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Do modern-time wars make states?  
Panel data evidence

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## **DO MODERN-TIME WARS MAKE STATES? PANEL DATA EVIDENCE<sup>1</sup>**

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### **ABSTRACT**

We re-examine the view that wars make strong states, taking advantage of panel data to address two of the most obvious endogeneity concerns that arise in this context: initial conditions and persistence of state capacity. Our main message is that, in modern times, there is no evidence that wars lead to strong states. In contrast to findings for earlier periods, our results show that external conflicts have displayed a negative correlation with traditional measures of state capacity in recent decades, which becomes insignificant after controlling for initial conditions and the persistence of state capacity. As in previous work, we find a negative capacity- internal conflict correlation, robust to controlling jointly for initial conditions and persistent effects.

*Keywords:* State capacity, conflict, external war.

*JEL codes:* O1, H1, H8.

*Word count:* 8,711

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## “¿Guerras que construyen estados? Evidencia a partir de un panel de datos”<sup>1</sup>

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### Resumen

Este artículo re-examina la hipótesis de que las guerras contribuyen a fortalecer los estados. Usamos datos de panel para mitigar dos de las más obvias fuentes de endogeneidad en la estimación del impacto de una guerra en la capacidad estatal: condiciones iniciales y la persistencia de las instituciones. Nuestro mensaje central es que, al menos para las décadas más recientes, no hay evidencia de que los conflictos fomenten la capacidad del estado. En contraste con resultados de estudios que se refieren a tiempos anteriores, nuestros hallazgos muestran que en las últimas décadas ha habido una correlación negativa entre la ocurrencia de guerras entre países y las medidas tradicionales de capacidad estatal para los países involucrados. Esa correlación negativa se convierte en no significativa (tanto en magnitud como en términos estadísticos) una vez las estimaciones toman en cuenta el papel de las condiciones iniciales y la persistencia de las instituciones. En términos de la relación de la capacidad estatal con la ocurrencia de conflictos internos, encontramos una correlación negativa. Esto es consistente con la literatura previa, pero en nuestro caso se muestra que esta correlación sobrevive a la inclusión de controles conjuntos de condiciones iniciales y persistencia.

Palabras clave: capacidad estatal, conflicto, guerra externa

Código JEL: O1, H1, H8

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<sup>1</sup> Las opiniones expresadas en este documento son las de los autores y no comprometen a las instituciones con las que están afiliados. Agradecemos los valiosos comentarios de participantes en las reuniones de ASSA 2010, LACEA 2010, y la primera reunión de America Latina Crime and Policy Network (AL CAPONE), en particular Rafael Di Tella. Agradecemos también a José Tessada, quien proveyó parte de los datos.

## 1. INTRODUCTION

State capacity is a key to development. Understanding what shapes state capacity is thus clearly fundamental to understanding development. The literature is varied, and has pointed at democracy, equality and other factors as determinants of a state's capacity to conduct its business (e.g. Besley and Persson 2008, 2009). One particularly provocative set of arguments, well established in political sociology, suggests that wars may also be engines for state capacity (e.g. Tilly, 1990; Stubbs, 1999; Desch, 1996; Centeno, 1997 and 2002).

Why would wars strengthen a state's capacity? At least two sets of arguments have been proposed. Successfully fighting a war requires a capable state, and thus the threat of conflict could promote investments in state capacity. Moreover, wars unify people around their state, potentially enabling such investments. This "bellicist" approach to state capacity has also found support in empirical evidence, mostly—though not exclusively—from country case studies. History is rich in examples of the association between wars and the introduction and development of the modern income tax systems (Tilly, 1990). Stubbs (1999) claims that war (or the threat of) has been an important factor in molding state institutions in the most successful economies of East Asia (namely, Japan, South Korea, Hong Kong, Malaysia, Singapore, Taiwan, and Thailand), while Desch (1996) concludes that the threatening external environments have resulted in stronger states in China, Cuba, Israel, and South Korea. The war-capacity relationship recently attracted also attention among economists, notably Tim Besley and Torsten Persson, who opted for a more systematic approach to the empirical evidence. They find a positive correlation between traditional measures of state capacity and the earlier occurrence of external confrontations across a large cross section of countries (Besley and Persson, 2008 and 2009).

Among economists at least, little controversy has surrounded the portrait of wars as drivers of strong states, perhaps because many see it as a characterization of times long passed, and the idea that decades ago strong states emerged when they needed to get organized to fight a war is not that hard to grasp. But to some of its proponents, the importance of wars as engines for state development is of full current relevance. Desch (1996) argues that “One might concede that war plays a critical role in state formation but still argue that once established, states no longer depend on external threats to maintain cohesion or continue to grow or remain large in scope. But war, or preparation for war, also plays a significant role in maintaining the scope and the cohesion of states.” He goes on to argue that the end of the cold war should thus be expected to significantly weaken modern-day states.

