Do Natural Resources Influence Who Comes to Power, and How?*

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Abstract

Do natural resources impair institutional outcomes? Existing work studies how natural resources influence the behavior of leaders in power. We study how they influence leaders' rise to power. Our analysis focuses on oil price shocks and local democracy in Colombia, a country mired in civil conflict. We find that when the price of oil rises, legislators affiliated with right-wing paramilitary groups win office more in oil-producing municipalities. Consistent with the use of force to gain power, positive price shocks also induce an increase in paramilitary violence, and reduce electoral competition: fewer candidates run for office, and winners are elected with a wider vote margin. Ultimately, fewer centrist legislators are elected to office, and there is diminished representation at the center. Our findings highlight how natural resources undermine democracy by distorting elections, and suggest that conflict leaves the political sector vulnerable to the resource curse.

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Introduction

Do natural resources lead countries to develop faster? Paradoxically, many have argued that they instead hinder development (Sachs and Warner 1995 and 2001; Sala-i-Martin and Subramanian 2013; Gelb 1988). A key reason behind this hindrance may lie in how natural resources affect politicians' incentives (Ross 1999; Robinson et al. 2006; Caselli and Cunningham 2009; Mehlum et al. 2006). For example, theory suggests that they may lower accountability by easing taxation (Madhavy 1970; Huntington 1991; Morrison 2007), increasing repression (Caselli and Tesei 2011) or allowing leaders to buy off the opposition (Acemoglu et al. 2004). Alternatively, they may exacerbate redistributive demands, leading those who hold power to maintain autocracy (Boix 2003). Given these potential consequences on the political sector, many cross-national studies have tried to assess how natural resources affect democratic development. This rich literature has found mixed results.[1]

Theoretical work in this area illuminates how natural resources distort politicians' behavior once in power. But do they also distort who comes to power? And, how they come to power?[2] After all, the desire to control windfall revenues may motivate influential groups to seize power through coercive strategies. These groups may constrict electoral participation in a bid to alter election outcomes. Or, they may turn to violence in the fight for power, skewing election outcomes toward those willing to use force.

The question of whether natural resources undermine electoral democracy holds global relevance — from Iraq to Nigeria to Burma, there is no shortage of countries with both natural resources and armed actors poised to intervene in electoral politics. We answer this question within one institutional context — Colombia — since this enables a clean research design. We harness data on local elections in nearly 1,000 municipalities over 1997-2007. We

[1] The range of findings include: negative effects (Barro 1999; Ross 2001; Jensen and Wantchekon 2004; Ramsay 2006; Aslaksen 2008; Tsui 2011; Brückner Ciccone and Tesei 2012); heterogenous effects (Dunning 2008; Caselli and Tesei forthcoming; Ross 2012; and Andersen and Ross 2014); and insignificant effects (Herb 2005; Alexeev and Conrad 2009; Haber and Menaldo 2011; Wacziarg 2011). Morrison (2009) also finds that oil revenue exerts positive effects on regime stability.

[2] Caselli and Cunnginham (2009) address this question theoretically but posit that greater rents will incentivize more candidates to run for office, increasing electoral competition.

determine whether movements in the international price of oil influence election outcomes differentially in more oil-dependent municipalities.

This within-country strategy poses several identification advantages relative to cross-national analysis. First, the price of oil is exogenous to small producers such as Colombia, while this is questionable for large producers in a global sample. Second, there are fewer potential cross-sectional confounds: municipalities are more homogeneous than countries; and local elections outcomes are more standardized relative to democracy measures across countries.[3] Also, micro elections data allows us to pinpoint specific aspects of democratic development undermined by natural resources, enabling us to unpack how these resources impair institutional outcomes.

The Colombian context also offers specific advantages for examining this topic. Its long internal conflict has bred many illegal armed groups that seek to control both politics and rents from natural resources — including left-wing guerrillas and right-wing paramilitary groups. During our study period, both armed groups used politically-targeted violence, and the paramilitaries came to be known for massacring civilians. In addition, paramilitary groups also intervened directly in elections, assassinating candidates, and helping allied politicians gain office in exchange for favorable policies (Acemoglu et al. 2013). Fortuitously, recent data tracks whether legislators were affiliated with political parties that colluded with various paramilitary groups (Fergusson et al. 2013).

Drawing on this data, we find that a rise in the price of oil leads to the differential election of pro-paramilitary legislators in more oil-dependent areas. These effects go hand-in-hand with lower competition in local elections: positive oil price shocks widen the vote margin of winners and reduce the number of candidates running for office. Correspondingly, fewer centrist mayors are elected, reducing representation at the center. In essence, oil price shocks alter the political equilibrium.

[3] A commonly used cross-national measure of democracy, the polity index, also includes components related to civil war (Vreeland 2008). An outcome such as this makes it difficult to disentangle the impact of natural resources on democracy from the impact of natural resources on conflict.

We also demonstrate that violence plays a role in these distortions, which past work on natural resources and democracy has largely ignored. We show that price shocks boost aggregate municipal revenue and the incidence of paramilitary activity and attacks in oil-rich regions. This is consistent with the idea that these groups seek to control territories flush with rents (Dube and Vargas 2013), and intervene in elections to achieve control.

In contrast, we find no impacts on tax revenue and spending patterns, which suggests a limited role of these other mechanisms in our institutional context. In addition, we cast evidence against several alternative accounts. Changes in preferences based on income and security considerations are unlikely to be key drivers behind these effects. For example, we observe no significant impacts on wages; and price shocks do not induce effects in locations with oil pipelines, where security concerns should be most acute. Also, we observe substantial increases in the election of pro-paramilitary legislators in traditionally leftist strongholds, where voter turnout also falls differentially. These patterns are inconsistent with changes in preferences under democratic elections. Rather, they suggest that armed groups use coercion in achieving electoral ends, leading to a deterioration in local democracy.

Our paper complements a handful of other within-country studies of the political resource curse. Three focus on Brazil, and find effects on outcomes such as corruption (Caselli and Michaels 2013; Brollo et al. 2013) and incumbency over the short run (Monteiro and Ferraz 2012). Looking in the U.S., Goldberg et. al (2008) also suggest that resource dependence affects sitting governors' vote shares. The biggest difference between these papers and our paper is that we examine the role of extra-legal force. Our findings highlight how natural resources can induce groups to use coercive strategies, distorting who gains power based on political affiliation.[4]

In the remainder of the paper, we provide background on the Colombian context; lay out the mechanisms linking oil prices to elections; describe the empirical strategy and data; present the results; and conclude.

[4]Monteiro and Ferraz (2012) and Brollo et al. (2013) look at candidate characteristics such as education, but neither considers the party affiliation of elected legislators.

Background

Democracy and Local Government. Colombia has held national elections regularly since independence, except for two periods of military intervention (the last of which ended in 1958). Since 1988, the direct popular election of mayors, governors and local councils have taken place at pre-determined intervals of two to four years. We focus on the election of mayors and councils as these positions vary at the municipality level, and we aim to identify the impact of municipal oil dependence.[5]

Notably, mayors are not allowed to run for immediate re-election (Dávila 2009) which limits individual-level incumbency.[6] Mayors are also considered more powerful than the councils. Given their limited functions,[7] a recent debate has even emerged about abolishing these entities.[8] Council size varies by municipal population. Elections for council positions are municipality-wide, and candidates are elected through a list system.

The Oil Sector. Oil is Colombia's largest export. National legislation determines the royalty rate, and specifies the amount received by each municipality, which is proportionate to the value of production during our sample period.[9] As of 1996, royalty revenues from the production of oil and other natural resources, termed "regalias", have been categorized separately in the fiscal accounts.

The Colombian Conflict. The Colombian conflict includes three actors: leftist guerrillas, right-wing paramilitary groups, and the state. The guerrilla insurgency was launched in the 1960s. During the study period, it was led by the Armed Revolutionary Forces of Colombia (FARC) and the National Liberation Army (ELN).[10] A first generation of independent paramilitary groups emerged to fight the guerrillas during the late 1980s. In 1994,

[5] Governors are department level positions, and there are 33 such departments.

[6] Non-consecutive re-election is uncommon, occurring in 5 percent of our sample elections.

[7] http://www.citymayors.com/mayors/colombian-mayors.html.

[8] http://www.eltiempo.com/archivo/documento/MAM-1305716

[9] Oil revenue was an important part of municipal revenue throughout this period. The ratio of oil revenue to total revenue for oil producing municipalities in our sample was 14% in 1997 and 15% in 2005.

[10] Other revolutionary groups such as M-19 and Quintín Lame also joined during the 1980s. Most of these other groups demobilized and formed political parties in the early 1990s. For example, the M-19 movement formed the M-19 Democratic Alliance political party.

the Peasant Self-Defense Forces of Córdoba and Urabá (ACCU) began crafting regional alliances with other paramilitary groups. They formed an umbrella organization called the United Self-Defense Forces of Colombia (AUC), giving rise to a second generation of paramilitarism in 1997. These paramilitaries were declared illegal as they violently targeted civilians (Restrepo et al. 2004). While some factions colluded unofficially with the military brigades (HRW 2000), they held no official affiliation with the government.

Both the guerrillas and paramilitaries rely on cocaine financing; aim to control territories with natural resources; and siphon associated rents. Commodity price shocks have been a key determinant of violent attacks by armed groups, with different actors specializing in predation over different natural resources. As documented extensively by Dube and Vargas (2013), paramilitary groups have been better positioned to dominate the oil region, in part, because two key paramilitary groups (including the ACCU) originated from areas that had oil, notably, for reasons that were unrelated to the presence of oil.[11] Once the paramilitary groups gained a foothold in these areas, they had a stronger ability to seize rents, including in response to rising oil value. Audits show that oil and gas royalties are often missing from municipalities where they exert influence (HRW 2005a). Armed groups siphon revenue either by colluding with aligned politicians, or extorting resources under threat of force, for example, by kidnapping and assassinating mayors (El Tiempo 2007). The guerrillas also blow up oil pipelines, though past work has demonstrated that these attacks do not respond to changes in oil prices (Dube and Vargas 2013).

Paramilitary Intervention in Elections. When the AUC was launched, the paramilitary groups made a strategic decision to influence electoral outcomes. They formed explicit pacts with politicians to support particular candidates. For example, the Pacto de Ralito called for a "refounding of the country" and was signed by prominent paramilitary leaders and more than 50 politicians including senators, mayors and local councilors (Lopez and Sevillano 2008). The large number of links between paramilitaries and politicians were

[11] Neither of these groups relied on oil for financing purposes initially, but both became dominant in these areas after expunging the guerrillas.

revealed by the media in the "para-politics scandal".

Paramilitary organizations used many strategies to achieve their political ends.[12] They helped allied candidates by providing illegal financing, or by intimidating and assassinating opponents (Lopez 2010).[13] Additionally, they coerced voters by threatening violence or carrying out massacres (Acemoglu et al. 2013). Sometimes, they did this to get votes for their preferred candidates; other times, to suppress voters and keep people from voting (BBC, 2002). They also bought votes and stuffed ballots (Valencia 2007).

Which politicians enjoyed paramilitary support? As documented by Acemoglu et al. (2013), the small, new political parties that emerged in Colombia in the 2000s were the parties that came to be affiliated with paramilitary groups. Fergusson et al. (2013) also present evidence that greater media exposure did not reduce the degree of collusion.

Finally, it is worth noting that the guerrillas retracted from attempts to influence electoral politics after an initial, disastrous attempt during the early 1980s. FARC formed a party called the Unión Patriótica (UP). But by 1988, over 500 of its members including four Congressmen and the presidential candidate had been assassinated by the first generation paramilitaries (Dudley 2004). After that, the guerrillas re-positioned themselves to focus exclusively on warfare.[14]

Mechanisms

There are several pathways through which natural resources can affect institutional outcomes. They may influence how leaders gain power, and thus who holds office. Alternatively, they may influence the actions of those already in office. We examine each of these pathways below.

[12] Much of this evidence comes from a laptop confiscated from paramilitary leader "Jorge 40". http://www.semana.com/on-line/articulo/el-computador-jorge-40-puede-inicio-nuevo-proceso-8000/81379-3

[13] As an example, Jorge 40's computer revealed a recording of Carlos Maria Garcia Davila, a fellow paramilitary member, coordinating with politicians on important electoral campaign in the Caribe Coast (Pedraza Saravia and Olaya 2011).

[14] Some of the political parties formed by the guerrillas continued participating in elections, but these participants either disconnected from the violent arm of the FARC, or were organizations such as the Movement of April 19 (M-19), which demobilized in the 1990s.

The Means of Gaining Power. When the price of oil rises, more rents are up for grabs in oil-producing areas. In countries such as Colombia, with explicit sharing agreements, greater revenue accrues within the coffers of oil-rich municipalities. This boosts the value of controlling these locations, incentivizing armed groups to wrest political control. Indeed, past theoretical work shows that stealable resources promote conflict owing to predation incentives (Grossman 1991; Dal Bó and Dal Bó 2011).

The bid to wrest control, in turn, motivates armed groups to intervene in elections. Getting favored candidates into office has clear benefits, since these officials are the key to accessing municipal revenue. In Colombia, mayors decide on the allocation of public contracts. They are also positioned to divert public funds toward allies.

