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Manpower to coerce and co-opt—State capacity and political violence in southern Sudan 2006–2010

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Abstract

This paper investigates the role of state capacity for political violence. Most previous studies have suffered from inadequacies of country-level data, questionable validity of indicators or theoretical shortcomings. This paper aims at overcoming some of these challenges. We focus on one specific aspect of state capacity: the role of governmental manpower. We argue that its subnational effect on political violence follows a non-linear, inverted-U shape. We investigate this hypothesis in the context of southern Sudan, covering the period from 2006 to 2010. We use unique data on the geographical distribution of public personnel across 75 southern Sudanese counties. The data are matched with geocoded data on violent events as well as various socio-economic indicators. Our fixed-effects estimations indicate that particularly low or high levels of state capacity are associated with low levels of violence. Counties with intermediate numbers of state personnel experience the highest numbers of violent events.

Introduction

State capacity matters for political violence.[1] States that are not capable of fulfilling their security mandate may provide opportunities for rebellion, making anti-state action less costly and more promising. Similarly, states that are not able to provide effective public goods delivery may foment grievances that increase the risk of violence (e.g. Fjelde and De Soysa, 2009; Schwarz, 2005).

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Whereas theoretical arguments on the role of the state and its capacity for political violence are quite straightforward, their empirical investigation is not. Most studies that analyze the role of state capacity for violence rely on cross-national data. A recently growing body of research on the micro-dynamics of violence has, however, stressed that such analyses are problematic in various respects, most notably owing to inferential problems that emanate from national-level explanations of subnational phenomena (Buhaug and Rød, 2006; Gleditsch and Weidmann, 2012; Kalyvas, 2008).

Few subnational studies consider or actively investigate the role of state capacity (Buhaug, 2010; Buhaug and Gates, 2002). Those studies that do have two central shortcomings: first, they struggle with challenges of conceptualization and operationalization similar to their cross-country predecessors—they try to capture state capacity in general terms, do not differentiate between various dimensions of the concept and often make use of indicators with questionable validity; second, arguments about state capacity are often adopted directly from cross-national studies. However, the subnational level differs from the cross-national level in important respects. Notably, whereas from a country-level perspective many states may be considered weak in the aggregate, on the subnational level the state may actually be strong in some, but wholly absent in other regions. These differences need to be considered in the development of hypotheses as well as in empirical analyses.

Our paper aims at contributing to a better understanding of the role of state capacity for political violence. We argue the subnational effect of state capacity on political violence is not simply linear, but rather follows an inverted-U shape. At very low levels of state capacity little fighting takes place because rebel groups have no opportunity to target state institutions, the value of state resources is low and inter-communal conflicts are regulated by local informal institutions. At high levels of state capacity pacifying effects are realized, because the government is able to effectively co-opt or coerce groups violating local peace. The state is unable to effectively enforce the monopoly of violence at intermediate levels of state capacity, governmental programs are likely to incite struggles over access to government services, and a mismatch between informal local institutions and the claims of the state overall increases levels of political violence.

We perform a subnational analysis of southern Sudan in the period ranging from 2006 and 2010 to test our argument. We make use of data from an administrative census undertaken in southern Sudan after the end of the civil war in 2005. The data provide geographically disaggregated numbers of all state personnel in functional areas such as healthcare, education and security. They constitute a persuasive indicator for a specific dimension of state capacity: manpower. Thus, we aim at capturing one crucial element of state capacity, distinct from infrastructural or monetary resources. We match this data with geo-coded violent event data as well as socio-economic indicators on the county level. Our empirical findings provide overall support for an inverted U-shaped effect on violence, with the evidence being particularly strong for the conflict increasing effects of initial gains in state capacity.

Overall, our paper makes several relevant contributions to the existing literature: we extend arguments about the role of state capacity for local violence; we use new data on the manpower dimension of state capacity to test our hypothesis in a relevant country context; and our results cast new light on the state capacity debate, highlighting the conflictual nature of state building, as well as suggesting a greater need for better data and further conceptual disaggregation. Finally, our paper also offers new empirical analysis of conflict patterns in southern Sudan, contributing to a small but growing literature.

The paper is structured as follows: we first briefly introduce previous studies on the role of state capacity and political violence and outline some methodological and theoretical shortcomings. The subsequent section presents our own approach followed by a brief introduction of our empirical case. The next section describes the design, data and results of our analysis. The final section summarizes our main arguments and findings.

State capacity and political violence

From a functional perspective two broad areas of state capacity may be distinguished and considered particularly relevant for the risk of political violence: security and welfare.[2] The first refers to the ability of the state to uphold its monopoly over the legitimate use of force. The welfare function of the state entails the provision of the necessary framework for economic interaction as well as sponsoring of intra-societal economic redistribution (Boulding, 1989; Czempiel, 1981; Milliken and Krause, 2002).

Focusing on the opportunity or feasibility of rebellion, it has been argued that the state's capacity to deter violence matters. The basic argument is that people will refrain from challenging states that have a strong military apparatus at their disposal. Country-level analyses on the link between military power and violent conflict onset have been inconclusive—whereas some studies confirm the role of coercive power others refute its relevance (Bussmann, 2009; Collier and Hoeffler, 2004; Fearon and Laitin, 2003; Fjelde and De Soysa, 2009; Hegre and Sambanis, 2006; Henderson and Singer, 2000). Subnational geospatial analyses have argued that violence will most likely occur in areas where the state is not present or not able to effectively exert authority. For example, Buhaug (2010) finds that, in comparably strong states, violence will occur in the peripheries rather than close to the capital. More generally Buhaug and Rød (2006) find that subnational regions' distance from the country capital has a positive effect on the likelihood of violent conflict in these regions.

Emphasizing the role of grievances rather than opportunities, other studies have focused on the ability of the state to co-opt rather than to coerce. Notably, Bueno de Mesquita et al. (2003) argue that public spending can be used to "buy" the allegiance of broader segments of the population and thus reduce the risk that the people will support challengers of state authority. Taydas and Peksen (2012) as well as Fjelde and de De Soysa (2009) find a significant negative connection between welfare spending and civil conflict. However, performing analyses along the same lines and considering different types of violence, Bussmann (2009) and Bethke and Bussmann (2011) cannot provide support for the thesis. Finally, Thyne (2006) examines the role of educational expenditures, enrolment levels, and literacy rates for civil war onset. He finds substantial pacifying effects of expenditures.

We argue that challenges in three areas have played major roles for this inconclusiveness. They will be briefly sketched in the following three sections before we present our own approach and theoretical argument.

Level of analysis

Countries still constitute the prime unit of analysis in peace and conflict studies. When it comes to state capacity, we argue that such an approach is problematic in two respects: measurement of state capacity on the national level may come with negligence of regional disparities and of differences between input and output.

State capacity is influenced by geography. National-level numbers may obscure the strong concentration of state capacity in specific regions. Quality and quantity of state repression or provision of public goods may vary across subnational regions. Furthermore, the state might be inclined to provide services differently across different regions and groups (Azam, 2001). Thus, for example, high or low total welfare spending might be concentrated in specific regions thus sharpening regional, ethnic or religious cleavages and increasing rather than reducing the risk of violence. National level indicators of state capacity obscure such geographical variation, making it difficult to draw reliable inferences on the actual effects of state capacity on substate violence (e.g. Raleigh et al., 2010; Raleigh, 2011).