It is hard to not jump to a quite troublesome “policy implication” of these statements: sustained wars appear as a potential engine for development, even in today’s world. But the human and economic costs of war are so dramatic that the evidence upon which the view of war-made states rests should be subject to more stringent scrutiny. There are, in fact, reasons to question evidence previously used to support that view. Much of that evidence corresponds to specific cases, which could be refuted by equally valid examples of episodes where pervasive war has not been associated with strong states. Centeno (1997) points at the early 19th century Latin America as one such counter-example. But beyond specific cases, a relevant question is what does evidence say about the “representative” case. The Besley and Persson studies (2008, 2009), relying on large samples of countries to identify more systematic effects, have found positive correlations between wars and traditional measures of state capacity, drawing the conclusion that the former indeed drives the latter. However, such correlations do not prove that dismantling external threats today will endanger the sustainability of current day states, or that it is wars that caused

better states. Regarding the former objection, it is possible that wars were drivers of state formation at a time when most states were poorly organized to begin with. But that wouldn't imply that in today's world military confrontation is necessary to keep the state cohesive. As for the latter, it may well be that countries with stronger states today had stronger states to begin with, and that such early power enabled and pushed them to engage in external confrontation. We would thus observe strong states today where we observed wars in the past, but not because wars enhanced state capabilities. This argument would indeed point at the opposite direction of causality: it is strong states that conduct wars.

In this paper, we use panel data for recent decades to further examine the relationship between conflict and state capacity, analyzing the robustness of previous results to changes in the period analyzed and the empirical techniques used. Our focus on the most recent decades is not only dictated by the availability of the type of data on which our approach relies, but also by our purpose to re-examine this relationship with an emphasis on the current relevance of its message. We also take advantage of the panel structure of the data to control for two, arguably, main sources of endogeneity in the war-to-state-capacity relationship: initial conditions, as captured by fixed effects, and the persistence of state capacity. By controlling for these dimensions, we make sure that the relationship between state capacity and war that we estimate does not reflect the persistence of state capacity together with possibility that it is initially weak/strong states that engage in fighting. Moreover, the introduction of country fixed effects implies that we focus on the question of whether the beginning of a new conflict or the end of an ongoing one will affect the current capacity of the state, which is also to say that we focus on within-country variability. Consistent with our interest on identifying the relevant present day relationship, this allows us to circumvent the issue that the presence of inherently bellicist countries in our sample, which may

be those with initially strong states, drives our results. While our approach does not allow us to fully identify the causal effect of conflict on state capacity, it does allow us to examine the robustness of findings to controlling for a major source of concerns regarding endogeneity: initial conditions.

Our work also builds on other developments in this literature that have qualified the assertion that conflict drives state capacity. In particular, it has been argued that it is only wars with other countries that strengthen the state's capacity, while internal conflict actually erodes it (Besley and Persson, 2008). The stated reasons are that the strong internal division during episodes of internal conflict blocks investments in state capacity, and that the expected returns to such investments are low during these episodes.<sup>1</sup> Besley and Persson (2008) show that in fact the occurrence of internal conflict is negatively correlated with posterior state capacity in a large sample of countries.

The evidence linking internal conflict with decreased state capacity is subject to the same concerns about endogeneity to fixed effects, including initial conditions, discussed above: it could well be that weak states are easier prey to internal fighting, and that this is what the observed correlations are picking up. Moreover, the conceptual underpinnings for attributing opposite roles to internal and external conflicts seem debatable: are internal and external conflicts really that different? Is it really the case that the former are times of unique division while the latter are times of unique cohesion, and thus investing in state capacity is more desirable and feasible when there is external confrontation but not under internal one? It is hard to see that there has been unique cohesion in the US around the country's-led wars in Vietnam, Afghanistan, and Irak. It is equally debatable that the internal conflict in Colombia has been associated with unusual internal division during the recent times: many actually argue that the



internal conflict generated unprecedented unity around the government in the purpose of fighting the insurgency. To the extent that the negative relationship proposed in the literature holds under the approach we introduce, as is in fact the case, investigating the mechanisms that lie behind such relationship seems equally interesting.

The paper is divided into four sections, including this introduction. Section 2 analyzes the relationship between the occurrence of external conflict and state capacity. Section 3 does an analogous job for the case of internal conflict. Section 4 concludes.

## **2. STATE CAPACITY AND EXTERNAL CONFLICT**

We begin by examining the relationship between the incidence of external conflicts and state capacity for a panel of country-year observations covering the period 1975-2004. We first present the data, and then move on to the detailed empirical strategy and results.

### **2.1. Data and measurement issues**

Despite its pedigree in various social sciences, state capacity is a relatively unknown concept in the economics empirical literature. This is partly a reflection of the fact that state capacity is complex to define and measure. Broadly, the concept refers to the capability of the state to perform its varied roles. There are many dimensions to this capability: military and policing capacity to provide security and overcome rebellious actions with force; bureaucratic capacity to conduct its business effectively and efficiently; institutional capacity to enforce contracts and property rights.

The recent economics literature has focused on measures of “legal” and “fiscal” state capacity (Besley and Persson, 2008, 2009). Legal capacity refers to issues such as the availability of

“contracting institutions” and “property rights institutions”, to use the terminology in Acemoglu and Johnson (2005). It has been measured using indices of institutional quality such as the one constructed by Knack and Keefer (1995) averaging five of the categories created by the International Country Risk Guide to rank countries on the quality of their governments: "law and order," "bureaucracy quality," "corruption," "risk of expropriation" and "government repudiation of contracts." Fiscal capacity, meanwhile, is a term used to refer to the state's ability to raise revenue from society. It has been typically measured by the share taxes represent out of GDP, and has been the focus of a number of contributions, including the forthcoming book by Besley and Persson (2011).

