The Risk of Civil Conflicts as a Determinant of Political Institutions

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Abstract

This paper proposes a mechanism to explain differences in political institutions based on a particular feature of civil conflicts that has not been previously explored. Under asymmetric and uncertain costs of civil conflicts members of the elite would like to commit in advance to a strong response to insurgencies, but ex-post they have the incentives to block any response if the conflict mainly affects other members of the elite. One way of solving this commitment problem is empowering the executive so he may react forcefully to conflicts, despite the opposition of some fraction of the elite. The main prediction is that, conditional on asymmetric and uncertain costs, the higher is the likelihood of a conflict in the future, the lower are the constraints imposed on the executive. The paper validates this implication using a sample of former colonies and geographic variables to identify the exogenous component of the likelihood of conflicts.

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1 Introduction

There is extensive empirical literature that identifies political institutions as one of the main determinants of income per capita today. Efficient political institutions ensure that the government (or political elite) is sufficiently constrained so it cannot engage in coercion and expropriation. It is thus natural to find that adequate constraints on the decision-making powers of chief executives are associated with political institutions conducive to long-run economic growth. These findings have spawned a research agenda that tries to understand the determinants of institutional quality, and in this context the risk of violent conflict has received growing attention. In a seminal paper, Acemoglu and Robinson (2000) identify the fear of revolutions as the key factor behind the extension of the franchise to a larger fraction of the population. This serves as a commitment by elites to future redistribution, and its main objective is the reduction of revolutionary impulse which threatens their status.

But how do political institutions react when elites face the risk of violent conflict, which is costly, but not as effective as to threaten their political power? As extensively discussed in the paper in light of past empirical evidence, modern civil wars and internal armed conflicts are rarely related to class struggles. Instead they are generated by minorities seeking changes in their status. They commonly arise where rebel groups are sustainable without reference to grievances, and although rebels have the military capacity to challenge the state, they lack the capacity to confront it in a direct and frontal way. These and other features make the overthrow of the political elite a rather unlikely outcome. In this paper we explore this question. We develop a simple model of institutional building to study how intra-elite power is allocated under the risk of rebellions, and test its main prediction by implementing an identification strategy to estimate the effect of this risk on political institutions. We show that elites facing this type of conflicts react in the opposite way than when they face a risk of revolution: they lower the constraints on the executive. Hence this paper contributes to the understanding of political institutions, and emphasizes the idea that the relationship between conflict risk and political institutions may vary depending on the expected effects of conflict.

In the model there is an elite that faces the risk of uprisings by external groups. If the benefit of fighting an insurgency is not internalized equally by the elite's members, due for instance to regional interests, there is disagreement in terms of the size of an eventual response. But if there is uncertainty about who will be affected by future uprisings, disagreement is lower ex-ante because the expected benefits of fighting are shared more evenly among members of the elite. Thus, conflicts generate a commitment problem. Elite members would like to commit in advance to a larger military response to conflicts than the one they are willing to sustain once a conflict has erupted in some region. Institutional building is characterized in the model as a stage in which the elite restricts policy-making in the future, imposing constraints on the executive's decisions. There is a trade-off at this point: more constraints lead to lower expropriation or a larger provision of public goods in

the future. But they also lead to an ex-ante suboptimal response to conflicts, since an unconstrained executive finds easier to finance a military reaction. The main implication of the model follows; under asymmetric and uncertain costs, a higher likelihood of a civil conflict in the future incites the elite to impose fewer constraints on the executive, even though that is not conducive to long-run economic growth.