Using macro-level (e.g. state-level) indicators to explain political violence requires auxiliary assumptions that link the indicator to local, micro-level dynamics. These assumptions may introduce additional uncertainties into empirical analyses. Thus, for example, one has to assume that national-level military or welfare spending mirrors actual state capacity on the ground. However, inefficiency, inability or corruption may prevent expenditures on public basic services or on military personnel from actually reaching the ground (Fjelde and De Soysa, 2009). Thus, information on state planning, budget allocation and spending may say little about the actual capacity to deliver in various subnational regions.

Conceptualization and operationalization

National and subnational studies alike have been struggling with identifying persuasive indicators for state capacity. Such different indicators as regime type (Hegre, 2001), gross domestic product (GDP) per capita (Fearon and Laitin, 2003) and extractive capacities (Bethke and Bussmann, 2011; Englehart, 2009) have been used on the national level. Subnational geospatial analyses have been operationalizing state capacity using the distance from the capital, the type of terrain (e.g. mountainous or forested) and the density of road networks (Buhaug, 2010; Cederman et al., 2009). We believe that these indicators are problematic in two main respects.

First, they try to capture state capacity in general terms and subsume various elements of state capacity within single indicators. State capacity, however, is a multidimensional concept. It encompasses various functional areas such as the security sector, provision of welfare services and avenues for meaningful political participation (Boulding, 1989; Czempiel, 1981; Milliken and Krause, 2002; Schwarz, 2005). Moreover, on the level of resources that determine state capacity, one may differentiate between finances, personnel and infrastructure. Most of the indicators presented above neglect this multidimensionality. Empirical results obtained with these indicators do not allow for inferences about the relevance of specific elements of state capacity and thus prevent more specified theory-building.

Second, even if we assume that these indicators actually proxy state capacity in general terms, it is not clear if they do not proxy other factors as well. The problem can exemplified with respect to road networks: in addition to state capacity (Cederman et al., 2009), they might be used as indicators for overall levels of development (Buhaug and Rød, 2006); they may be understood as strategic targets of rebel groups (Raleigh and Hegre, 2009) and might enhance rebel logistical capacities (Zhukov, 2012). If dense road networks are found to be negatively or positively associated with political violence, what conclusions can be drawn from these findings? Such ambiguities limit the explanatory power of analyses that rely on these indicators.

Theoretical argument on the subnational level

Finally, subnational analyses have been built on theoretical arguments that have been developed for cross-country studies. The respective hypotheses may, however, not be valid when it comes to the role of state capacity at the subnational level. Previous literature has emphasized the theoretical assumptions sketched above: the more the state is able to coerce or to co-opt, the less likely is the occurrence of violent protest, armed conflicts or civil wars. Such a linear relationship is persuasive on the national level. However, further qualification is needed if we look at the role of state capacity for geographical variation of violence within states, especially for weak or least developed states. The main difference lies in the degree of conceivable state weakness. Contrary to the national level, the state may not only be weak in subnational regions but it may be virtually absent. This may yield consequences for effects of particularly low levels of state capacity. First, on the national level extremely weak states provide opportunities for rebellion but they are generally still strong enough to engage their challengers in violent fights. However, if the state is actually absent in a specific subnational region this may not be the case anymore. Second, from a cross-country perspective it may be argued that grievances stemming from specific state regulations and allocations may trigger resistance in weak states. However, this may not apply to subnational regions without meaningful state presence, where people's expectations towards the state are practically non-existent and where its actions do not impact people's daily lives. Finally, even in extremely weak states it may make sense for rational actors to fight over access to state resources. However, if the state is barely present in a specific subnational region, motives for trying to capture state resources by violent means may be similarly absent. These differences affect associations between state capacity and political violence and need to be taken into consideration in respective subnational analyses.

Analyzing the role of the state's manpower on the subnational level

Our analysis tries to avoid some of the challenges sketched above. To mitigate problems that might emanate from the ecological fallacy we will perform analyses on the subnational level. More specifically, we analyse associations between state capacity and political violence across subnational administrative units. By focusing on the smallest administrative units with meaningful state institutions, we considerably reduce challenges for inference that may result from within-unit variance of the dependent and independent variables. Moreover, contrary to national-level analyses, this approach allows us to measure state capacity where it matters for public perceptions of the state and interactions with state institutions and actors: on the local level. This reduces risks of potential distortions stemming from the gap between macro-level indicators and micro-level dynamics.

Moreover, we focus on a specific element of state capacity, namely its manpower. The state as an organization is crucially dependent on human agents. State employees administer laws and regulations, implement redistributive schemes and public goods delivery, and uphold the monopoly of violence. A state without bureaucrats is hardly anything more than a set of unenforced decrees.[3]

To the best of our knowledge we are the first to proxy subnational variation in state capacity with personnel records across various relevant functional areas. Specifically, we use data on total state employee counts, employees in the security sector and employees in public services provision in South Sudanese counties (more details below). We argue that this

data on personnel is a valid indicator of a specific element of the state's capacities. Thus, the indicator is much less ambiguous.[4] Contrary to data on road networks or distance to state capitals, information on personnel can reasonably be associated with a specific dimension of the state: its manpower in various functional areas. Our data do not reveal any information on the quality of state personnel,[5] their infrastructural or budgetary support. Despite these limitations, we argue that assessing the effects of governmental manpower at the subnational level promises to provide new and relevant insights about the determinants of political violence.

Finally, reflecting some of the criticism raised above and contrary to hypotheses of previous studies, we argue that the relationship between state capacity and political violence follows an inverted-U shape on the subnational level. In many developing countries the state is virtually absent in some regions. We expect these areas to be less violence-prone than regions with intermediate levels of state capacity for three main reasons. First, and quite simply, the state does not fight where it is not present—it will not be targeted by non-state challengers and it cannot itself attack its rivals. Previous subnational studies have demonstrated that violence levels will be highest where territories are contested (Balcells, 2011; Kalyvas and Kocher, 2009). Areas with particularly low levels of state capacity may be refuges for violent actors rather than arenas for violent clashes. Second, low state presence is also associated with especially low values of state resources. In plural societies, conflict often erupts over access to public goods. Notably, different identity groups may try to maximize access to basic service provision or to control public security resources in order to prevail over their rivals. The less the state is present, the lower the value of the resources it has to offer is and the less competition there is about these resources. Moreover, potential inter-communal or inter-ethnic clashes might be effectively mediated by informal institutions in the complete absence of state power (Fearon and Laitin, 1996; Taylor, 1982). Finally, the lower the expectations of the people towards the state, the lower the risk is that grievances are generated owing to inadequate provision of public goods.