While indices of government quality are probably uncontroversial as measures of state capacity, equating high tax revenue to good state capacity may be highly debatable. It is not clear that big states are necessarily more capable states; it may well be that they are in fact less efficient in running their business, and therefore need more revenue. It may also be that high taxation is a reflection of state “rapacity” rather than its capacity: governing elites that extract high rents from the rest of society.<sup>2</sup>

Though we are sympathetic to these criticisms about measuring fiscal “capacity” through tax collections, we stick in this paper to the traditional proxies for state capacity. The main reason is that our central goal is to examine whether previously documented correlations between conflicts and these proxies survive a different empirical strategy. Moreover, being willing to extract high rents from society is not enough for a government to actually collect high tax revenue. It must be the case that tax payers are either willing or effectively forced to contribute, and both circumstances do reflect dimensions of state capabilities: persuading the population of the value of supporting the state, and having the administrative capability to monitor economic activity and

collect the corresponding taxes. Because of this reason, tax revenues have been used to proxy for state capacity not only in the economics literature, but also quite frequently in political science and sociology. As Centeno (1997, p. 1567) puts it, citing seminal contributions to the state capacity literature (Peacock and Wiseman, 1961; Organski and Kugler, 1980; Tilly, 1975; Ardant, 1975; Schumpeter, 1954; Gallo, 1991; Levi, 1988) : “Taxes both represent and augment the strength of the state as measured by the capacity to enforce centralized rule on a territory and its population... Taxes partly determine the very size of states’ institutions and shape relationships between these and society; they help mold the eventual form of the state.” In this sense, our focus on tax revenues as a proxy for fiscal state capacity keeps our empirical analysis consistent with the previous literature, a necessary condition if this study is to throw any light on the robustness of previous conclusions about the conflict-state capacity relationship.

Given this discussion, our state capacity measures for the panel of countries follow closely the work of Besley and Persson (2008, 2009). We cover both the fiscal and legal dimensions. We measure fiscal capacity with total tax revenue as a percentage of GDP, and with income tax revenue as a percentage of GDP (following Besley and Persson, 2009). Data on these variables comes from Baunsgaard and Keen (2010), who take tax revenue data from the IMF’s *Government Financial Statistics* (GFS) between 1975 and 2006 (1975 to 2000 for the income tax variable,) and improve measurement for countries outside the OECD. They do this with revenue information provided in the context of the IMF’s periodic consultations with member countries, thus making the data more reliable. We measure legal capacity through a summary indicator of the quality of government reported by the Quality of Government Institute (QOG), based on the International Country Risk Guide (ICRG).<sup>3</sup> This measure is similar to the one constructed by Knack and Keefer (1995) to quantify the quality of government, but it only includes three of the

five categories considered in the original index: “law and order,” “bureaucracy quality,” and “corruption.” The other two dimensions originally included, “risk of expropriation” and “government repudiation of contracts”, were discontinued in 1997. The QOG measure we use takes values between zero and one, and increases with the assessed quality of government. This variable is available for the period 1984-2008.

Turning to the explanatory variables, we use various measures of conflict from the *UCDP/PRIO Armed Conflict Dataset (version 3-2005)*, also available in the QOG panel database. The data provides information on all armed conflicts that took place over the period 1946-2004. Conflicts are defined as such when there are at least 1,000 battle-related deaths over the full span of the episode. Internal conflicts are those that occur between the government of a state and internal opposition groups, without intervention from other states. External conflicts, meanwhile, are defined as those that occur between two or more states.<sup>4</sup>

Besley and Persson’s models of state capacity point at political and economic inequality, and wealth, in addition to conflict, as determinants of state capacity. To control for these factors, we include real GDP per capita and a measure of democracy in our estimation. We also control for time effects, since our dependent variables (in particular the fiscal ones) can be affected by global phenomena, such as economic crises. Country effects and lagged dependent variables are added in our preferred specifications, and constitute a main contribution of this paper. We discuss these issues in detail further below.

Real GDP per capita data comes from the QOG database, which in turn takes the information from Gleditsch (2002).<sup>5</sup> As for democracy, we use a revised version of the Combined Polity Score from the Polity IV Project, named Polity2 (Marshall et al., 2009), which

ranges from -10 (complete autocracy) to +10 (complete democracy). The index of democracy we use in our regressions is a dummy variable that takes the value of 1 if the Polity2 score, averaged over the five preceding years, is above 3.<sup>6</sup> Further details about the data we use, and our construction of country codes over the period—in which several country divisions and unifications occurred—are discussed in the Appendix.

Table 1 reports descriptive statistics for our panel of countries. The sample covers 141 countries, though only 105 of them have information on tax collections dating back to 1975. The external conflict dummy shows that there was incidence of external confrontations between countries in only 3 percent of the country-year observations between 1975 and 2004. Regarding our state capacity measures, the sample average for total tax revenues is 20.08 percent of GDP, while that for income taxes is 9.14 percent of GDP. The average Quality of Government score is 0.55, in a 0-1 scale. Countries and years with a Polity2 score above 3 (which we define as democracies) represent 48 percent of the sample.

