars will terminate for both democracies and single-party systems. Within the first year, both regime types (when governments have access to oil wealth) are significantly more likely to terminate civil wars. Equally, Figure 4b demonstrates that the conditional effects of oil wealth are stronger for democracies as compared to single-party systems. Strongmen regimes seem to gain no apparent benefit from access to oil wealth throughout the civil war, providing more support for our Hypothesis 1. On the other hand, party bosses (the civilian counterpart of strongmen regimes) appear to benefit significantly from access to oil wealth. The results in Figure 4 demonstrate that access to oil wealth significantly increases the likelihood that party bosses will terminate the civil war.[8]

We should also note that our control variables seem to support much of the previous research on civil war duration. For instance, civil wars appear to be

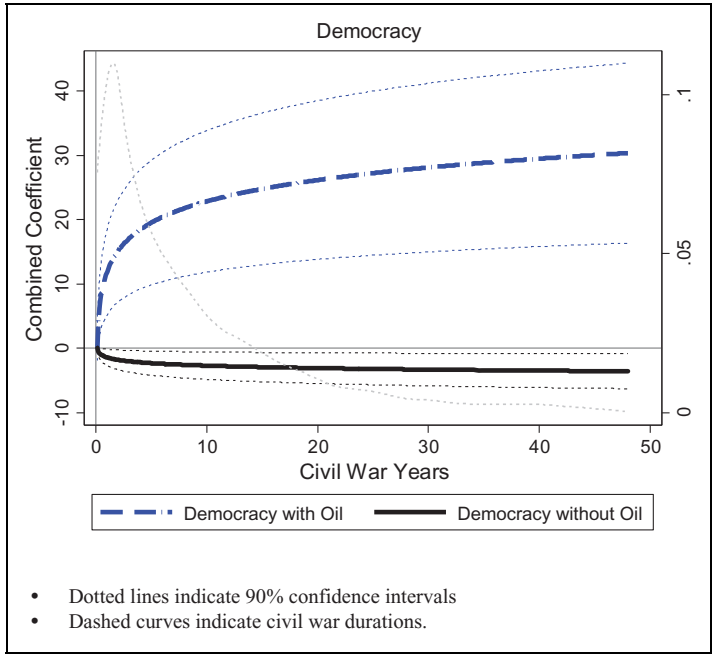

Figure 3. Risk of civil war termination. Combined coefficients compare democracies with access to oil wealth as compared to democracies that lack access to oil wealth.

shortened following the occurrence of a successful coup (Thyne 2017). Furthermore, greater conflict intensity appears to be tied to longer civil wars as well. Interestingly, though, our controls for conflicts fought over territory and the number of ongoing civil wars fail to meet statistical significance.[9] Further research into how institutions or resource wealth may mollify these factors would be a useful avenue of inquiry.

For the second part of our analysis, we examine how the size of the government's winning coalition in oil-wealthy states shapes the specific outcomes of civil wars. Tables 2 and 3 present the results of our multinomial logistic regression models on different civil war outcomes. Table 2 includes the results of our multinomial logistic regression using the data of Chyzh's (2014) regime types, while Table 3 estimates a similar model relying on Bueno de Mesquita et al.'s (2003) interval data for coalition size. Following the example of Cunningham, Skrede, and Salehyan (2009), we include a logged time variable to account for duration dependence in our model. These results are further illustrated by examining the predicted probabilities. Based on the model in Table 2, a democracy without oil wealth has a .01 probability of entering a negotiated settlement, as compared to a .20 probability when oil is present.[10] Party machines, on the other hand, are significantly less likely to sign onto a peace agreement when oil is present. Absent oil reaching a settlement has a predicted probability of .02 for party