We expect intermediate levels of state capacity to be associated with comparatively high levels of political violence. The underlying argument corresponds to the hypotheses put forward in cross-country analyses: the state is present and trying to establish authority but not able to co-opt or to repress effectively. State institutions provide collective goods, but not to the extent needed or demanded. Insufficient supply may be particularly risky: the state raises expectations that it does not fulfil, thus fomenting grievances that can evolve into violent anti-state action. The state's security apparatus engages challengers against its authority within the respective subnational region, without however, being able to supress them effectively, increasing the likelihood that violent events will be observed within the region. Intermediate state capacity might also be associated with inter-communal or inter-ethnic violence because imperfect state intervention and security institutions are mismatched with informal institutions (Tajima, 2013). As compared with situations of particularly low state capacity, access to state resources is more valuable but still scarce. This combination increases the risk that groups engage in competition over access to these resources, potentially leading to increased levels of political violence. Medium-level state presence might also exacerbate inter-ethnic rivalries. When limited state personnel is largely recruited from a single ethnic group, local populations might opt for violent resistance against a state that is trying to assert its authority, but is being perceived as ethnically biased.

Finally, subnational regions with high state capacity should see less violence than other regions. Effective provision of services reduces grievances among the population and

decreases competition over access to these resources. Thus, risks of violence against the state as well as among various competing groups should be lower. Conflict may still evolve within these regions. Moreover, violence may diffuse from neighbouring areas. However, the state's police and military presence is strong enough to repress violent opposition against its authority or to push it back into areas where the state's capabilities are lower. Finally, the state's ability to enforce its monopoly over the use of force should also reduce the likelihood of violence among non-state actors within the respective region. We will test the hypothesis of this inverted-U relationship looking at the distribution of state personnel and violent events in southern Sudan.

The case of southern Sudan, 2006–2010

Southern Sudan in the 2006–2010 time period is a suitable example to test our argument about the non-linear relationship between state manpower and local violence. It provides an empirical context of a developing country in which levels of state capacity vary dramatically between administrative units and state institutions are in the process of institutionalizing a monopoly of violence across the whole territory. The 2005 Comprehensive Peace Agreement (CPA) between the government in Khartoum and the Sudan People's Liberation Army/ Movement (SPLA/M) made an end to the protracted Sudanese civil war. A power- and wealth-sharing arrangement was agreed at the national level. Moreover, the southern region was granted a semi-autonomous status with wide-ranging self-government provisions— including full responsibility over the armed forces and civil administration (e.g. Collins, 2008; Deng, 2005; Young, 2005).

Violence in southern Sudan

Throughout the period under investigation southern Sudan was haunted by various forms of violence. Clashes along tribal lines were particularly widespread in Jonglei and Upper Nile states but occurred across most parts of southern Sudan. Violence evolved from competition over resources such as land, food and cattle, mutual fears of tribal domination and opposing claims on access to political and material resources of local administrative units (Schomerus and Allen, 2010; Walraet, 2008). It is not possible to define a single inter-tribal cleavage. Violent conflicts were not confined to specific tribal constellations—Mundari fought Dinka, Bari fought Mundari, Lou Nuer clashed with Murle (McEvoy and LeBrun, 2010; Schomerus, 2008). During the interim period this kind of fighting along tribal lines constituted the primary cause of violence across most parts of southern Sudan.

Certainly, not in all cases did violence take place in between different tribes. Time and again violence erupted in various parts of the region owing to local power struggles of political elites involving their quasi-private armies. In many cases they were intertwined with more macro-level political dynamics such as the competition for political leadership of the Nuer tribe (ICG, 2009). Sometimes security forces have been involved in fighting—not necessarily as security agents of the state but also as tools of powerful political elites. After the end of the civil war, numerous militia leaders were integrated into the SPLA and the government of southern Sudan. Whereas their integration has helped to buy in numerous military commanders into the official state structures, competition for status, political influence and economic benefits has continued and on numerous occasions led to violent incidents (ICG, 2011b; McEvoy and LeBrun, 2010).

Finally, facing increasing military pressure from the Ugandan army, the notorious Lord's Resistance Army (LRA) moved into southern Sudan, where it terrorized communities in the greater Equatorian states bordering Uganda and the Democratic Republic of Congo (McEvoy and LeBrun, 2010). The rebels established their main base in Acholi-speaking areas in Magwi county and the Imatong Hills during the later period of the Sudanese civil war (Schomerus, 2008). As the war ended, the LRA lost much of its previous support from the regime in Khartoum. In the following years, various attempts at peaceful talks with the LRA failed. The number of violent incidents increased in southern parts of the greater Equatoria region. In the interim period, clashes between the SPLA and the LRA, violence against civilians committed by LRA members and fighting between the LRA and local self-defense militias accounted for most of the violence in these southern regions (McEvoy and LeBrun, 2010; Schomerus, 2008).

The state in southern Sudan

The southern Sudanese state institutions were strongly shaped by the civil war period. The post-war public service emerged out of two distinct organizations: the first was the Civil Authority of the New Sudan. In the early 1990s the SPLA/M felt the pressure to address broader governance issues in addition to purely military concerns. It established the Civil Authority of the New Sudan as the basic civil authority in SPLA/M-controlled areas (Branch and Mampilly, 2005). The Coordinating Council of Southern States was the back-bone of a Khartoum-controlled administrative structure confined to some towns under northern Sudanese control (e.g. Collins, 2008; Johnson, 2003). After the end of the war, both administrative systems were merged. Coordinating Council of Southern States staff were fully integrated into the new southern administration, resulting in an oversized patchwork structure. Whereas the public service further grew in size and some administrative reforms were implemented, this basic setup remained largely the same throughout the period under investigation (World Bank, 2010).

The end of the civil war and the establishment of the semi-autonomous region in southern Sudan raised the population's expectations with regard to rapid improvements of their living conditions. The government has struggled to establish meaningful state presence across its territory and to deliver on people's expectations—not least from a stability perspective in order to prevent the "burst of the expectations bubble" (ICG, 2011a: 18). In many areas the civil administration has largely remained absent. Delivery of basic services has been low. Education and health services, for instance, have been mostly confined to larger villages and state capitals. The government of southern Sudan lacked the personnel, infrastructure and financial resources to ensure service delivery in most rural areas.

The armed forces struggled with similar challenges. The SPLA included many fighters from various former enemy militias that were integrated into the armed forces in 2006 and beyond. All through the interim period the army maintained its heterogeneous character, lacking effective central control and organization. It is ill-equipped, reducing its effectiveness and its mobility. Moreover, it has been perceived in many regions as the agent of powerful political interests. Nonetheless it has remained the central provider of security in southern Sudan (ICG, 2009; McEvoy and LeBrun, 2010). The police force consists mainly of former SPLA soldiers, often behaving more like soldiers than police officers (Schomerus and Allen, 2010). In the interim period many areas did not have any police posts. Lack of

communication infrastructure and vehicles prevented the police from ensuring the safety of the population beyond the boundaries of major towns (ICG, 2009).