## **2.2. Empirical approach**

We begin by simply revisiting, for our data set, the cross section evidence relating external conflict and state capacity in Besley and Persson's work (2008 and 2009). A first important difference is our focus on more recent times. While that earlier work related average state capacity between 1975 and 1997 to the previous occurrence of conflicts (either from the time of independence to 1975, or between 1945 and 1997), we concentrate on whether wars in the 1975-2004 period led to changes in state capacity during the same period. This reflects our interest in taking to the data the claim that sustained external tension is key to maintaining state capacity even in the more recent times (e.g. Desch, 1996). Moreover, panel data are central to our

approach to address potential biases in estimations that have not controlled for initial levels and trends in state capacity. This type of data is only available for large samples of countries starting in 1975. Data constraints thus also prevent us from exploring periods further into the past.

To examine the effects of concentrating on more recent times without introducing further changes with respect to Besley and Persson’s seminal work, we initially explore a baseline specification that does not control for fixed effects, and does not take persistence into account. In particular, we estimate the following specification:

$$SC_{it} = \beta_0 + \beta_1 EC_{it} + \gamma' X_{it} + \delta' D_t + u_{it} \quad (1)$$

where  $SC_{it}$  is a measure of state capacity in country  $i$  in year  $t$ ;  $EC_{it}$  is 1 if the country is part of an external conflict in that year, and 0 otherwise;  $X_{it}$  is a vector of controls: GDP per capita (in logs) and our index of democracy; and  $D_t$  is a vector of year dummies to control for global effects. We also experiment with versions of equation (1) where  $EC$  is lagged rather than contemporaneous and with versions where  $t$  refers to a five-year period rather than a year.

We begin by estimating equation (1) using OLS techniques, again to mimic previous work closely. But a central point in this paper is that OLS estimation ignores that both the engagement in conflict and current state capacity may be correlated with initial state capacity. Including country fixed effects deals with this concern, and at the same time controls for other fixed characteristics of countries that can potentially correlate with both the occurrence of wars and the state’s capacity (e.g. geography, scale). Our second estimation thus transforms the baseline estimation to include fixed effects:

$$SC_{it} = \beta_0 + \beta_1 EC_{it} + \gamma' X_{it} + \delta' D_t + \varepsilon_{it} \quad (2)$$

where

$$\varepsilon_{it} = \mu_i + v_{it}$$

While fixed effects control for initial levels of state capacity, both current state capacity and the engagement in conflict today may be more closely related to the recent dynamics of state capacity than to its average level across decades. We thus further extend the estimation by including lagged state capacity as an additional regressor, as in equation (3):

$$SC_{it} = \beta_0 + \alpha SC_{it-1} + \beta_1 EC_{it} + \delta' D_t + \gamma' X_{it} + \varepsilon_{it} \quad (3)$$

By introducing country fixed effects and the lag of the dependent variable in the model, equation (3) takes into account the possible effects of initial conditions, other sources of unobserved time-invariant heterogeneity, and persistence in state capacity. At the same time, the specification is subject to the problems of endogeneity for the lagged dependent variable that are standard in dynamic panel data models (e.g. Arellano and Bond, 1991; Blundell and Bond, 1998). While a precise estimation of  $\alpha$  is not our central interest, biases in this estimate could in turn bias the estimate that is central to our investigation: that of  $\beta_1$ . This is not unlikely, given the expected correlation between state capacity in the past and current engagement in conflict that our discussion above has been pointing at. We thus also estimate equation (3) using standard GMM techniques, where the lagged dependent variable is instrumented using its own lags. In particular, we implement a one-step “System” GMM estimator for equation (3) (Arellano and Bover, 1995; Blundell and Bond, 1998). The lagged dependent variable is always instrumented with its own first lag in the differenced equation and with its first difference in the levels equation.<sup>7</sup>

We emphasize that our GMM estimation is not intended to deal with the endogeneity of wars to state capacity, but simply that of the lagged dependent variable with respect to fixed effects. In terms of the more important and interesting problem of endogeneity between wars and state capacity, central to this paper, our main contribution is to control for fixed effects and persistent state capacity. We see these two dimensions as the most evident sources of concern of an endogenous war-capacity relationship, and thus regard controlling for them as an important step towards uncovering a causal relationship. At the same time, we fully acknowledge that there may be other important sources of endogeneity. We, therefore, abstain from referring to the relationship we estimate as causal.

We explore different possibilities regarding the timing of the effects of conflict on state capacity. We first run our estimations for the panel of annual data, considering the contemporaneous effects of conflict on state capacity. In an alternative specification, we add lagged conflict as another regressor, thus considering the possibility that the effects on state capacity of engaging in confrontation with a different country take some time to consolidate. A third estimation is performed using data with a five-year frequency. In this latter version of the panel, the conflict variable corresponds to the fraction of the five-year period spent in conflict; the democracy dummy takes the value of 1 if the average of the polity 2 score over the five-year period is above 3; income per capita is measured as the simple average of the real annual GDP per capita over the five-year period; and the dependent variables correspond to the five-year averages of the corresponding annual variables.