The implications of the model depend crucially on the fact that empowered executives may react forcefully to the type of conflicts we consider. This feature is generated endogenously by the model, which is built following the work by Baron and Ferejohn (1989), who highlight the trade-off between delay and the arbitrariness of policy decisions when analyzing different formal rules regarding the way legislatures bargain. More generally this captures the trade-off between ensuring state decisiveness or responsiveness when designing political institutions, particularly the number of veto players involved in policy decisions (Cox and McCubbins, 2001).[1] In particular empirical evidence suggests that countries with more authoritarian political institutions are less likely to revert to violence, supporting this mechanism (see for instance Hegre, Ellingsen, Gates, and Gleditsch, 2001; Sambanis, 2001; Collier and Rohner, 2008; Collier, Hoeffler, and Soderbom, 2008; Boix, 2008).[2]

To generate its main prediction the model also requires that the costs of conflicts be asymmetric and uncertain. Otherwise there is no ex-post disagreement about an eventual response to insurgencies. It follows that external conflicts and revolutions, which affect the elite as a whole, would not generate the mechanism put forward in this paper. These are precisely the type of events whose risk would facilitate democratization and state development according to Tilly (1992), Herbst (2000), Acemoglu and Robinson (2000, 2006), Conley and Temimi (2001), Boix (2003), Besley and Persson (2009, 2010, 2011), and Hicks (2013). The literature that studies modern civil wars, which we review in more detail below, has shown that most of them are ethnic, geographical, and religious in nature, while class struggle is relatively rare (Ray, 2010). Most of these conflicts are, at least in the beginning, localized in specific regions. Indeed one of the strongest relationships that the empirical literature has found is between civil conflicts and geographic conditions, particularly the abundance of mountains and forests (Fearon and Laitin, 2003; Collier and Hoeffler, 2004; Hegre and Sambanis, 2006). Moreover Kalyvas and Balcells (2010) find that most of these conflicts can be classified as irregular wars, i.e. the military technology is asymmetric between the state and

[1] A similar trade-off exists between the centralization and decentralization of public policy decisions (Oates, 1972; Besley and Coate, 2003; Giuranno, 2010).

[2] Unlike in poor and middle income countries, most of today's industrialized countries have the capacity to peacefully accommodate political ethnic groups (Gurr, 1993), or fight insurgencies, if any, without jeopardizing their institutions. They are able to separate military and economic decisions between the executive and other branches of government. Indeed the literature finds an inverted U-shaped curve between democracy and violence, with intermediate regimes being the most conflict-prone (Hegre, Ellingsen, Gates, and Gleditsch, 2001). Thus the model is best suited to countries in the early stages of political development, and the sample used in the empirical part reflects this.

rebels. These are costly conflicts, but it is unlikely a defeat of the incumbent and hence the elite does not face a high risk of losing its status.

In principle, any kind of shock with asymmetric and uncertain costs for elite members would work. We focus on the type of conflicts described above because some of their properties are better suited to the model's mechanism and more relevant empirically in developing countries. Particularly they affect strongly those with political power; they likely persist in the absence of a response, making policy delay more relevant; they need a response that may involve strengthening the military, which may generate additional costs in poorly institutionalized countries (Acemoglu, Ticchi, and Vindigni, 2010; Besley and Robinson, 2010; Boix, 2015); and the evidence supports the fact that authoritarian regimes reduce the incidence of violent conflict. Additionally it complements the literature on the fear of revolutions as the trigger of democratization.

This paper uses a sample of almost 100 countries, mostly from Africa, Asia, and Eastern Europe, that became independent after WWII to show that, as predicted by the theory, a higher likelihood of civil war in the future lowers the average constraints imposed on the executive during the first years after independence. To identify causality geographic variables are used as instruments to capture the exogenous component of the likelihood of a civil conflict in the future. This is consistent with the theoretical model and follows previous theoretical and empirical work on the causes of civil wars. Additionally it is shown that the magnitude of the effect is larger when either minor conflicts or irregular wars, i.e. when the military technology is asymmetric between the state and rebels (Kalyvas and Balcells, 2010), are considered. The empirical results are robust to the inclusion of a large set of controls capturing geographic and demographic characteristics, the level of development, and features related to the colonial past. Results are also robust to the relaxation of the instruments' exclusion restriction when applying the methodology proposed by Conley, Hansen, and Rossi (2012).

