Bridging Economics and International Relations to Understand State Capacity and War in Sub-Saharan Africa

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Abstract

This paper explores the relationship between state capacity in affecting the probability of being attacked by another country. We measure state capacity as the effectiveness of state sovereignty over its territory (from the Variety of Democracy dataset). We also make allowance for the distance between countries at war. The analysis is performed through a logit model, investigating 42 countries over the period 1954–2010 taking into account high intensity episodes. The paper shows that higher levels of state capacity increase the probability of suffering from attacks. This result may appear counterintuitive, since a state that has full control of its territory seems stronger than one that does not, and therefore the invader may lose. However, external territorial threats increase state capacity by unifying the state and by increasing the repressive power of the central government. Endogeneity between state capacity and war is taken into account in a number of ways.

Keywords: war; state capacity; international relations; quantitative analysis

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1. Introduction

The debate over the relationship between war and state capacity has a long tradition within political science and international relations. In particular, state capacity can be broadly defined as the 'ability of the government to enforce its sovereignty across all its land' (Gibler and Miller, 2014, p. 2)[1], which in turn can be ultimately understood as a form of political power, as defined by Dahl (1957, p. 202-3). Most of the empirical works on state capacity relates this form of power to domestic outcomes, especially economic performance (Persson and Besley, 2009; Besley and Persson, 2011; Knutsen, 2013) and internal conflicts (Sobek, 2010; Besley and Persson, 2010; Gibler and Miller, 2014). This paper aims at bridging a gap in the literature, by investigating whether state capacity is able to "protect" from international war, by bridging political economy insights and international relations theoretical claims.

Starting from the famous claim that "states made war, and war made states" (Tilly, 1990), economists argue that, in historical perspective, the ability to finance war was key for survival, therefore monarchs created effective fiscal infrastructures. Besley and Persson (2010, 2011) model state capacities as forward-looking investments by government. They highlight some determinants of state building such as the risk of external or internal conflict, the degree of political instability, and dependence on natural resources. Empirically, Besley and Persson (2009) show that countries with a belligerent past have greater fiscal capacity today. Dincecco and Prado (2012) exploit differences in casualties sustained in pre-modern wars to estimate the impact of fiscal capacity on economic performance. Finally, Gennaioli and Voth (2015) build a model along the same lines, but emphasizes the role of military technological innovations in causing the need for higher capacity to extract revenues for governments.

Indeed, a widely debated theory in the realm of international relations argues that countries tend to act in order to preserve the balance of power in a given system (Waltz, 1979; Jervis, 1997)[2]. The balancing can occur throughout a variety of instruments, spanning from diplomatic skirmishes to acts of war, and depending on the scale of the state power, originating an inter-state dispute. Although appealing, and probably one of "the best theory" in international relations (Jervis, 1997, p. 131), the *balance-of-power* theory is not suitable for being applied ubiquitously, rather it particularly fits concentrations of power in land-based autonomous continental systems, as stressed by Levy and Thompson (2005, p. 11). In fact, when a system is lacking a naval hegemonic leader, geographical

[1] For a brief summary of further definitions see Lindvall and Teorell (2016, p. 1).

[2] The balance-of-power theory is probably the most debated theory within international relations and a brief but comprehensive summary can be found in Levy and Thompson (2005). A through discussion of the pros and cons of this theory is clearly beyond the scope of this paper.

proximity sharpens the perception of threats, increasing the immediate perception of threat when the balance of power is altered (Buzan, 2003 and Walt, 1985).

On these premises, this paper investigates the relationship between state capacity and militarized intra-state disputes adopting as a test-bed a panel of 42 Sub-Saharan African countries, observed from 1954 to 2010. We believe the Sub-Saharan region substantially meets the requirements postulated in Levy and Thompson (2005): the region historically lacks an autonomous naval power, conflicts are essentially territorial-based and their frequency is endemic, due to historically high instability. Figure 1 summarizes these claims by showing the number of disputes, the number of states, and a power concentration index calculated following Ray and Singer (1973, p. 421-423) in our sample. As shown in the figure, while disputes fluctuate over time, the number of countries increases, in particular from the 60s to the mid-70s. Power concentration falls over time, strongly as long as the number of countries was increasing, more steadily afterwards.