Whereas the state was overall very weak in the interim period, it nonetheless tried to project its authority across the southern Sudanese territory. Notably, civil administration and security forces claimed functions held by local traditional elites while the state was absent. In many areas such local authorities had been capable of maintaining a certain degree of order where government institutions had not been present or effective (Schomerus and Allen, 2010). The expanding state, however, forced them into cooperation, undermining their credibility and acceptance within their communities (Höhne, 2008). Considering the weakness of the state in many parts of the country, its expansion may have actually led to a decline rather than an increase in effective governance.

Having briefly introduced the context of the state and political violence in the period of interest we will now move on to the statistical analysis of violence in southern Sudanese counties.

Design, data and results

Data and operationalization for the dependent and independent variables

We analyse associations between state capacity and political violence on the subnational level. Contrary to most other studies, we do not concentrate on violence in actual armed conflicts or civil wars. As explained above, southern Sudan has experienced various forms of violence, including clashes between state and non-state actors, inter-communal fighting and violence against civilians. None of these different forms of violence qualifies for categorization as armed conflict or civil war in line with the widely applied definition by the Uppsala Conflict Data Program/Peace Research Institute Oslo (UCDP/PRIO; Gleditsch et al., 2002). Whereas we consider various manifestations of violence, we assume that state capacity matters for their occurrence and intensity in similar ways, in line with the hypothesis put forward above.

We use data from the Armed Conflict Location and Event Dataset (ACLED) project (Raleigh et al., 2010). The dataset contains geo-referenced violent event data for numerous countries on the African continent and beyond. ACLED data has been criticized for geocoding problems, notably miscoding owing to lack of differentiation of villages with similar names and misuse of geo-precision codes that indicate whether information provided refers to the exact location or broader geographic areas (Eck, 2012). To mitigate these issues, we implement two complementary approaches. First, based on locations named in the ACLED data, we match violent events to the counties of southern Sudan. Second, we use latitudes and longitudes provided by ACLED to match events to counties.[6] Both approaches produce event counts that are highly, but not perfectly, correlated. For our main analysis we rely on events matched to locations based on names instead of geo-codes, but we repeat all our analyses using the alternative data, with no effect on our substantive results. Our main dependent variable throughout the analysis is a simple total count of violent events in each southern Sudanese county.

Our independent variable is state capacity, as expressed through manpower. We use information on the number of serving public personnel per capita for each county as our main measure. After the end of the Sudanese civil war in 2005, the Government of southern Sudan initiated an administrative census with the aim of enumerating and appraising the human

resources available in the public sector of the semi-autonomous region. The exercise received support from the World Bank and was implemented by a team of international consultants (Computer Feeds Ltd and Ecotech Consultants). A total of 62,172[7] survey forms where filled in between December 2005 and January 2006. Data was processed, cleaned and analyzed by the implementing consultants. The final report, including technical descriptions and detailed results, can be downloaded from the website of the World Bank.[8]

We used numbers on serving public service personnel per county provided in the annex of the report.[9] In order to match information from the report with data from other sources, we had to adjust some of the data. Administrative divisions in southern Sudan were amended shortly after the end of the civil war. Some counties were merged while others were newly established. Moreover, some names provided in the list did not refer to actual counties in southern Sudan. To provide a reliable list of counties that allowed for integration with information generated after 2006 (see list of variables below), we used the county list from the 2008 national Sudanese census as the central reference. The 2006 report contains information on 120 counties, whereas the 2008 census lists only 84. Most of the county names that constitute the difference refer to former counties or to single towns. We researched which of the counties were merged and the boundaries within which they lay in 2008 and attributed the numbers respectively. Finally, we excluded all counties from the list that could not be attributed to any county in the 2008 list.[10]
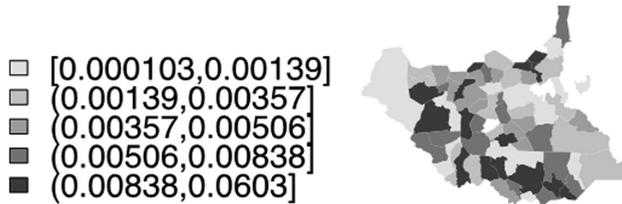
The personnel list contains functional categories such as agriculture, wildlife, education, healthcare, finance, local government, technical and security.[11] To measure state manpower we used three alternative measures. First, we used total personnel numbers across all categories, normalized by local population size. We then focused on the two distinct aspects of state capacity: security and services provision. To measure the ability to sustain the monopoly of violence, we created an indicator that counts only personnel in the security and wildlife categories per county-population. We added employees of the wildlife department since rangers in southern Sudan are armed. They are mostly former SPLA soldiers and should be associated with armed forces rather than with administrative staff. We calculated security personnel per capita and per county size, since the provision of security has an important territorial dimension. To measure state manpower in services provision, we counted personnel in the education and healthcare sectors, the two largest government services categories, again normalized by the size of the local population.

The maps in Figure 1 indicate that the highest levels of violence occurred in the southernmost counties, which are also characterized by intermediate to high levels of state capacity. At the same time, other regions with low levels of state capacity, such as the southeast, are also regions with the lowest numbers of violent events in the 2006–2010 period.

When we look at the bivariate correlations between our personnel based indicators of state capacity and other prior used variables, we find hardly any association. Average GDP per capita in southern Sudanese counties is negatively correlated with our measures of state capacity, at fairly low levels. Capital distance shows barely any correlation with state capacity either. Difficult terrain and estimates of average travel times to the next largest city show a moderate amount of correlation with our three state capacity measures, but in the case of forested terrain, not in the theoretically expected direction. Estimates of road density show the strongest degree of association with state capacity, between 0.225 and 0.263 (while still being likely to exert independent effects on political violence). Hence, our focus on state manpower and the associated data from southern Sudanese counties clearly provides information on a different aspect of state capacity that has not been sufficiently captured with

(a) County Violence

[0,1]
(1,3]
(3,5]
(5,8]
(8,10]
(10,60]

(b) County State Capacity

[0.000103,0.00139]
(0.00139,0.00357]
(0.00357,0.00506]
(0.00506,0.00838]
(0.00838,0.0603]

Figure 1. Violence and state capacity in southern Sudan, 2006–2010.

Table 1. Correlation matrix for state capacity indicators

	State capacity	State capacity (security)	State capacity (services)
Average GDP per capita	−0.062	−0.004	−0.047
Forest	0.151	0.063	0.175
Travel time	−0.110	−0.143	−0.042
Road density	0.263	0.232	0.225
Capital distance	−0.007	0.067	−0.016
State capacity	1.000	0.739	0.855
State capacity (security)	0.739	1.000	0.301
State capacity (services)	0.855	0.301	1.000

existing measures. The low strength of correlation between our manpower-based indicator and other variables does not necessarily suggest that other studies have relied on invalid measures, but rather that prior results represent at a minimum a wholly different dimension of state capacity than is analyzed in this paper.

Alternative explanations and control variables

We include further socio-economic variables into our analysis to control for alternative explanations of the location and intensity of violence. As we are not able to control for all

potentially competing factors, we focus on variables that might act as potential confounding factors and that may play an important role in the specific context of southern Sudan in the period under investigation.