### 2.3. Results

Our results from estimating equations (1) to (3) are reported in Table 2. Panels a and b correspond to estimations using the panel of annual data, while panel c uses the five-year frequency data. Panel b differs from the other two in that the lag of external conflict is also included. The four first columns present results for state capacity measured through tax revenue as a % of GDP; the four middle columns use income tax as a % of GDP as the state capacity measure; and the last four columns correspond to the estimations where state capacity is measured using our index of quality of government. For each of these dependent variables, the initial column corresponds to the OLS estimation, followed by the FE estimation, then the specification that adds lagged state capacity to fixed effects and performs the estimates using OLS techniques, and finally the GMM estimates of this last specification.

A first striking feature of the results is the contrast between our OLS results and results from previous literature that found a positive correlation between state capacity and the occurrence of external wars when initial conditions were similarly not controlled for. In our sample, the occurrence of external conflicts is in fact negatively correlated with fiscal capacity, as measured by both total and income tax revenue as a fraction of GDP (columns 1 and 5). The negative correlations are quite strong, and generally significant in a statistical sense. In the five year frequency panel, for instance, being involved in confrontation with another country for a full five-year period—a value of 1 for the fraction of years spent in conflict within the period—is associated with a reduction in tax revenues of close to six percentage points of GDP compared to a period where conflict was completely absent. Legal capacity, in turn, is uncorrelated with the occurrence of external conflict in our sample. These results hold for the three different panels of Table 2.

Our estimates thus indicate that it is not the case that countries engaging in wars in recent decades have fared better than others in terms of traditional measures of state capacity. If anything, the opposite seems to be the case. Why such a contrast with previous results? One possibility is that the capacity building effect of wars takes decades to consolidate, and thus our estimates cannot capture it. But this would challenge the logic that has been used to argue that such a positive effect exists: why would it be that the incentives to build state capacity to fight the war, and the war-related social cohesion necessary to transform those incentives into investments, only become evident decades after war has taken place?

It could also be argued that using early rather than current conflicts as regressors in the state capacity equation (as in Besley and Persson's work, for instance) is a way to address concerns about current war being endogenous to state capacity. In that sense, previous estimates using cross section data would be better capturing a causal effect from wars to state capacity. We have already pointed at one problem with this argument, namely the fact that early conflicts could rather be proxying for early state capacity, which in turn affects current state capacity, in those estimations. In other words, if endogeneity is a central concern, it is not clear that early war should be a good instrument for current war (when, as is our case, current war is the object of interest) in the sense of being exogenous. It is not clear either that it should be a relevant instrument, since there is no obvious reason to expect that confrontation decades ago is a good predictor for current engagement.

Given this discussion, we do not believe that the contrast between our OLS results and those from previous work suggest that our focus on the correlation between state capacity and contemporaneous (or almost contemporaneous) conflict is misguided. Rather, we believe that the main reason for the differential results is that earlier wars occurred more frequently in more

developed countries, with more consolidated states and the capacity to run a war abroad at a time where the technology to do this was less developed, while modern conflicts have involved less established states more frequently. Both our OLS estimates and those from earlier work likely reflect the type of states that were willing and able to get into an armed confrontation with others.

We now show results from estimating equations (2) and (3), to deal with what should be a primary concern relating endogeneity: the fact that previous state capacity may affect both the likelihood of engaging in a conflict and current state capacity. Results from estimating the FE equation (equation 2) are presented in columns 2, 6, and 10; FE estimates of equation (3) are reported in columns 3, 7, and 11; and GMM estimates of the same equation are presented in columns 4, 8 and 12. The inclusion of fixed effects leads to very small estimated coefficients for wars on state capacity (in an order of magnitude of one tenth of those estimated by OLS), none of which is estimated with precision. This is independent of whether we focus on annual or five-year frequencies; whether we focus exclusively on contemporaneous effects, or one-period lagged effects; and whether we look at fiscal or legal state capacity. In sum, we find no evidence that in recent times countries engaging in a new confrontation, or ceasing to be in conflict with another country, affects traditional measures of a state's capacity. Note also that the lack of robustness of the negative estimates of the effect of war on tax collections to the inclusion of fixed effects and lagged state capacity supports the hypothesis that those negative estimates simply reflect that external conflict over our sample period has occurred in countries that perform badly in traditional measures of state capacity more frequently than in other countries.

### 3. STATE CAPACITY AND INTERNAL CONFLICT

While external conflicts are generally seen as engines for the development of state capacity, internal conflicts have been portrayed as having the opposite effect. Consistent with the latter view, cross-country evidence has indeed shown a negative correlation between the early occurrence of internal conflicts and measures of state capacity. But, for the same reasons discussed before for the case of external conflicts, such cross sectional correlations need not reflect a causal effect from internal conflicts to state capacity. We re-estimate equations (1)-(3) with internal conflict instead of external conflict as our regressor of central interest, using the same methods reported for the case of external conflict.<sup>8</sup> Our focus is on examining whether, as suggested by previous literature, there is evidence that internal conflicts negatively affect state capacity.

Results are presented in Table 3, following the same conventions used in Table 2. We start by discussing OLS results (columns 1, 5, and 9), which are methodologically closest to previous literature based on cross sectional data, though with a focus on recent decades. The central result from that literature—that internal conflicts are negatively related to state capacity measures—does hold for our sample period: we find negative and coefficients for our internal conflict measures, whether measures of fiscal or legal state capacities are used as dependent variables. All of these are precisely estimated. (We discuss the estimated magnitude of effects further below, for our preferred specifications.)