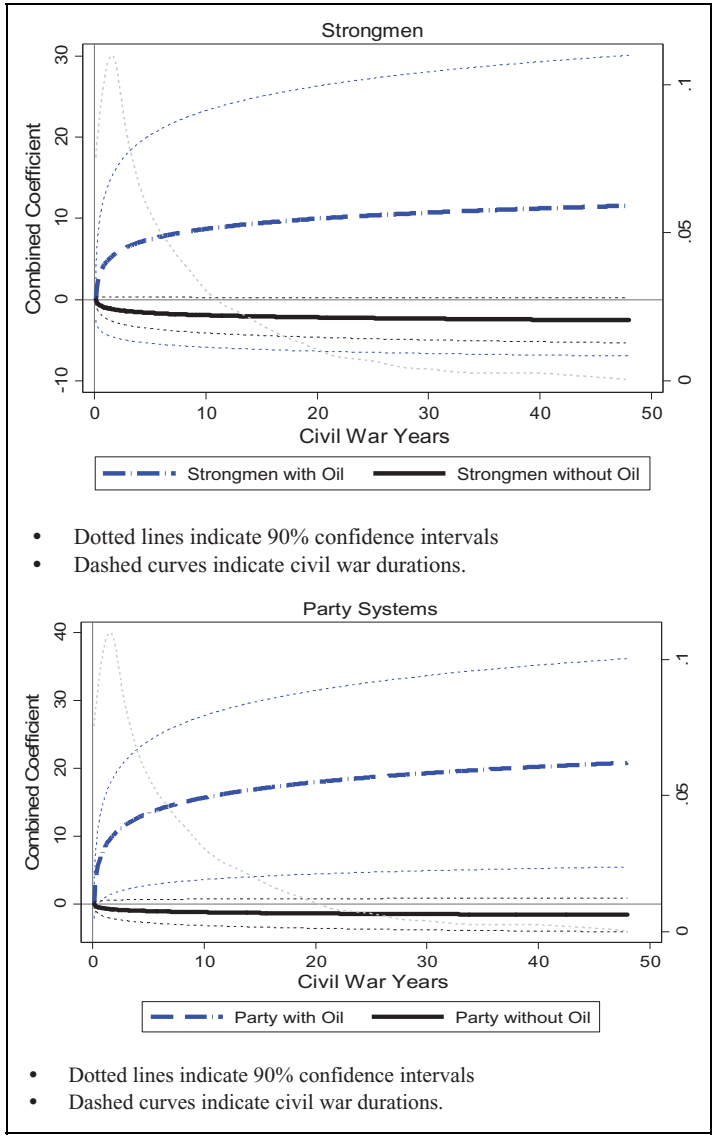

Figure 4. Termination of civil wars—combine coefficients.

machines. When oil is added, party machines have a predicted probability of reaching a negotiated settlement of .001. This suggests that only large winning coalitions are able to use the promise of maximized oil revenue to offset the costs of compromising with dissidents. Looking at Bueno de Mesquita et al.'s (2003) measure, shown in Figure 5, for a state involved in a civil war with a winning coalition size of .9 and no

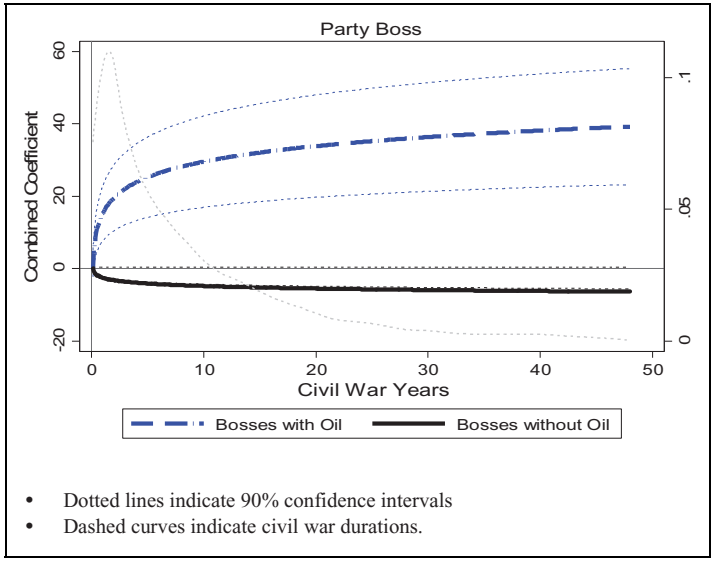

Figure 4. (continued).

oil wealth, there is a .02 probability of the civil war ending in a settlement as compared to continued fighting. On the other hand, when the same state has access to oil wealth the probability that a settlement will be reached as opposed to continued fighting is 0.84, a strong increase of 97.6 percent.