Related Historical Experiences and Literature

Perhaps the most notable historical example to illustrate the model's prediction is the US Constitution, a case in which the debates and ideas that shaped it have been well documented. The previous political order, defined by the Articles of Confederation, was based on the individual liberty philosophy observed by the Revolutionary movement. Political power was concentrated in the states, leaving the national government unable to implement most policies. In particular Congress did not have power to suppress domestic insurrections (Maier, 2010). Although the convention in Philadelphia in 1787 was intended to fix other problems of the Articles of Confederation, Thach (1969), studying the political environment before the convention, concludes that its outcome was importantly influenced by rebellions and the different experiences of the states regarding executive power. He argues that *"the most important influence convincing the gentry that [national] government strength ... was desirable, was the rising discontent of the poorer classes which ... precipitated*

disturbances such as those in Connecticut, New Hampshire and, specially, Massachusetts [Shay's Rebellion]". Rebellions also influenced how states perceived a strong executive, as New York, the state with the strongest executive, stood out as the only one able to sustain a strong reaction to them.[3] Therefore many delegates to the convention, influenced by Shay's Rebellion or the experience of the states, wanted a strong national executive (Horowitz, 2002). This happened despite the fact that members of the elite were aware of the costs of empowering the national executive. Besides their experience with the British government, they also saw how the control of patronage by the governor of New York allowed him to become the dominant political force in the state.[4]

The US experience constitutes a remarkable application of the stylized model presented in this paper. A broad cross-section of the elites got together, although for different motives, anticipated possible conflicts, perhaps both among themselves and from others that would hurt some of them, and bargained over the level of constraints on the executive. We do not claim this was the common pattern, particularly in our sample of poor and middle-income countries. A broader interpretation of the model is that the net benefits for politically powerful individuals from opposing certain institutional arrangements that empower the executive depend on what they think is their personal risk from rebellions, and the way these institutions respond to them. We may never see actions in equilibrium, but the model predicts that the effort put forward by individuals threatened by these rebellions to generate more power sharing inside the elite would be lower.

This broader interpretation of the model, and the role of intra-elite conflicts, can be illustrated with the rise of the Absolutist State in pre-industrial Europe. The risk of rebellions may have had an influence on this configuration, but without the explicit and orderly bargaining process seen in the case of the US Constitution. Anderson (1974) claims that Absolutism was essentially a redeployed and recharged apparatus of feudal domination, designed to clamp the peasant masses back into their traditional social position (See also Hilton, 1976, particularly the chapters by Hill and Merrington). Consequently the structures of the Absolutist States were vested with a coercive force capable of breaking groups even within the nobility itself, as well as the mercantile bourgeoisie which had developed in the towns. Hence, *"the arrival of Absolutism was ... never a smooth evolutionary process... it was marked by extremely sharp ruptures and conflicts within the feudal aristocracy to whose collective interests it ultimately ministered"*, and *"the threat of peasant unrest, unspokenly constitutive of the Absolutist State, was thus always conjoined with the pressure of mercantile or manufacturing capital... in moulding the contours of aristocratic class power in the new age."*

[3]Thach (1969) argues that *"the experience of the states taught ... the futility of legislative military control. Most states included almost every conceivable provision for reducing the executive to a position of complete subordination, being New York the most notable exception, where the strong reaction against insurrections and the opposition to a legislature that threatened to surrender New York's claims in the Vermont region, distinguished it from the other states."*

[4]Thach (1969) illustrates the trade-off facing the elite: *"As men's thoughts turned towards the establishment of public order and ceased to focus on individual liberty, it was inevitable that the executive department should be the chief beneficiary of the change in emphasis"*.

