Oil and Conflict: What Does the Cross-Country Evidence Really Show?

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Online Appendix

In this appendix, we provide (a) a detailed description of the data sources, (b) additional robustness checks of our empirical results, and (c) some further remarks about the literature.

Data Sources

Oil Exploration, Discoveries, and Reserves Data The ASPO dataset provides detailed information on both oil discoveries and production for 62 top oil-producing countries over the period 1930-2003, and hence oil reserves at any given year can be computed based on past and new discoveries and depletion. Such backdating reserves revisions remove any suspicious drastic changes in reserves without any significant discovery being identified and any implausibly unchanged reserves according to the BP and the OGJ data. The BP and the OGJ data provide self-reported oil reserves data for a larger sample, which include countries with little or no oil reserves. We use these data to identify countries with no oil in the main sample we use in our panel regressions. There are 51 such no-oil countries. In some specifications, we also use these self-reported data to enlarge the sample size. There are 19 such countries.

Data on oil endowment are also obtained from the ASPO dataset. The amount is estimated by geologists, using statistical techniques involving size distributions and geological habitats. Knowledge about cumulative discovery and cumulative wildcats also contribute to the estimate. For details, see Tsui (2011).

Civil War, Coup Attempts, Irregular Leadership transitions, and Military Spending Data. Civil conflict data are taken from Gleditsch's revision of the Correlates of War dataset (Gleditsch-COW, version 1.52) and the UCDP/PRIO Armed Conflict Dataset (UCDP/PRIO, version 4-2009). The Gleditsch-COW dataset contains data on armed conflicts with over 1,000 battle deaths from 1816 to 2005. This civil war database is a revision of the Correlates of War (COW) project, which is based on a list of independent states receive formal recognition by the UK and France. The Gleditsch-COW revision of the COW data are based on a different list of

independent states, and according to this list some civil wars are reclassified as interstate wars and also some omitted civil wars are added. The UCDP/PRIO dataset contains data on both major armed conflicts (over 1,000 battle deaths per year) and minor ones (25-999 battle deaths per year) over the period 1946-2009. All country-year observations with a civil war incidence with at least 1,000 battle deaths per year (or 25 battle deaths in some specifications) are coded as ones, and other observations are coded as zeros. Following Miguel, Satyanath, and Sergenti (2004) and Ross (2006), we study the impact of oil wealth on major conflicts and all conflicts collectively. Also, we examine conflict onset in our main panel specification, where we restrict our attention to country-year observations in which there was no civil conflict during the previous year. To capture the oil discoveries in Africa since 2000 and to increase the number of observations, in the civil conflict specification where recent UCDP/PRIO data are available, we extend the oil reserves data using the BP and OGJ data. To ensure continuity in the data we link the two data sets by multiplying the 2004-2008 data by a proportionality factor to agree with the 2003 figures from the 1930-2003 dataset. Specifically we compute the annual rate of growth of oil figures based on the 2004-2008 dataset and apply it to 2003 oil figures from the 1930-2003 dataset. The changes this induces are relatively small. To further test the robustness of the results based on these two widely used civil war datasets, we also consider two additional civil war datasets complied by Fearon and Laitin (2003) and Sambanis (2004).

The Center for Systemic Peace (CSP) provides data on military coup attempts. This dataset contains information on all coups d'état occurring each year in countries with populations greater than 500,000 during the period 1946-2009. A coup d'état is defined as "a forceful seizure of executive authority and office by a dissident/opposition faction within the country's ruling or political elites that results in a substantial change in the executive leadership and the policies of the prior regime (although not necessarily in the nature of regime authority or mode of governance). Social revolutions, victories by oppositional forces in civil wars, and popular uprisings, while they may lead to substantial changes in central authority, are not considered coups d'état. Voluntary transfers of executive authority or transfers of office due to the death or incapacitance of a ruling executive are, likewise, not considered coups d'état. The forcible ouster of a regime accomplished by, or with the crucial support of, invading foreign forces is not here considered a coup d'état." The total number of coups, including both successful and unsuccessful ones, occurring for any country at each year is used as a dependent variable. As such, not all

coups result in irregular transfer of power, because not all of them are successful. To check the robustness of our results, we also use the newest and most comprehensive dataset on coups up to date (Powell and Thyne, 2011).

Another measure of violent challenges to the state is derived from the Archigos dataset of political leaders over the period 1875-2004. Following Jones and Olken (2009), we compute the percentage of leadership transitions over the following twenty years that are "irregular" — i.e. transitions that are unlawful and not according to the country's prevailing rules, provisions, conventions and norms.

Finally, the Stockholm International Peace Research Institute (SIPRI) provides data on the defense burden (i.e. military spending as a fraction of GDP) for the period since 1988. Where possible, the SIPRI data include all current and capital expenditure on: (a) the armed forces, including peacekeeping forces; (b) defense ministries and other government agencies engaged in defense projects; (c) paramilitary forces, when judged to be trained and equipped for military operations; and (d) military space activities. Such expenditures should include: (a) military and civil personnel, including retirement pensions of military personnel and social services for personnel; (b) operations and maintenance; (c) procurement; (d) military research and development; and (e) military aid (in the military expenditure of the donor country).

Other Variables. Other control variables include per capita income, economic growth, population, population density, democracy, mountainous, ethnic, religious, and language fractionalization and polarization, and a dummy for whether the country has a British legal origin. Income and population data are taken from Maddison's Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD, because it contains historical data that are needed for our analysis. The CIA World Factbook provides data on country area. The mountain data are obtained from Gerrard (2000). Legal origin data are available from the Easterly's Global Development Network Growth Database.

Democracy data are taken from the Polity IV dataset. To facilitate a consistent comparison with previous findings, we follow most of the literature to measure democracy using the polity index. In a recent article, Vreeland (2008) suggests that an x-polity index, constructed by including only the three components associated with the executive, but not the two associated

with political participation, is more appropriate in examining the effect of democracy on civil war. There are pros and cons of choosing between the polity and the x-polity index. Vreeland argues that the coding of the two components associated with political participation is contaminated with political violence, and it creates problems when using the polity index to test nonlinear hypotheses, although the polity index may work fine for linear hypotheses. The construction of the x-polity index, however, requires measures of individual components of the polity index. These components are missing when a country is in transition or interregnum. Using the x-polity index therefore requires throwing away these observations, which are observations especially prone to outbreaks of political violence. While using the x-polity index artificially creates a sample selection problem, and democracy is included in a linear fashion in our regressions only as a control variable, we report results using both measures of democracy.

Data on fractionalization are taken from Alesina et al. (2003). We obtain data on polarization from Montalvo and Reynal-Querol (2005), which argue that ethnic polarization (not fractionalization) is a significant explanatory variable for civil wars. Note that there is no time-series variation in the standard fractionalization data, and hence all the fractionalization variables are dropped out in the fixed-effects regressions. Campos, Saleh, and Kuzeyev (2011) provide a panel fractionalization dataset for 26 transition (formal centrally-planned) economies.

Variable List

Log (Oil Wealth per capita) represents (the log of) oil reserves per capita multiplied by the price of crude oil expressed on 1990 USD. For countries with no oil reserves, we impute the zeroes by dividing the smallest observed positive value of the variable oil reserves per capita × crude oil price by 1000. While the smallest value may differ from ASPO dataset to public oil datasets (OGJ, BP), we use the same value for the imputation across all.

Log (Value of Oil Discoveries per capita) represents (the log of) oil discovery per capita multiplied by the price of crude oil expressed on 1990 USD. For countries with no oil discovery, we impute the zeroes by dividing the smallest observed positive value of the variable oil discovery per capita × crude oil price by 1000.

Log (Oil Rents per capita) represents (the log of) oil production per capita multiplied by the price of crude oil expressed on 1990 USD. For countries with no oil production, we impute the zeroes

by dividing the smallest observed positive value of the variable oil production per capita × crude oil price by 1000.

Wildcat measures the number of wildcats drilled in a particular year.

Intense War Onset is a dummy variable equal to 1 in the first year of war and zero in years of peace (thus excluding country-year observations of war when there was civil war in the previous year) using the Gleditsch-COW dataset.