Armed groups can accomplish their goal of manipulating elections through several strategies. First, they can finance and support politicians from parties aligned with their political agenda or intimidate and assassinate politicians from non-aligned parties. Helping aligned candidates will serve to consolidate their gains and expand their vote shares, while scaring off contenders will reduce the number of candidates running for office. Both effects will serve to reduce the competitiveness of elections.

Second, armed groups can manipulate the electorate. They may buy votes, or intimidate voters to keep them away from the polls.[15] All of these efforts to target candidates and voters will influence the political affiliation of elected legislators, inducing a political selection effect.

But, what types of candidates will get selected into office? In our institutional context, the paramilitaries are known to operate more in oil areas and explicitly target elections. Thus positive oil price shocks should increase officials aligned with pro-paramilitary parties in oil-dependent areas. Moreover, if violence is a key means through which paramilitary groups achieve political control, we should observe corresponding increases in the incidence

[15]Both strategies have been documented in Colombia. Thus, the impact on average voter turnout is theoretically ambiguous. However, armed groups are likely to violently target opposition voters, suggesting that systematic voter suppression by right-wing paramilitary groups is likely to be higher in left-leaning areas.

of paramilitary violence in these locations.[16]

The Actions of those in Power. Natural resources may also affect institutional outcomes through the actions of those who already hold power. Theoretical work has documented how these resources can impede democracy through the actions of politicians. Under the canonical rentier mechanism, natural resources allow officials to buy off political support through light taxation and increased spending (Madhavy 1970; Huntington 1991), particularly on patronage. For example, Robinson et al. (2006) theoretically show that politicians inefficiently expand public sector employment during resource booms. These spending and taxation patterns are held to lower accountability as citizens become politically disengaged and make weak demands for representation. If rentier mechanisms are at play, we should see lower tax revenue in municipal coffers as municipal governments lower taxes in non-resource sectors; and, we should see significant increases in total spending, particularly on municipal employment.

A number of theories also posit that natural resources entrench leaders. As Boix (2013) points out, these resources are fixed factors, for which there is little threat of exit. This feature exacerbates demands for redistribution, curbing leader's incentives to allow democratic politics. Other accounts of entrenchment emphasize that office-holders can spend resources buying off the opposition (Acemoglu et al. 2004), or repressing their opponents (Caselli and Tesei 2011; Ross 2011). Finally, if natural resources equip office-holders with the incentives and means to retain office, then we should observe general incumbency advantages in elections outcomes, as party-level incumbency is legally possible in this context.

Predictions. In summary, the accounts above imply five empirical predictions. First, if leader selection is important then positive oil price shocks should boost the election of pro-paramilitary legislators. Second, if these effects reflect intervention by paramilitary groups, positive oil price shocks should lower electoral competition. Third, they should boost the

[16] Relatedly, the decision to target elections may interact with the presence of conflict. Violent groups may already have a base of operations and know how to target opponents in locations with recurrent violence. Since these factors lower the cost of forceful intervention, oil price shocks may induce larger effects in locations that have historically experienced more conflict.

likelihood of violent paramilitary activity in oil rich areas. Fourth, if rentier type effects are at play, then positive oil price shocks should differentially lower tax revenue and increase municipal spending in areas such as public employment. Fifth, if general entrenchment effects are important, then these price shocks should lead to more re-election of incumbent parties. Importantly, all of these effects should be strongest in municipalities that produce more oil as positive oil price increases are, by definition, larger in these areas.

In testing the predictions on political selection, we draw on both mayoral and local council elections. In testing the role of competition, we focus on just mayoral elections, for which we have better measures. For example, the margin of victory can only be defined for these races. And, the interpretation of candidates running for office is cleaner since council elections occur through a list system.

Empirical Strategy

We use a difference-in-differences empirical strategy to test our predictions. We assess whether changes in the international oil price exert differential impacts among municipalities that produce more oil.

Our cross-sectional variation is oil dependence, defined as the value of oil produced in per capita terms in 1993.[17] During that year, 57 municipalities produced oil. Figure A.1 in the Online Appendix shows the quartiles of oil production across municipal locations. This variable circumvents endogeneity concerns for several reasons. It precedes the start of the sample period, and thus, cannot reflect potentially endogenous oil discovery or extraction undertaken in response to election outcomes.[18] Also, it precedes paramilitary consolidation which started with the expansion of ACCU in 1994, and culminated in the formation of the AUC in 1997.[19] In the appendix, we also present results using average oil production over

[17] This is defined as barrels of oil produced in each municipality in 1993, multiplied by the per barrel international oil price in 1993, scaled by the municipal population in millions in 1993.

[18] Since it precedes the 1997 election by several years, this minimizes concerns that it reflects extraction decisions made with the aim of influencing political outcomes in the run-up to the first election in our sample.

[19] Paramilitary presence could influence oil production if it reduces guerrilla presence, curbing threats of future violence, or, conversely, if paramilitary violence itself inhibits oil production.

1988-1996, which includes 62 oil-producing municipalities.

The time variation in our empirical strategy is the international price of oil. Importantly, this price is exogenous to Colombia's production, as the country holds less than one percent of the world oil market. Figure A.2 shows the oil price over time.

The estimating equation that represents our empirical strategy is:

$$y_{jrt} = \alpha_j + \beta_t + \delta_r t + (Oil_{jr} \times OilPrice_t)\lambda + \mathbf{X}_{jrt}\phi + \varepsilon_{jrt} \quad (1)$$

where y_{jrt} are elections-related outcomes in municipality j, region r and year t; α_j are municipality fixed effects; β_t are year fixed effects; and $\mathbf{X}_{jrt}$ are time-varying controls which always include the natural log of population. Oil_{jr} is the oil dependence of municipality j in region r during 1993; $OilPrice_t$ is the natural log of the international price of oil in real terms in year t. λ captures the differential effect of the oil price on political outcomes in municipalities producing more oil. Note that the constituent terms do not appear in equation (1) since municipality fixed effects control for and absorb the municipal-level Oil_{jr} variable while year effects control for and absorb the annual-level $OilPrice_t$ variable.[20] $\delta_r t$ are linear time trends in the four major geographic regions.[21] These trends account for the fact that natural resources are concentrated in particular regions which may have experienced different trends in institutional outcomes, based on varying rates of economic growth or armed group presence. For example, oil is concentrated in the Southeastern region, and guerrilla presence may have increased there in the latter part of our sample period, when the government seized control of the Demobilized Zone (DMZ), pushing the FARC eastward toward Venezuela.[22]

We estimate equation (1) using OLS. Since boundaries changed in a potentially endogenous manner over this period, we use a concordance (Dube and Vargas 2013) to aggregate municipalities to their boundaries in 1988, a pre-sample year. In all specifications, standard

[20] We examine the effect of prices in levels versus growth since a growth specification may lead to an excess focus on short-run effects by capturing only year-to-year changes.

[21] These are: Andean, Caribbean, Southeastern and Pacific.

[22] The DMZ comprises five municipalities in Southern Colombia that the FARC were allowed to administer over 1999-2002.

errors are clustered at this original municipality level to control for serial correlation over time within these units.

Data

This section provides an overview of our main variables which are detailed further in the Appendix. We use data on mayoral and local council elections from the Registraduría Nacional del Estado Civil. Election years include 1997, 2000, 2003 and 2007. We also use data on governor's elections compiled by CEDE-Los Andes (Pachón and Sánchez 2014). For mayoral elections, we calculate measures of competition, including actual and effective number of candidates (Molinar 1991; Golosov 2010); as well as the winner's vote share, runner-up's vote share, and the margin of victory, defined as their difference. We also examine voter turnout. We classify whether winners of mayoral elections are from center-right, center-left, or extreme left political parties, which include the socialist party, Polo Democrático (Polo), and those historically associated with the guerrillas such as the UP or M-19.

We also define whether elected municipal officials are affiliated with pro-paramilitary parties on the basis of an original event-based dataset collected by Fergusson et al. (2013). This extraordinary data records all news events from *El Tiempo,* Colombia's leading newspaper, in which national-level politicians in the Congress are accused of collaborating with paramilitary groups over 1997-2010. We use this data to construct measures of pro-paramilitary affiliation using the approach of Dube and Vargas (2013). Importantly, in this approach, a party is defined as pro-paramilitary for the duration of the sample if one of its national-level politicians is accused of paramilitary collaboration in the Fergusson et al. data. This party classification is then combined with the Registraduría data to code the share of local council seats held by pro-paramilitary parties, and an indicator for whether the mayor is from a pro-paramilitary party. Table A.1 in the Online Appendix shows the list of pro-paramilitary parties in our sample of mayoral elections, which extend to 2007.

This approach can generate measurement error along two dimensions. First, it is possible that a national-level senator may have colluded with paramilitary groups, but the rest of his party is not paramilitary aligned. This is unlikely to be pervasive because national legislators tend to be leading, influential members of their parties, so their position typically serves as a good proxy for the positions of other members. This is especially true for our context, since the paramilitary affiliated parties tend to be small (Acemoglu et al. 2013). Also, paramilitary groups and political parties embarked on a coordinated effort to influence politics, with national level politicians signing documents such as the *Pacto de Ralito*. Implementing these plans would require coordination within parties, rather than one-off acts of collusion between isolated politicians and armed groups.

A second type of measurement error may arise because there are parties running in local elections that do not have national level representation. If some of these parties are pro-paramilitary, they may be missing from the classification. Suppose this measurement error is like white noise, simply adding mean zero error. This would bias our results toward zero. Suppose that the measurement error had some systematic bias, such as over or under-measuring pro-paramilitary parties. If this mismeasurement is uncorrelated with oil dependence, again this would not be a problem. Finally, suppose this mismeasurement were correlated with oil dependence. Even this correlation wouldn't create a bias since the pro-paramilitary measure itself can't respond to changes in oil prices. This is because the pro-paramilitary classification is held constant over the sample period.[23]

While this approach circumvents potentially endogenous classification, it creates a potential look-back problem, in that parties may be discovered to be paramilitary affiliated toward the end of the sample period but are specified to be paramilitary affiliated throughout the period. In the appendix, we also use the approach of Acemoglu et al. (2013) as an

[23] This is also why we would want to avoid using a measure that classifies individual local-level politicians as paramilitary-affiliated. Consider two mayors colluding with paramilitary groups, one of whom is in an oil municipality. When the price of oil rises, and oil areas become more valuable, greater scrutiny by the media and political adversaries may lead to higher rates of discovery of paramilitary collusion for the politician in the oil area. Our time-invariant party-level measure circumvents this type of potentially endogenous classification.

alternate measure of paramilitary affiliation to address this and other measurement concerns with this variable.

We also use electoral data from the three mayoral elections prior to our sample period (1988, 1992 and 1994) to gauge pre-sample political preferences. This data is incomplete in that vote shares accruing to candidates of different parties is unavailable for these elections. However, we can observe the party of the winner, and use this information to construct indicators of whether the left won consistently, the right won consistently, or whether the area was swing, with a mix of winners of different political leanings.[24,25]

Our data on municipal spending and revenue span 1997-2005 and come from the National Planning Department (NPD). We also use data on paramilitary and guerrilla activity, available up to the same year. This includes data from the Center for Study of Economic Development (CEDE), which allow us to observe if the paramilitaries or guerrillas (FARC or ELN), undertook any activities (such as arson, kidnaps, political homicides, or injuring army members) in a given municipality-year.

We additionally use data originating from the Conflict Analysis Resource Center (CERAC), available over 1988-2005. We define indicators of whether any attacks were perpetrated by the paramilitaries and guerrillas in a given municipality-year. We also use the number of attacks and clashes between these groups and these groups and the state, to define high conflict samples, such as those in which any of these variables exceeded their mean over 1988-1992, or over 1988-2005.

We use income data from the *Encuesta Nacional de Hogares* (ENH), a representative household survey conducted in 23 Colombian departments, over 1998-2005. We use this source to construct (log) hourly wages in real terms, and two municipal-level measures of

[24]Here, left pools together center and extreme-left candidates. Analogously, right candidates includes all right-leaning candidates, but we only observe pro-paramilitary parties after 1997, when the AUC made a concerted decision to influence electoral politics.

[25]In just under 6% of the cases, the winner came from a coalition, and we allow coalition winners to contribute to our definition of swing. For example, if a municipality had two left winners and a third coalition winner, we treat this as a mixed outcome as it would be inappropriate to code this municipality as consistently voting for the left. However, our results are robust to an alternate classification where we do not allow coalition winners to contribute to the swing definition but instead control for their effect separately.

wage dispersion: the (log) ratio of wages at the 90th vs. 10th percentile and at the 75th vs. 25th percentile of the municipal wage distribution.

The Ministry of Mines and Energy (MME) provides our 1993 oil production measure and the oil pipeline length measure, which is from 2000, the earliest year available. Data on 1994 coca production is from the Dirección Nacional de Estupefacientes (DNE) and municipal population data comes from DANE. Table A.2 in the appendix presents the descriptive statistics of key variables. Approximately 15% of mayorships and 11% of local councils are composed of pro-paramilitary legislators over this period.