(Anderson, 1974, p.20 and 23).[5]

As already mentioned this paper relates to the literature on the fear of revolutions as the cause for the extension of the franchise (Acemoglu and Robinson, 2000, 2006; Conley and Temimi, 2001; Boix, 2003; Bueno de Mesquita and Smith, 2009), although our focus is on a different type of conflicts and, because of that, we obtain opposite predictions.[6] Unlike this literature, which deals with institutions regulating the relationship between the elite and the rest of the population, we consider power sharing inside the elites, both in the theoretical and empirical part.[7]

Other authors have focused on intra-elite conflict as the factor leading to the extension of the franchise (Lizzeri and Persico, 2004; Llavador and Oxoby, 2005). In our framework an internal division of the elite is crucial as well. But the conflict is revealed after the establishment of institutions, since there is no ex-ante intra-elite heterogeneity. Agents are uncertain about the consequences of ex-post heterogeneity (caused by a rebelion), and this is what influences institutional design. In this sense our mechanism can be associated to the work on political reform and uncertainty (Fernandez and Rodrik, 1991; Cason and Mui, 2005), where the unknown distribution of benefits and costs leads to a bias against efficiency-enhancing reforms –increasing executive constraints in our framework. Also close to ours is the literature on the selectorate theory pioneered by Bueno de Mesquita, Smith, Siverson, and Morrow (2003), and applied to the study of the effects of revolutionary threats by Bueno de Mesquita and Smith (2009). This literature stresses the role of competition and collaboration between leaders and the elite to determine political institutions, mainly characterized by the size of government coalitions, a feature that is also present in our framework.

Our paper also relates to the literature on conflict and state capacity (Tilly, 1992; Herbst, 2000; Besley and Persson, 2009, 2010, 2011). Besley and Persson (2010) consider the effect of conflict risk on state capacity investments. But the types of conflict they consider, both external and internal, don't posses the properties needed for our mechanism to work. Although state capacity is not

[5]Related arguments are given in Brenner (1976, 1982). Although these authors emphasize differences between Western and Eastern Europe, the risk of rebellions is acknowledge in both cases. In the case of Eastern Europe, in addition to the military pressure from the West, class struggle in the country side *"detonated peasant explosions against serfdom... [and] acted as a general centripetal force on Eastern aristocracies"* (Anderson, 1974, p.212).

[6]In this literature democratization is not always the outcome from a higher risk of revolution. Under certain conditions repression, and not democracy, may be the outcome (Boix, 2003; Acemoglu and Robinson, 2006; Bueno de Mesquita and Smith, 2009). What our model illustrates is that, when facing the type of conflicts we consider, repression needs to be done relaxing executive constraints. This follows from a commitment problem which is not present in the case of the fear to revolutions, or under certain conditions that are naturally associated with that type of risk. Hence we see our mechanism as a complement to this literature.

[7]Focusing on power sharing inside elites allows us to analyze features of political institutions in developing countries, as well as their historical development in industrial countries, as the last paragraphs illustrate. In Aguirre (2014) the general idea of this paper is applied to the early development of political institutions in Latin America. But the model can also be applied to specific features of democratic countries. For instance the constraints imposed by civil society on the executive may depend on his capacity to react to certain developments (Posner and Vermeule, 2011). Under this interpretation the model proposes a channel to explain, for instance, how terrorism or drug trafficking may hinder democracy.

included explicitly in our analysis, Besley and Persson (2009, 2011) suggest that the cohesiveness of political institutions, which in some of their cross-country estimations is measured by executive constraints, is an important determinant of it. Hence our mechanism may have additional dynamic effects if nested in the more general framework developed by these authors.[8]

Close to ours is the paper by Aghion, Alesina, and Trebbi (2004), who study the trade-off between delegation of power and ex-post control of politicians. Unlike ours, their focus is on democratic countries. They consider the decision of empowering politicians who may either expropriate or pursue some reform. Agents choose institutions so they can have a "voice" ex post, after they delegate power to a politician for exogenous reasons (e.g. to coordinate the reform). In our model agents want to avoid having a "voice" ex post as they face a commitment problem. They choose to delegate power to a politician whose preferences differ from theirs after a conflict emerges.[9] Empirically Aghion, Alesina, and Trebbi (2004) find a negative correlation between polarization and the constraints on politicians, which they argue corresponds to a situation in which those who choose the constitution are very likely those who control power thereafter. Our econometric exercise is different. The empirical strategy looks for causality from the risk of civil conflicts to institutions, and the consistency of the results with the theoretical prediction does not rely on ex-ante heterogeneity, e.g. there is no subgroup of agents inside the elite who choose institutions and govern thereafter.