All Conflict Onset is a dummy variable equal to 1 in the first year of war and zero in years of peace (thus excluding country-year observations of war when there was civil war in the previous year) using the UCDP/PRIO dataset, where civil conflict includes code 3, internal armed conflict occurs between the government of a state and one or internal opposition group(s) without the intervention of other states, and code 4, Internationalized internal armed conflict occurs between the government of a state and one or more internal opposition group(s) with intervention from other states (secondary parties) on one or both sides

Coup Attempts represent the number of coup attempts (both successful and unsuccessful) in a country-year.

Irregular Leadership Transition is computed as the percentage of leader transitions over the following twenty years that are "irregular" i.e. transitions that are unlawful and not according to the prevailing rules, provisions, conventions and norms of the country.

Log (Defense Burden) is defined as (the log of) military expenditures share of GDP. A few observations are zero. For these observations we used the same imputation procedure used in calculation (the log of) oil variables.

Log (GDP per capita) is defined as (the log of) GDP per capita in a country-year expressed in 1990 USD.

Economic Growth Rate is the annual growth rate of GDP per capita in a country-year.

Log (Population) is (the log of) population (expressed in thousands) in a country-year.

Log (Population Density) is (the log of) population per square kilometer.

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Democracy is calculated from the polity2 variable normalized to take values between 0 and 1, with 1 being most democratic.

Log (Mountainous) is (the log of) the mountain area percentage in a country.

Ethnic Fractionalization is computed as one minus the Herfindahl index of ethnic group shares. Religious and language fractionalizations are computed in a similar way.

British Legal Origin is a dummy variable indicating whether a country's legal system is based on British common law.

Country and Region Lists. The 103 countries from the oil-wealth specification are: Algeria, Angola, Argentina, Australia, Austria, Azerbaijan, Bahrain, Belgium, Bolivia, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Central Africa Republic, Chad, Chile, China, Colombia, Comoros, Congo, Costa Rica, Denmark, Djibouti, Dominican Republic, Ecuador, Egypt, Finland, France, Gabon, Gambia, Germany, Guinea, Guinea-Bissau, Honduras, Hungry, India, Indonesia, Iran, Iraq, Ireland, Italy, Jamaica, Kenya, Korea, Republic of; Kuwait; Laos, Lebanon, Lesotho, Liberia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Mozambique, Namibia, Nepal, Netherlands, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Portugal, Qatar, Romania, Russian Federation, Saudi Arabia, Senegal, Sierra Leone, Singapore, Somalia, Sri Lanka, Sudan, Swaziland, Switzerland, Syria, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela, Vietnam, Zambia, Zimbabwe.

The 62 countries from the oil-discovery specification are: Albania, Algeria, Angola, Argentina, Australia, Austria, Azerbaijan, Bahrain, Bolivia, Brazil, Cameroon, Canada, Chad, Chile, China, Colombia, Congo, Croatia, Denmark, Ecuador, Egypt, Former Soviet Union, Former Yugoslavia, France, Gabon, Germany, Hungry, India, Indonesia, Iran, Iraq, Italy, Kazakhstan, Kuwait, Libya, Malaysia, Mexico, Netherlands, Nigeria, Norway, Oman, Pakistan, Peru, Qatar, Romania, Russia, Saudi, Arabia, Sudan, Syria, Thailand, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Ukraine, United Arab Emirates, United Kingdom, United States, Uzbekistan, Venezuela, Vietnam, Yemen.

Finally, the 18 regions, according to the UN classification, are South America, Western Africa, Central America, Eastern Africa, Northern Africa, Middle Africa, Southern Africa, Northern America, Caribbean, Eastern Asia, Southern Asia, South-Eastern Asia, Southern Europe, Australia and New-Zeeland, Western Asia, Eastern Europe, Northern Europe and Western Europe. The 6 larger regions are Africa, Northern America, Latin America and the Caribbean, Asia, Europe, Oceania.

The following table summarizes additional descriptive statistics reported in Table 1.

TABLE A.1—DESCRIPTIVE STATISTICS OF ADDITIONAL COUNTRY CHARACTERISTICS

`	All	No Oil Wealth	Small Oil Wealth	Large Oil Wealth	F-test
	(1)	(2)	(3)	(4)	(5)
Log (mountainous)	-0.278	-0.914	1.541	-0.850	3.57**
	(5.023)	(5.256)	(3.441)	(5.434)	
Ethnic fractionalization	0.478	0.510	0.369	0.523	3.05*
	(0.267)	(0.267)	(0.262)	(0.240)	
Religious fractionalization	0.421	0.429	0.405	0.424	0.09
	(0.244)	(0.248)	(0.235)	(0.245)	
Language fractionalization	0.405	0.463	0.309	0.389	2.39*
	(0.299)	(0.313)	(0.282)	(0.260)	
British legal origin	0.320	0.373	0.269	0.269	0.63
	(0.467)	(0.484)	(0.444)	(0.444)	
Number of Countries	103	51	26	26	

Notes: Summary statistics are reported for the sample of countries used in regressions reported in Table 2 columns 1-4. Countries are classified into three groups, according to their oil wealth. The cutoff that determines whether an oil country has large or small oil wealth is the median of average oil wealth per capita over the sample period (i.e., the log of oil wealth is 0.01236). Sample mean and standard deviation (in parentheses) are reported for each variable. The last column reports the F-statistics under the hypothesis that the group means are identical. The wildcat variable is divided by 100 to improve readability. The actual number of observations varies function of data availability. * significant at 10%; ** significant at 5%; *** significant at 1%.

More Robustness Checks

Region Fixed effects Regressions

In Table 2 from the main text, when we use only 6 larger regions, the estimated oil coefficient is 0.062 (standard error = 0.032), which is smaller in magnitude and is only marginally significant at the 10% level. Adding year fixed effects the estimate becomes 0.060, and it remains only marginally significant (standard error = 0.031). We also estimate that in the absence of fixed effects, adding governance (1996 rule of law, in particular) as a control reduces the size of the oil coefficient from 0.079 (standard error = 0.033) to 0.059 (standard error = 0.032), which is only marginally significant at the 10% level. The governance coefficient is negative (-0.013) and significant at the 1% level (standard error = 0.004).

Oil-Democracy Interaction

In Table 3, introducing an oil-democracy interaction term and using the whole sample, the estimated main and interaction coefficients using Gleditsch-COW data and a fixed-effects model are respectively 0.023 (standard error = 0.091) and -0.180 (standard error = 7.479), and thus neither of them is significant.

Additional Figures

The following figures replicate Figures 1 and 2 using the UCDP/PRIO dataset.
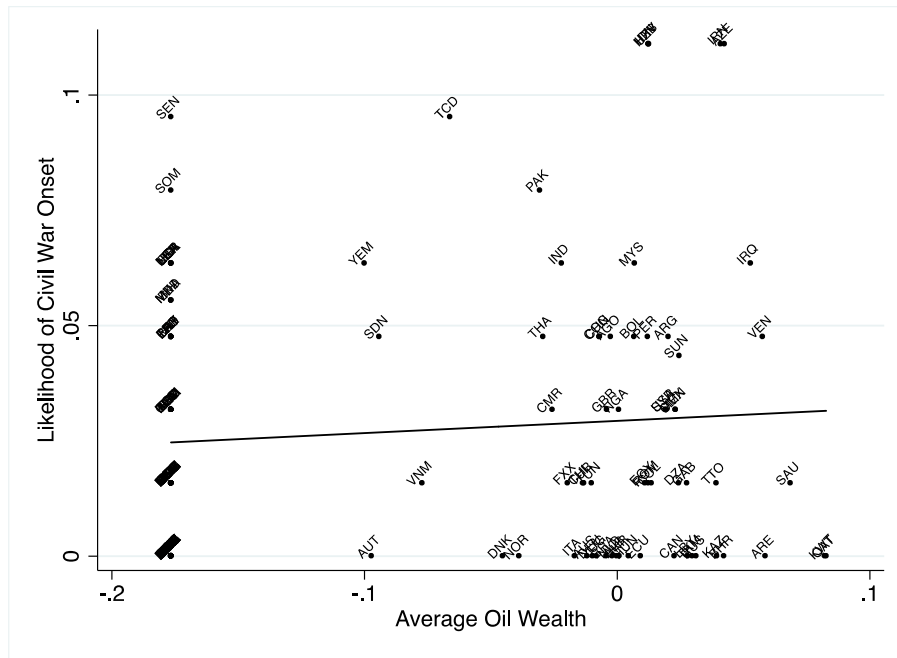
FIGURE A.1. OIL WEALTH AND CONFLICT ONSET: CROSS-SECTIONAL RELATIONSHIP OVER 1946-2008