Our empirical analysis focuses on the interim period between 2006 and 2010 after the civil war between northern and southern Sudan and before South Sudan became an independent country. Country-level analyses have demonstrated that post-war countries face significantly higher risks of relapse into violence than other countries (Collier et al., 2008; Walter, 2004). This argument may also apply to subnational regions. Thus, those counties that experienced intense violence during Sudan's civil war may display specific socio-economic characteristics that increase the risk of violence in the post-war period. Furthermore, past levels of violence might have impacted levels of state capacity in 2005/2006. Hence, we include a count variable of violent events in the pre-2006 period.

It can be argued that violence will be more to likely occur in regions that are strongly populated (Hegre and Sambanis, 2006). The underlying argument is straightforward: the more people live within a given administrative unit, the more people can be mobilized (e.g. Raleigh and Hegre, 2009). Information on population counts has been taken from the 2008 census. While using a measure of population counts collected in the beginning years of our period of analysis is not ideal, the census data are the only available and reliable population estimate at the county level. For our regression analysis we log-transform local population counts.

We also control for the distance to the border for each county. Border distance has been identified as a relevant predictor of violent conflict (Buhaug and Rød, 2006). Distance from an international border might also correlate with the reach of the state. Moreover, in the case of southern Sudan, border distance may influence susceptibility towards violence incited by the Government of Sudan through local proxy militias as well as by transnational actors such as the LRA. To calculate border distance, we drew on the newly available PRIO-GRID data structure (Tollefsen et al., 2012). The PRIO-GRID provides geo-referenced data on a number of important variables at a 55×55 km grid level. We matched grid cells associated with each county and calculated the average for each variable. This gave us, in the case of border distance, the average distance to the next border for each grid cell included in the county.

Previous studies have put forward the argument that areas that are difficult to access provide opportunities for rebel groups to hide from strong state armies (Collier and Hoeffler, 2004; Fearon and Laitin, 2003). The most often emphasized aspects of terrain are mountains and forests. To account for the effect of terrain accessibility on the location of violence, we included measures for road density and terrain. For road density we counted the number of major roads in each county, based on a shapefile provided by the United Nations Development Programme. For difficult terrain we focused on forested areas, since mountainous terrain is negligible in most parts of southern Sudan. Again, we used the PRIO-GRID data to calculate the average share of forested terrain in all grid cells associated with a county.

Various studies emphasize the role of low income and poverty for political violence (Justino, 2009; Murshed and Gates, 2005; Østby, 2008), arguing that low living standards lead to grievances and violence. Thus, violence may occur where people are particularly poor and where overall development levels are low (Buhaug et al., 2011). To control for this competing explanation we included a measure of GDP per capita, aggregated to the county

level from PRIO-GRID data. Originally, this data was based on local GDP estimates from Nordhaus (2006).

It has been argued that differences among identity groups might lead to competition and conflict over political or economic resources (Bodea and Elbadawi, 2007; DiPasquale and Glaeser, 1998; Ellingsen, 2000; Fearon and Laitin, 2003; Reynal-Querol, 2002). Similarly, broken down to the subnational level, it has been argued that violence of any kind will be more likely in areas that display specific identity constellations such as polarization or fractionalization (Østby et al., 2011). As argued above, ethnicity has played a crucial role in violence in southern Sudan—much of the violence in the interim period has taken place along tribal lines. Based on maps of settlement patterns of Sudanese ethnic groups, provided by the United Nations Office for the Coordination of Humanitarian Affairs, we counted the number of ethnic groups in each county as a basic proxy for ethnic heterogeneity. Our measure is not ideal. The (relative) size of identity groups may influence inter-ethnic relations. Similarly, specific inter-ethnic constellations may be particularly violence-prone. We are not aware, however, of any detailed survey of ethnic affiliations in southern Sudan, disaggregated on the county level. Moreover, identification of specifically violence-prone ethnic constellations would not only be utterly complex, requiring detailed historical analysis of all possible inter-ethnic relations, but would also probably be futile. Inter-ethnic violence has erupted along very different ethnic constellations in different counties of southern Sudan. Some of them may have been "expectable", considering previous inter-tribal conflicts; others, however, reflect cleavages that have not been politically salient before but that result from more recent and more mundane political and socio-economic developments and conflicts (Schomerus, 2008; Schomerus and Allen, 2010). The latter constellations would be missed by any variable aiming at capturing "violence-prone" ethnic constellations. We therefore relied on a parsimonious diversity measure, acknowledging the limits of this approach.

Much attention has also been given to the role of resources for violent conflict (Basedau and Lay, 2009; De Luca et al., 2012; Lujala, 2009). It can be argued that violence will most likely be observed in resource-rich areas because rebels try to capture these resources to finance their rebellion or because state-sponsored extraction of resources can generate grievances among people living in resource-rich areas. We included a simple dummy variable on the presence of oil or gas deposits in each county, based on the geocoded PETRO-DATA provided by Lujala et al. (2007).

Finally, one might also be concerned about the potential confounding effects of non-governmental organization (NGO) activity. NGOs play an important role in service provision in southern Sudan and might act as a substitute for state capacity (Bennett et al., 2010). Although the theoretical impact of NGO activity on the relationship between state capacity and violence is somewhat unclear, non-state service provision might still act as a confounding variable. We utilized a report on NGOs in southern Sudan that provides the number of NGO programs unique to single counties (South Sudan NGO Forum, 2013). Although the report is from 2013 and thus compiled after the time frame of the analysis, it is the best available data on NGO presence at the county level. We constructed a simple dummy variable that takes the value 1 if a county is ranked in the top category of NGO activity.[12] Given the shortcomings of the indicator, we estimated all models with and without it. Results of the latter models correspond to the ones presented below.

Table 2. Violence in southern Sudan, state capacity

|	(1) Negative binomial	(2) Negative binomial	(3) Logit
Pre-2006 violence	0.0113*	0.0200**	0.0562**
	(0.00482)	(0.00756)	(0.0190)
log(Population)	0.747*	1.314*	5.694*
	(0.337)	(0.627)	(2.243)
Border distance	−0.00317	−0.00179	−0.0187
	(0.00260)	(0.00344)	(0.0157)
Road density	357.2	190.2	51.75
	(363.4)	(258.2)	(876.2)
Forest	−0.00747	−0.0237	0.00322
	(0.0125)	(0.0184)	(0.0546)
GDP per capita	−0.00677	−0.00672	−0.0257
	(0.00489)	(0.00551)	(0.0217)
NGO activity	0.932$^+$	0.646	—
	(0.543)	(0.481)	—
Number of ethnic groups	0.00724	−0.0343	0.211
	(0.123)	(0.0756)	(0.293)
Oil	0.390	−0.263	7.064*
	(0.383)	(0.606)	(3.020)
State capacity	110.1***	58.37	1917.8***
	(31.75)	(55.35)	(482.6)
State capacity squared	−1812.5***	−742.5	−68160.1***
	(425.1)	(1270.0)	(17600.8)
Constant	−2.034	−8.280	−54.24*
	(6.061)	(5.748)	(21.17)
State dummies	No	Yes	No
Observations	72	72	69

Clustered standard errors in parentheses.
$^+p<0.10$, *$p<0.05$, **$p<0.01$, ***$p<0.001$.