It should be noted that the results also suggest that the conditional relationship between oil wealth and the size of the government's winning coalition appears to significantly increase the likelihood of a government victory. The results appear to be stronger with smaller and moderate coalition sizes as compared to larger, as democracies with oil are no more or less likely to achieve a government victory. On the other hand, party machines are 93.8 percent, party bosses are 98 percent, and strongmen are 97.3 percent more likely to experience a government victory when oil is present as compared to when oil is absent. Again, oil wealth does not appear to necessarily be an asset on the battlefield for more democratic countries, given that elites are constrained by the ballot box when fighting insurgents. Rather, oil wealth appears to enhance the ability of more democratic governments to negotiate with dissidents.

Conclusion

The results largely suggest that the conditional relationship between civil war states and access to oil wealth has a significant effect on the duration and outcomes of civil wars. Specifically, when governments that rely on large winning coalitions have access to oil wealth, they fight significantly shorter civil wars as compared to similar

Table 2. Civil War Outcomes with Regime Type (Chzyh 2014)—Multinomial Logistic Regression.

Civil War Outcomes	Negotiated Settlement	Govt. Victory	Rebel Victory	Low Activity
Democracy × oil wealth	2.815**	1.116	−9.404***	0.361
	(1.251)	(1.513)	(1.931)	(1.420)
Party machines × oil wealth	2.027	15.04***	19.50***	2.535**
	(1.401)	(1.286)	(1.584)	(1.072)
Strongmen × oil wealth	−12.04***	14.83***	14.53***	2.429**
	(1.327)	(1.472)	(1.442)	(1.067)
Party boss × oil wealth	−12.46***	15.74***	1.387	4.946***
	(1.315)	(1.319)	(1.381)	(1.472)
Oil wealth	−2.893***	−15.82***	−16.40***	−1.926**
	(1.002)	(0.945)	(0.908)	(0.791)
Democracy	−1.432*	−1.380	−4.962***	−0.221
	(0.786)	(0.918)	(1.178)	(0.572)
Party machines	0.323	0.793	−3.781***	0.592
	(0.519)	(0.678)	(1.096)	(0.555)
Party boss	−0.855	−0.415	−1.919*	−1.271
	(0.698)	(0.987)	(1.004)	(0.836)
Strongmen	−0.921	0.377	−1.528**	0.251
	(0.785)	(0.896)	(0.744)	(0.749)
Logged time	−0.327***	−0.515***	−0.272	−0.264**
	(0.107)	(0.114)	(0.176)	(0.111)
Rebels at parity strength	1.741***	1.245	0.711	−1.323
	(0.552)	(0.797)	(0.658)	(1.109)
Logged GDP per capita	0.490	0.589	−0.0317	0.0699
	(0.330)	(0.389)	(0.568)	(0.225)
Territory	−0.000472	−0.345	−4.087***	−0.0489
	(0.565)	(0.718)	(0.822)	(0.488)
Constant	−4.544*	−4.465*	−0.371	−1.428
	(2.669)	(2.543)	(3.757)	(1.636)
Observations	12,934	12,934	12,934	12,934
Log-likelihood	−5,363.0035			

Note: Robust standard errors are in parentheses.
*$p < .1$.
**$p < .05$.
***$p < .01$.

governments that are not able to securely access to postwar oil revenues. Constraints on the ability of executives to negotiate with dissidents (Thyne 2012) are a hallmark of large winning coalition governments, as each constituency represents a potential veto player in the peace process. Our results demonstrate that when leaders will have secure access to oil revenue after a war ends, they can use the promise of resource rents from oil to appease the concerns of their constituents about any concessions

Table 3. Civil War Outcomes with *w* Size (BDM et al. 2003)—Multinomial Logistic Regression.