Notes: On the horizontal axis, Average Oil Wealth represents the mean of log oil wealth per capita over the period 1946-2008 for the sample of countries used in the regressions reported in Table 2 column 9 (the actual number of observations used is larger than 5021; the sample size drops in the regressions due to data availability on control variables). On the vertical axis, The Likelihood of Conflict Onset is calculated as the annual frequency of war onset over the same sample of countries and years using the UCDP/PRIO data. The slope of the regression line is 0.027 (standard error = 0.028).
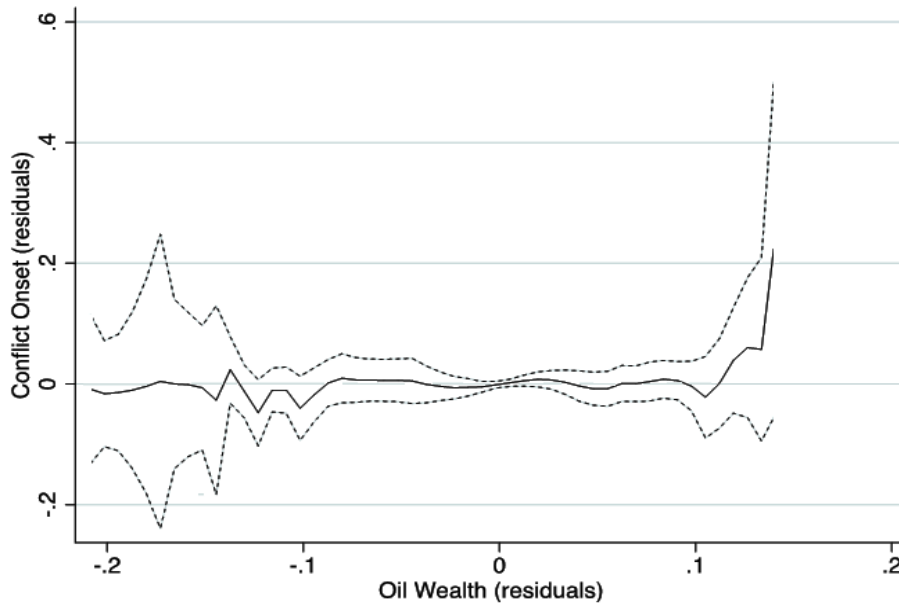
FIGURE A.2. OIL WEALTH AND CONFLICT ONSET: NONPARAMETRIC REGRESSION, CONDITIONAL ON COUNTRY FIXED EFFECTS

Notes: The figure is plotted using a nonparametric local regression method with an Epanechnikov kernel. In particular, we first subtract the country-specific mean from each observation and then plot a graph of the residuals with local first degree polynomial smoothing (bandwidth 0.03). Oil Wealth stands for residual variation in log oil wealth per capita after subtracting country specific means. Conflict Onset stands for residual variation on war onset using the UCDP/PRIO data after subtracting country specific means. The sample is identical with the sample used for regressions reported in Table 2 column 9.

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Additional Tables

The following tables summarize other robustness checks.

TABLE A.2—FEARON AND LAITIN'S (2003) ANALYSES OF DETERMINANTS OF CIVIL WAR ONSET

	Logit	OLS	OLS	FE-OLS
	(1)	(2)	(3)	(4)
Oil exporter	0.855***	0.020***	0.020***	0.009
	(0.282)	(0.006)	(0.006)	(0.011)
Prior war	-0.936***	-0.020***	-0.017***	-0.072***
	(0.314)	(0.005)	(0.005)	(0.007)
Per capita income	-0.685***	-0.012***	-0.012***	-0.011**
	(0.123)	(0.002)	(0.002)	(0.005)
log(population)	0.253***	0.005***	0.007***	0.020***
	(0.075)	(0.001)	(0.001)	(0.007)
log(mountainous)	0.201**	0.002*		
	(0.084)	(0.001)		
Noncontiguous state	0.404	0.013**		
	(0.280)	(0.005)		
New State	1.719***	0.064***	0.065***	0.063***
	(0.343)	(0.011)	(0.011)	(0.012)
Instability	0.627***	0.013***	0.013**	0.015***
	(0.238)	(0.005)	(0.005)	(0.005)
Democracy	0.0181	0.000	0.000*	0.001
	(0.017)	(0.000)	(0.000)	(0.000)
Ethnic fractionalization	0.285	0.005		
	(0.370)	(0.007)		
Religious fractionalization	-0.129	0.002		
	(0.511)	(0.008)		
R^2	0.103	0.020	0.018	0.056
Observations	6,327	6,327	6,327	6,327

Notes: This table replicates and extends the results reported in Fearon and Laitin's (2003). Column 1 reports the results using logit estimation. Columns 2 to 4 report the results using linear model. The specification in column 4 also controls for country fixed effects. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.3—OIL WEALTH AND CIVIL WAR ONSET: ALTERNATIVE MEASURES OF OIL WEALTH

	Probit (1)	Pooled OLS (2)	Pooled OLS with Region FE (3)	Fixed Effects OLS (4)	Fixed Effects 2SLS (5)	Fixed Effects 2SLS (6)
	Panel A: Log (oil wealth per capita + 1)					
Log (oil wealth per capita + 1)	0.224***	0.488**	0.320	0.236	-0.464	0.070
	(0.091)	(0.196)	(0.195)	(0.229)	(0.526)	(0.394)
First stage F-test					12.04***	14.41***
Obs. (countries)	5011 (103)	5011 (103)	5011 (103)	5011 (103)	4042 (103)	5011 (103)
	Panel B: Level of oil wealth per capita					
Oil wealth per capita	-0.005	0.005	-0.014	-0.008	-0.024	0.045
	(0.015)	(0.010)	(0.016)	(0.011)	(0.019)	(0.036)
First-stage F-test					8.57***	4.98**
Obs. (countries)	5011 (103)	5011 (103)	5011 (103)	5011 (103)	4042 (103)	5011 (103)
	Panel C: Log (lagged oil wealth per capita)					
Log (lagged oil wealth per capita)	0.032*	0.065**	0.018	-0.003	-0.117	-0.003
	(0.019)	(0.032)	(0.034)	(0.061)	(0.220)	(0.061)
First stage F-test					11.46***	2.58×10⁴***
Obs. (countries)	4998 (103)	4998 (103)	4998 (103)	4998 (103)	3981 (102)	4998 (103)
	Panel D: Log (oil reserves)					
Log (oil reserves)	0.039**	0.077**	0.028	0.024	-0.210	
	(0.019)	(0.033)	(0.034)	(0.054)	(0.235)	
First stage F-test					6.82**	
Obs. (countries)	5011 (103)	5011 (103)	5011 (103)	5011 (103)	4042 (103)	
	Panel E: Using All Countries from ASPO					
Log (oil wealth per capita)	0.038**	0.075**	0.027	0.037	-0.231	0.040
	(0.019)	(0.032)	(0.034)	(0.049)	(0.238)	(0.049)
First stage F-test					11.78***	3.15×10⁴***
Obs. (countries)	5011 (103)	5011 (103)	5011 (103)	5601 (121)	4404 (120)	5601 (121)
	Panel F: Sample Using Both ASPO and Public Data					
Log (oil wealth per capita)	0.013	0.026	0.001	0.003		0.004
	(0.011)	(0.019)	(0.021)	(0.033)		(0.033)
First stage F-test						5.67×10⁴***
Obs. (countries)	5785 (125)	5785 (125)	5785 (125)	6498 (150)		6498 (150)