Model specification and results

Our basic dependent variable is the number of conflict events in each county in the 2006–2010 time period. Counts are usually modeled in the generalized linear modeling framework to explicitly account for non-normality. Since the count of violent events is over-dispersed, that is, the variance is larger than the mean, we used standard negative binomial models.

An alternative dependent variable dichotomizes the counts of violent events based on a threshold of five events. Doing so sacrifices some of the information in the underlying count, but coarsening the variable might address some concerns of measurement bias.[13] For this binary measure we estimated a standard logit model. We always clustered standard errors at the state level to account for arbitrary serial correlation and heteroskedasticity. Table 2 presents our first set of estimation results for overall state capacity.

Column 1 estimates the negative binomial model with our measure of overall state capacity and its squared term, controlling for confounding factors. The linear term is statistically significant below the 0.1% level and positive. The quadratic term is negative and also statistically significant below the 0.1% level. This provides clear evidence for our hypothesis that there exists an inverted-U relationship between state capacity and violence. In column 2 we
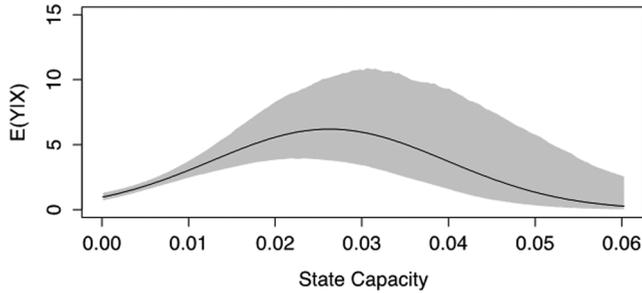
**Figure 2.** Effect of state capacity on the expected number of violent events and 95% confidence intervals.

add a full set of state-level dummy variables. Including such state "fixed effects" allows us to control for any unobserved factors constant across counties within the same state.[14] Note that this asks a lot of our limited dataset of 72 observations, since additional parameters have to be estimated. Column 2 shows that the linear and quadratic state capacity terms still have the correct signs, but lose statistical significance. This might be because important variation in our data comes from differences between counties of different states. Importantly, when the model only includes the state capacity measure, its square and the state dummies, we can recover a highly statistically significant inverted U effect. When using our binary measure of violence (column 3) to estimate the effect of state capacity on the conditional probability of experiencing more than five events, we also find a highly statistically significant inverted U-shaped effect.

Of the controls we find that population size and prior violence play a consistently statistically significant and expected role. For all of the other control variables we mostly find no robust statistically significant effects. The NGO activity measure is dropped in the logit estimations, because high levels of NGO presence overlap perfectly with the binary conflict measure, that is, NGO focus on conflict affected regions. Interestingly, after controlling for our measure of state capacity, GDP per capita has no clear effect on violence. In total, for general levels of state capacity we find tentative evidence in support of our hypothesis.

Since we are working with generalized linear models, we cannot simply judge the substantive importance of state capacity from the coefficients in Table 2. Instead we simulate the expected number of events as state capacity varies from the sample minimum to the maximum, holding all other factors at their respective means, medians or modes (King et al., 2000). Figure 2 shows the average effect and the associated 95% confidence intervals.

We can clearly see the shape of an inverted U, as suggested by the signs of the coefficients in Table 2. At low levels of state capacity, the expected number of violent event counts in a county is around one to two. As the level of state capacity increases, the average number of event counts rises dramatically to peak values around five to six events. At even higher values of state capacity though, expected event counts start to fall again back to initial levels of around one to two. This clearly shows the substantive importance of state capacity: at intermediate levels of state capacity, violent events are approximately three times as frequent as at low or very high levels.

Our results are particular pronounced for the initial effects of state capacity. These findings provide strong evidence against the linear *negative* association between state capacity
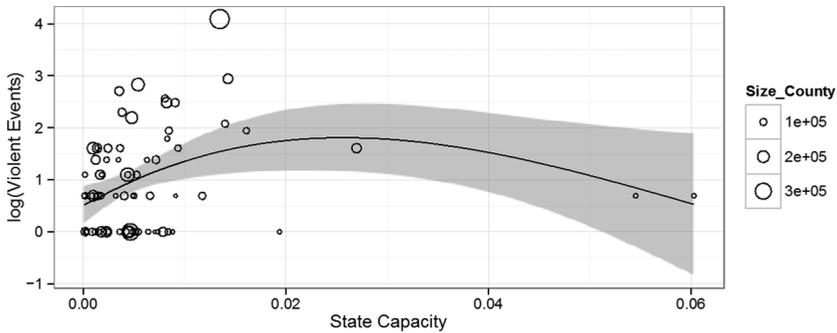
Figure 3. Bivariate relationship between state capacity and logged violent events, point size scaled by county area.

and political violence emphasized in cross-country studies. Moreover, the results suggest that the initial establishment of state authority has been a rather conflictive and potentially violent process in the case of southern Sudan. Findings are somewhat weaker for the right-hand half of the inverted U. This is probably due to the lower number of counties that score at the higher levels of state capacity, making precise estimates difficult. To investigate this further we show in Figure 3 a simple scatterplot of county-level state capacity and the logged number of conflict events. We also fit a quadratic function to the data. We can see that, even in the bivariate context, at very low levels of state capacity there are fewer violent events. At medium levels of state capacity we find counties with the highest levels of violence. At very high levels of state capacity, violence is again limited. This graph shows though that there are very few counties in the dataset that score highly on the state capacity measure. This illustrates the difficulty in precisely estimating the effect of the highest levels of state capacity on violence, but further substantiates the conflict-increasing effects at low to medium levels of state capacity.

Tables 3 and 4 unpack which subcomponent of state capacity is the main driver of this relationship: security or services provision. Table 3 shows estimated coefficients and clustered standard errors for our state capacity indicators that only count security personnel.

Models 1–3 show the effect of state security capacity normalized by population, while models 4–6 normalize the measure by county size. Results are weaker for security personnel per capita. Neither the standard negative binomial nor the model with additional state dummies shows any effect of state capacity (although a model with just state dummies again shows statistical significance). Only the logit model shows a statistically significant inverted U-shaped effect. Results are much stronger for state security personnel, normalized by county size. Here we find across all three models the correct signs. The linear term is statistically significant at the 10, 1 and 5% level, respectively. The quadratic term is statistically significant at the 10% level in all three models. Furthermore, a joint *F*-test indicates that we can reject the null hypothesis of both terms being simultaneously zero.