The next section of the paper presents the model. The empirical evidence is shown in Section 3, and the last section concludes.

2 The Model

The Environment

The economy is divided into $N+1$ districts indexed by j. Each of these districts is populated by a representative agent. A district j may be in conflict or in peace. Define $s_j = 1$ if there is a conflict in district j, and $s_j = 0$ otherwise. It is assumed for simplicity that there are only $N+2$ aggregate states, one state where every district is in peace, $s_j = 0$, $\forall j$, and $N+1$ states where only one district is in conflict, $s_j = 1$ and $s_{-j} = 0$.[10] Define by $S = 1$ an aggregate state where there is a conflict in one district ($s_j = 1$ for some j), and $S = 0$ otherwise. As will be clear later there are only three states for an individual member: $s = (s_j, S) \in \{(0,0),(1,1),(0,1)\}$. Output is $y_j = 0$ if

[8] It is important to emphasize that the model is not suited for countries with high levels of state capacity (see footnote 2), and that in the empirical part we control for many variables that may capture this property, like the level of economic development and the State Antiquity index (Bockstette, Chanda, and Putterman, 2002).

[9] These differences lead to opposite predictions. For instance in Aghion, Alesina, and Trebbi (2004) higher risk aversion leads to more checks and balances, but in our model risk aversion would lead to fewer checks and balances.

[10] Although it would be more realistic, allowing for conflicts affecting more than one district at a time would complicate the solution of the model. It would change its main prediction only if the costs became less asymmetric. But our theoretical analysis allows for different degrees of cost asymmetry, and in the empirical part we focus on conflicts with asymmetric costs.

there is conflict in district j ($s_j = 1$), and $y_j = 1$ otherwise. Agents are risk neutral. Flow utility, u_j, is given by output net of taxes, $(1 - \tau_j)y_j$, minus additional costs of conflicts,

$$u_j = \begin{cases} 1 - \tau_j & \text{if } (0,0) \\ -\theta_1 & \text{if } (1,1) \\ (1 - \tau_j) - \theta_0 & \text{if } (0,1) \end{cases}$$

Thus $\theta_0 > 0$ captures the fact that a conflict is costly for all regions, independently of where it occurs. $\theta_1 > \theta_0$ would imply asymmetric costs of conflicts, a necessary condition for the results as shown below.

The transitional probabilities between states are given by $p \in (0,1)$, which captures the exogenous probability of conflict onset, and q, which captures the endogenous probability of a conflict ending.[11] That is, if there is peace in the country, then the probability of a conflict in the following period is given by p. There is an equal probability of conflict onset in each district, so the probability of observing a conflict in district j after observing peace in the country is $p/(N+1)$. This implies a high degree of uncertainty in terms of the costs of future conflicts. If there is a conflict in district j the probability of it ending this period is q. Hence the probability of observing a conflict in a given period is endogenous. Finally it is assumed that a conflict can move to another district with probability $pN/(N+1)$ if it is not terminated in the current period. Defining $n = 1/(N+1)$, we can represent the law of motion of the states by the following transition matrix:[12]

$$\pi = \begin{bmatrix} \pi((0,0)—(0,0)) & \pi((0,0)—(1,1)) & \pi((0,0)—(0,1)) \\ \pi((1,1)—(0,0)) & \pi((1,1)—(1,1)) & \pi((1,1)—(0,1)) \\ \pi((0,1)—(0,0)) & \pi((0,1)—(1,1)) & \pi((0,1)—(0,1)) \end{bmatrix} = \begin{bmatrix} 1\text{-}p & q & q \\ np & 1\text{-}(1\text{-}n)p\text{-}q & np \\ (1\text{-}n)p & (1\text{-}n)p & 1\text{-}np\text{-}q \end{bmatrix}$$

where $\pi(s'|s)$ is the probability of s' being the state in the next period after observing s in the current period.