Notes: To improve coefficients readability in Panel B oil reserves is expressed as hundred thousand barrels per person. All other coefficients (and standard errors) are multiplied by 100 to improve readability. The dependent variable is war onset defined according to Collier and Hoeffler's (2004) criterion, using the Gleditsch-COW dataset. In Panel B column 5, we use the value of oil reserves reported in the public data as an instrument. In Panel B column 6, we use the out-of-region natural disaster, reserves per capita, and their product as instruments. In Panel C column 5, we use the log of value of lagged oil reserves per capita reported in the public data as an instrument. In Panel C column 6, we use the product of log (lagged out-of-region natural disaster), log (lagged reserves per capita), and their product as instruments. In Panel D column 5, we use the log of oil reserves reported in the public data as an instrument. In Panel E column 5, we use the value of oil reserves reported in the public data as an instrument. In Panel E column 6, we use log (out-of-region natural disaster), log (oil reserves per capita), and their product as instruments. In Panel F column 6, we use log (out-of-region natural disaster), log (reserves per capita), and their product as instruments. All t-statistics of instruments used for the first stage regressions are significant at conventional (5% or 1%) significance levels with one exception (the interaction term in the first stage of the regression in Panel A column 6 is significant only at 10%). Hansen J test of overidentification fails to reject the null that instruments are valid, i.e. not correlated with the error term at conventional significance levels in all reported regressions. Column 1 reports the marginal effect from a probit regression. Column 3 controls for 18 region fixed effects according to the UN classification. They are: South America, Western Africa, Central America, Eastern Africa, Northern Africa, Middle Africa, Southern Africa, Northern America, Caribbean, Eastern Asia, Southern Asia, South-Eastern Asia, Southern Europe, Australia and New-Zealand, Western Asia, Eastern Europe, Northern Europe and Western Europe. All regressions control for log (GDP per capita), economic growth rate, log (population), and democracy. In addition, columns 1-3 also control for log (mountainous), log (population density), ethnic fractionalization, religious fractionalization, language fractionalization, and legal British origin. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.4—OIL WEALTH AND CIVIL WAR ONSET: ALTERNATIVE MEASURES OF CONTROL VARIABLES

	Pooled OLS (1)	Pooled OLS with Region FE (2)	Fixed Effects OLS (3)	Fixed Effects 2SLS (4)	Fixed Effects 2SLS (5)
Panel A: Using Ethnic/Religious Polarization to Measure Ethnic/Religious Diversity					
Log (oil wealth per capita)	0.063**	0.039	0.049	-0.194	0.048
	(0.030)	(0.031)	(0.050)	(0.234)	(0.050)
First stage F-test				11.42***	3.05×10^{4}***
Obs. (countries)	4614 (90)	4614 (90)	4614 (90)	3720 (90)	4614 (90)
Panel B: Using Time-Varying Measure of Ethnic Fractionalization					
Log (oil wealth per capita)			-0.217		-0.118
			(0.206)		(0.172)
First stage F-test					9.31×10^{4}***
Obs. (countries)			203 (16)		203 (16)
Panel C: Using X-Polity Index to Measure Democracy					
Log (oil wealth per capita)	0.050	0.015	0.019	-0.168	0.022
	(0.031)	(0.033)	(0.049)	(0.214)	(0.049)
First stage F-test				11.43***	2.84×10^{4}***
Obs. (countries)	4896 (103)	4896 (103)	4896 (103)	3961 (103)	4896 (103)
Panel D: Using 1 Year Lagged Controls					
Log (oil wealth per capita)	0.063**	0.009	-0.017	-0.183	-0.021
	(0.031)	(0.033)	(0.054)	(0.245)	(0.053)
First stage F-test				11.48***	2.88×10^{4}***
Obs. (countries)	4912 (103)	4912 (103)	4912 (103)	4001 (103)	4912 (103)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. In The dependent variable is war onset defined according to Collier and Hoeffler's (2004) criterion, using the Gleditsch-COW dataset. Ethnic polarization data used in Panel A are obtained from Montalvo and Reynal-Querol (2005). Ethnic fractionalization data used in Panel B are obtained from Campos, et al. (2011). In Panel C, the definition of the x-polity index is adapted from Vreeland (2008). In Panel D, all time-varying control variables are measured at year t-1. Column 2 controls for 18 region fixed effects according to the UN classification. They are: South America, Western Africa, Central America, Eastern Africa, Northern Africa, Middle Africa, Southern Africa, Northern America, Caribbean, Eastern Asia, Southern Asia, South-Eastern Asia, Southern Europe, Australia and New-Zealand, Western Asia, Eastern Europe, Northern Europe and Western Europe. In column 4, we use the value of oil reserves reported in the public data as an instrument. For Panel B, columns 1, 2, and 4 are missing due to small sample size. In column 5, we use log (out-of-region natural disaster) log (reserves per capita), and their product as instrument. All t-statistics of instruments used for the first stage regressions are significant at the 1% significance level. Hansen J test of overidentification fails to reject the null that instruments are valid, i.e. not correlated with the error term at conventional significance levels in all reported regressions. All regressions control for log (GDP per capita), economic growth rate, log (population), and democracy. In addition, columns 1-2 also control for log (mountainous), log (population density), ethnic fractionalization, religious fractionalization, language fractionalization, and legal British origin. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.5—OIL WEALTH AND POLITICAL VIOLENCE: ALTERNATIVE MEASURES OF CIVIL WAR AND COUP ATTEMPTS

	Pooled OLS (1)	Pooled OLS with Region FE (2)	Fixed Effects OLS (3)	Fixed Effects 2SLS (4)	Fixed Effects 2SLS (5)
	Panel A: Using Fearon and Laitin's Civil War Data				
Log (oil wealth per capita)	0.039	-0.019	-0.004	-0.282	-0.004
	(0.031)	(0.033)	(0.073)	(0.251)	(0.072)
				10.54^{***}	$1.52\times10^{4***}$
Obs. (countries)	4415 (103)	4415 (103)	4415 (103)	3924 (101)	4415 (103)
	Panel B: Using Sambanis's Civil War Data				
Log (oil wealth per capita)	0.042	-0.008	0.017	-0.086	0.008
	(0.033)	(0.033)	(0.070)	(0.357)	(0.068)
				9.66^{***}	$1.64\times10^{4***}$
Obs. (countries)	4367 (103)	4367 (103)	4367 (103)	3831 (103)	4367 (103)
	Panel C: Using Powell and Thyne's Coup Data				
Log (oil wealth per capita)	0.127	0.115	-0.376	-2.376^{**}	-0.319
	(0.091)	(0.125)	(0.361)	(1.111)	(0.359)
First stage F-test				13.31^{***}	$1.82\times10^{4***}$
Obs. (countries)	4955 (103)	4955 (103)	4955 (103)	4557 (103)	4955 (103)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. For panels A and B, the dependent variable is war onset defined according to Collier and Hoeffler's (2004) criterion. In Panel A civil war data are taken from the updated version of the Fearon and Laitin (2003) dataset over the period 1945-2008. In Panel B civil war data are taken from the updated version of the Sambanis (2004) dataset over the period 1944-2003. In Panel C coup data are taken from Powell and Thyne (2011) over the period 1950-2008. Column 2 controls for 18 region fixed effects according to the UN classification. They are: South America, Western Africa, Central America, Eastern Africa, Northern Africa, Middle Africa, Southern Africa, Northern America, Caribbean, Eastern Asia, Southern Asia, South-Eastern Asia, Southern Europe, Australia and New-Zealand, Western Asia, Eastern Europe, Northern Europe and Western Europe. In column 4, we use the value of oil reserves reported in the public data as an instrument. In column 5, we use log (out-of-region natural disaster), log (reserves per capita), and their product as instruments. All t-statistics of instruments used for the first stage regressions are significant at the 1% significance level. Hansen J test of overidentification fails to reject the null that instruments are valid, i.e. not correlated with the error term at conventional significance levels in all reported regressions with the exception of Panel C column 5. All regressions control for log (GDP per capita), economic growth rate, log (population), and democracy. In addition, columns 1-2 also control for log (mountainous), log (population density), ethnic fractionalization, religious fractionalization, language fractionalization, and legal British origin. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.6—OIL WEALTH AND OTHER MEASURES OF POLITICAL VIOLENCE: ALTERNATIVE INSTRUMENT