	Negotiated Settlement	Government Victory	Rebel Victory	Low Activity
Winning coalition size (*w*)	−2.154	−0.764	−1.047	−0.535
	(1.353)	(1.125)	(1.022)	(0.686)
Oil wealth	−3.077**	−1.137	−1.902*	0.351
	(1.242)	(1.009)	(1.105)	(0.656)
Winning coalition size × oil wealth	8.248***	4.245**	5.283	1.813
	(2.989)	(1.802)	(3.465)	(1.815)
Logged time	−0.309***	−0.466***	−0.422**	−0.250**
	(0.108)	(0.103)	(0.179)	(0.100)
Rebels at parity strength	2.107***	1.405*	0.680	−1.419
	(0.445)	(0.812)	(0.647)	(1.094)
Logged GDP per capita	0.445	0.310	−0.0361	0.109
	(0.381)	(0.315)	(0.476)	(0.218)
Territory incompatibility	−0.0149	−0.518	−4.261***	−0.134
	(0.564)	(0.695)	(1.043)	(0.473)
Intensity	−0.633	−0.326	2.167***	0.0726
	(0.531)	(0.646)	(0.765)	(0.422)
Constant	−4.050	−2.546	−1.772	−1.599
	(2.896)	(2.170)	(3.085)	(1.740)
Observations	12,934	12,934	12,934	12,934
Log-likelihood	−5,534.4589			
Wald χ^2	191.12***			

Note: Robust standard errors are in parentheses.
*$p < .1$.
**$p < .05$.
***$p < .01$.

granted to rebels as part of the bargaining process. This in turn allows leaders to make meaningful concessions during the bargaining process in order to end fighting. As governments that rely on large winning coalitions are seen by rebels as more credible than governments with small winning coalitions, concessions made during the bargaining process should be perceived as legitimate, thereby making it more likely for rebels to agree to settlement terms, leading to a settlement of the civil war. Interestingly, our results also show that personalistic leaders that have access to oil wealth also fight shorter civil wars but are not engaging in negotiated settlements. This may suggest that autocrats are using oil wealth to achieve battlefield success.

These findings are significant in that they provide more a fine-tuned understanding of the mechanisms that help to influence civil war duration. A major contribution of this research is to demonstrate tangibly how a feasible bargaining process can work for certain types of governments to offset costs of settlement for domestic audiences. Under the right conditions, our findings about the application of oil

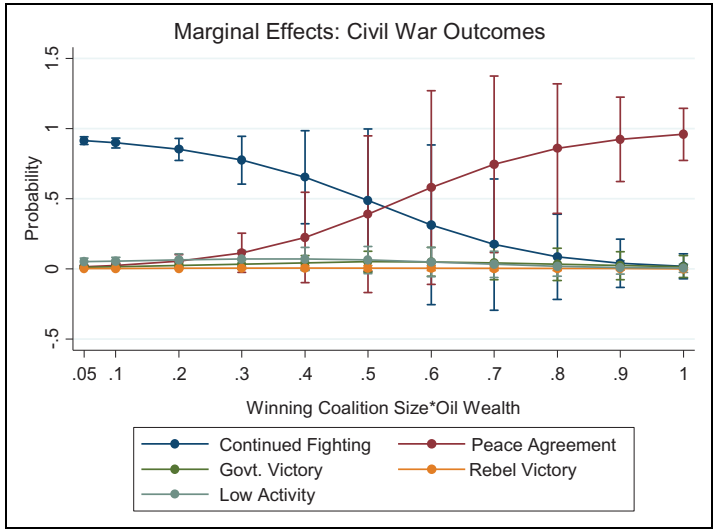

Figure 5. Marginal effects of civil war outcomes.