Characteristics of Oil and Non-Oil Municipalities

Table 1 examines the cross-sectional characteristics of municipalities that did and didn't produce oil in 1993. It shows that measures of poverty and public services do not vary significantly across these two groups.[26] However, oil locations are larger as measured by population, and differ on geographic dimensions such as elevation. These differences could confound the effects if electoral dynamics differ in highly populated areas or low elevation locations, in a manner correlated with the price of oil. We therefore control for time-varying (log) population and elevation interacted with the price of oil. In the appendix, we also present results controlling for all other covariates shown in Table 1.

Results

Oil Price Shocks and Pro-Paramilitary Legislators

We examine the effect of oil price shocks on institutional outcomes by estimating equation (1) . In Table 2, we look at the election of pro-paramilitary mayors and the share of seats held by pro-paramilitary legislators in local councils, progressively adding in controls.[27]

The results show that when the price of oil rises, pro-paramilitary legislators differentially

[26] These balance statistics look the same if we instead compare municipalities above and below mean oil dependence in 1993.

[27] The pro-paramilitary council share variable is unavailable for 2007. Thus our analysis of council outcomes include the 1997 to 2003 elections.

attain office in more oil-dependent municipalities. The effects are substantial. The coefficient of .08 in column (3) tells us that a 10% increase in the price boosts the likelihood of a pro-paramilitary mayor by .008 more in the average oil municipality (with oil dependence 1.01), as compared to a non-oil municipality. This represents a 5.4% increase above the pro-paramilitary mayor mean (.15). Since the price of oil rose by 130% over 1997-2007, this implies a 72% greater chance of getting at least one pro-paramilitary mayor over the four elections in our sample. This is a per-election effect of approximately 18%.

The effect on the council share is also substantial, though smaller in magnitude. The coefficient in column (6) suggests that a 130% price hike differentially increases the share of pro-paramilitary councilors by 43% above the mean (of .12). This is a per-election effect of 11%. The difference in magnitudes may arise because mayors are more powerful than local councils. As such, it would be more strategic for armed groups to target mayorships.

In the appendix, we explore whether these effects are larger in high conflict samples, where armed groups may have greater experience carrying out forceful interventions. We define whether armed group attacks and clashes exceeded their means over 1988-1992 (the period preceding our 1993 oil dependence measure) and over 1988-2005 (the duration over which conflict data is available). Table A.3 shows that the magnitude of the coefficients are always larger and statistically significant in the high conflict sample, and statistically insignificant in the low conflict sample, for both the pro-paramilitary mayor and council share outcomes. However, the effects are not statistically distinguishable from one another as the low conflict sample exhibits relatively large standard errors, likely because two-thirds of the oil producing municipalities fall into the high conflict group. Below, we build on this suggestive evidence and test directly for the role of conflict in shaping electoral outcomes by analyzing armed group activity and attacks.

Political Competition

Next, we examine the competitiveness of local elections, in Table 3. We look at candidates contending office, and the vote margin of winners running in mayoral elections.[28]

Column (1) shows that oil price shocks reduce the total number of candidates. The coefficient of -.182 in column (1) tells us that a 130% oil price rise induces a 6% effect, or a 1.5% per-election reduction. The next two columns show that this effect stems from reductions in candidates from non pro-paramilitary parties, while there are no significant reductions in candidates from pro-paramilitary parties. These results are consistent with the scare-off effect, in which paramilitary groups successfully drive contenders out of office. As shown in Column (4), the effect on electoral contenders also remains in place if we consider the effective number of candidates, which takes into account the vote shares received by each candidate.[29]

Next, we examine effects on the margin of victory. Column (5) demonstrates a substantial increase in this outcome. The coefficient implies that a 130% oil price increase induces a differential per-election effect of 4.6%. This margin may either increase if the winner's vote share rises or the runner's up vote share falls – for example, if votes become more fragmented across other contenders. Columns (6)-(7) indicate that the winner's vote share rises, suggesting that the leading candidate consolidates his or her gains. In the final column, we show that the vote share accruing to paramilitary-affiliated parties also increases, further corroborating their electoral gains in response to oil price shocks. These findings provide evidence for our second empirical prediction on the competitiveness of local elections.

In Appendix Table A.4, we examine two other electoral outcomes. We find that there is a negative effect on the effective number of parties, but it is not statistically significant at conventional levels. This suggests that the scare-off effect operates on the level of candidates,

[28] We focus on the mayoral elections for this analysis since the vote margin of the winner can be defined, and because the council elections occur via list systems, which makes it difficult to interpret results around the number of candidates running for office.

[29] These results estimate effects on the effective number of candidates as measured by the Molinar (1991) index, but Appendix Table A.4 shows that the result is the same if we use the Golosov (2010) index.

but doesn't drive entire parties out of the election. We also find that there are no significant average effects on (log) voter turnout.[30] However, as we show below, there are heterogeneous effects on this outcome across municipalities.

Revenue and Violent Activity by Armed Groups

To what extent can we say that these impacts on political selection and competition reflect interference by armed paramilitary groups seeking control of revenue in oil-rich areas? To answer this question, the first part of Table 4 gauges whether oil price shocks boost revenue and armed group activity in oil-dependent municipalities.

Columns (1)-(2) demonstrate substantial increases in both regalias revenue and total revenue. The coefficients suggest that a 130% oil price hike boosts these outcomes by 24% and 9% more in the average oil municipality, as compared to a non-oil municipality, over the sample period.[31] In the next columns, we show that the oil price shock differentially increases the likelihood of paramilitary activity and paramilitary attacks, without affecting the likelihood of guerrilla activity or guerrilla attacks.[32] These findings support our third prediction that oil price shocks will boost revenue and paramilitary violence in oil areas.

[30] These results are the same if we examine voter turnout in per capita terms (and are available upon request). But we lack exact data on eligible voters and so cannot construct exact turnout rates.

[31] Since we conceptualize revenue to be a key mechanism, an alternative approach is to instrument revenue with the oil price interaction. We then lose the 2007 election as we don't have revenue data for that year. Appendix Table A.5 presents these results for our main outcomes. All of the effects remain significant, verifying the robustness of the results to this alternate approach.

[32] In Appendix Table A.6A, we examine the robustness of these results to controlling for all characteristics in Table 1 (not just population and elevation). For example, it is possible that factors such as the presence of coca may affect conflict since the cocaine trade finances the armed groups, while public service provision or poverty may affect conflict by shaping individual's incentives to join armed groups. To maximize power, we first predict the dependent variable at the start of sample on the basis of additional characteristics in Table 1 and then control for its interaction with the price of oil (see appendix for more details). We account separately for the land gini variable since it is missing for over 15% of the municipal sample. We also present estimates varying the sample period. Table A.6A shows that the results are generally robust across specifications, though sample period restrictions marginally affect the precision of the paramilitary attack effect when the land gini interaction is included: specifically, when we restrict the sample to the shortest (post-1997) period, the estimate becomes marginally insignificant (p-value = .11), while the coefficient does not fall in magnitude, suggesting a loss in power from the shorter period. In contrast, the effect on the incidence of guerrilla attacks remains consistently insignificant across sample periods and control sets. In Table A.6B, we repeat this analysis with the number of paramilitary and guerrilla attacks. We again find the same pattern of results, and the effect on the number of paramilitary attacks even remains significant at the 10% level with the land gini control in the shortest (post-1997) sample period.

These results are consistent with Dube and Vargas (2013), which also finds effects of oil price shocks on paramilitary violence. This reflects the idea that paramilitary groups have a relative comparative advantage in predating in the Colombian oil region. Overall, these findings lend support to the idea that coercion is used in the rise to power and that violent attacks and electoral intervention are complementary levers for controlling oil-rich areas.

Other Aspects of the Resource Curse

In the remaining columns of Table 4, we examine other dimensions of the resource curse stemming from the actions of those already in office. First, we consider rentier effects. In columns (7)-(9) we find no significant effects on tax revenue, total spending and spending on personnel in municipal governments. For total spending, the coefficient is positive, but statistically indistinguishable from zero. For spending on personnel, the coefficient is negative, suggesting limited impacts on patronage networks. Second, we consider general incumbency effects in mayoral elections. But, in column (10), we find that there is no greater tendency to re-elect whichever party is in power.[33] For this institutional context, we find little evidence of our fourth and fifth empirical predictions.

Alternative Accounts

Here we consider and present evidence against a number of important alternative accounts.

Changes in Voter Preferences. One set of alternative accounts posit that paramilitary-affiliated legislators may be elected to office owing to changes in voter preferences. We consider four ways in which preferences might change.

First, voters may prefer right-wing parties with more conservative policies owing to economic factors. For example, voters may respond if oil price hikes boost income or income inequality. Alternatively, if oil wealth is perceived to generate economic benefits, a rise in value may generate backlash against politicians with pro-environmental views.

[33] This restricts our elections sample to the 2000-2007 period. We verify that our main effect holds with the same magnitude and remains statistically significant in this sub-sample.

Table 5 presents evidence against this account. Column (1) shows that the oil price shock did not exert significant effects on average wages, measured from household surveys.[34] This is consistent with the fact that the oil sector is not labor intensive, and therefore employs relatively few individuals within the municipal workforce. Columns (2)-(3) examine ratios of wages at the 90th vs. 10th percentile and at the 75th vs. 25th percentile of the municipal wage distribution.[35] These results show there were no discernible impacts on wage dispersion, casting further doubt on the idea that changes in economic conditions induced voters to shift rightward.

In the remaining columns of Table 5, we examine the election of mayors from different types of political parties. Column (4) demonstrates that there were no significant effects on the election of Green-party mayors, which is inconsistent with the idea that oil prices altered environmental preferences. Also, columns (5)-(6) show that were significant *reductions* in mayors from both center-right as well as center-left political parties. As such, the rise of pro-paramilitary mayors did not go hand-in-hand with a general shift to the right. Rather, this phenomenon was accompanied by a decrease in mainstream mayors from both parties and thus a hollowing of the center.

Second, it is possible that oil producing municipalities were already experiencing decreasing support for leftist parties and center right parties prior to the start of the sample period, and support for the extreme-right pro-paramilitary parties then filled this political vacuum during our sample period. If this is the case, we should observe differential pre-trends between oil and non-oil municipalities in political support for these parties, during the three pre-sample elections that took place in 1988, 1992 and 1994.[36] In Table A.7A we use data on the partisan affiliation of mayors elected and examine pre-trends by interacting an indicator for oil municipalities with a linear time trend over 1988-1994. We present pre-trend speci-

[34] Column 1 estimates an individual-level wage regression with standard demographic controls: gender, age, age squared, whether the respondent was married and years of education.

[35] These are municipal-level regressions which control for municipal averages of the demographic variables in column (1).

[36] We are grateful to an anonymous referee for pointing this out.

fications for the extreme left, center left and center-right categories, and for all 26 parties that won any election over this period individually.[37] We see no significant trends among any of these three combined categories suggesting no systematic tendencies in the election of either the left or center right parties as a whole. Among the 26 individual parties, we observe two significant trend coefficients. Note that statistically, we expect to find some significant coefficients by chance – for example, we expect to find a significant effect at the 10% level for 10% of the coefficients, or for two to three of the parties, even if there is no true effect. In our case we observe one coefficient significant at the 10% level and another significant at the 1% level. Probing further, we see that these coefficients are for the Movimiento Fuerza Progresista and the Movimento Alianza Social Indigena, which are both minor political parties that together won just 36 of 3,169 mayoral contests that took place in the three pre-period elections.[38] Since they are small, decreased support for these two parties is unlikely to be the driver of the effects we observe for the post-1997 period. To verify this, in Table A.7C, we re-estimate our main specifications from Table 2, eliminating these 36 municipalities where they won in the pre-period. We find that the effects on pro-paramilitary mayor and council share are unaffected by this sample restriction. These results demonstrate that trend decreases in support for other political parties prior to the sample period cannot account for the rise of pro-paramilitary legislators after 1997.

A third reason why voter preferences may have shifted toward pro-paramilitary legislators may have to do with security concerns. They are unlikely to be responding directly to increased guerrilla attacks, since Table 4 (as well A.6A and A.6B) shows that price shocks do not significantly influence this outcome. Also, such a response should reduce the election of extreme-left mayors (affiliated with the guerrillas), but column (7) of Table 5 shows there is no such effect.[39] Nonetheless, voters may respond to perceived threats of violence. These

[37] Table A.7B lists the names of these parties.

[38] Specifically, Movimento Alianza Social Indigena won 9 mayoral elections; and Movimiento Fuerza Progresista won 27 mayoral elections, 25 of which took place in the department of Antioquia, indicating it is also primarily a regional party.

[39] These results do not change if we re-classify Polo, the socialist party, as center-left vs. extreme-left. These estimates are available upon request.

perceptions should be strongest in areas that have pipelines used to transport oil, since the guerrillas are known for blowing up this infrastructure.[40] However, Table 6 (Column 1) shows that a change in oil value does not lead to the differential election of pro-para mayors in locations with oil pipelines. Column 2 also shows insignificant effects on total revenue – municipalities do receive revenue from taxing oil transport, but these increases are insufficient to register increases in the total budget in pipeline areas. Our results from Table 4 and 6, together, suggest that paramilitary affiliates focus their efforts toward gaining electoral control of oil production areas, which have the largest, most visible revenue increases. Overall, the results do not support the idea of the electorate choosing paramilitary affiliated legislators for protection purposes.