	Coup Attempts	Irregular Transitions	Defense Burden
	Fixed Effects 2SLS	Fixed Effects 2SLS	Fixed Effects 2SLS
	(1)	(2)	(3)
Panel A: All Countries			
Log (oil wealth per capita)	-0.185	0.186	-0.217
	(0.259)	(0.275)	(15.734)
First stage F-test	$1.57 \times 10^{4***}$	$7.62 \times 10^{3***}$	$2.41 \times 10^{3***}$
Obs. (countries)	4868 (103)	3356 (98)	1395 (97)
Panel B: Democratic Countries Only			
Log (oil wealth per capita)	-0.088	0.192	-23.598
	(0.154)	(0.180)	(26.022)
First stage F-test	$2.65 \times 10^{4***}$	$1.14 \times 10^{4***}$	941.61^{***}
Obs. (countries)	2271 (83)	1429 (58)	860 (70)
Panel C: Nondemocratic Countries Only			
Log (oil wealth per capita)	-0.263	-0.191	34.648^{**}
	(0.512)	(0.518)	(14.378)
First stage F-test	$3.98 \times 10^{3***}$	$1.92 \times 10^{3***}$	937.27^{***}
Obs. (countries)	2597 (77)	1927 (77)	535 (58)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. All regressions control for log (GDP per capita), economic growth rate, log (population), and democracy. Panel B uses only data for democracies as defined by a polity score higher than 0.5 (out of maximum 1 possible where 1 means most democratic). Panel C uses only data for nondemocracies as defined by a polity score lower or equal to 0.5. The instruments are log (out-of-region natural disaster) and log (oil reserves per capita). When necessary, their product was added to improve identification. Specifically, the product of log (out-of-region natural disaster) and log (oil reserves per capita) was added as an additional instrument in columns 1 and 2. Most t-statistics of instruments used for the first stage regressions are significant at the 5% or 1% significance level (the only exception being disaster significant at the 10% in the first stage of regression reported in Panel C, column 2). Hansen J test of overidentification fails to reject the null that instruments are valid, i.e. not correlated with the error term at conventional significance levels in all reported regressions with the exception of Panel A, column 1. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.7—ARE SUCCESSFUL AND FAILED OIL EXPLORATION SIMILAR? LOGIT REGRESSION MODEL

	Logit
Log (oil wealth per capita$_{t-1}$)	0.162***
	(0.051)
Log (GDP per capita$_{t-1}$)	0.400
	(0.251)
Economic growth rate$_{t-1}$	0.007
	(0.009)
Log (population$_{t-1}$)	0.618***
	(0.113)
Log (population density$_{t-1}$)	-0.219***
	(0.078)
Democracy$_{t-1}$	-0.507
	(0.358)
Log (mountainous)	-0.003
	(0.036)
Ethnic fractionalization	0.645
	(0.662)
Religious fractionalization	-0.007
	(0.561)
Language fractionalization	-0.000
	(0.558)
British legal origin	-0.356
	(0.252)
Wildcat$_{t-1}$	0.001
	(0.008)
Chi-square test	287.92***
Observations	2427

Notes: Results are coefficients from a logit specification. The coefficients and standard error of the wildcat coefficient is multiplied by 100. Standard errors are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.8—OIL DISCOVERY AND CIVIL CONFLICT: LAGGED EFFECTS

	7-10 Years after Wildcat Drilling		
	Fixed Effects OLS (1)	Fixed Effects 2SLS (2)	Fixed Effects 2SLS (3)
	Panel A: All Countries		
Log (value of oil discoveries per capita)	0.139	0.109	0.089
	(0.109)	(0.106)	(0.122)
First stage F-test		$1.4\times10^{5***}$	$2.1\times10^{3***}$
Data source	COW	COW	COW
Obs. (countries)	2201 (62)	2201 (62)	1909 (50)
Log (value of oil discoveries per capita)	0.171	0.180	0.269
	(0.162)	(0.157)	(0.174)
First stage F-test		$8.3\times10^{4***}$	$3.4\times10^{3***}$
Data source	PRIO	PRIO	PRIO
Obs. (countries)	2149 (62)	2149 (62)	1906 (57)
	Panel B: Democratic Countries Only		
Log (value of oil discoveries per capita)	-0.064	-0.108	-0.183
	(0.108)	(0.114)	(0.161)
First stage F-test		$5.5\times10^{4***}$	$8.9\times10^{2***}$
Data source	COW	COW	COW
Obs. (countries)	1058 (38)	1055 (35)	930 (29)
Log (value of oil discoveries per capita)	0.294	0.296	0.388
	(0.212)	(0.212)	(0.236)
First stage F-test		$5.3\times10^{4***}$	$1.5\times10^{3***}$
Data source	PRIO	PRIO	PRIO
Obs. (countries)	1053 (38)	1051 (36)	943 (32)
	Panel C: Nondemocratic Countries Only		
Log (value of oil discoveries per capita)	0.287	0.274^{*}	0.292^{*}
	(0.172)	(0.162)	(0.169)
First stage F-test		$5.4\times10^{4***}$	$4.5\times10^{3***}$
Data source	COW	COW	COW
Obs. (countries)	1143 (50)	1142 (49)	978 (42)
Log (value of oil discoveries per capita)	-0.016	-0.002	0.105
	(0.242)	(0.228)	(0.236)
First stage F-test		$3.8\times10^{4***}$	$4.5\times10^{3***}$
Data source	PRIO	PRIO	PRIO
Obs. (countries)	1096 (46)	1096 (46)	962 (43)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. In all columns, the samples include all country-year observations with at least one wildcat drilling. In columns 1-3, the dependent variable is change in the civil conflict status from one year before discovery to the maximum value in year three to seven to ten after discovery. In column 2, we use log (out-of-region disaster), log (oil discoveries per capita) and their product as instruments. In column 3, we use unexpected discovery as an instrument. All t-statistics of instruments used for the first stage regressions are significant at the 5% or 1% significance level. Hansen J test of overidentification fails to reject the null that instruments are valid, i.e., not correlated with the error term at conventional significance levels in most regressions. All regressions control for log (lagged GDP per capita), lagged economic growth rate, log (lagged population), lagged democracy, log (lagged value of oil reserves), the number of wildcats, and decade fixed effects. The pooled OLS in column 1 also control for log (mountainous), log (population density), ethnic fractionalization, religious fractionalization, language fractionalization, and legal British origin. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.9—OIL DISCOVERY AND OTHER VIOLENT CHALLENGES TO THE STATE

	Coup Attempts									Irregular Leadership Transition		
	1 Year after Wildcat Drilling			3-6 Years after Wildcat Drilling			7-10 Years after Wildcat Drilling			1-20 Years after Wildcat Drilling		
	Fixed Effects OLS	Fixed Effects 2SLS	Fixed Effects 2SLS	Fixed Effects OLS	Fixed Effects 2SLS	Fixed Effects 2SLS	Fixed Effects OLS	Fixed Effects 2SLS	Fixed Effects 2SLS	Fixed Effects OLS	Fixed Effects 2SLS	Fixed Effects 2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Log (value of oil per capita)	0.215	0.216*	0.149	0.185	0.196	0.119	0.263	0.254	0.102	0.086	0.096	0.061
	(0.129)	(0.126)	(0.143)	(0.198)	(0.193)	(0.259)	(0.218)	(0.217)	(0.258)	(0.093)	(0.090)	(0.102)
First stage F-test		$9.8{\times}10^{4***}$	$3.8{\times}10^{3***}$		$9.6{\times}10^{4***}$	$3.7{\times}10^{3***}$		$8.3{\times}10^{4***}$	$3.4{\times}10^{3***}$		$1.1{\times}10^{5***}$	$1.8{\times}10^{3***}$
Obs. (countries)	2436 (62)	2436 (62)	2168 (57)	2370 (62)	2370 (62)	2107 (57)	2149 (62)	2149 (62)	1906 (57)	1550 (51)	1550 (51)	1340 (46)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. In all columns, the samples include all country-year observations with at least one wildcat drilling. In columns 1-3, the dependent variables are change in coup attempts one year before and one year after wildcat drilling. In columns 4-6 (7-10), the dependent variables are change in coup attempts from one year before discovery to the maximum value in year three to six (seven to ten) after wildcat drilling. In columns 10-12, the dependent variables are the fraction of irregular leadership transitions over the following 20 years after wildcat drilling. In columns 2, 5, 8, and 11, we use log (out-of-region disaster), log (oil discoveries per capita) and their product as instruments. In columns 3, 6, 9, and 12, we use unexpected discovery as an instrument. All t-statistics of instruments used for the first stage regressions are significant at the 5% or 1% significance level. Hansen J test of overidentification fails to reject the null that instruments are valid, i.e. not correlated with the error term at conventional significance levels in all reported regressions. All regressions control for log (lagged GDP per capita), lagged economic growth rate, log (lagged population), lagged democracy, log (lagged value of oil reserves), the number of wildcats, and decade fixed effects. The pooled OLS in column 1 also control for log (mountainous), log (population density), ethnic fractionalization, religious fractionalization, language fractionalization, and legal British origin. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.10—OIL DISCOVERY AND POLITICAL VIOLENCE: ALTERNATIVE SPECIFICATIONS OF LAGGED EFFECTS