Does this correlation survive the inclusion of fixed effects and lagged state capacity controls? The answer is a tentative yes. The estimated effect of internal conflict on our proxy for legal state capacity is negative and statistically significant throughout the relevant columns of the table (columns 9 to 12), with the exception of panel b, where some of the estimated coefficient are close to zero in magnitude and imprecisely estimated, though still negative. That is, an estimated

negative and significant effect of internal conflict on legal state capacity survives controlling for these sources of potential bias in the OLS estimates. Something similar occurs when fiscal capacity is examined, though in this case the negative effect is precisely estimated only if the GMM approach is used to appropriately pin down the coefficient for lagged state capacity (columns 4 and 8). One could argue that this is our best specification because it separates initial levels of state capacity (captured by country fixed effects) from state capacity trends in more recent times, and estimates the latter more precisely than the specification of columns 3 and 7. But we do note that, in the case of fiscal capacities, the estimated effect is not fully consistent throughout the different specifications.

Supporting our expectation that omitting controls for fixed effects and the persistency of state capacity introduces large biases in the estimates, the size of the estimated effects is greatly reduced when they are included. Focusing on the GMM estimates, we find that facing internal conflict for a full five-year period reduces tax revenue by almost one percentage point of GDP, and reduces our index of legal capacity by 0.037 (about a tenth and a fifth of a standard deviation, respectively). Neither of those estimates seems overwhelmingly large, but they are not negligible either. However, they are only a fraction (close to a fifth) of what is estimated in simple OLS regressions.

The results presented in this section support the view that using fixed effects to control for initial conditions and taking into account the persistent nature of state capacity, is important to help identify the effect of internal conflict on state capacity. But, in contrast to the case of external conflict, they do point at a significant effect: we find evidence that internal conflict is related to a deterioration of traditional measures of state capacity, even after controlling for fixed effects and persistent state capacity.

#### 4. CONCLUSIONS

The main message from this paper is that wars are not a shortcut to development, at least in modern times. While previous work has pointed at a positive correlation between state capacity and the occurrence of early external wars, we have argued that these findings may reflect both the concentration of early wars in more developed countries, and a focus on times when modern states were just emerging. Consistent with this view, we have shown that, in recent decades, the occurrence of external conflicts has in fact been negatively associated with standard measures of state capacity. We have found no evidence that this negative correlation reflects a causal effect from wars to state capacity. In fact, after initial conditions (and other fixed effects) and the persistence of state capacity have been taken into account, we find no evidence wars influencing state capacity in either direction. On the other hand, we have found suggestive evidence that internal conflicts do have a negative effect on the state's institutional capacity, as well as its capacity to raise taxes. This is true even after controlling for initial state capacity conditions and the persistence of state capacity, though the effects are smaller than if these dimensions were ignored.

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## Appendix

**GDP per capita:** We use Gleditsch's (2002) improved version of the GDP per capita (constant US dollars of 2000) originally reported in the Penn World Tables' mark 5.6 and 6.2. Missing data are imputed through the use of an alternative source (the CIA *World Fact Book*), and through extrapolation beyond available time-series. The data are originally available for 205 countries throughout the period 1950-2004, of which only a subset is present in our sample due to more restricted availability for other variables in our analysis).

**Democracy score:** The Polity2 score captures the nature of the political regime on a scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). It applies a simple treatment to the original Polity measure, converting instances of "standardized authority scores" (i.e., -66, -77, and -88) to conventional polity scores (i.e., within the range, -10 to +10). See Marshall et al. (2009) for details.

**Country codes:** We re-codify countries in the QOG and Polity IV databases to take maximum advantage of existing historical information regarding the countries that currently exist. Our fiscal data already contains only countries currently in existence. For data from QOG and Polity IV, when the current country is the result of the unification of several countries, the data that is used prior to the unification corresponds to the absorbing country (e.g., West Germany in the case of today's Germany or North Vietnam in the case of today's Vietnam). If the current country is the result of a division, then the historical data from the original country is used (prior to the date of creation of a new country). For example, Czech Republic and Slovakia are both assigned the value of Czechoslovakia up to 1992. Following Teorrell et al. (2009), we have relied on the "July 1st-principle" for the year of the merger/split. If the event occurred *after* July

1st, the data for this year will belong to the historical country. This is the case of Germany in 1990 and the USSR in 1991. For mergers/splits *before* July 1st, the data for this year is recorded as belonging to the new country. This is the case of Yemen in 1990, Yugoslavia in 1992, Ethiopia in 1993, and Czechoslovakia in 1993. The only exception to this rule occurs if there are missing values on the year of the merge/split for the countries being modified. In this case we take the non-missing value to keep as much information as possible.

## Notes

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<sup>1</sup> In Besley and Persson's (2008) model, for instance, a main driver of low investment in state capacity during internal conflict is that all of the resources invested are soaked up by the conflict.

<sup>2</sup> Both alternative views would be consistent with a recent model by Bourguignon and Verdier (2010). In that model, state capacity is defined as the fraction of revenue that is not wasted (for instance, not wasted by inefficiency or corruption), so that lower taxes—for a given amount of spending—would actually reflect better state capacity. The model also considers elites that extract rents from others through taxation, so that higher taxes reflect more rent extraction.