[Figure 1 here]

The main contribution of our paper is twofold. On the one hand, it offers a first attempt of bridging a gap in the existing literature by relating state capacity on inter-state conflicts. In fact, from the point of view of economics, an investment in state capacity should then result in lower likelihood of suffering an external aggression, while, the balance of power theory argues that countries tend to balance against neighbors when they are perceived as potential threats. The paper builds upon this (apparent) contradiction.

On the other hand, the paper provides a novel empirical investigation on the relationship between state capacity and external aggression by using new data retrieved from a recently released dataset[3].

The paper proceeds as follows. In section 2 we introduce the variables and data used in our analysis, whereas in section 3 we present the methodology. Results are discussed in section 4. Section 5 draws some conclusive remarks.

2. Variables and data

Measuring state capacity can be challenging due to its latent variable nature (Hanson and Sigman, 2013; Soifer, 2008, 2012; Hendrix, 2010): indeed, as arguably claimed by Lindvall and Teorell (2016, p. 6), power "cannot be directly observed, only *inferred* from instances where it is exercised (italics in

[3] The V-Dem Institute website provides a dataset that includes hundreds of indicators for more than 160 countries over the period 1900-2014. The dataset has been publicly released in January 2016. For more details, please see https://v-dem.net/.

the original text)." For this purposes, relying on a *substantive*, rather than a mere nominal definition, our measure for State Capacity is "Sovereignty over territory" (`v2svstterr`) retrieved from a recently released dataset, the V-Dem project (Coppedge et al., 2016). The purpose of this variable is 'to judge the extent of recognition of the preeminent authority of the state over its territory.' (Coppedge et al., 2016). Therefore, this is a proxy for 'state reach' that simultaneously consider the multidimensional features of state capacity.[4] The dependent variable is the occurrence of an external aggression suffered by a given country. Data for our main dependent variable are retrieved from the *Militarized Interstate Dispute Database*[5] (Jones et al., 1996). According to Jones et al. (1996), obtaining *disputes* an operational definition of disputes is not easy, since disagreement within scholars occurs on the definition of these phenomena. However, within the above-mentioned database, Militarized Interstate Disputes (MID henceforth) are defined as "united historical cases of conflict in which the threat, display or use of military force short of war by one member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state. Disputes are composed of incidents that range in intensity from threats to use force to actual combat short of war." (Jones et al., 1996, p. 163). As the definition suggests, MID can be characterized by different levels of intensity, namely hostility levels, ranging from "No Militarized Action" (level 1) to "War" (level 5).[6] Our sample includes 207 episodes of aggression of any hostility level and 82 high hostility episodes of aggression (i.e. levels 4, "Use of armed force" and 5 "War"): 73% of the countries included in our sample experienced at least one high hostility aggression episode, while 27% has been never involved in such occurrence. Figure 2 shows the countries included in our sample and number of aggressions suffered.

[Figure 2 here]

To control for the possible confounding effect of other factors, we follow the empirical literature on conflict determinants and include the following control variables: the level of development, proxied by the log of Real GDP per capita (Feenstra et al., 2015); the log of the size of Population (retrieved from World Bank Indicators and Penn World Data); the share of rents due to natural resources on GDP (World Bank Development Indicators); a measure to approximate the internal distance of the country

[4] For a discussion of the proxies of state capacity included in the V-Dem dataset and their application to conflict onset see Rossignoli (2016).
[5] We retrieved data from version 4.0, which has been updated on December 2013.
[6] The five levels of hostility contemplated in the MID Databse are: 1) No militarized action; 2) Threat to use force; 3) Display of force; 4) Use of force; 5) War.