	All Countries				Democratic Countries Only	Nondemocratic Countries Only
	Intense Civil War	All Civil Conflict	Coup Attempts		Defense Burden	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Effect 2 Years after Wildcat Drilling						
Log (value of oil discoveries per capita)	0.061	0.012	0.234	0.259	-0.292	1.118[*]
	(0.065)	(0.101)	(0.163)	(0.283)	(0.298)	(0.572)
Obs. (countries)	2653 (62)	2434 (62)	2434 (62)	572 (55)	362 (35)	210 (31)
Panel B: Effect 3 Years after Wildcat Drilling						
Log (value of oil discoveries per capita)	0.078	0.045	0.163	-0.065	-0.727[**]	0.918[*]
	(0.065)	(0.114)	(0.149)	(0.260)	(0.278)	(0.522)
Obs. (countries)	2595 (62)	2432 (62)	2432 (62)	528 (55)	331 (35)	197 (30)
Panel C: Effect 1-3 Years after Wildcat Drilling						
Log (value of oil discoveries per capita)	0.072	0.064	0.207	0.214	-0.406[*]	1.173[**]
	(0.061)	(0.091)	(0.132)	(0.256)	(0.222)	(0.461)
Obs. (countries)	2595 (62)	2432 (62)	2432 (62)	522 (53)	331 (35)	191 (29)
Panel D: Effect 1-5 Years after Wildcat Drilling						
Log (value of oil discoveries per capita)	0.084	0.040	0.244[*]	0.155	-0.451[*]	1.144[**]
	(0.070)	(0.087)	(0.130)	(0.320)	(0.239)	(0.528)
Obs. (countries)	2484 (62)	2428 (62)	2428 (62)	428 (52)	270 (32)	158 (27)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. In all columns, the estimates are the fixed-effects estimates, and the samples include all country-year observations with at least one wildcat drilling. Column 1 uses the Gleditsch-COW dataset. Column 2 uses the UCDP/PRIO data on civil war as defined by more than 25 annual deaths. Column 3 uses the CSP data on coup attempts. Columns 4-6 use the SIPRI data on defense burden. Dependent variable in Panel A is the change in various measures of political violence one year before and two years after exploration. Dependent variable in Panel B is the change in various measures of political violence one year before and three years after exploration. Dependent variable in Panel C is the change in various measures of political violence one year before and the average of the three years after exploration. Dependent variable in Panel D is the change in various measures of political violence one year before and the average of the 5 years after exploration. All regressions control for log (lagged GDP per capita), lagged economic growth rate, log (lagged population), lagged democracy, log (lagged value of oil reserves), the number of wildcats, and decade fixed effects. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

	Bin 1	Bin 2	Bin 3	Bin 4	Bin 5	Bin 6	Bin 7	Bin 8	Bin 9	Bin 10	Bin 11
	Panel A: Stratified Matching: Results of Balancing Tests of Covariates within Bins: t-statistics										
Log(oil reserves per capita)	0	0	-0.434	1.237	0.959	-1.312	1.306	1.054	-1.511	-1.624	0.636
Crude oil price	-0.158	-0.579	0.814	0.322	-0.331	0.035	1.252	0.244	-2.078	1.481	-0.593
Democracy	-0.442	0.009	1.184	-1.681	-1.206	0.591	1.883	-1.239	0.627	-1.563	0.459
War	1.045	0	-2.016	-2.477	0.068	-1.151	1.652	-0.387	-1.491	2.560	-0.185
Africa	2.155	1.567	0	0	1.143	2.034	-1.223	-1.643	-1.280	2.402	-0.185
South America	1.119	1.350	0.532	0	-0.884	-0.530	-0.537	-0.458	-0.723	-0.141	0.972
Asia	-0.750	0	-1.202	1.829	-0.350	-2.177	1.337	0.302	0.331	0.032	-0.313
Oceania	0	0	0	0	0	0	-0.477	1.004	0.359	0	-0.553
[Log(oil reserves per capita)]^2	0	0	1.056	-1.654	-1.135	0.383	1.545	0.243	1.137	1.080	-0.406
Log(oil reserves per capita)×Crude oil price	0.158	0.579	0.106	1.039	0.993	-0.557	1.869	0.871	-0.987	-1.909	0.661
Log(oil reserves per capita)×Democracy	0.442	-0.009	-1.313	1.617	1.355	-0.235	-1.669	0.690	-1.020	0.063	0.571

	Panel B: Kernel matching: results of balancing tests of covariates	
	t-statistics	% bias reduction
Log(oil reserves per capita)	0.61	98.7
Crude oil price	1.86	85.9
Democracy	1.80	84.9
War	-0.96	81.8
Africa	1.79	2.4
South America	1.28	87.0
Asia	-2.38	77.3
Oceania	1.28	76.6
[Log(oil reserves per capita)]2	-0.28	99.6
(Democracy)^2	1.93	83.3
(Democracy)^3	2.03	81.2
[Log(oil reserves per capita)]×Democracy	1.15	96.1
[Log(oil reserves per capita)]^2 ×Democracy	-0.03	99.9
(Crude oil price)^2	1.67	83.6
(Crude oil price) ×War	-2.09	22.8

Notes: This table documents that the observations within bins are balanced on covariates across the exploration "treatment" using the Gleditsch-COW dataset. In particular, these tests correspond to the matching results reported in Table 9 column 1.

TABLE A.12—OIL DISCOVERY AND OTHER VIOLENT CHALLENGES TO THE STATE: PROPENSITY SCORE MATCHING ESTIMATION

	Fixed Effects OLS	Stratified Matching	Kernel Matching
	(1)	(2)	(3)
	Panel A: Coup Attempts		
Log (value of oil discoveries per capita)	0.014	0.022	-0.365
	(0.168)	(0.169)	(0.284)
Obs. (countries)	2801 (62)	2733 (61)	2714 (61)
	Panel B: Irregular Leadership Transition		
Log (value of oil discoveries per capita)	0.087	0.035	0.051
	(0.106)	(0.099)	(0.181)
Obs. (countries)	1893 (51)	1883 (51)	1654 (50)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. In Panel A, the dependent variables are change in CSP coup attempts status one year before and one year after wildcat drilling. In Panel B, the dependent variables are the fraction of irregular leadership transitions over the following 20 years after wildcat drilling. In all columns, the samples are based on all possible observations (including those with no wildcat drilling) where oil exploration data are available. In column 2, only observations whose propensity score belongs to the intersection of the supports of the propensity score of treated and controls were retained. Using these observations, we form 12 strata for the sample used in Panel A, and 9 strata for the sample used in Panel B. In column 3, we report results obtained after performing kernel matching using the Epanechnikov function with a bandwidth of 0.05. Again only observations in the common support were retained. All regressions control for log (lagged GDP per capita), lagged economic growth rate, log (lagged population), lagged democracy, log (lagged value of oil reserves), the number of wildcats, and decade fixed effects. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.13—OIL DISCOVERY AND POLITICAL VIOLENCE: CONTROLLING FOR FAILED OIL EXPLORATION

	All Countries					Democratic Countries Only	Non-democratic Countries Only
	Intense Civil War	All Civil Conflict	Coup Attempts	Irregular Transitions		Defense Burden	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Panel A: Stratified Matching						
Log (value of oil discoveries per capita)	0.147	0.098	-0.247	0.118	0.361	-1.884	0.615
	(0.112)	(0.090)	(0.303)	(0.165)	(0.956)	(1.526)	(0.441)
Failure dummy	0.022	0.013	-0.071	0.022	0.006	-0.213	-0.063
	(0.018)	(0.017)	(0.049)	(0.026)	(0.131)	(0.218)	(0.091)
Observations (# of countries)	3114 (62)	2728 (61)	2733 (61)	1883 (51)	670 (56)	313 (25)	268 (31)
	Panel B: Kernel Matching						
Log (value of oil discoveries per capita)	0.088	-0.002	-0.558	0.194	-0.428	-0.939	1.159*
	(0.083)	(0.148)	(0.345)	(0.199)	(1.224)	(0.885)	(0.572)
Failure dummy	0.012	-0.011	-0.115**	0.065	-0.124	-0.085	0.005
	(0.015)	(0.021)	(0.052)	(0.026)	(0.174)	(0.118)	(0.117)
Observations (# of countries)	3064 (62)	2726 (61)	2714 (61)	1654 (50)	541 (52)	206 (22)	232 (27)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. The samples used in all columns are based on all possible observations (including those with no wildcat drilling) where oil exploration data are available. Column 1 uses the Gleditsch-COW dataset. Column 2 uses the UCDP/PRIO data on civil war as defined by more than 25 annual deaths. Column 3 uses the CSP data on coup attempts. Column 4 uses political leadership data from the Archigos dataset. Columns 5-7 use the SIPRI data on defense burden. In Panel A, only observations whose propensity score belongs to the intersection of the supports of the propensity score of treated and controls were retained. In panel B, we report results obtained after performing kernel matching using the Epanechnikov function with a bandwidth of 0.05. Again only observations in the common support were retained. All regressions control for log (lagged GDP per capita), lagged economic growth rate, log (lagged population), lagged democracy, log (lagged value of oil reserves), the number of wildcats, and decade fixed effects. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.14—OIL DISCOVERY AND CIVIL WAR: USING LEVEL OF OIL DISCOVERY