In case of conflict tax revenues are used to finance a military response. In practice there are many ways to respond to conflicts (see e.g Miquel and Yared, 2012). Here, similarly to Besley and Persson (2010) and Boix (2003), we assume tax policy is the only one. This is the easiest way to capture the fact that the response to conflicts is costly for different members of the elite, even if they are not directly affected by it. Thus the probability of a conflict ending, q, depends positively on tax revenues, which are denoted by T,

$$T = \frac{\sum_j \tau_j y_j}{N}$$

[11] Making the probability of conflict onset exogenous may seem unrealistic, but it simplifies the model and facilitates the mapping to the data. In Aguirre (2014) this probability is endogenous and it depends on labor coercion by landowners.

[12] The properties of q defined below ensure that these probabilities are well defined.

which is normalized by the constant N for simplification.

It is also assumed that q depends negatively on p. Therefore p not only captures how likely is the onset of a conflict, but also its expected duration. This assumption follows the finding in the empirical literature on civil wars, where (exogenous) geographic conditions that hinder government actions, influence both onset and persistence. It is also useful to help map the model into the data in the next section. For simplicity the following function is assumed for q:

$$q = max\left\{0, Q\left(T\right) - p\right\} \tag{2.1}$$

where $Q' > 0$, $Q'' < 0$, $Q(0) = 0$, and $Q(1) \leq 1$. Thus, when the executive is not able to collect a sufficient amount of resources the probability of ending a conflict is zero. This introduces a discontinuity in the model. Notice that $max(Q(T)) = Q(1)$. We further assume $Q(1) > p > Q(1/2)$, so $q > 0$ when revenues represent a large fraction of output. Finally the linearity of q on p greatly simplifies the model.

Taxes need to be set every period there is conflict in any district ($S = 1$). To keep the model simple it is assumed that taxes are zero when there is peace ($S = 0$).[13] Policymaking is modelled using the legislative bargaining approach of Baron and Ferejohn (1989). Each district has a member in the legislature. As agents are identical inside each district we do not model elections. There is one agent, the executive, with agenda power. He does not represent any district, nor can he commit to future proposals, and he dislikes conflicts as every member of the elite does.[14] He proposes the vector $(\tau_j)_{j=1}^{N+1}$, which defines a tax rate for every district. This proposal has to be approved by M members of the legislature to be implemented, otherwise $\tau_j = 0$ in all districts is the outcome. The ratio $m = M/N$ captures the constraints on the executive, and it is set in the initial period and under $S = 0$. In equilibrium members of the legislature are ex-ante identical so there is no disagreement with respect to m. Therefore we may assume that this variable is chosen by unanimity, after which it is assumed exogenous.[15] As usual the subset of members whose votes are decisive for approving the proposal is called the minimum winning coalition (WC).

In the model the institutional framework is greatly simplified since in practice executive constraints are not only imposed by legislatures. Indeed legislatures may not even exist in poorly institutionalized countries. Here we use it as a modeling device only, to capture the bargaining process between members of the elite. This process may take different forms as illustrated by the historical examples reviewed in the introduction. In the empirical section the institutional variable measuring executive constrains considers constraints from different political agents like parties or

[13] In Aguirre (2014) taxes are always positive, and they constitute an instrument for expropriation. Here expropriation risk will be included separately in a more simplified way.

[14] Hence, the only difference with respect to other elite's members is that the executive does not face the risk of conflict in his own district. Assuming this does not change the results but introduces an asymmetry that complicates the solution of the model, because the policy function would be different when the conflict arises in the district of the executive.

[15] The ratio m is assumed to be continuous, which may be the case if the number of legislators per district varies.

the judiciary, and we discuss how these are related to the realization of violent conflict. Another dimension in which the model is greatly simplified is the timing of taxes. More realistically the government could raise tax revenue every period to maintain a standing army. But this does not invalidate the main prediction of the model as the executive still needs the approval of other members of the elite (if he is actually constrained) in order to use the army; and the costs, including mobilization, deployment, and replacements, are still important. Again the historical experiences examined in the introduction are illustrative in this respect.[16]