(CEPII, 2012); an indicator for democracy[7] (Coppedge et al., 2016); the log of Mountainous Terrain as defined by Gibler and Miller (2014). Additionally, two dummy variables are included: the first to account for landlocked countries, the second for oil exporting countries (Fearon and Laitin, 2003).

We model temporal dependency in the dependent variable, by including cubic spline functions as suggested by Beck et al. (1998). Furthermore, we also tested whether the institutional features of neighboring countries affect the onset of external aggression, by including a proxy for the average level of democracy within neighbors (calculated on the same indicators retrieved from Coppedge et al., 2016). Finally, we test whether the distribution of state capacity among neighboring countries also matter for predicting the probability of being object of a MID. Table 1 presents summary statistics of the selected variables.

[Table 1 here]

3. Methodology

Our analysis includes 42 countries observed from 1954 to 2010. However, due to the lack of available data on some of the included control variables, for some specifications the number of countries drops to 41 and the temporal span shrinks to 1971 to 2010.

Data on MID are monadic and in binary form (onset=1), therefore the analysis is performed through a logit model. To account for the cross-sectional time-series nature of our database, standard errors are clustered at the unit of analysis (i.e. countries) in all model specifications. Furthermore, to account for time-dependence of our dependent variable, we include cubic spline functions, as suggested by Beck et al. (1998). Besides, independent variables are lagged, to ensure the correct consequential dynamics and, following a common practice in the literature (Cederman et al., 2010, p. 384), the dependent variable is adjusted by dropping ongoing conflicts: current realizations of state capacity cannot be affected by past realization of conflicts, for the mere fact that these observations are subject to case-deletion.

The aim of our analysis is testing whether MID are predicted by the level of state capacity, in this way assessing one of the most important postulate of international relations, that assumes the balance of power as a main feature of the international system. In particular, exploiting the relative homogeneity of our sample of countries, we test whether state capacity, which can signal an increase of regional power, predicts the onset of MID.

Our main analysis is performed through the following logit model:

[7] Controlling for democracy is relevant in a region charatcterized by widespdread experiences of military rule regimes (Caruso et al. 2014).

$$\log\left(\frac{\pi_{i,t}}{1-\pi_{i,t}}\right) = \beta_0 + \beta_1 SC_{i,t-1} + \beta_j X_{j,i,t-1} + \cdots + \beta_k X_{k,i,t-1}$$

where $\pi_{i,t}$ is the probability that $Y_{i,t}$ equals 1; Y is the dependent variable; β_0, β_1, βj, ...· , βk are the parameters to be estimated; *SC* is the proxy for state capacity and *Xj* ... *Xk* are a set of control variables defined in section 3.

As a second hypothesis, we test whether the aggression by a foreign country is affected by neighbors' level of state capacity. For this reason, we calculated the average level of state capacity of neighbors for every country in the sample and included it in the second set of models.

4. Results

Table 2 presents the main results of our analysis. State capacity positively and significantly affects the probability of experiencing an aggression by a foreign country in all the model specifications, controlling for institutional features, endowment of natural resources and geographical characteristics. Democracy does not appear to exert a significant effect; conversely, higher levels of democracy in neighbors' countries significantly decrease the probability of experiencing an external aggression. As expected, the presence of natural resources makes countries more vulnerable to external aggression, although accounting for this effect (models 3 and 4) does not affect the robustness of the main result: state capacity does not protect from war, rather it makes it more likely.

[Table 2 here]

Table 3 shows that the level of neighbor countries' state capacity weakly affects the probability of aggression, supporting the claim that investments in state capacity are likely to be used to wage a war against other countries. State capacity confirms both the size and significance showed in Table 2. Checking for state capacity contiguity does not affect the results for democracy and democratic levels of neighbors. The influence of the other variables on external aggression remains unchanged.