<sup>3</sup> *The Quality of Government Dataset (QOG)* from the *QOG Institute at the University of Gothenburg* compiles annual information for the period 1946–2008. The datasets can be freely downloaded at <http://www.qog.pol.gu.se/>. For details see Teorell et al. (2009).

<sup>4</sup> We use the UCDP/PRIO conflict dataset as opposed to the more conventional Correlates of War Dataset (COW) because it provides data up to 2004 while the latter only does so until 1997. The definition and measurement of conflicts in the UCDP/PRIO data base follows the guidelines of the Uppsala Conflict Data Program (UCDP) at the Department of Peace and Conflict Research, Uppsala University, and the Centre for the Study of Civil War at the International Peace Research Institute in Oslo, Norway (PRIO).

<sup>5</sup> Gleditsch (2002) fills gaps in the original data of the Penn World Tables using additional sources and extrapolation techniques.

<sup>6</sup> Results are robust to using a cutoff of zero rather than three.

<sup>7</sup> The System GMM estimator requires that the first-differenced instruments used for the variables in levels be uncorrelated with the unobserved country effects. While the levels of conflict and state capacity are likely correlated with country fixed effects, it seems plausible to assume that changes in these dimensions do not reflect fixed characteristics of countries.

<sup>8</sup> Our results are robust to including external and internal conflicts simultaneously rather than sequentially.

**Table 1. Cross-country descriptive statistics**

	<b>a. Annual Panel</b>									
	<b>Obs.</b>	<b>Number of Countries</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Percentile</b>			<b>Period covered</b>
							<b>25</b>	<b>50</b>	<b>75</b>	
<b>State Capacity</b>										
Total Tax Revenue (% of GDP)	2,882	105	20.08	11.02	0.97	53.38	11.57	17.18	26.53	1975-2004
Income Tax Revenue (% of GDP)	2,515	105	9.14	9.03	0.00	40.07	2.49	4.98	13.82	1975-2000
ICRG Indicator of Quality of Government (0-1)	2,714	141	0.55	0.23	0.04	1.00	0.39	0.53	0.67	1984-2004
<b>Conflict</b>										
External Conflict (Intermediate + war)	2,882	105	0.03	0.17	0.00	1.00	0.00	0.00	0.00	1975-2004
Internal Conflict (Intermediate + war)	2,882	105	0.12	0.32	0.00	1.00	0.00	0.00	0.00	1975-2004
<b>Controls</b>										
Democracy dummy (polity2>3)	2,882	105	0.48	0.50	0.00	1.00	0.00	0.00	1.00	1975-2004
Real GDP per capita	2,882	105	7,657	8,048	346.66	40,342	1,372	4,075	12,032	1975-2004
<b>b. Quinquennium Panel</b>										
<b>State Capacity</b>										
Total Tax Revenue (% of GDP)	618	105	19.75	10.76	0.88	50.99	11.57	16.80	25.87	1975-2004
Income Tax Revenue (% of GDP)	613	105	8.87	8.89	0.00	39.64	2.46	4.80	13.12	1975-2000
ICRG Indicator of Quality of Government (0-1)	663	141	0.54	0.23	0.06	1.00	0.38	0.52	0.67	1984-2004
<b>Conflict</b>										
External Conflict (Intermediate + war)	618	105	0.03	0.11	0.00	1.00	0.00	0.00	0.00	1975-2004
Internal Conflict (Intermediate + war)	618	105	0.12	0.30	0.00	1.00	0.00	0.00	0.00	1975-2004
<b>Controls</b>										
Democracy dummy (polity2>3)	618	105	0.49	0.50	0.00	1.00	0.00	0.00	1.00	1975-2004
Real GDP per capita	618	105	7,465	7,977	373.82	39,008	1,336	3,949	11,319	1975-2004