The somewhat weaker findings, especially with regard to the measure normalized by population size, may be due to the inconsistent role of the security forces in the interim period: qualitative accounts from southern Sudan stress that actions by the army have been strongly influenced by local political and ethnic constellations. Whereas the SPLA has effectively

Table 3. Violence in southern Sudan, state capacity (security)

	(1) Negative binomial	(2) Negative binomial	(3) Logit	(4) Negative binomial	(5) Negative binomial	(6) Logit
Pre-2006 violence	0.0136* (0.00552)	0.0233* (0.0103)	0.180*** (0.0536)	0.0103 (0.00697)	0.0146** (0.00554)	0.0230 (0.0345)
log(Population)	0.779* (0.356)	1.367* (0.532)	3.795** (1.431)	0.587+ (0.343)	1.221** (0.382)	5.397 (3.876)
Border distance	−0.00333 (0.00284)	−0.00140 (0.00294)	−0.0206* (0.00992)	−0.00330 (0.00314)	−0.00147 (0.00309)	−0.0153+ (0.00895)
Road density	459.0 (427.4)	236.2 (266.1)	1289.8 (940.5)	475.5 (305.3)	285.8 (180.0)	−1066.8 (2050.2)
Forest	−0.00274 (0.0127)	−0.0237 (0.0172)	0.0343 (0.0317)	−0.00268 (0.0123)	−0.0229+ (0.0123)	0.0737 (0.0628)
GDP per capita	−0.00831 (0.00551)	−0.00680 (0.00520)	−0.0300 (0.0254)	−0.00663 (0.00522)	−0.00608 (0.00499)	−0.0219 (0.0187)
NGO activity	0.999 (0.620)	0.696+ (0.399)	—	1.228+ (0.655)	0.851* (0.418)	—
Number of ethnic groups	0.0149 (0.127)	−0.0116 (0.0803)	0.609+ (0.311)	0.0282 (0.109)	0.00748 (0.0649)	0.676 (0.775)
Oil	0.265 (0.458)	−0.417 (0.453)	5.735 (3.567)	0.413 (0.549)	−0.390 (0.529)	6.585+ (3.944)
State capacity (security personnel per capita)	125.4 (98.53)	5.375 (171.1)	2942.5** (1111.8)			
State capacity (security personnel per capita) squared	−3340.0 (2379.8)	2886.0 (4226.3)	−24,2547.3** (81,155.1)			
State capacity (secure area) squared				24.66+ (13.63)	23.66** (8.385)	352.8* (170.5)
State capacity (security personnel per capita) squared				−146.1+ (88.16)	−140.9+ (72.40)	−2503.8+ (1329.6)
Constant	−1.016 (6.971)	−8.863 (5.831)	−28.36 (31.27)	−0.526 (6.591)	−8.052+ (4.558)	−57.56 (52.80)
State dummies	No	Yes	No	No	Yes	No
Observations	72	72	69	72	72	69

Clustered standard errors in parentheses.
+p<0.10, *p<0.05, **p<0.01, ***p<0.001.

Table 4. Violence in southern Sudan, state capacity (services)

	(1) Negative binomial	(2) Negative binomial	(3) Logit
Pre-2006 violence	0.0150**	0.0224***	0.0551**
	(0.00476)	(0.00582)	(0.0189)
log(Population)	0.792*	1.412***	2.600*
	(0.326)	(0.260)	(1.269)
Border distance	−0.00249	−0.00185	−0.00489
	(0.00271)	(0.00290)	(0.00762)
Road density	348.3	192.3	−2900.0[+]
	(317.9)	(201.6)	(1640.5)
Forest	−0.00735	−0.0278*	0.000180
	(0.0126)	(0.0114)	(0.0289)
GDP per capita	−0.00773	−0.00825[+]	−0.0155
	(0.00555)	(0.00464)	(0.00980)
NGO activity	0.929[+]	0.568*	—
	(0.528)	(0.275)	—
Number of ethnic groups	0.0316	−0.0158	−0.252
	(0.131)	(0.0606)	(0.402)
Oil	0.250	−0.243	2.342
	(0.322)	(0.374)	(2.269)
State capacity (services)	181.1***	154.1[+]	1126.6[+]
	(34.25)	(80.43)	(600.9)
State capacity (services) squared	−6007.1***	−4857.1*	−44514.3
	(1095.7)	(2455.9)	(43764.3)
Constant	−1.783	−8.014[+]	−20.64
	(6.469)	(4.389)	(17.05)
State dummies	No	Yes	No
Observations	72	72	69

Clustered standard errors in parentheses.
[+]$p<0.10$, *$p<0.05$, **$p<0.01$, ***$p<0.001$.

deterred and contained violence in some areas, it may have contributed to inciting violence in others. Most notably, many small "private armies" persist within the SPLA. They are loyal to former militia commanders that were integrated into the SPLA after the end of the civil war. Whenever such leaders decided to engage in unilateral action against the state, respective units were quickly mobilized against regular SPLA forces (ICG, 2011b; McEvoy and LeBrun, 2010). Moreover, SPLA soldiers often intervened in communal conflicts on behalf of their respective identity groups, contributing to escalation of violence (ICG, 2009). Such variations in SPLA actions may explain the inconsistent results we find in our estimations. Compare this with the results for state capacity in services provisions, presented in Table 4.

For the ability to provide services we find clear evidence of an inverted U-shaped effect. Both the negative binomial models without and with state dummies show the correct signs and statistical significance for the linear and quadratic term. The logit model also estimates a positive linear and negative quadratic terms, albeit at lower levels of statistical significance. Looking at the rather desolate state of public service delivery in southern Sudan in the interim period, it is rather surprising that the link between state capacity and violence is less

strongly affected by the security dimension of the state and much more so by its ability to provide services. Moreover, previous qualitative accounts emphasize poor quality of service provision as well as low effectiveness of state institutions and international actors in providing for an actual "peace dividend" in the aftermath of the civil war (e.g. Bennett et al., 2010). We believe, however, that it would be misleading to consider objective indicators of actual service delivery alone. Reports from South Sudan indicate that people's perceptions of state action are essential. Service delivery may be perceived as poor, deficient and therefore irrelevant from the outside, but survey evidence suggests that people actually attach great value to it and judge the state in terms of its efforts at providing services in an equitable way.

When asked for priorities with respect to ensuring security, expansion of health and education services have been ranked among the top five priorities by communities across various counties (e.g. UNDP et al., 2012a, b). In focus group discussions done for the National Democratic Institute in 2011, people emphasized that the public delivery of basic services to all southern Sudanese would "cure" many of the country's problems. Most people asked recommended that the government focus on improvements in basic services, with education and health cited as top priorities (Cook and Moro, 2012). Interviews, focus group discussions and questionnaire-based surveys undertaken by Schomerus and Allen (2010) stress that the absence of development has encouraged violent behavior. Almost all people claimed that better access to services would be essential for securing peace.

Our findings suggest that a low presence of service personnel was associated with low levels of violence. We argue that people's expectations are essential in this respect. Surveys indicate that people's frustrations are often based on a sense of feeling abandoned by the state (UNDP et al., 2012a). However, such expectations would have certainly been particularly low where the state has never been able to establish any meaningful presence. Similarly, surveys stressed that a sense of unequal treatment in terms of service delivery incited tribal competition—the background of many incidents of violence across southern Sudan. However, where the state has been virtually absent in terms of service delivery, inequities will generally be less pronounced. Moreover, the value of state capture was particularly low, reducing the intensity of competition.