	Positive Wildcats Sample				Full Sample		
	Pooled OLS (1)	Fixed Effects OLS (2)	Fixed Effects 2SLS (3)	Fixed Effects 2SLS (4)	Fixed Effects OLS (5)	Stratified Matching (6)	Kernel Matching (7)
	Panel A: Civil War 1 Year after Wildcat Drilling						
Value of oil discoveries per capita	-0.027	-0.030	0.002	0.119	-0.025	-0.018	-0.018
	(0.029)	(0.033)	(0.030)	(0.154)	(0.028)	(0.032)	(0.024)
First stage F-test			52.69[***]	11.78[***]			
Observations (# of countries)	2427 (52)	2655 (62)	2655 (62)	2323 (57)	3142 (62)	3114 (62)	3064 (62)
	Panel B: Civil War 3-6 Years after Wildcat Drilling						
Value of oil discoveries per capita	-0.021	-0.043	0.000	0.195	-0.035	-0.029	0.003
	(0.026)	(0.047)	(0.034)	(0.334)	(0.032)	(0.035)	(0.015)
First stage F-test			52.61[***]	11.59[***]			
Observations (# of countries)	2238 (52)	2427 (62)	2427 (62)	2115 (57)	2893 (62)	2867 (62)	2770 (62)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. Civil war data are taken from the Gleditsch-COW dataset. In columns 1-4, the positive-wildcats samples include all country-year observations with at least one wildcat drilling. In column 3, we use log (out-of-region disaster), log (oil discovery per capita), and their product as instruments. In column 4, we use unexpected discovery as an instrument. All t-statistics of instruments used for the first stage regressions are significant at the 5% or 1% significance level. Hansen J test of overidentification fails to reject the null that instruments are valid, i.e. not correlated with the error term at conventional significance levels in all reported regressions. The samples used in columns 5-7 are based on all possible observations (including those with no wildcat drilling) where oil exploration data are available. In column 6, only observations whose propensity score belongs to the intersection of the supports of the propensity score of treated and controls were retained. Using these observations, we formed 12 strata and 9 strata for the samples used in Panel A and B respectively. In column 7, we report results obtained after performing kernel matching using the Epanechnikov function with a bandwidth of 0.05. Again only observations in the common support were retained. All regressions control for log (lagged GDP per capita), lagged economic growth rate, log (lagged population), lagged democracy, log (lagged value of oil reserves), the number of wildcats, and decade fixed effects. The pooled OLS in column 1 also control for log (mountainous), log (population density), ethnic fractionalization, religious fractionalization, language fractionalization, and legal British origin. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

TABLE A.15—OIL DISCOVERY AND CIVIL WAR: ALTERNATIVE MEASURES OF CIVIL WAR AND COUP ATTEMPTS

	1 Year after Wildcat Drilling				3-6 Years after Wildcat Drilling		
	Pooled OLS (1)	Fixed Effects OLS (2)	Fixed Effects 2SLS (3)	Fixed Effects 2SLS (4)	Fixed Effects OLS (5)	Fixed Effects 2SLS (6)	Fixed Effects 2SLS (7)
	Panel A: Using Fearon and Laitin's Civil War Data						
Log (value of oil discoveries per capita)	0.073	0.069	0.067	0.031	0.081	0.088	0.183[*]
	(0.061)	(0.063)	(0.060)	(0.079)	(0.108)	(0.105)	(0.103)
First stage F-test			$9.60 \times 10^{4***}$	$3.67 \times 10^{3***}$		$9.4 \times 10^{4***}$	$3.6 \times 10^{3***}$
Observations (# of countries)	2233 (52)	2451 (62)	2451 (62)	2182 (57)	2385 (62)	2385 (62)	2121 (57)
	Panel B: Using Sambanis's Civil War Data						
Log (value of oil discoveries per capita)	0.038	0.029	0.023	-0.008	0.058	0.051	0.051
	(0.055)	(0.059)	(0.056)	(0.060)	(0.118)	(0.113)	(0.113)
First stage F-test			$1.1 \times 10^{5***}$	$3.49 \times 10^{3***}$		$1.0 \times 10^{5***}$	$3.5 \times 10^{3***}$
Observations (# of countries)	2247 (52)	2465 (62)	2465 (62)	2195 (57)	2292 (62)	2292 (62)	2037 (57)
	Panel C: Using Powell and Thyne's Coup Data						
Log (value of oil discoveries per capita)	0.018	0.020	0.014	-0.052	-0.005	0.002	-0.110
	(0.104)	(0.112)	(0.110)	(0.122)	(0.179)	(0.177)	(0.191)
First stage F-test			$8.52 \times 10^{4***}$	$3.63 \times 10^{3***}$		$8.1 \times 10^{4***}$	$3.6 \times 10^{3***}$
Observations (# of countries)	2126 (52)	2342 (62)	2342 (62)	2082 (57)	2280 (62)	2280 (62)	2025 (57)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. In Panel A civil war data are taken from the update version of the Fearon and Laitin (2003) dataset. In Panel B civil war data are taken from the updated version of the Sambanis (2004) dataset. In Panel C coup data are taken from Powell and Thyne (2011). In all columns, the samples include all country-year observations with at least one wildcat drilling. In columns 1-4, the dependent variables are change in civil war/coup attempts one year before and one year after wildcat drilling. In columns 5-7, the dependent variables are change in civil war/ coup attempts from one year before discovery to the maximum value in year three to six after wildcat drilling. In columns 3 and 6, we use log (out-of-region disaster), log (oil discoveries per capita), and their product as instruments. In columns 4 and 7, we use unexpected discovery as an instrument. All t-statistics of instruments used for the first stage regressions are significant at the 5% or 1% significance level. Hansen J test of overidentification fails to reject the null that instruments are valid, i.e. not correlated with the error term at conventional significance levels in all reported regressions. All regressions control for log (lagged GDP per capita), lagged economic growth rate, log (lagged population), lagged democracy, log (lagged value of oil reserves), the number of wildcats, and decade fixed effects. The pooled OLS in column 1 also control for log (mountainous), log (population density), ethnic fractionalization, religious fractionalization, language fractionalization, and legal British origin. Robust standard errors clustered at the country level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

	Intense Civil War	All Civil Conflict	Coup Attempts	Irregular Leadership Transitions	Defense Burden
	(1)	(2)	(3)	(4)	(5)
Log (oil endowment/capita)	0.271	0.618	0.219	0.145	7.168[**]
	(0.334)	(0.392)	(0.217)	(0.436)	(2.874)
Log (mountainous)	0.008[***]	0.011[***]	0.004[**]	0.000	-0.023
	(0.002)	(0.003)	(0.001)	(0.004)	(0.026)
Ethnic fractionalization	3.040	7.544	2.914	14.932	32.460
	(8.113)	(10.900)	(4.994)	(10.882)	(66.872)
Religious fractionalization	1.093	-11.974	-2.861	-9.051	49.448
	(6.013)	(7.438)	(4.209)	(10.478)	(42.971)
Language fractionalization	3.483	14.077	3.055	-0.472	-36.949
	(8.438)	(11.499)	(4.053)	(8.151)	(50.059)
British legal origin	-0.626	-0.281	-3.721	-20.362[***]	22.723
	(3.575)	(4.800)	(2.533)	(5.201)	(19.483)
Observations	119	119	119	112	107
R^2	0.154	0.257	0.266	0.361	0.203