Fourth, if paramilitary-affiliated politicians gain office because preferences change in fair and free elections, we should see heterogenous effects based on initial political preferences. We shouldn't observe much of a response in left-leaning areas, where preferences of the representative voter lie farther from the extreme right position of pro-paramilitary parties – i.e., where voters are infra-marginal. And, responses should be relatively large in swing areas, where voters are marginal.

Columns (3)-(4) of Table 6 test for these effects. We interact the oil price shock with indicators of whether a municipality consistently voted for the right or was swing in the three mayoral elections over 1988-1994. (The omitted category is areas that consistently voted left in these elections).[41] The significant positive coefficient on the *Oil dependence x log oil price* in column (3) demonstrates that there was a substantial increase in pro-paramilitary mayors in leftist locations. And, the insignificant effects on the three-way interactions indicate that the effects were no smaller in the leftist areas than other areas. (In fact, the coefficient on the swing interaction is negative, corroborating that effects were no larger in these marginal areas). These results seem inconsistent with changes in preferences under democratic elec-

[40] Pipelines are used to transport oil from producing municipalities to ports. Our sample includes 141 municipalities with oil pipelines.

[41] Thus, the coefficient on *Oil dependence x log oil price* captures the effect of the price shock in left-leaning areas, while the coefficients on the three way interactions capture the differential effects in the other areas.

tions. Rather, they appear more consistent with an account in which violent groups interfere in local elections, targeting a variety of voters, including infra-marginal voters in left-leaning areas.

In line with this, column (4) also shows that voter turnout falls differentially in the left locations.[42] The coefficient tells us that the 130% price increase reduced turnout differentially by approximately 11.5% in the average oil dependent municipality in left-leaning areas (a per-election effect of 2.9%). This evidence goes hand-in-hand with well-documented accounts of paramilitary efforts to suppress votes (Acemoglu et al. 2013; Valencia 2007), and is consistent with the idea that electoral support obtained by pro-para parties was not entirely voluntary. Together, these results point to the use of force in electoral politics, and suggest that oil price shocks compromise the quality of local democracy by inducing electoral interference.

Resources from Higher Levels of Government. Our account posits that oil revenue accruing to municipalities serves as a draw for paramilitary groups to seek political control of these areas. However, an alternative account posits that oil revenue may be used as a financing tool to help these groups gain power. Revenue generated from taxing oil flow not just to municipal coffers, but also to the department and national levels of government. Thus, these resources could be diverted to candidates in municipal elections from higher-level politicians. This diversion could serve as a competing channel if for example, pro-para presidents allocate more resources to pro-para candidates in oil dependent areas during years with high oil prices.

If this account is true, we should observe larger effects during the presidency of Álvaro Uribe, who was widely perceived to be pro-paramilitary in his orientation.[43] In Table 6-column (5), we introduce a three-way interaction between the oil price shock and an indicator for the Uribe period, after 2002. But the coefficient on this term is insignificant and negative,

[42] In contrast, there is no significant effect on turnout in either the right or swing areas, as indicated by tests on the sum of the coefficients on the two-way and three-way interactions.

[43] President Uribe was criticized for lenience in the amnesty terms offered to paramilitary groups during their 2003 demobilization. In addition, many members of his administration, including the head of the leading security organization, were implicated for involvement with paramilitary groups (Bronstein 2007).

suggesting no such effect.

Analogously, pro-paramilitary governors may funnel oil money toward pro-paramilitary candidates in municipal races within their department. Governor elections occur concurrently with mayoral elections, so this effect can only arise if the governor holding office in the year before the election was paramilitary affiliated (which occurs 6% of the time). Also this effect should be especially large when both the previous governor and mayor were pro-paramilitary (which is relatively rare, occurring 2% of the time). Columns (6)-(7) of Table 6 show that the three-way interactions with both these alignment variables are small and insignificant. These results also suggest that resources flowing from higher levels of government are not the key driver behind our estimates.

Robustness Checks

In this section, we subject our estimates to a number of robustness checks. We summarize these checks briefly here and provide greater details in the appendix.

Alternate Measurement of Pro-Paramilitary Affiliation. First, we use an approach based on Acemoglu et al. (2013) to create an alternate measure of pro-paramilitary affiliation. This identifies paramilitary-supported parties as the non-traditional third parties (i.e., parties other than the traditional center-left, center-right and extreme left parties) fielding candidates in each election. This other approach averts the potential look-back assignment of our measure. Table A.8 shows that effects on both the mayoral and local council outcomes are robust to this alternate measurement.

Linear Trends by Oil Producing Area. Figure A.2 shows that the price of oil rose linearly for the majority of our sample period, with the exception of two dips. If institutional outcomes also trended differentially in oil producing municipalities, for some reason besides the oil price rise, this could be a confound. While our main specifications control for linear trends by region, in Table A.9, we add linear trends by whether municipalities produced oil in 1993. This could be an over-control by controlling for electoral trend responses to changes in the oil price. However, we find that all of our main outcomes remain statistically

significant at conventional levels.

Controlling for the Pre-Period Presence of Paramilitary Groups. As mentioned previously, paramilitary groups tend to be more active in the oil region, including at the outset of our sample period. This general tendency cannot confound our estimates since municipality fixed effects sweep out time-invariant effects. However, if paramilitary groups happened to intervene more aggressively in elections during years when the oil price was high, then this, combined with their presence in oil areas at start of sample could produce over-estimates. To account for this confound, we create a measure of whether paramilitary groups (and also guerrilla groups) were active in each municipality over 1988-1992. In Table A.10, we control for the interaction of both of these variables with the oil price. Our results remain unaffected. This suggests that the cross-sectional correlation of paramilitary groups in oil areas at start of sample do not drive the effects.

Controlling for Trends by Department. In Table A.11, we also control for separate linear time trends for each of Colombia's 33 departments. Almost all effects remain in place, with the exception of the effect on paramilitary activity, which becomes marginally insignificant (with a p-value of .12). However, the coefficient (in column 12) is not substantially smaller in magnitude relative to the benchmark specification in Table 4-Column 3, indicating that the results do not change meaningfully with the inclusion of these trend controls.

Controlling for Additional Municipal Characteristics. Table A.12 additionally controls for the other cross-sectional covariates in Table 1. To maximize power, we first predict the dependent variable value in 1997 on the basis of these characteristics, in a manner similar to the procedure used for Table A.6A and A.6B (see appendix for details). We then control for interactions of this predicted value with both the oil price and annual time trends. Table A.12 shows that our results are robust to controlling for price and trend effects of these additional variables.

Alternate Measure of Oil Dependence. Our preferred specification measures oil

dependence prior to 1994, since this marked the beginning of paramilitary expansion. However, there may be year-to-year variation in oil production, which raises concerns that our estimates could reflect idiosyncrasies in 1993 production. To address this, we employ mean oil dependence based on production over 1988-1996, which spans the entire pre-sample period. Table A.13 shows that almost all the estimates remain in place, with the exception of a weaker effect on the margin of victory (which becomes marginally insignificant with a p-value of .104), and a smaller and weaker effect on total candidates. However, the negative effect on the number of non pro-paramilitary candidates remains strongly significant, which continues to provide support for the scare-off effect and reduced electoral competition under this robustness check. As such, this alternate measure of oil dependence does not meaningfully change our findings.

Conclusion

This paper has examined how natural resources influence institutions using a within-country approach. While much of the past literature has focused on incumbent behavior, we ask whether these resources can influence the electoral process, and distort who comes to power.

Focusing on Colombian politics, we find that oil price shocks reduce electoral competition and promote the election of legislators from right-wing pro-paramilitary parties. These effects correspond to greater violent activity by paramilitary groups. Our results are consistent with an account in which armed groups intervene forcefully in local elections with the aim of controlling resource rich regions. Overall, they show that natural resources may prove inimical to local democracy by shaping how leaders rise to power.

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Table 1: Characteristics of Oil and Non-Oil Municipalities

	(1) Mean in Non-Oil Mun.	(2) Std. Error in Non-Oil Mun.	(3) Mean in Oil Mun.	(4) Std. Error in Oil Mun.	(5) Difference in Mean	(6) Std. Error of Difference	(7) Obs.
Unsatisfied Basic Needs 1993 (poverty)	53.108***	[0.635]	55.217***	[2.613]	2.109	[2.689]	1,023
Secondary education 1993	0.450***	[0.008]	0.472***	[0.033]	0.022	[0.034]	961
Police stations 1997	37.807***	[6.129]	47.564*	[25.110]	9.756	[25.847]	978
Judicial officers 1997	81.265***	[13.560]	104.842*	[54.771]	23.578	[56.425]	987
Post offices 1997	41.040***	[6.589]	43.368	[26.630]	2.329	[27.434]	988
Rural development banks 1997	46.711***	[7.468]	45.895	[30.181]	-0.816	[31.091]	988
Schools 1997	283.970***	[48.088]	430.737**	[194.135]	146.767	[200.002]	986
Hospitals 1997	21.063***	[3.437]	24.889*	[14.086]	3.826	[14.499]	961
Tax Office 1997	17.757***	[2.877]	19.925*	[11.955]	2.167	[12.296]	968
Length of primary rivers	2.726***	[0.339]	3.491**	[1.381]	0.765	[1.422]	985
Land inequality (gini)	0.687***	[0.004]	0.696***	[0.014]	0.009	[0.014]	853
In Demilitarized Zone (indicator)	0.004**	[0.002]	0.000	[0.008]	-0.004	[0.009]	1,023
Log population	-4.299***	[0.035]	-3.750***	[0.145]	0.549***	[0.149]	1,023
Elevation	1.271***	[0.037]	0.446***	[0.153]	-0.825***	[0.158]	1,022
Cultivated coca 1994, indicator	0.048***	[0.007]	0.088***	[0.029]	0.040	[0.030]	1,023

Notes: Oil refers to municipalities that produced oil in 1993. Non-oil refers to municipalities that did not produce oil in 1993. The coefficients and standard errors shown in column (1)-(4) are obtained by cross-sectionally regressing the municipal characteristic in each row on the oil and non-oil indicators (without a constant). The coefficients and standard errors shown in columns (5)-(6) are obtained from a cross-sectional regression of each characteristic on a constant and the oil indicator, which captures the difference in charactersitics across the two groups. Column (7) shows the number of observations in each of these regressions. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table 2: Oil Price Shocks and the Election of Pro-Paramilitary Legislators

	(1)	(2)	(3)	(4)	(5)	(6)
	Pro-para mayor			Pro-para council share		
Oil dependence x log oil price	0.080***	0.081***	0.080***	0.049***	0.044**	0.039**
	[0.022]	[0.022]	[0.022]	[0.018]	[0.018]	[0.016]
Observations	3,659	3,659	3,659	2,964	2,964	2,964
Number of municipalities	959	959	959	998	998	998
Election years	1997-2007	1997-2007	1997-2007	1997-2003	1997-2003	1997-2003
Log population	-	Y	Y	-	Y	Y
Elevation x log oil price	-	-	Y	-	-	Y
Mean oil dependence	1.01	1.01	1.01	1.01	1.01	1.01

Notes: Standard errors clustered at the municipality level are shown in parentheses. Variables not shown in all specifications include municipality and year fixed effects and linear trends by region. Mean oil dependence is the mean for municipalities that produced oil in 1993. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table 3: Political Competition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total candidates	Pro-para candidates	Non pro-para candidates	Effective number of candidates	Margin of victory	Winner's vote share	Runner's up vote share	Vote share of pro-para parties
Oil dependence x log oil price	-0.182*	0.042	-0.225***	-0.098**	0.024**	0.018**	-0.006	0.049***
	[0.098]	[0.044]	[0.073]	[0.042]	[0.009]	[0.009]	[0.005]	[0.011]
Observations	3,710	3,703	3,703	3,678	3,597	3,597	3,597	3,678
Number of municipalities	967	965	965	960	957	957	957	960
Election years	1997-2007	1997-2007	1997-2007	1997-2007	1997-2007	1997-2007	1997-2007	1997-2007
Controls	Y	Y	Y	Y	Y	Y	Y	Y

Notes: See Table 2 for notes. Controls include the log of population and elevation interacted with log oil price. Effective number of candidates is the Molinar (1991) measure.

Table 4: Mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Revenue and Armed Group Activity						***Other Resource Curse Mechanisms***			
	Log regalias revenue	Log total revenue	Any paramilitary activity	Any guerrilla activity	Any paramilitary attack	Any guerrilla attack	Log tax revenue	Log total spending	Log personnel spending	Party re-elected
Oil dependence x log oil price	0.186***	0.068**	0.024*	-0.022	0.031*	0.018	0.024	0.044	-0.018	-0.021
	[0.062]	[0.030]	[0.013]	[0.014]	[0.017]	[0.022]	[0.025]	[0.029]	[0.033]	[0.037]
Observations	3,427	8,234	9,063	9,063	9,198	9,198	8,219	8,397	8,291	2,662
Number of municipalities	683	1,007	1,007	1,007	1,022	1,022	1,006	1,007	1,007	905
Sample period			1997-2005					1997-2005		2000-2007
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes: See Table 2 for table notes.