[Table 3 here]

Table 4 provides some robustness checks, excluding the Democratic Republic of Congo (because of its continuous history of war and internal conflict) and considering only the post-Cold War period.

Moreover, we also check for the inclusion of neighbours' SC as in Table 3. The size of the state capacity coefficient is among the largest that we have previously uncovered, and it is significant at the 10% level. Similar findings already commented in the previous tables also apply for the other variables, in particular for SC of neighbours.

[Table 4 here]

The results shown so far support the hypothesis that countries counter-balance the strongest neighbors by resorting to MID. As a final check, we tested whether state capacity predicts the probability of countries of being side A in a MID, i.e. whether strongest countries are likely to strike first. Table 5 reports the summary of this analysis showing that the coefficient of SC is mostly not significant (models 1, 2 and 3), becoming weakly significant only in the final model specification, but with a negative sign: therefore, this final check further supports our previous findings on the prevalence of a balancing behavior in SSA.

[Table 5 here]

5. Conclusions

In this note we have analyzed the effect of state capacity on the likelihood of being attacked by another country in a panel of Sub-Saharan African countries. From the point of view of economics, an investment in state capacity should give some return, for example, security from external threat and ability to strike. However, we find that countries with higher state capacity are more likely to be attacked. This can be rationalized recurring to the "balance of power" theory from international relations. The theory claims that under specific circumstances that apply to our sample, countries tend to pre-empt possible expansionary behavior of a regional leader by striking first in order to preserve the current relationship among the countries. Our findings are robust to several model specifications, to the inclusion of neighbors' state capacity as a control variable and to the exclusion from the sample of potential outlier countries and time periods.

We believe our findings help bridging a gap between economics and international relations in understanding the relation between state capacity and militarized disputes, opening the floor for further research on the topic.

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Fig. 1 - Disputes, power concentration and number of countries in Sub-Saharan Africa