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. Various measures of political violence are averaged over the period since 1960. Column 1 uses the Gleditsch-COW dataset. Column 2 uses the UCDP/PRIO data on civil war as defined by more than 25 annual deaths. Column 3 uses the CSP data on coup attempts. Column 4 uses political leadership data from the Archigos dataset. Column 5 uses the SIPRI data on defense burden. Oil endowment is the initial oil-in-place, normalized by population in 1960. All regressions control for region fixed effects. The 6 regions, according to the UN classification, are Africa, Central and South America, North America, Asia, Europe, and Oceania. Robust standard errors are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

	All Countries										Democratic Countries Only		Nondemocratic Countries Only	
	Intense Civil War		All Civil Conflict		Coup Attempts		Irregular Transitions		Defense Burden					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Baseline	0.021	0.066	0.101	0.127	-0.201	0.215	0.132	0.086	0.260	0.362	-9.773	-0.259	20.499**	0.971***
	(0.052)	(0.066)	(0.110)	(0.087)	(0.261)	(0.129)	(0.279)	(0.093)	(9.633)	(0.252)	(13.815)	(0.238)	(9.968)	(0.333)
Exclude US	0.028	0.068	0.114	0.134	-0.198	0.215	0.144	0.090	-0.906	0.393	-12.311	-0.235	20.499**	0.971***
	(0.052)	(0.068)	(0.110)	(0.088)	(0.261)	(0.131)	(0.280)	(0.091)	(9.759)	(0.256)	(13.957)	(0.254)	(9.968)	(0.333)
Exclude USSR	0.021	0.068	0.101	0.136	-0.201	0.220	0.132	0.086	0.260	0.362	-9.773	-0.259	20.499**	0.971***
	(0.052)	(0.066)	(0.110)	(0.086)	(0.261)	(0.129)	(0.279)	(0.093)	(9.633)	(0.251)	(13.815)	(0.238)	(9.968)	(0.333)
Add Dummy for OPEC	0.014	0.066	0.102	0.126	-0.201	0.216	0.089	0.072	0.436	0.364	-9.404	-0.251	20.499**	0.971***
	(0.051)	(0.066)	(0.112)	(0.087)	(0.261)	(0.130)	(0.272)	(0.094)	(9.620)	(0.252)	(13.606)	(0.239)	(9.968)	(0.333)
Low-Income Countries	0.099	0.147	0.200	0.041	-0.662	0.297	-0.319	0.053	-6.621	0.326	-39.246	-0.816	18.333*	0.928*
	(0.216)	(0.176)	(0.422)	(0.187)	(0.626)	(0.297)	(0.776)	(0.131)	(12.511)	(0.460)	(23.173)	(0.782)	(10.438)	(0.462)
Mountainous Countries	-0.012	0.021	-0.081	-0.016	-0.314	0.329*	0.051	0.118	-12.109	0.207	-20.642	-0.303	19.812	1.182***
	(0.050)	(0.098)	(0.088)	(0.136)	(0.382)	(0.184)	(0.393)	(0.125)	(16.235)	(0.259)	(23.458)	(0.295)	(21.127)	(0.379)
Fractionalized Countries	0.095	0.047	0.492	0.123	-0.068	0.513**	0.395	-0.002	-12.820	1.006	-47.149	0.092	20.123	0.901
	(0.167)	(0.135)	(0.366)	(0.159)	(0.680)	(0.226)	(0.314)	(0.134)	(15.988)	(0.591)	(32.142)	(0.689)	(12.684)	(0.646)
Bad-Governance Countries	0.013	0.153	0.158	-0.023	-0.691	0.280	0.316	0.171	-12.395	0.455	-38.237	-0.673	13.973	1.261**
	(0.170)	(0.145)	(0.425)	(0.150)	(0.629)	(0.256)	(0.608)	(0.137)	(13.871)	(0.395)	(28.782)	(0.619)	(10.571)	(0.479)
Post WWII	0.052	0.061	0.101	0.127	-0.201	0.215	0.056	-0.023	0.260	0.362	-9.773	-0.259	20.499**	0.971***
	(0.067)	(0.065)	(0.110)	(0.087)	(0.261)	(0.129)	(0.299)	(0.087)	(9.633)	(0.252)	(13.815)	(0.238)	(9.968)	(0.333)
No War at (t-1)	0.024	0.046	0.120	0.085	-0.043	0.255*	0.105	-0.063	2.508	0.276	1.326	-0.274	16.141	0.798***
	(0.055)	(0.033)	(0.136)	(0.074)	(0.153)	(0.129)	(0.210)	(0.089)	(12.142)	(0.269)	(11.004)	(0.233)	(18.854)	(0.280)
Add Year Fixed Effects	-0.005	0.058	0.091	0.108	-0.330	0.200	0.182	0.109	3.046	0.288	-15.701	-0.322	25.724*	1.018***
	(0.053)	(0.060)	(0.107)	(0.087)	(0.277)	(0.127)	(0.288)	(0.096)	(9.733)	(0.243)	(11.605)	(0.250)	(15.100)	(0.367)
Use X-Polity Index	0.019	0.059	0.087	0.122	-0.201	0.174	0.108	0.049	-2.486	0.378	-13.081	-0.267	22.033*	1.045***
	(0.049)	(0.054)	(0.107)	(0.085)	(0.229)	(0.134)	(0.268)	(0.088)	(10.786)	(0.254)	(15.560)	(0.240)	(12.281)	(0.307)

Notes: All coefficients (and standard errors) are multiplied by 100 to improve readability. Odd numbered columns report the estimated effect of oil reserves on various outcomes as specified. With the exception of column 8, even numbered columns report the estimated effect of oil discovery on changes in the dependent variable one year after compared to the year before wildcat drilling. Column 8 reports the estimated effect of oil discovery on percent irregular transitions out of total transitions in the 20 years following wildcat drilling. Low-income countries are classified according to the World Bank definition in 2008. Mountainous countries are countries with the fraction mountainous areas above the median value. Fractionalized countries are countries with the degree of ethnic fractionalization above 0.5, the sample mean. Poor governance countries are countries with negative rule of law index in 1996 according to the Worldwide Governance Indicators project. All regressions are fixed effects OLS regressions. All odd numbered regressions control for log (GDP per capita), economic growth rate, log (population), democracy, and country fixed effects. All even numbered regressions control for the number of wildcats drilled, log (lagged value of oil reserves per capita), log (lagged GDP per capita), lagged economic growth rate, log (lagged population), lagged democracy, country fixed effects, and decade fixed effects. Robust standard errors clustered at the country level are reported in parentheses. Note also that even in the subsamples of mountainous or fractionalized countries, the effect of oil discoveries on coup attempts is also not robust to alternative measure coup attempts. For example, using the data from Powell and Thyne (2011), the estimate is 0.073 (standard error = 0.214) among the fractionalized countries. * significant at 10%; ** significant at 5%; *** significant at 1%.

Additional Remarks about the Literature

This section reviews the recent empirical literature that provides micro-level evidence on the resource-conflict relationship by exploiting regional variation in resource abundance.

Angrist and Kugler (2008) examine the impact of upsurge in coca prices on violent death rates in Colombia, and they report increased violent death rates in growing areas after the increase in coca cultivation. Dube and Vargas (2009) show that again in Colombia a fall in coffee prices increases violence in regions growing more coffee and a rise in oil prices increases violence in the oil region, where violence is measured by the number of attacks, clashes, and war-related casualties. These novel studies provide solid micro-level evidence of the impact of short-run fluctuation in resource value on conflict intensity in Columbia. More work needed to be done before one can conclude if these results can be generalized in other countries. Using casualties or the number of attacks as the main dependent variables, this micro-empirical approach attempts to explain the intensity of conflict (an intensive margin), rather than the onset of conflict (an extensive margin) as in the literature based on cross-country comparison. All these outcome variables are important to be examined. However, since the determinants of regional violent crime and national insurgency need not be identical, we may not be able to obtain the impact of oil on civil war in a country by adding up the oil effects on violence from individual regions. Because we are interested in large-scale civil conflicts triggered by the prospect of capturing oil wealth in office and government's macro responses to insurgent groups, we view our study complementary to these micro-level analyses.