Competition was certainly more intense in areas with more substantial state presence and service provision. Participants in the above-mentioned studies emphasized that unequal provision of services along tribal lines forced them to resort to tribalism themselves (National Democratic Institute, 2012). Such dynamics have in many instances led to fierce competition for access to government that eventually escalated into violent clashes. Moreover, the state's presence raises people's expectations as regards the state's provision of services that are urgently needed. However, as the state is not strong enough to ensure delivery on a broad range, unmet expectations may increase the risk of violent behavior in line with surveys cited above.

Finally, as the number of state personnel increases, potentially beneficial effects of state presence become more pronounced. High levels of personnel in service delivery certainly do not mean abundance and broad-based coverage in the case of southern Sudan. Still, considering prioritization of service delivery by the population, we assume that higher numbers of personnel can instill the perception that the state is trying to address the essential needs of the population. Moreover, as the number of personnel increases, it will become less likely that single identity groups are able to control all of the service provision, potentially easing competition among tribes.

In total, given the appropriate operationalization, the non-linear pattern suggested in the simple maps presented in Figure 1 is borne out in the multivariate statistical analysis: even after controlling for a comprehensive list of important confounding factors, as well as unobserved effects at the state level, we still find good evidence for a non-linear effect of state capacity on violence.

Further robustness checks

We implemented a series of additional robustness checks to further establish the strength of the finding. In the following we simply summarize our auxiliary findings, while some of the detailed results and regression tables are provided in the supplementary Online Appendix.[15]

First, we re-estimated our models for the personnel indicators using slightly different geocoded event counts based on longitude and latitude provided by ACLED (all and only high-quality events). In both cases we again found strong confirmation for our finding.

It might also be of concern that the capital county of Juba registers the highest number of conflict events and might drive our findings. We repeated our analysis dropping Juba county and still found a clear, strongly statistically significant effect and non-linear effect of state capacity.

Similarly, we also dropped counties with the maximum values of overall state capacity and state capacity in services provision. The concern is that an outlying county with very high levels of state capacity and unrelatedly low violence is driving the results. Dropping the counties with maximum values and repeating the analysis we can still confirm all of our results. Taken together, our statistical analysis provides overwhelming evidence of a more nuanced theory of the relationship between state capacity and violence in the developing world.

Conclusion

It is intuitively convincing that countries will tend to experience more violence when states are not able to effectively secure their monopoly over the use of force or if they are not capable of providing essential public services to their citizens. A growing body of literature aims at investigating this association empirically. These efforts have been severely hampered by lack of data that would allow for persuasive operationalization of different facets of state capacity. Moreover, the dominant cross-country approach blurs potential gaps in between national-level planning and actual capacity and does not allow for consideration of subnational variations of state capacity. On the other hand, subnational analyses have not adequately considered potential differences between the national and subnational levels for the generation of hypotheses that link state capacity to political violence.

Our analysis overcomes some of these challenges. Focusing on the subnational rather than the national level, we mitigate challenges emanating from ecological inference. Second, our analysis relies on data on the geographical distribution of personnel that is more readily associated with varying degrees of the manpower dimension of state capacity across subnational regions. Finally, we propose a theoretical argument that accounts for the specificities of the subnational level of analysis as compared with the cross-country approach.

We have said a great deal about the shortcomings of previous studies. We are, however, also very much aware of the problems that come with our own analysis. First, our estimations are time-invariant and do not differentiate strongly between different types of violence.

Such aggregation covers temporal changes and potentially diverging dynamics of different types of violence such as inter-communal clashes or anti-state riots. Second, the number of personnel provides for a persuasive but not a flawless operationalization of the state capacity: certainly qualification and budget as well as material equipment and infrastructure matter significantly for state capacity. Finally, as compared with cross-country studies, the scope of our findings is rather limited. We have concentrated on a single case study that can be considered special in various respects—the type of violence, the specific post-war administrative structure and the generally low overall capacity of state institutions in southern Sudan.

Thus, whereas we cannot claim that our findings can be directly transferred to other cases, we are convinced that our results yield important insights for research on the role of state capacity for political violence. Most notably, we find a robust non-linear association. While we find supportive evidence for the pacifying effects of state capacity, this only applies when the state extends its power from intermediate to high levels. Contrary to previous studies, our analysis suggests that state penetration may increase rather than reduce the risk of violence if it is not strong enough to deter or co-opt potential opposition. This finding resonates with historical work on the emergence of the state in Western Europe and its partial absence in Africa (Herbst, 2000; Tilly, 1992): building state capacity is a bloody and arduous conquest, which might only pay peace dividends in the long run. This qualified understanding of the role of state capacity for political violence carries important implications for current debates on state failure and post-war reconstruction.

Notes

1. We use "Political violence" as an umbrella term for various forms of collective violence such as anti-state riots, communal violence and clashes between organized non-state actors and the state (Gurr and Bishop, 1976).
2. Representation or legitimacy is often referred to as third relevant dimension of state capacity (Milliken and Krause, 2002; Schwarz, 2005). In this sense capacity refers to the state's ability to provide for meaningful political participation, inclusion and peaceful reconcilement of differing interests. Whereas we do not deny that such factors may matter for political violence, we do not consider them in our analysis. First, these factors are more associated with regime type than state capacity. Moreover, variation of representation is hard to capture in subnational analyses, where all of the units of analysis are subject to the same national government system.
3. Previous studies have used numbers of personnel as indicator for state capacity (Bussmann, 2009; de Rouen and Sobek, 2004; Walter, 2006). However, they consider military personnel only. Thus, in terms of the role the state's human resources, they have missed substantial elements of state capacity.
4. While the relative size of local government personnel force might also be a measure of patronage politics and clientelistic efforts, we believe that this still reflects essential human capital capacities

that governments can rely on. Clientelistic networks and patronage hiring might be used for political ends, but still represent one form of an effective delivery mechanism and organizational strength.

5. Some of the recorded employees might be beneficiaries of patronage and not actually perform any functions on behalf of the state.
6. We created one event count indicator that uses all events recorded by ACLED and one alternative count that only uses events with high-quality geo-codes as indicated by ACLED.
7. As this was the first exercise of this kind in southern Sudan, the degree of non-response cannot be estimated.
8. http://siteresources.worldbank.org/INTSUDAN/Resources/Final_report_SS_JD.pdf
9. The report does not include counts of international staff.
10. For example, "GoSS", the acronym for "Government of Southern Sudan" or "Khartoum" the capital of Sudan
11. We excluded the non-descript category "other".
12. Results are unaffected when we also include counties in the second highest category.
13. It might be the case that ACLED event counts under- or overestimate the exact number of events. It is less likely though that a distinction between counties with high and low levels of violence is subject to the same degree of measurement bias.
14. There exists no clear equivalent to standard ordinary least squares fixed effects models for count data. Allison and Waterman (2002) show that fixed effects count models, as implemented by the statistical software STATA, do in fact not control for time-invariant unobserved factors. They instead recommend as a simple approximation the use of unit dummies. The incidental parameters problem will also be less of a concern in our models, since we only include dummies at the state, not the county, level.
15. Online Appendix is available at: https://www.dropbox.com/s/l6qaoav0x49xexz/SUPPLEMENTARY%20APPENDIX.pdf

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