The benefits of more constraints on the executive are introduced as a function $I(m)$, with $I'(m) > 0$, $I'(0) = \infty$, and $I''(m) < 0$. This function enters flow utility linearly in every state. Possible benefits are a lower probability of expropriation, a greater capacity of raising revenue for the provision of public goods, or a lower probability of intra-elite conflicts. These are not modeled explicitly since this has been done before, and because our focus is on the costs of having more constraints.[17] Now we can define the value functions for individual j and each state (s_j, S),

$$\begin{bmatrix} V_j(0,0) \\ V_j(1,1) \\ V_j(0,1) \end{bmatrix} = I(m) + \begin{bmatrix} 1 \\ -\theta_1 \\ 1 - E(\tau) - \theta_0 \end{bmatrix} + \delta \begin{bmatrix} 1\text{-}p & np & (1\text{-}n)p \\ q & 1\text{-}(1\text{-}n)p\text{-}q & (1\text{-}n)p \\ q & np & 1\text{-}np\text{-}q \end{bmatrix} \begin{bmatrix} V_j(0,0) \\ V_j(1,1) \\ V_j(0,1) \end{bmatrix} \quad (2.2)$$

where δ is the discount rate.

Equilibrium

An equilibrium is a policy vector $\{\tau_j^*\}_{j=1}^{N+1}$ that is optimal for the executive in the current period, given m, the voting strategy by members of the legislature, and subsequent equilibrium outcomes; and a level of constraints, m^*, which is optimal for every member of the legislature given the initial conditions and taking into account subsequent equilibrium outcomes. We rule out pre-commitment to decision rules and hence we restrict attention to symmetric Markov-perfect equilibria.[18]

First the model is solved for a given value of m. This implies finding a proposal $(\tau_j)_{j=1}^{N+1}$ that has the support of a WC. Once this is done we obtain $q^* = q(m)$, the equilibrium value of ending a conflict as a function of m. This function is constant over time since the executive can not commit to future proposals. After this function is characterized the first period problem can be solved, which consists of finding m^* that maximizes the utility of the members of the legislature under

[16] Moreover powerful standing armies have additional costs that make them a suboptimal choice in poorly institutionalized countries, which are the ones we consider in the empirical analysis (Acemoglu, Ticchi, and Vindigni, 2010; Besley and Robinson, 2010; Boix, 2015).

[17] We could assume, similarly to Aghion, Alesina, and Trebbi (2004) and Aguirre (2014), that a fixed fraction of output is expropriated each period with some probability only to members outside the WC.

[18] Commitment problems are inherent to politics (Acemoglu, 2003). However, since output is exogenous, a pre-commitment to policy is not unrealistic in our setting. But if output is endogenous, the promise of being part of the WC in the future would raise investment and hence the incentives to renege on the promised policy as well.

$S = 0$. Finally the effects of (p, θ_0, θ_1) on m^* can be explored, which will guide the empirical exercise.

Fix $m > 0$. The problem of the executive is very simple. Because conflicts are costly and he does not bear any costs of financing a military response, he chooses $(\tau_j)_{j=1}^{N+1}$ to maximize q as defined in Equation (2.1). Notice that this is equivalent to maximizing total output in the economy. If he does not face any constraint he would set $\tau_j = 1$ in all the N districts in peace, so q would take its maximum value, $q = Q(1) - p > 0$. Then it is clear that the only constraint that he faces is to get the approval of the WC. He will propose $\tau_{\text{NWC}} = 1$, and the proposal for τ_{WC} will be such that the following holds,

$$\begin{aligned} V_{\text{WC}}(0,1) &= I(m) + 1 - \tau_{\text{WC}} - \theta_0 + \delta\left[qV_j(0,0) + npV_j(1,1) + (1 - np - q)\,V_j(0,1)\right] \\ &\geq I(m) + 1 - \theta_0 + \delta\left[npV_j(1,1) + (1 - np)\,V_j(0,1)\right] \end{aligned}$$

The first term is the utility of a member of the WC of accepting the proposal, while the last term is the value of the status-quo, where there are no tax revenues to finance the military response to a conflict, and so $q = 0$. This condition is equivalent to,

$$\delta q[V_j(0,0) - V_j(0,1)] \geq \tau_{\text{WC}}$$

The LHS of this expression is the future total gain from a military response for an individual member of the legislature, while the RHS is the corresponding cost. The former depends on the expected value of ending the conflict. The higher is the LHS, the higher the tax rate the executive is able to set for members of the WC.