Table 5: Income Effects and Preference Changes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Log wage	Log wage ratio (90/10)	Log wage ratio (75/25)	Center-right mayor	Center-left mayor	Extreme-left mayor	Green mayor
Oil dependence x log oil price	0.021	-0.002	0.009	0.00001	-0.056***	-0.047***	0.002
	[0.016]	[0.030]	[0.009]	[0.002]	[0.019]	[0.018]	[0.004]
Observations	207,835	1,050	1,050	3,710	3,710	3,710	3,710
Sample period		1998-2005			1997-2007		
Municipal controls	Y	Y	Y	Y	Y	Y	Y
Additional demographic controls	Y	Y	Y	-	-	-	-
Number of municipalities	229	229	229	967	967	967	967

Notes: See Table 2 for table notes. Additional demographic controls include gender, education, if the respondent is married, age and its square. Column (1) is an individual level wage regression and columns (2)-(3) are municipal level regressions with municipal averages of the demographic controls.

Table 6: Differential Effects by Swing Areas, Pipeline Locations and Political Alignment

	(1) Pro-para mayor	(2) Log total revenue	(3) Pro-para mayor	(4) Log turnout	(5) Pro-para mayor	(6) Pro-para mayor	(7) Pro-para mayor
Oil dependence x log oil price	0.079***	0.068**	0.081***	-0.079***	0.047**	0.052*	0.0493*
	[0.022]	[0.030]	[0.022]	[0.024]	[0.022]	[0.029]	[0.029]
Oil pipeline length x log oil price	0.009	0.015	-	-	-	-	-
	[0.058]	[0.036]	-	-	-	-	-
Oil dependence x price x swing 1988-1994	-	-	-0.028	0.515	-	-	-
	-	-	[0.085]	[0.377]	-	-	-
Oil dependence x price x right 1988-1994	-	-	0.021	0.067**	-	-	-
	-	-	[0.028]	[0.031]	-	-	-
Oil dependence x price x President Uribe in office	-	-	-	-	-0.032	-	-
	-	-	-	-	[0.038]	-	-
Oil dependence x price x previous governor pro-para	-	-	-	-	-	-0.007	-
	-	-	-	-	-	[0.014]	-
Oil depenence x price x previous governor & mayor pro-para	-	-	-	-	-	-	-0.0001
	-	-	-	-	-	-	[0.005]
Observations	3,659	8,234	3,624	3,629	3,659	2,670	2,538
Number of municipalities	959	1,007	950	948	959	910	851
Sample period	1997-2007	1997-2005	1997-2007	1997-2007	1997-2007	2000-2007	2000-2007
Controls	Y	Y	Y	Y	Y	Y	Y

Notes: See Table 2 for table notes. In columns (3)-(4), the omitted category is areas that were left during the period 1988-1994, so the coefficient on oil dependence x log oil price measures effects in these areas. Columns (3)-(4) also control for the two-way interactions of left, right and swing with the oil price. Column (5) controls for the interaction of oil dependence and the indicator of whether President Uribe was in office (after 2002). Columns (6) and (7) additionally control for whether the previous governor was pro-para and whether both the previous mayor and governor were pro-para, respectively, along with the interactions of these indicators with 1993 oil dependence and the log oil price.

Supporting Information Appendix to:

Do Natural Resources Influence Who Comes to Power, and How?

(Not Intended for Publication)

January 2016

A Supporting Information Appendix

In this appendix, we present details on data sources and variable construction, and descriptive statistics of the variables used in the main paper (Table A.2A) as well as auxiliary variables used in the appendix (Table A.2B). We also include figures of the spatial distribution of oil production in 1993 (Figure A.1) and the price of oil over our sample period (Figure A.2). In addition, we show a number of robustness checks, and provide greater detail on the following checks below: instrumenting revenue with oil price shocks; robustness checks on conflict outcomes; alternate measurement of pro-paramilitary affiliation; and additional controls, including linear trends by oil producing municipalities, pre-period armed group presence, linear trends by department, and additional municipal characteristics.

A.1 Data Sources and Construction

We utilize data on oil production, prices and a number of elections-related outcomes. Data on mayoral and local council elections come from the Colombian national elections council, which is the Registraduría Nacional del Estado Civil.[1] We follow the standard elections data and avoid using irregular elections that didn't occur on the official election day since their timing may be endogenous.

In examining the political competition channel, we use measures of the effective number of candidates, as well as the effective number of political parties. For both, we use two indices. Molinar (1991) defined an index of effective number of parties that is $N_M = 1 + \frac{\left(\sum_i s_i^2\right) - s_1^2}{\left(\sum_i s_i^2\right)^2}$, where s_i is the vote share allocated to each party i. This index has the advantage that it avoids overstating the effective number of parties when there is one dominant party, which has been an issue with simpler measures such as the inverse of the Herfindahl index. However, the Molinar index sometimes doesn't satisfy the property that increasing the number of smaller parties should register a greater degree of competition. So we also utilize a measure proposed by Golosov (2010) which addresses this issue and is defined as $N_G = \sum_i \frac{s_i}{s_i + s_1^2 + s_i^2}$, where s_1 is the largest party vote share.[2] The effective number of candidates measures also use the Molinar and Golosov indices, but utilizing the vote shares allocated to candidates rather than parties.

[1] http://www.registraduria.gov.co/

[2] See Golosov (2010) for a more in-depth discussion of the respective strengths and weaknesses of these indices.

We define whether paramilitaries or guerrillas (the FARC or ELN) are active in a given municipality-year based on data from the Center for Study of Economic Development (CEDE). This dataset originates from the Observatory of Human Rights of the Vice-Presidency of Colombia and is constructed on the basis of reports from the Administrative Department of Security (DAS), the Colombian security agency. It records whether these groups undertook activities such as arson, attacks on private property, kidnapping, blocking transport routes, injuring members of the armed forces, or carrying out political homicides.

Our conflict data originates from the Conflict Analysis Resource Center (CERAC). This data covers war-related episodes in over 950 Colombian municipalities over 1988-2005. It is event-based, drawing from 25 major newspapers, and oral reports on political violence from a network of Catholic priests operating in rural areas. We use this data source to define various high conflict samples. For example, we use the number of paramilitary attacks, guerrilla attacks and total clashes between the armed groups and the armed groups and the state to identify municipalities in which any of these variables exceed their mean over 1988-1992, and in which they exceeded their mean over 1988-2005.

We also use income data from household surveys called the *Encuesta Nacional de Hogares* (ENH). This survey is carried out by the Departamento Administrativo Nacional de Estadistica (DANE), and includes data on a representative sample of 23 departments in the four regions of Colombia. The employment module gathers repeated cross-sectional data on labor market outcomes. We conduct our analysis with individuals above age 14, the official working age in Colombia. We use data from 1998-2005, when earnings data are collected in a comparable manner.[3] We divide real monthly earnings for wage and salaried workers by monthly hours to obtain the (log) hourly wage in real terms. We trim out the top and bottom 1% outliers in this variable and also use it to generate two municipal-level variables: the (log) ratio of wages at the 90th vs. 10th percentile of the municipal wage distribution; and the equivalent ratio for wages at the 75th vs. 25th percentile of the distribution.

In terms of our independent variables, the international price of crude oil is obtained from the International Financial Statistics (IFS) and is measured in thousands of 2012 pesos per barrel. Our measures of oil production and pipeline length come from the Ministry of Mines and Energy (MME).[4]

[3] The ENH survey was also conducted in 1996 and 1997 but the earnings measures from these years exclude in-kind earnings and are thus not directly comparable to remaining sample years.

[4] http://www.minminas.gov.co/.

We use data on oil production from 1988 to 1996. The measure is defined as the average daily production of barrels of crude oil, in hundreds of thousands of barrels, in each municipality in a given year. Oil dependence is constructed for each year by taking oil production that year, multiplying it by the oil price that year, and scaling by municipal population in that same year. Mean oil dependence over 1988 to 1996 is the average over this period. Our oil pipeline length measure is from 2000 (the earliest year this data is available), and is measured in hundreds of kilometers.

A.2 Instrumenting Revenue

Our paper conceptualizes revenue as a key part of the mechanism, and posits that revenue surges attract paramilitary groups which in turn influences elections. So, an alternate approach is examining how changes in revenue — instrumented by oil price shocks — affects these outcomes. One drawback to this approach is that it necessarily excludes election year 2007 since we lack revenue data for that year. This is why we prefer to estimate the direct impacts of the price shocks as our primary specification.

In implementing the IV approach, we treat log total revenue as the endogenous variable. We opt to instrument total revenue rather than regalias revenue since places with no natural resources receive zero regalias, leading to their exclusion from the log specification.

Table A.5 presents the IV specification for our five main outcomes, estimated using 2SLS. All our results remaining significant, including those related to mayoral elections, for which we now have a reduced sample. Thus our findings are robust to this alternate approach.

A.3 Robustness Checks on Conflict Outcomes

In Table A.6A we conduct robustness checks on the incidence of paramilitary and guerrilla attacks, controlling for all covariates in Table 1 (as opposed to population and elevation which are significantly different across oil and non-oil municipalities and thus incorporated as additional controls in all tables). Given the number of covariates, we use a predicted controls approach to maximize power. We face two data limitations. First, the conflict dependent variables are only available through to 2005. Thus, we present results for different sample periods, with the starting year stretching back

to 1988 (the first year in which the conflict data is available). Second, among covariates, the gini variable is missing for 15 percent of the municipalities. We initially exclude the land gini from the baseline specification shown in the top two panels of Table A.6A and incorporate them in the bottom two panels.

We use the following steps for the predicted controls approach. First, we regress each of our dependent variables in the first sample year on the additional municipal characteristics (except population and elevation, which are already accounted for separately), to generate a variable that is predicted by these characteristics. We then interact this predicted control with the price of oil, and incorporate it into the regressions. This accounts for the potential confound that these other characteristics may be correlated with oil dependence, and municipalities with these other characteristics may have been experiencing increases in violence in a time pattern correlated with changes in the price of oil. Panel 1 and Panel 2 of Table A.6A show that the effects on the likelihood of paramilitary attacks remain unchanged with the inclusion of these controls for all sample periods (while the effects on the likelihood of guerrilla attacks remains insignificant).

In Panels 3 and 4, we add in separate controls for the land gini interacted with the price of oil. We circumvent throwing out the entire municipality for which the gini is missing by filling in missing gini data with zeroes[5] and then control separately for a missing gini indicator (also interacted with the price of oil). However, the gini measure itself is noisy given the missingness, and so including this covariate influences the precision of the estimated effect on the likelihood of paramilitary attacks, for shorter sample periods that start beyond 1992. Nonetheless, the coefficient on the oil interaction is only marginally insignificant (with a p-value of .11) and is approximately the same in magnitude for the post-1997 regressions as those starting in earlier years, indicating that changes in the significance of the effect reflect a loss in power in shorter samples.

Nonetheless, in Table A.6B, we conduct further checks using the number of paramilitary and guerrilla attacks. We again repeat the two iterations — without land gini controls in the first two panels and with the gini controls in the second two panels — and find that the same pattern of results with paramilitary and guerrilla violence continues to hold with the inclusion of controls across sample periods, with the effect on the number of paramilitary attacks even remaining significant at

[5] We arbitrarily use zero but of course any number could be used since our specification will control out for these values which are actually missing.

the 10% level for the sample period starting in 1997.

A.4 Alternate Measure of Pro-Paramilitary Affiliation

Next, we show the robustness of our results to using the alternate pro-paramilitary measurement approach of Acemoglu, Robinson and Santos (2013). These authors define paramilitary-supported parties as non-traditional third parties (i.e., parties other than the traditional liberals, conservatives and leftist parties), and utilize vote shares allocated to these third parties in Colombian elections covering the time period of our study.

This approach circumvents the look-back problem of our measure, which classifies parties as pro-paramilitary over the duration of our sample, even if discovery of their paramilitary ties occurred toward the end of this period. In implementing their approach with our local elections data, we specify the non-traditional third parties as those that are not from the traditional center-left, center-right and extreme-left parties. In addition, we consider a second variant which removes indigenous and Afro-Colombian parties who also field candidates in the local elections. These parties are not paramilitary affiliated, and are even violently targeted by paramilitary groups (UNHCR 2015). We construct pro-paramilitary mayor and council seat shares, as well as vote shares allocated to pro-paramilitary parties in both types of elections.

Table A.8 presents the results for both variants of the measure, which are labeled approach 1 and approach 2. The effects are significant for all four outcomes using both approaches. This establishes the robustness of our results to this alternate measure of pro-paramilitary affiliation.

A.5 Additional Controls

As shown in Figure A.2, the price of oil trended upward for much of our sample period. If institutional outcomes also trended upward differentially in oil producing municipalities – for some reason other than the oil price increase – this could upward bias our estimates. Table A.9 adds in a linear trend by whether municipalities produced oil in 1993. All effects remain statistically significant.

A second potential concern stems from the fact that armed groups tend to be active in certain geographic regions. Of course, if their presence is uncorrelated with oil dependence, this cannot bias

our estimates. If their pre-period presence is correlated with oil, but they do not differentially alter their activities in these locations over time in a way that covaries with the oil price, this again cannot bias the estimates. However, if they increase activities in locations with pre-period presence as the price of oil changes, then this could create bias.

This is particularly a concern for paramilitary groups since they have been operating in the oil region since their emergence. Our account is that paramilitary groups increase their activities in oil locations when the price of oil rises. But, if paramilitaries were already more active in oil municipalities prior to the study period, we have to discern whether oil price hikes lead them to boost activities in oil locations vs. locations where they were already present.