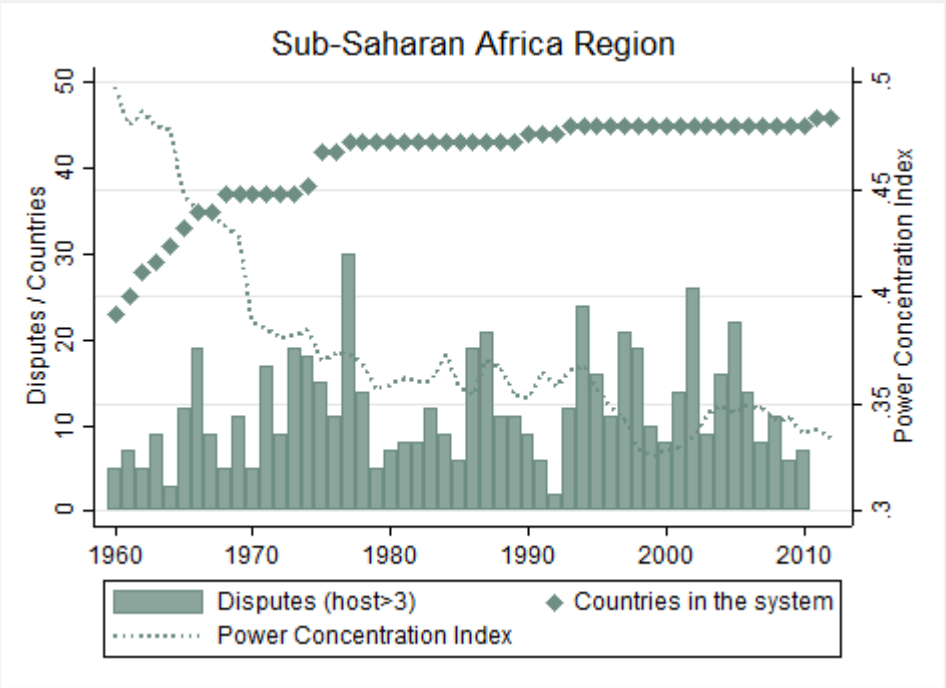

Fig. 2 - Included countries and the number of aggressions

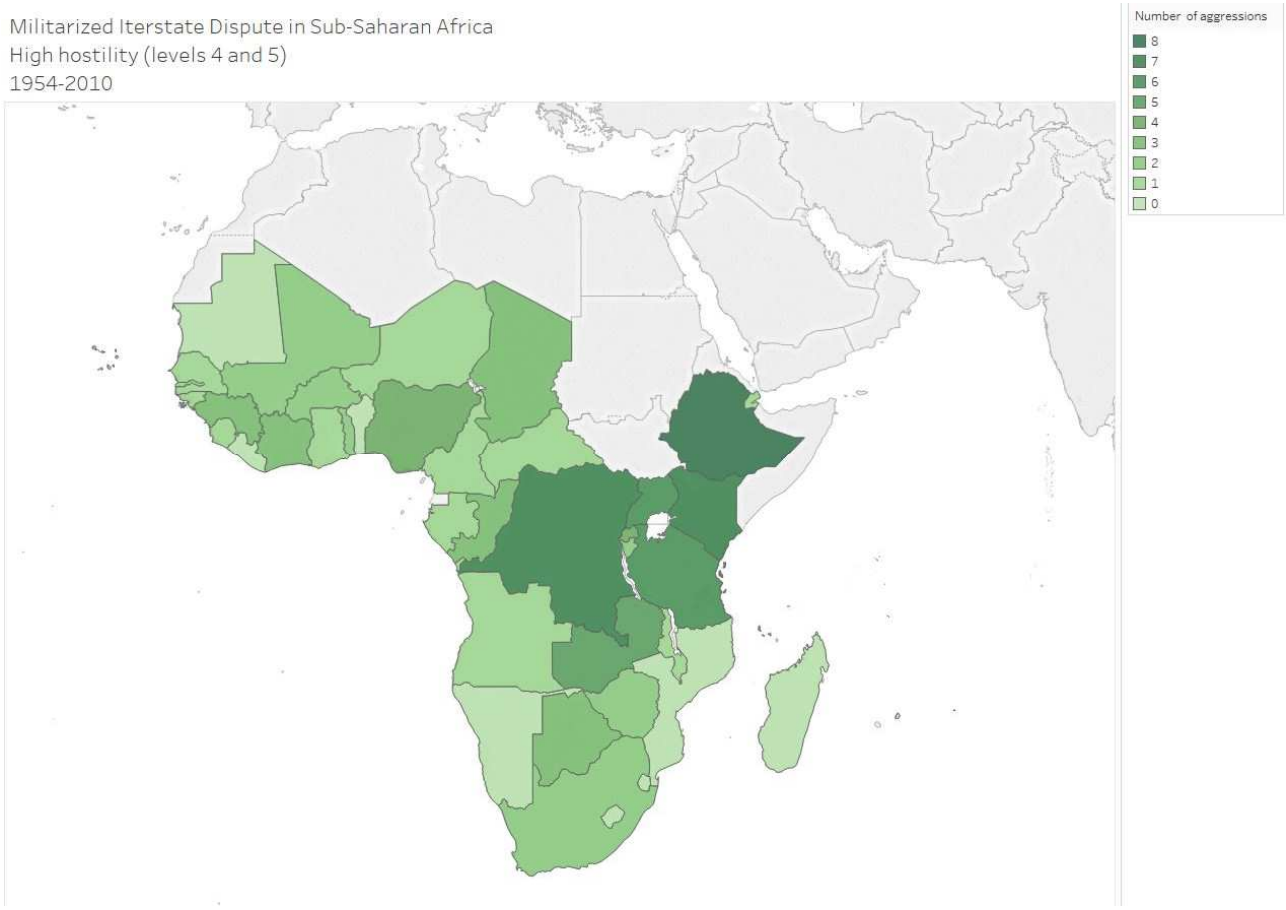

Table 1: Descriptive statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
MID (Side B)	0.08	0.27	0	1	2852
MID (Side B, hostility level> 3)	0.04	0.19	0	1	2925
MID (Side A)	0.07	0.05	0	1	2627
State Capacity (Territory)	84.66	14.35	31.2	100	2784
State Capacity neighbours (average)	85.54	6.72	51.4	100	2142
Democracy	0.28	0.2	0.01	0.84	2736
Democracy of neighbours (average)	0.32	0.15	0.02	0.82	2141
Real GDP per capita (ln)	7.46	0.75	4.96	9.77	2094
Total population (ln)	15.32	1.37	11.98	18.86	2094
Internal distance	224.24	140.87	16.23	576.03	2860
Natural resources (%GDP)	12.79	13.73	0	83.43	1752
Oil exporter	0.08	0.28	0	1	2285
Mountain terrain (ln)	1.57	1.42	0	4.42	2285
Landlocked	0.36	0.48	0	1	2925

Notes: MID (Side B) refers to MID episodes suffered by countries; MID (Side A) refers to MID episodes in which countries are Side A (used as robustness check in Table 5)

Table 2: Probability of aggression and state capacity, logit model results