**Table 3. State capacity and internal conflict<sup>a</sup>**

	<b>a. Annual data, contemporary effect</b>												
	Total Tax Revenue as a % of GDP (t)			Income Tax Revenue as a % of GDP (t)			ICRG indicator of the quality of government (t)			GMM			
	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	GMM
	1	2	3	4	5	6	7	8	9	10	11	12	
Internal Conflict (t)	-5.049*** (0.378)	-0.440 (0.437)	-0.204 (0.138)	-0.869*** (0.275)	-2.570*** (0.319)	-0.048 (0.281)	-0.015 (0.079)	-0.293** (0.147)	-0.088*** (0.009)	-0.068*** (0.019)	-0.013*** (0.005)	-0.007** (0.004)	
Democracy dummy	5.100*** (0.425)	0.133 (0.546)	0.140 (0.139)	0.941*** (0.313)	4.581*** (0.324)	0.352 (0.284)	0.034 (0.071)	0.514*** (0.185)	0.096*** (0.007)	0.033* (0.019)	-0.005 (0.004)	-0.000 (0.004)	
log of GDP per capita (t)	4.284*** (0.189)	2.668** (1.133)	0.180 (0.365)	0.717*** (0.251)	4.090*** (0.143)	2.458*** (0.773)	0.392* (0.200)	0.452** (0.190)	0.114*** (0.003)	0.057*** (0.020)	0.017*** (0.006)	0.012*** (0.004)	
Dependent variable (t-1)			0.752*** (0.026)	0.831*** (0.042)			0.766*** (0.025)	0.893*** (0.039)			0.878*** (0.010)	0.912*** (0.031)	
AR (2) test				[0.169]				[0.103]				[0.000]	
Hansen J test				[0.161]								[0.000]	
Observations	2882	2882	2777	2777	2515	2515	2412	2412	2714	2714	2565	2565	
R-squared	0.426	0.375	0.965	-	0.515	0.474	0.978	-	0.569	0.542	0.968	-	
	<b>b. Annual data, contemporary and lagged effects</b>												
	Total Tax Revenue as a % of GDP (t)			Income Tax Revenue as a % of GDP (t)			ICRG indicator of the quality of government (t)			GMM			
	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	GMM
	1	2	3	4	5	6	7	8	9	10	11	12	
Internal Conflict (t)	-3.027*** (0.757)	-0.393 (0.331)	-0.339** (0.159)	-0.789*** (0.220)	-1.632*** (0.590)	0.006 (0.221)	-0.087 (0.106)	-0.267* (0.148)	-0.050*** (0.019)	-0.035*** (0.016)	-0.008 (0.006)	-0.003 (0.006)	
Internal Conflict (t-1)	-2.305*** (0.760)	-0.029 (0.349)	-0.178 (0.145)	-0.115 (0.225)	-1.121* (0.599)	0.029 (0.183)	0.096 (0.109)	-0.038 (0.125)	-0.043*** (0.018)	-0.049*** (0.017)	-0.008 (0.008)	-0.006 (0.007)	
Democracy dummy	5.108*** (0.430)	0.097 (0.521)	0.141 (0.139)	0.941*** (0.313)	4.546*** (0.329)	0.332 (0.269)	0.034 (0.071)	0.514*** (0.185)	0.096*** (0.007)	0.032* (0.019)	-0.005 (0.004)	0.000 (0.004)	
log of GDP per capita (t)	4.266*** (0.191)	2.627** (1.143)	0.187 (0.365)	0.715*** (0.250)	4.071*** (0.145)	2.529*** (0.789)	0.398* (0.201)	0.452** (0.189)	0.114*** (0.003)	0.056*** (0.020)	0.017*** (0.006)	0.012*** (0.004)	
Dependent variable (t-1)			0.753*** (0.026)	0.831*** (0.042)			0.766*** (0.025)	0.893*** (0.039)			0.877*** (0.010)	0.907*** (0.031)	
AR (2) test				[0.170]				[0.097]				[0.000]	
Hansen J test				[0.163]								[0.000]	
Observations	2824	2824	2777	2777	2456	2456	2412	2412	2714	2714	2565	2565	
R-squared	0.425	0.373	0.965	-	0.511	0.469	0.978	-	0.570	0.534	0.968	-	
	<b>c. Quinquennium data</b>												
	Total Tax Revenue as a % of GDP (t)			Income Tax Revenue as a % of GDP (t)			ICRG indicator of the quality of government (t)			GMM			
	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	OLS	Fixed effects	Fixed effects + lag	GMM
	1	2	3	4	5	6	7	8	9	10	11	12	
Internal Conflict (t)	-5.529*** (0.871)	-0.125 (0.684)	-0.248 (0.493)	-0.940* (0.524)	-3.003*** (0.699)	-0.069 (0.342)	-0.018 (0.231)	-0.556* (0.287)	-0.089*** (0.019)	-0.065*** (0.029)	-0.084*** (0.025)	-0.037** (0.017)	
Democracy dummy	4.642*** (0.893)	-0.390 (0.535)	0.938** (0.409)	1.644*** (0.349)	4.130*** (0.607)	0.129 (0.271)	0.397* (0.201)	0.676*** (0.254)	0.113*** (0.013)	0.052*** (0.018)	0.039** (0.017)	0.031*** (0.011)	
log of GDP per capita (t)	4.260*** (0.408)	2.692** (1.102)	1.086 (1.024)	0.459 (0.288)	4.088*** (0.282)	2.353*** (0.795)	0.829 (0.533)	0.374 (0.407)	0.115*** (0.006)	0.025 (0.019)	0.066*** (0.025)	0.044*** (0.010)	
Dependent variable (t-1)			0.467*** (0.048)	0.889*** (0.050)			0.489*** (0.061)	0.918*** (0.088)			0.405*** (0.047)	0.647*** (0.071)	
AR (2) test				[0.067]				[0.287]				[0.027]	
Hansen J test				[0.040]								[0.000]	
Observations	618	618	514	514	613	613	509	509	663	663	522	522	
R-squared	0.410	0.342	0.918	-	0.492	0.448	0.942	-	0.569	0.444	0.830	-	

<sup>a</sup> Note: All regressions in these tables include year dummies and quinquennium dummies, depending on the panel. In columns 4, 8 and 12 the Arellano & Bover (1995)/Blundell & Bond (1998) one step system GMM estimator is implemented; the state capacity variables are always instrumented with their own first lags in the differenced equation and with their first differences in the levels equation; the conflict variables, the democracy dummy, the log of GDP per capita and the year/quinquennium dummies are always considered exogenous. P-values are reported for the AR(2) test and the Hansen J test, in square brackets. A constant is included but not reported. Overall R-squared reported in all columns except 4, 8 and 12. Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.