To distinguish the effect of armed group presence from oil presence, we measure whether paramilitary groups were active in each municipality over 1988-1992. This variable takes on a value one if any of paramilitary activity measures in the CEDE data are one over this period. We derive an equivalent indicator for if the guerrillas (FARC or ELN) were active over this pre-period. We then control for the interaction of these variables with the oil price. Table A.10 presents these results. Our results remain unaffected by the inclusion of these controls. In fact, the magnitude of the coefficients for the elections outcomes are in line with the baseline estimates in Tables 2 and 3. The results on paramilitary activity in columns (5) and (10) help clarify that when the price of oil rises, paramilitary activity increases in the oil dependent municipalities, even after accounting for the potential correlation between oil-dependence and paramilitary presence in the pre-period.

Another potential confound stems from trends in political outcomes among Colombia's 33 departments. In particular, if oil producing municipalities happen to be located in departments that were experiencing trend increases in the support for pro-paramilitary parties, in a manner correlated with the price of oil, these trends could also be conflated with the estimated effects. To account for this possibility, in Table A.11, we now include separate linear time trends for each of the 33 departments. Incorporating these department level trends is a stringent test. However, we again find that all of our effects remain in place. The effects on total candidates is statistically insignificant and smaller in the specification without controls. However, the effect remains in place with our main controls (which include the two covariates displaying imbalance in Table 1) . Moreover, both the margin of victory and the number of non pro-para candidates remain significant at conventional levels under both

specifications, providing continued evidence of lower electoral competition and the scare-off effect on challengers. Finally, note that the effects on any paramilitary activity is marginally insignificant with p-value of .12, and the coefficients of .022 and .021 are quite similar to the baseline estimate of .024 (in Table 4). Thus the results as a whole remain in place with the inclusion of trends by department.

Next, in Table A.12, we check the robustness of the results comprehensively to the additional municipal characteristics shown in Table 1. Similar to when examining the conflict outcomes, we use a predicted control approach to maximize power, and we initially exclude the land gini from the baseline specification, since it is missing for over 15% of our municipalities. We regress each of our dependent variables in the first sample year (1997) on (1) the additional municipal characteristics except population and elevation, and (2) all cross-sectional municipal characteristics including elevation, along with the 1993 oil producer indicator, to generate two sets of variables predicted by these characteristics. We then take the predicted values from the first set of regressions and interact them with the log oil price, and take the predicted set of values from the second set of regressions and interact them with a linear time trend. We incorporate both sets of predicted controls, along with our two baseline controls (log population and elevation x price). This allows us to control for the price and trend effects of all covariates in Table 1, as well as linear trends by oil producer. Panel A serves as the baseline. Panel B additionally incorporates the price interactions with paramilitary and guerrilla presence over 1988-1992. These panels show that our results are robust to the cumulative addition of the various municipality level controls.[6] Panel C implements the same approach but additionally incorporates price and trend interactions with the land gini. This reduces our sample by 126 municipalities owing to missingness in this variable, which reduces our statistical power. Still, this only affects the statistical significance of the paramilitary activity and attack variables, for which we have data only through to 2005. In Panel D, we repeat this exercise, but fill in values for missing gini observations with zeros, and then control separately with an indicator for whether gini observations are missing interacted with the oil price, and interacted with year. This is to ensure that we do not throw out the entire observation for which the land gini is missing. Under this approach, the effect on the number of paramilitary attacks retains its significance at the 10% level. The coefficients in regressions of the likelihood of paramilitary activity and attacks also remain similar in size to baseline

[6]Note that the effects on likelihood of paramilitary attacks is only marginally insignificant, with p-values of .109 and .101 in the two panels respectively.

magnitudes, and are also only marginally insignificant with p-values of .111 and .108, respectively. Together, these results point to the strong robustness of our results to the incorporation of additional controls.

References

[1] Acemoglu, Daron, James Robinson and Rafael J. Santos-Villagran. 2013, "The Monopoly of Violence: Evidence from Colombia." *Journal of the European Economic Association* 11(s1): 5-44.

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[3] Molinar, Juan. 1991. "Counting the Number of Parties: An Alternative Index." *American Political Science Review* 85: 1383-91.

[4] United Nations High Commissioner for Refugees (UNHCR). 2015. "Colombia: Construyendo soluciones sostenibles TSI" http://www.acnur.org/t3/que-hace/soluciones-duraderas/colombia-construyendo-soluciones-sostenibles-tsi (accessed July 2015).

Figure A.1: Oil Production in 1993

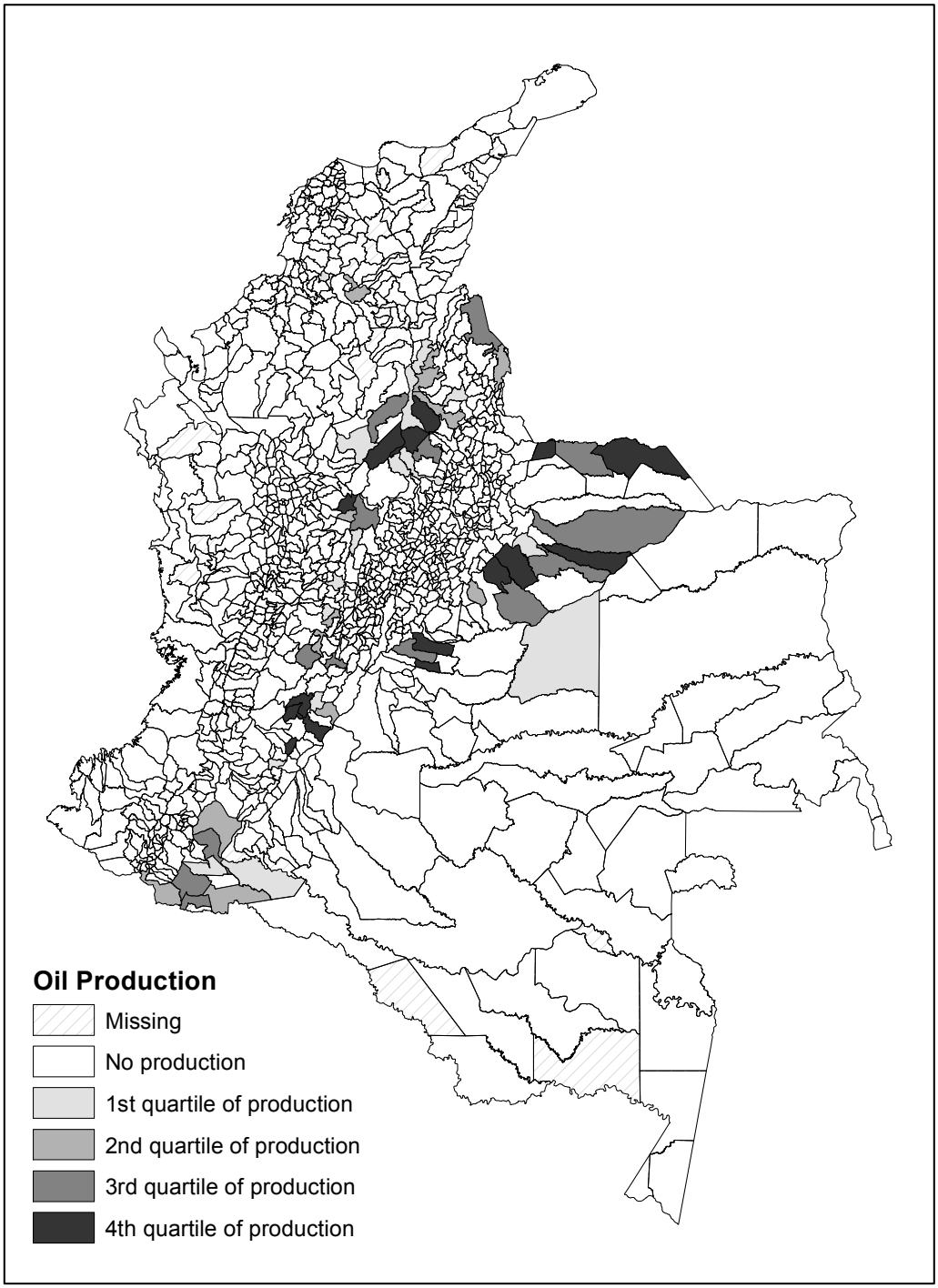

Figure A.2: The International Price of Oil

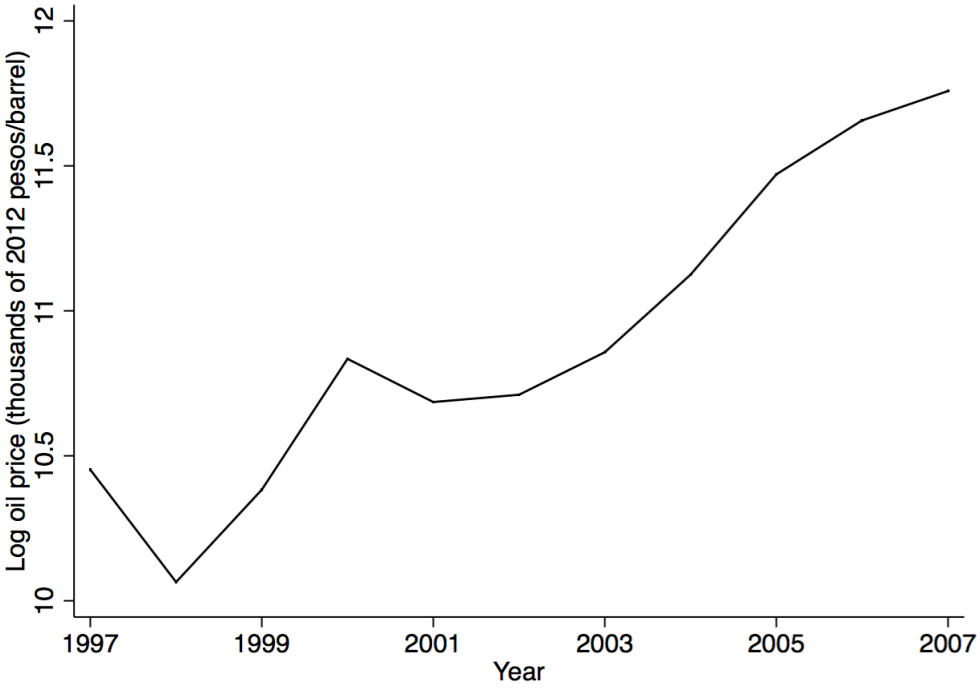

Table A.1: List of Pro-Paramilitary Parties

Movimiento Alas Equipo Colombia	Movimiento Politico Actidud Renovadora
Movimiento Apertura Liberal	Movimiento Popular Unido
Movimiento Colombia Viva	Movimiento Progresismo Democratico
Movimiento de Integracion Popular	Movimiento Somos Colombia
Movimiento de Participacion Popular	Movimiento Via Alterna
Movimiento Dejen Jugar al Moreno	Partido Colombia Democratica
Movimiento Nacional	Partido Colombia Siempre
Movimiento Nacional Conservador	Partido Popular Colombiano

Table A.2A: Summary Statistics of Key Variables

	Mean	Stdv Dev.	Min.	Max.	N
Panel-level variables					
Pro-para mayor	.148	.355	0	1	3,659
Pro-para council share	.118	.198	0	1	2,964
Total candidates	3.912	2.286	1	37	3,710
Pro-para candidates	.797	1.116	0	13	3,703
Non pro-para candidates	3.113	1.858	0	24	3,703
Effective number of candidates (Molinar index)	1.974	.622	1	5.571	3,678
Margin of victory	.169	.155	0	1	3,597
Winner's vote share	.530	.135	.206	1	3,678
Runner's-up vote share	.351	.090	0	.499	3,597
Vote share of pro-para	.174	.250	0	1	3,678
Log regalias revenue (millions of pesos)	5.053	2.730	-2.158	11.026	881
Log total revenue (millions of pesos)	8.584	.951	5.345	15.294	2,606
Log tax revenue (millions of pesos)	5.846	1.786	-.567	14.502	2,600
Log total spending (millions of pesos)	8.619	.957	5.397	15.586	2,679
Log personnel spending (millions of pesos)	6.389	1.048	3.407	12.795	2,648
Any paramilitary activity	.469	.499	0	1	3,021
Any guerrilla activity	.486	.500	0	1	3,021
Any paramilitary attack	.075	.264	0	1	3,066
Any guerrilla attack	.253	.435	0	1	3,066
Party re-elected	.321	.467	0	1	2,662
Log wage (measured at individual level)	7.712	.755	5.218	9.954	207,835
Log wage ratio (90*th*/10*th* percentile)	1.753	.543	0	3.717	1,099
Log wage ratio (75*th*/25*th* percentile)	.802	.345	0	2.733	1,099
Green mayor	.006	.075	0	1	3,710
Center-right mayor	.307	.461	0	1	3,710
Center-left mayor	.352	.478	0	1	3,710
Extreme-left mayor	.0140	.014	0	1	3,710
Log turnout	8.539	1.115	1.099	14.538	3,629
Previous governor pro-para, 2000-2007	.056	.231	0	1	2,670
Previous governor and mayor pro-para, 2000-2007	.016	.124	0	1	2,538
Log population (millions)	-4.212	1.121	-7.264	1.953	3,659
Cross-sectional variables					
Oil dependence, 1993	.056	.549	0	10.839	1,023
Oil pipeline length, 2000	.073	.272	0	3.819	1,023
Elevation	1225.449	1171.15	2	25221	1,022
Swing areas, 88-94	.244	.430	0	1	996
Right areas, 88-94	.317	.466	0	1	996
Left areas, 88-94	.430	.495	0	1	996
Annual-level variable:					
Log oil price, thousands of 2012 pesos/barrel	10.676	.482	10.064	11.758	20

Notes: Values for log of population and some revenue and spending variables are negative since they are fractions when measured in millions.