	(1) Base	(2) Democracy	(3) Nat Res	(4) Geo
State Capacity (Territory, lag)	0.025**	0.026**	0.033*	0.031*
	(0.010)	(0.012)	(0.018)	(0.018)
Lagged Democracy		-0.437	0.294	0.162
		(1.090)	(1.390)	(1.341)
Lagged Democracy neighbours (avg)		-2.244	-3.281**	-3.366**
		(1.426)	(1.534)	(1.578)
Lagged Population (log)	0.211**	0.217*	0.178	0.269*
	(0.096)	(0.113)	(0.158)	(0.163)
Lagged Real GDP pc (log)	-0.424***	-0.367***	-0.499**	-0.413
	(0.136)	(0.127)	(0.245)	(0.269)
Internal distance	0.002**	0.002	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Lagged Natural resources (%GDP)			0.023*	0.024*
			(0.013)	(0.013)
Lagged Oil exporter			-0.268	-0.221
			(0.602)	(0.604)
Mountain terrain (log)				-0.083
				(0.110)
Landlocked				0.401
				(0.320)
Constant	-5.093***	-4.769***	-4.142	-6.076*
	(1.622)	(1.742)	(2.859)	(3.292)
Cubic spline	Yes	Yes	Yes	Yes
Pseudo R-sq.	0.07	0.07	0.07	0.08
Obs.	2093	1790	1457	1457
Countries	42	41	41	41
Model Chi-Sq.	138	91	118	115
LL	-332	-309	-229	-228
AIC	682	639	484	487
BIC	733	700	553	566

Clustered standard errors in parentheses. Levels of significance: *** 0.01; ** 0.05 * 0.010