wealth as offsetting costs could apply more broadly to studies about other sources of revenue, including foreign aid, mining, other natural resources, or other sources of revenue or rents that governments can use to make promises of side payments to winning coalitions who oppose concessions to rebels. Our findings have clear implications for new research on the role of accountability in shaping the duration and outcomes of civil wars (Prorok 2016), as the ability of leaders to offset costs may relieve concerns relating to culpability in civil war. Our research also expands how the stabilization hypothesis (Smith 2004; Dunning 2008) can be applied to new areas of research, updating our perception of how natural resources affect armed conflict.

Our results also have policy implications for ongoing conflicts. While oil-rich states are often prone to the onset of civil wars, democratic reforms made during conflicts should increase the ability of leaders to credibly negotiate with dissidents. The international community should therefore continue to pressure leaders to pursue democratic reforms prior to negotiating with dissidents so as to credibly commit to a peace process. For instance, as the civil war rages in South Sudan, efforts on the part of President Salva Kiir to consolidate his authority undermines the bargaining leverage of his negotiators. Our models suggest that Kiir should be able to bargain effectively with the Sudanese People's Liberation Movement-In Opposition (SPLM-IO) rebels if he renews efforts to promote representative democracy in South Sudan. Although his constituents may oppose negotiations, supporters may be mollified by increased oil revenue from the peace dividend.

While these results expand our understanding of how natural resources interact with institutions to shape political phenomena, there is still much we do not know.

While a larger winning coalition may be more amenable to enter negotiations with dissidents when the government has access to oil revenue, we know very little about how variation within the winning coalition shapes the bargaining process. Equally, how does government access to other natural resources shape their willingness to enter negotiations? In regard to rebel groups, is their willingness to enter negotiations also based on the size of their governing apparatus? In short, the results presented here provide multiple future avenues of inquiry to further elaborate the connection between natural resources and political institutions in shaping the dynamics of civil war.

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Supplemental Material

Supplementary material for this article is available online.

Notes

1. Replication materials can be made available upon request. Please e-mail the authors.
2. We ran a robustness check in Table 9a in the Online Appendix interacting our winning coalition variables with the World Bank's data on rare metals and ore exported from civil war states, as well as World Bank foreign aid data. We find that these variables do not appear to have any significant effect on the bargaining leverage of large coalition governments, but these findings should be evaluated further in future research.
3. As a robustness check, we estimate the duration of civil wars using the civil war dyad year as the unit of analysis. Our results remain robust and these findings can be found in Tables 6a and 7a in the Online Appendix.
4. We use a multinomial regression rather than a competitive risk model for this analysis since there are more than two outcomes and we want to be able to compare them to each other.
5. This variable shows the value of oil produced (not sold) as compared to the total size of the economy.
6. As this measure may conflate tyrants with oil wealth and states with no oil wealth, we include a measure (*autocrats with oil*) in a robustness check. This is a binary variable that is measured as 1 when *winning coalition size* $= 0$ and *oil Wealth* $= 1$. The results for our primary independent variable (*winning coalition size* $\times$ *oil wealth*) remain unchanged with the inclusion of this control (see in Table 3a in the Online Appendix).
7. Models were tested and corrected for violations of the proportional hazard assumption. The results for this test can be found in Table 2a in the Online Appendix. We have also

ensured that our interpretations do not violate Brambor, Clark, and Golder's (2006) four rules.

8. These results vary, though, depending on specification. Further robustness checks outlined in the Online Appendix identified null findings for Party Boss regimes.
9. Of the 223 cases, 40.64 percent have multiple ongoing civil wars. Using monthly data, the vast majority of our cases end sequentially as compared to concurrently (with only eleven cases ending concurrently within the same month).
10. These results are stronger when we run models with only democracy variables and not autocracies.

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