Table A.2B: Summary Statistics of Auxiliary Variables

	Mean	Stdv Dev.	Min.	Max.	N
Panel-level variables					
Effective number of parties (Molinar index)	2.155	.691	1	6.612	3,678
Effective number of parties (Golosov index)	1.891	.711	1	6.612	3,678
Effective number of candidates (Golosov index)	1.748	.631	1	5.571	3,678
Center-right mayor, 1988-1994	.364	.481	0	1	2,980
Center-left mayor, 1988-1994	.462	.499	0	1	2,980
Extreme-left mayor, 1988-1994	.0174	.131	0	1	2,980
Pro-para mayor (3rd party measure - approach 1)	.313	.464	0	1	3,659
Pro-para council seat share (3rd party measure - approach 1)	.273	.282	0	1	2,964
Vote share of pro-para mayors (3rd party measure - approach 1)	.327	.317	0	1	3,659
Vote share of pro-para local councils (3rd party measure - approach 1)	.277	.276	0	1	2,961
Pro-para mayor (3rd party measure - approach 2)	.288	.453	0	1	3,659
Pro-para council seat share (3rd party measure - approach 2)	.271	.280	0	1	2,964
Vote share of pro-para mayors (3rd party measure - approach 2)	.297	.309	0	1	3,659
Vote share of pro-para local councils (3rd party measure - approach 2)	.275	.273	0	1	2,961
Number paramilitary attacks	.120	.530	0	7	3,066
Number guerilla attacks	.616	1.719	0	27	3,066
Land inequality (Gini)	.690	.095	.374	.916	2,196
Missing land inequality (indicator)	0	0	0	0	2,196
In demilitarized zone (indicator)	.0027	.052	0	1	2,196
Cross-sectional variables					
Oil production indicator, 1993	.0557	.229	0	1	1,023
Unsatisfied basic needs, 1993 (poverty)	53.225	19.722	9.154	100	1,023
Secondary education, 1993	.451	.248	.026	2.156	961
Police stations, 1997	38.356	186.136	0	5136	978
Judicial officers, 1997	82.626	413.341	0	11256	987
Post offices, 1997	41.174	200.954	24	5592	988
Rural development banks, 1997	46.664	227.748	24	6336	988
Schools, 1997	292.454	1465.34	0	39600	986
Hospitals, 1997	21.278	103.462	0	2808	961
Tax office, 1997	17.876	86.990	0	2376	968
Length of primary rivers	2.769	10.330	0	113.119	985
Cultivated coca 1994 (indicator)	.050	.218	0	1	1,023
Above mean attacks / clashes, 1988-1992	.367	.482	0	1	1,023
Above mean attacks / clashes, 1988-2005	.409	.492	0	1	1,023
Paramilitary presence, 1988-1992	.692	.462	0	1	1,007
Guerrilla presence, 1988-1992	.581	.493	0	1	1,007

Table A.3: Effects in Low and High Conflict Locations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pro-para mayor		Pro-para council share		Pro-para mayor		Pro-para council share	
Oil dependence x log oil price	0.047	0.082***	-0.027	0.046***	0.056	0.092***	0.024	0.048*
	[0.079]	[0.020]	[0.031]	[0.017]	[0.048]	[0.029]	[0.019]	[0.027]
Conflict measure	*Attacks and Clashes 1988-1992*				*Attacks and Clashes 1988-2005*			
Sample	Low Conflict	High Conflict	Low Conflict	High Conflict	Low Conflict	High Conflict	Low Conflict	High Conflict
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,290	1,369	1,862	1,102	2,143	1,516	1,736	1,228
Number of municipalities	599	360	626	372	560	399	585	413
Sample period	1997-2007	1997-2007	1997-2003	1997-2003	1997-2007	1997-2007	1997-2003	1997-2003

Notes: Standard errors clustered at the municipality level are shown in parentheses. Variables not shown in all specifications include municipality and year fixed effects, and linear trends by region. Controls include the log of population and the interaction of elevation with the price of oil. The high conflict sample in columns (2) and (4) are those in which attacks and clashes over 1988-1992 exceed their mean. The high conflict samples in columns (6) and (8) are those in which casualties over 1988-2005 exceed their mean. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table A.4: Additional Measures of Political Competition

	(1)	(2)	(3)	(4)
	Effective number of candidates (Golosov index)	Effective number of parties (Golsov index)	Effective number of parties (Molinar index)	Log turnout
Oil dependence x log oil price	-0.099**	-0.069	-0.075	0.004
	[0.048]	[0.052]	[0.049]	[0.072]
Controls	Y	Y	Y	Y
Observations	3,678	3,678	3,678	3,664
Number of municipalities	960	960	960	957
Sample period	1997-2007	1997-2007	1997-2007	1997-2007

Notes: See Table A.3 for table notes.

Table A.5: Instrumenting Revenue

	(1)	(2)	(3)	(4)	(5)
	Pro-para mayor	Pro-para council share	Margin of victory	Total candidates	Any paramilitary activity
Oil dependence x log oil price	0.581**	0.148*	0.191***	-1.846*	0.375*
	[0.283]	[0.075]	[0.073]	[1.003]	[0.197]
Observations	2,294	2,568	2,246	2,323	8,219
Number of municipalities	846	941	839	852	1,005
Additional controls	Y	Y	Y	Y	Y
First stage kP F-statistic	4,86	5,24	4,73	4,92	5,31
Sample period	1997-2005	1997-2003	1997-2005	1997-2005	1997-2005

Notes: See Table A.3 for table notes. All specifications instrument log total revenue with an interaction of municipal oil dependence and annual log price. First stage kP F-statistic shows the Kleibergen-Paap rk Wald F statistic.

Table A6.A: Effects on the Likelihood of Attacks by Varying Sample Periods and Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel 1: Any Paramilitaty Attack									
Oil dependence x log oil price	0.026*	0.028*	0.031*	0.032*	0.029*	0.022*	0.022	0.027*	0.030*	0.030*
	[0.014]	[0.016]	[0.016]	[0.017]	[0.016]	[0.013]	[0.014]	[0.016]	[0.017]	[0.017]
	Panel 2: Any Guerrilla Attack									
Oil dependence x log oil price	-0.005	-0.002	0.004	0.003	0.000	-0.003	-0.003	0.004	0.010	0.014
	[0.015]	[0.017]	[0.016]	[0.017]	[0.018]	[0.018]	[0.021]	[0.023]	[0.025]	[0.021]
Observations	15,786	14,909	14,032	13,155	12,278	11,401	10,524	9,647	8,770	7,893
Number of municipalities	877	877	877	877	877	877	877	877	877	877
Years in sample	1988-2005	1989-2005	1990-2005	1991-2005	1992-2005	1993-2005	1994-2005	1995-2005	1996-2005	1997-2005
Controls interacted with price	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Panel 3: Any Paramilitaty Attack									
Oil dependence x log oil price	0.024*	0.026*	0.029*	0.029*	0.027	0.020	0.019	0.024	0.027	0.026
	[0.014]	[0.016]	[0.016]	[0.017]	[0.016]	[0.013]	[0.014]	[0.016]	[0.017]	[0.017]
	Panel 4: Any Guerrilla Attack									
Oil dependence x log oil price	-0.005	-0.002	0.004	0.002	-0.000	-0.004	-0.005	0.002	0.008	0.013
	[0.015]	[0.016]	[0.016]	[0.017]	[0.017]	[0.018]	[0.021]	[0.023]	[0.024]	[0.022]
Observations	15,786	14,909	14,032	13,155	12,278	11,401	10,524	9,647	8,770	7,893
Number of municipalities	877	877	877	877	877	877	877	877	877	877
Years in sample	1988-2005	1989-2005	1990-2005	1991-2005	1992-2005	1993-2005	1994-2005	1995-2005	1996-2005	1997-2005
Controls interacted with price	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Additional gini controls interacted with price	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes. All specifications control for log population and elevation x log oil price. Panels 1 and 2 use the predicted value approach to control for oil price interactions for all other covariates in Table 1 (except the land gini). Panels 3 and 4 additionally control for the land gini variable and an indicator of whether the land gini variable is missing, both interacted with the log oil price. See Table A.3 for additional table notes.

Table A6.B: Effects on the Number of Attacks by Varying Sample Periods and Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel 1: Paramilitaty Attacks									
Oil dependence x log oil price	0.081*	0.082*	0.088*	0.089*	0.086*	0.073*	0.064	0.080*	0.085*	0.079*
	[0.043]	[0.046]	[0.046]	[0.047]	[0.047]	[0.040]	[0.039]	[0.046]	[0.048]	[0.044]
	Panel 2: Guerrilla Attacks									
Oil dependence x log oil price	0.078	0.097	0.078	0.038	0.059	0.027	0.057	0.064	0.076	0.037
	[0.109]	[0.109]	[0.093]	[0.086]	[0.095]	[0.083]	[0.098]	[0.098]	[0.106]	[0.085]
Observations	15,786	14,909	14,032	13,155	12,278	11,401	10,524	9,647	8,770	7,893
Number of municipalities	877	877	877	877	877	877	877	877	877	877
Years in sample	1988-2005	1989-2005	1990-2005	1991-2005	1992-2005	1993-2005	1994-2005	1995-2005	1996-2005	1997-2005
Controls interacted with price	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Panel 3: Paramilitaty Attacks									
Oil dependence x log oil price	0.079*	0.080*	0.084*	0.085*	0.083*	0.068*	0.060	0.075	0.080*	0.074*
	[0.043]	[0.046]	[0.046]	[0.047]	[0.048]	[0.040]	[0.039]	[0.047]	[0.049]	[0.044]
	Panel 4: Guerrilla Attacks									
Oil dependence x log oil price	0.078	0.093	0.076	0.031	0.054	0.018	0.048	0.053	0.062	0.025
	[0.109]	[0.109]	[0.093]	[0.085]	[0.095]	[0.083]	[0.097]	[0.098]	[0.105]	[0.086]
Observations	15,786	14,909	14,032	13,155	12,278	11,401	10,524	9,647	8,770	7,893
Number of municipalities	877	877	877	877	877	877	877	877	877	877
Years in sample	1988-2005	1989-2005	1990-2005	1991-2005	1992-2005	1993-2005	1994-2005	1995-2005	1996-2005	1997-2005
Controls interacted with price	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Additional gini controls interacted with price	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes. The dependent variables in panels 1 and 3 are the number of paramilitary attacks and in panels 2 and 4 are the number of guerrilla attacks. All specifications control for log population and elevation x log oil price. Panels 1 and 2 use the predicted value approach to control for oil price interactions for all other covariates in Table 1 (except the land gini). Panels 3 and 4 additionally control for the land gini variable and an indicator of whether the land gini variable is missing, both interacted with the log oil price. See Table A.3 for additional table notes.

Table A7.A: Examining pre-trends in political representation (1988-1994)

	Center-right mayor	Center-left mayor	Extreme-left mayor	Party 1 mayor	Party 2 mayor	Party 3 mayor	Party 4 mayor	Party 5 mayor	Party 6 mayor	Party 7 mayor
Oil municiaplity x year	0.015	-0.009	0.001	0.002	0.002	-0.0003	-0.001*	-0.0004	-0.0002	0.001
	[0.010]	[0.012]	[0.008]	[0.003]	[0.003]	[0.000]	[0.001]	[0.000]	[0.000]	[0.003]
	Party 8 mayor	Party 9 mayor	Party 10 mayor	Party 11 mayor	Party 12 mayor	Party 13 mayor	Party 14 mayor	Party 15 mayor	Party 16 mayor	Party 17 mayor
Oil municiaplity x year	-0.0002	-0.0004	-0.001	-0.001	-0.002	-0.0001	-0.00002	-0.001	-0.004***	-0.0002
	[0.001]	[0.000]	[0.001]	[0.001]	[0.003]	[0.000]	[0.000]	[0.001]	[0.001]	[0.000]
	Party 18 mayor	Party 19 mayor	Party 20 mayor	Party 21 mayor	Party 22 mayor	Party 23 mayor	Party 24 mayor	Party 25 mayor	Party 26 mayor	
Oil municiaplity x year	0.00001	-0.0001	0.016	0.001	-0.0001	-0.00006	-0.0002	-0.003	0.004	-
	[0.000]	[0.000]	[0.011]	[0.012]	[0.000]	[0.000]	[0.000]	[0.007]	[0.007]	-
Observations	2,980	2,980	2,980	2,980	2,980	2,980	2,980	2,980	2,980	2,980
Number of municipalities	999	999	999	999	999	999	999	999	999	999
Sample Period	1988-1994	1988-1994	1988-1994	1988-1994	1988-1994	1988-1994	1988-1994	1988-1994	1988-1994	1988-1994
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes. Each cell represents a regression whose dependent variable is an indicator taking value one if the party indicated won the mayoral election. Party names for parties 1-26 are shown in Table A.7B. See Table A.3 for more table notes.