Table 3: Check for contiguity, dep.var: side B in external conflict

	(1) Base	(2) Democracy	(3) Nat Res	(4) Geo
State Capacity (Territory, lag)	0.022**	0.026**	0.033*	0.033*
	(0.011)	(0.012)	(0.018)	(0.018)
State Capacity neighbours (avg, lag)	0.026	0.045**	0.039*	0.036
	(0.018)	(0.023)	(0.023)	(0.024)
Lagged Democracy		-0.293	0.446	0.314
		(0.998)	(1.283)	(1.254)
Lagged Democracy neighbours (avg)		-3.067*	-3.944**	-3.961**
		(1.616)	(1.670)	(1.707)
Lagged Population (log)	0.182*	0.252**	0.205	0.276*
	(0.103)	(0.104)	(0.141)	(0.152)
Lagged Real GDP pc (log)	-0.452***	-0.431***	-0.542**	-0.476*
	(0.134)	(0.130)	(0.220)	(0.250)
Internal distance	0.002**	0.002*	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Lagged Natural resources (%GDP)			0.024*	0.024*
			(0.013)	(0.013)
Lagged Oil exporter			-0.174	-0.157
			(0.565)	(0.574)
Mountain terrain				-0.071
				(0.111)
Landlocked				0.314
				(0.330)
Constant	-6.245**	-8.636***	-7.722**	-8.899**
	(2.460)	(2.776)	(3.274)	(3.786)
Cubic spline	Yes	Yes	Yes	Yes
Pseudo R-sq.	0.06	0.08	0.08	0.08
Obs.	1797	1790	1457	1457
Countries	41	41	41	41
Model Chi-Sq.	99	99	128	119
LL	-312	-306	-228	-227
AIC	643	637	484	487
BIC	698	703	558	571

Clustered standard errors in parentheses. Levels of significance: *** 0.01; ** 0.05 * 0.010

Table 4: Probability of aggression and state capacity: robustness checks

	(1) Nat Res (excl. RDC)	(2) Nat Res (post Cold War)	(3) Nat Res (excl. RDC)	(4) Nat Res (post Cold War)
State Capacity (Territory, lag)	0.035*	0.035*	0.033*	0.033*
	(0.019)	(0.019)	(0.018)	(0.018)
Lagged Democracy	0.34	0.34	0.446	0.446
	(1.414)	(1.414)	(1.283)	(1.283)
Lagged Democracy neighbours (avg)	-3.558**	-3.558**	-3.944**	-3.944**
	(1.575)	(1.575)	(1.670)	(1.670)
Internal distance	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.001)	(0.001)
Lagged Population (log)	0.167	0.167	0.205	0.205
	(0.154)	(0.154)	(0.141)	(0.141)
Lagged Real GDP pc (log)	-0.459*	-0.459*	-0.542**	-0.542**
	(0.254)	(0.254)	(0.220)	(0.220)
Lagged Natural resources (%GDP)	0.023*	0.023*	0.024*	0.024*
	(0.014)	(0.014)	(0.013)	(0.013)
Lagged Oil exporter	-0.257	-0.257	-0.174	-0.174
	(0.647)	(0.647)	(0.565)	(0.565)
State Capacity neighbours (avg, lag)			0.039*	0.039*
			(0.023)	(0.023)
Constant	-4.546	-4.546	-7.722**	-7.722**
	(2.840)	(2.840)	(3.274)	(3.274)
Cubic spline	Yes	Yes	Yes	Yes
Pseudo R-sq.	0.07	0.07	0.08	0.08
Obs.	1422	1422	1457	1457
Countries	40	40	41	41
Model Chi-Sq.	90	90	128	128
LL	-217	-217	-228	-228
AIC	461	461	484	484
BIC	529	529	558	558

Clustered standard errors in parentheses. Levels of significance: *** 0.01; ** 0.05 * 0.010

Table 5: Robustness check: state capacity and side A, logit model results

	(1) Base	(2) Democracy	(3) Nat Res	(4) Geo
State Capacity (Territory, lag)	-0.001	-0.003	-0.006	-0.016**
	(0.009)	(0.008)	(0.007)	(0.008)
Constant	Yes	Yes	Yes	Yes
Control variables†	Yes	Yes	Yes	Yes
Cubic spline	Yes	Yes	Yes	Yes
Pseudo R-sq.	0.14	0.14	0.17	0.18
Obs	2093	1790	1457	1457
Countries	42	41	41	41
Model Chi-Sq.	113	145	169	198
LL	-493	-463	-366	-363
AIC	1004	948	758	755
BIC	1054	1008	827	835

† Control variables included according to the same model specifications shown in Table 2

Clustered standard errors in parentheses. Levels of significance: *** 0.01; ** 0.05 * 0.010