Table A.7B: Names of Political Parties (1988-1994)

Variable	Party Name
Party 1	ALIANZA DEMOCRATICA M-19
Party 2	ALIANZA NAL POPULAR ANAPO
Party 3	EDUCACION TRABAJO Y CAMBIO SOCIAL
Party 4	MOVIMIENTO ALIANZA SOCIAL INDIGENA ASI
Party 5	MOVIMIENTO CIVICO INDEPENDIENTE
Party 6	MOVIMIENTO CIVICO POR FUSAGASUGA
Party 7	MOVIMIENTO CONSERVATISMO INDEPENDIENTE
Party 8	MOVIMIENTO DE SALVACION NACIONAL
Party 9	MOVIMIENTO LIBERALINDDE RESLIDER
Party 10	MOVIMIENTO NACIONAL CONSERVADOR
Party 11	MOVIMIENTO NUEVA COLOMBIA
Party 12	MOVIMIENTO NUEVO LIBERALISMO
Party 13	MOVIMIENTO POR EL PUEBLO
Party 14	MOVIMIENTO UNIDOS POR COLOMBIA
Party 15	MOVIMIENTO UNION CRISTIANA UC
Party 16	MOVIMIENTO FUERZA PROGRESISTA
Party 17	MOVIMIENTO NACIONAL PROGRESISTA
Party 18	MOVIMIENTO QUINTIN LAME
Party 19	PARTIDO COMUNISTA
Party 20	PARTIDO CONSERVADOR COLOMBIANO
Party 21	PARTIDO LIBERAL COLOMBIANO
Party 22	RESTAURACION MORAL DE SAHAGUN MIPOL
Party 23	TODOS POR PASTO
Party 24	UNIDOS POR SOGAMOSO
Party 25	UNION PATRIOTICA UP
Party 26	COALICION

Notes. This table lists the names of political parties that won mayoral elections in either the 1988, 1992 or 1994 election. The variables refer to the dependent variables in Table A.7A.

Table A.7C: Robustness to Excluding Municipalities Showing Pre-trends in Political Representation

	(1)	(2)	(3)	(4)	(5)	(6)
	Pro-para mayor			Pro-para council share		
Oil dependence x log oil price	0.080***	0.081***	0.078***	0.050***	0.044**	0.035**
	[0.022]	[0.022]	[0.022]	[0.018]	[0.018]	[0.016]
Observations	3,531	3,531	3,531	2,861	2,861	2,861
Number of municipalities	924	924	924	963	963	963
Election years	1997-2007	1997-2007	1997-2007	1997-2003	1997-2003	1997-2003
Log population	-	Y	Y	-	Y	Y
Elevation x log oil price	-	-	Y	-	-	Y

Notes: All regressions drop the 36 municpalities where party 4 (Movimiento Alianza Social Indigena) and party 16 (Movimiento Fuerza Progresista) won a mayoral race in the 1988, 1992 or 1994. See Table A.3 for other table notes.

Table A.8: Alternate Measure of Pro-paramilitary Parties

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	3rd Party Measure-Approach 1				*3rd Party Measure-Approach 2*			
	Pro-para mayor	Pro-para vote share in mayoral elections	Pro-para council seat share	Pro-para vote share in council elections	Pro-para mayor	Pro-para vote share in mayoral elections	Pro-para council seat share	Pro-para vote share in council elections
Oil dependence x log oil price	0.065***	0.045***	0.050**	0.033**	0.071***	0.050***	0.047**	0.031**
	[0.024]	[0.016]	[0.020]	[0.014]	[0.022]	[0.014]	[0.020]	[0.013]
Observations	3,659	3,659	2,964	2,961	3,659	3,659	2,964	2,961
Number of municipalities	959	959	998	998	959	959	998	998
Sample period	1997-2007	1997-2007	1997-2003	1997-2003	1997-2007	1997-2007	1997-2003	1997-2003
Controls	Y	Y	Y	Y	Y	Y	Y	Y

Notes: This table examines measures of pro-paramilitary legislators using the approach of Acemoglu et. al (2013). Columns 1-4 define pro-paramilitary parties as third parties (besides the traditional center-right, center-left, and extreme left parties). Columns 5-8 define pro-paramilitary as third parties (besides the traditional center-right, center-left, extreme left, as well as idigenous/Afro-Colombian parties). See Table A.3 for other table notes.

Table A.9: Controlling for Linear Trends by Oil-Producing Municipality

	(1) Pro-para mayor	(2) Pro-para council share	(3) Margin of victory	(4) Total candidates	(5) Any paramilitary activity	(6) Pro-para mayor	(7) Pro-para council share	(8) Margin of victory	(9) Total candidates	(10) Any paramilitary activity
Oil dependence x log oil price	0.063***	0.028*	0.025**	-0.241**	0.029*	0.063***	0.026*	0.025**	-0.252**	0.028*
	[0.022]	[0.016]	[0.010]	[0.108]	[0.016]	[0.022]	[0.015]	[0.010]	[0.104]	[0.015]
Observations	3,659	2,964	3,597	3,710	9,063	3,659	2,964	3,597	3,710	9,063
Number of municipalities	959	998	957	967	1,007	959	998	957	967	1,007
Sample Years	1997-2007	1997-2003	1997-2007	1997-2007	1997-2005	1997-2007	1997-2003	1997-2007	1997-2007	1997-2005
Trends by oil producer	-	-	-	-	-	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes: Trends by oil producer include an interaction of year with an indicator of whether the municipality produced oil in 1993. See Table A.3 for additional notes.

Table A.10: Controlling for Initial Armed Group Presence

	(1) Pro-para mayor	(2) Pro-para council share	(3) Margin of victory	(4) Total candidates	(5) Any paramilitary activity	(6) Pro-para mayor	(7) Pro-para council share	(8) Margin of victory	(9) Total candidates	(10) Any paramilitary activity
Oil dependence x log oil price	0.080***	0.038**	0.025***	-0.187*	0.028**	0.080***	0.037**	0.025***	-0.189*	0.028**
	[0.022]	[0.016]	[0.009]	[0.097]	[0.014]	[0.022]	[0.016]	[0.009]	[0.099]	[0.013]
Observations	3,651	2,958	3,590	3,702	9,063	3,651	2,958	3,590	3,702	9,063
Number of municipalities	957	996	955	965	1,007	957	996	955	965	1,007
Sample Years	1997-2007	1997-2003	1997-2007	1997-2007	1997-2005	1997-2007	1997-2003	1997-2007	1997-2007	1997-2005
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Para presence 88-92 x log oil price	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Guerrilla presence 88-92 x log oil price	-	-	-	-	-	Y	Y	Y	Y	Y

Notes: Para presence 88-92 is an indicator of whether there was any paramilitary activity in the municipality in any of the years between 1988-1992. Guerrilla presence 88-92 is an indicator of whether there was any guerrilla activity in the municipality in any of the years between 1988-1992. See Table A.3 for additional notes.

Table A.11: Controlling for Linear Trends by Department

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Pro-para mayor	Pro-para council share	Margin of victory	Total candidates	Non pro-para candidates	Any para-military activity	Pro-para mayor	Pro-para council share	Margin of victory	Total candidates	Non pro-para candidates	Any para-military activity
Oil dependence x log oil price	0.076***	0.036***	0.022**	-0.116	-0.154*	0.022	0.075***	0.031**	0.021*	-0.232**	-0.192*	0.021
	[0.021]	[0.013]	[0.011]	[0.115]	[0.090]	[0.014]	[0.021]	[0.013]	[0.011]	[0.112]	[0.100]	[0.014]
Observations	3,659	2,964	3,597	3,710	3,703	9,063	3,659	2,964	3,597	3,710	3,703	9,063
Number of municipalities	959	998	957	967	965	1,007	959	998	957	967	965	1,007
Sample Years	1997-2007	1997-2003	1997-2007	1997-2007	1997-2007	1997-2005	1997-2007	1997-2003	1997-2007	1997-2007	1997-2007	1997-2005
Controls	-	-	-	-	-	Y	Y	Y	Y	Y	Y	Y
Department Trends	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes: Department trends include an interaction of year with an indicator for each of 33 Colombian departments. See Table A.3 for additional notes.

Table A.12: Robustness to Additional Covariates

	(1) Pro-para mayor	(2) Vote share of pro-para parties	(3) Margin of victory	(4) Total candidates	(5) Effective number of candidates	Non pro-para candidates	(6) Pro-para council share	(7) Log regalias revenue	(8) Log total revenue	(9) Any para-military activity	(10) Any para-military attack	(11) Number para-military attacks
Panel A: Baseline Price and Trend Controls for Covariates												
Oil dependence x log oil price	0.085***	0.044***	0.027***	-0.191**	-0.168*	-0.109**	0.030**	0.133**	0.072**	0.022*	0.030*	0.076*
	[0.023]	[0.010]	[0.010]	[0.090]	[0.088]	[0.044]	[0.014]	[0.058]	[0.031]	[0.012]	[0.017]	[0.044]
Observations	3,204	3,219	3,154	3,240	3,235	3,219	2,595	2,977	7,257	7,893	7,893	7,893
Number of municipalities	838	838	838	843	842	838	872	589	877	877	877	877
Panel B: Additional Controls for Pre-period Armed Group Presence												
Oil dependence x log oil price	0.084***	0.044***	0.028***	-0.203**	-0.171*	-0.112**	0.029**	0.140**	0.073**	0.025*	0.031*	0.079*
	[0.023]	[0.010]	[0.009]	[0.089]	[0.089]	[0.044]	[0.013]	[0.057]	[0.032]	[0.013]	[0.017]	[0.044]
Observations	3,204	3,219	3,154	3,240	3,235	3,219	2,595	2,977	7,257	7,893	7,893	7,893
Number of municipalities	838	838	838	843	842	838	872	589	877	877	877	877
Panel C: Additional Controls for Land Gini												
Oil dependence x log oil price	0.079***	0.042***	0.031***	-0.253***	-0.194**	-0.113**	0.031**	0.113**	0.070**	0.019	0.027	0.065
	[0.022]	[0.010]	[0.010]	[0.095]	[0.092]	[0.047]	[0.012]	[0.055]	[0.033]	[0.012]	[0.017]	[0.046]
Observations	2,731	2,745	2,692	2,764	2,759	2,745	2,216	2,489	6,168	6,750	6,750	6,750
Number of municipalities	712	712	712	717	716	712	745	489	750	750	750	750
Panel D: Additional Controls for Land Gini and Missing Land Gini Indicator												
Oil dependence x log oil price	0.090***	0.048***	0.026***	-0.222**	-0.186**	-0.104**	0.036***	0.146**	0.070**	0.021	0.027	0.074*
	[0.024]	[0.011]	[0.009]	[0.092]	[0.089]	[0.043]	[0.013]	[0.057]	[0.032]	[0.013]	[0.017]	[0.044]
Observations	3,204	3,219	3,154	3,240	3,235	3,219	2,595	2,977	7,257	7,893	7,893	7,893
Number of municipalities	838	838	838	843	842	838	872	589	877	877	877	877
Sample period	97-2007	97-2007	97-2007	97-2007	97-2007	97-2007	97-2003	97-2005	97-2005	97-2005	97-2005	97-2005

Notes: All specifications control for log population and elevation x log oil price. Panel A uses the predicted value approach to control for oil price interactions of all other covariates in Table 1 (except the land gini), and linear trend interactions with all cross-sectional covariates in Table 1 (except the land gini) as well as the linear trend interactions with the 1993 oil producer indicator. Panel B additionally controls for the interactions of para presence 88-92 x log oil price and guerrilla presence 88-92 x log oil price. Panel C further controls for land gini x oil price price and land gini x year, without accounting for missingness in the gini variable. Panel D additionally controls for an indicator taking value one if the land gini variable is missing and its interactions with log oil price and year. See Table A.3 for additional notes.

Table A.13: Alternate Measure of Oil Dependence

	(1) Pro-para council share	(2) Pro-para mayor	(3) Vote share pro-para parties	(4) Margin of victory	(5) Total candidates	(6) Non pro-para candidates	(7) Effective number of candidates	(8) Log regalias revenue	(9) Log total revenue	(10) Any para-military activity	(11) Any para-military attack	(12) Number para-military attacks
Oil dependence x log oil price	0.039***	0.080***	0.047***	0.014	-0.132	-0.190***	-0.040	0.173***	0.058**	0.017*	0.027*	0.060
	[0.015]	[0.020]	[0.011]	[0.009]	[0.105]	[0.065]	[0.044]	[0.060]	[0.027]	[0.009]	[0.014]	[0.037]
Observations	2,964	3,659	3,678	3,597	3,71	3,703	3,678	3,427	8,234	9,063	9,198	9,198
Number of municipalities	998	959	960	957	967	965	960	683	1,007	1,007	1,022	1,022
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sample period	1997-2003	1997-2007								1997-2005		

Notes: Oil dependence 88-96 is the average value of oil produced in each municipality in per capita terms, averaged over each of the years between 1988 and 1996. See Table A.3 for additional notes.