Using the fact that the equilibrium outcome is constant over time and that there is a probability m of being part of the WC in the future, so $E(\tau) = m\tau_{\text{WC}} + (1 - m)$ in (2.2), this equation can be used to express the relative value of peace as a function of τ_{WC} and the exogenous parameters,

$$V_j(0,0) - V_j(0,1) = \frac{1 - m(1 - \tau_{\text{WC}}) + \theta_0}{1 - \delta(1 - q - p)} > 0$$

Therefore the proposed tax rate, τ_{WC}, will be such that,

$$\frac{\delta q(1 - m + \theta_0)}{1 - \delta(1 - p) + \delta q(1 - m)} \geq \tau_{\text{WC}} \tag{2.3}$$

and tax revenues will be,

$$T = m\tau_{\text{WC}} + 1 - m$$

Proposition 1 *For every $m \in (0, 1]$ there is a unique τ^*_{WC}, which, together with $\tau^*_{NWC} = 1$, is proposed and accepted each period when $S = 1$. There exist constants $\bar{\theta}_0$ and $\bar{m} \in (0, 1)$ such that,*

– *If $\theta_0 > \bar{\theta}_0$, then $\tau^*_{WC} = 1$ and q^* takes its maximum value, $Q(1) - p$.*

– *If* $m > \bar{m}$ *and* $\theta_0 < \bar{\theta}_0$*, then* $\tau^*_{wc} = 0$ *and* $q^* = 0$*.*

– *If* $m \in (0, \bar{m})$ *and* $\theta_0 < \bar{\theta}_0$*, then* τ^*_{wc} *and* q^* *are strictly increasing in* θ_0 *and strictly decreasing in* m *and* p*. Both* τ^*_{wc} *and* q^* *are independent of* θ_1*.*

Proof. See Appendix A. ■

The proposition shows that ex-post, once a conflict has erupted in some district, the executive would be able to set a higher τ in the district of the WC members the higher is θ_0 and the lower are p and m. A higher θ_0 means that the conflict is more costly for members of the districts which finance the military response. This is why, for $\theta_0 > \bar{\theta}_0$, there will be no commitment problem and so m would not constrain the response to conflicts. Conflicts with high θ_0 may be those when the whole elite is threatened, i.e. interstate wars and revolutions, or when the elite's main source of power, for instance a natural resource, is affected. If the environment is more prone to conflicts, which is captured by a higher p, the effectiveness of a military response falls and so the members of the WC only accept lower taxes, which in turn imply a lower q in equilibrium.[19] Taxes also fall with m. As m rises there will be fewer districts paying the maximum tax. That has both a direct and an indirect effect on q, as the lower efficacy of the military response lowers the tax that members of the WC are willing to accept. As explained earlier the effect of m is discontinuous, so this result holds only below $\bar{m}$. Above $\bar{m}$ revenues are not enough to make $Q(T) > p$, and so no positive tax is accepted in equilibrium. Finally, as taxes are set once a conflict has erupted and they are used to end that specific conflict, θ_1 is not relevant for the WC at the moment they evaluate the proposal.

Now the value of m^* can be derived. First express $V_j(0,0)$ as a function of m, τ_{wc}, q and the exogenous parameters,

$$V_j(0,0) = \frac{1}{(1-\delta)} \left\{ I(m) + 1 - \delta p \left(\frac{(1-n)(1 - m(1-\tau^*_{\text{wc}}) + \theta_0) + n(1+\theta_1)}{1 - \delta(1 - q^* - p)} \right) \right\} \tag{2.4}$$

This is the discounted value of flow utility when there is peace, $I(m)+1$, adjusted by conflict costs. With probability $(1-n)$ the conflict doesn't occur in district j and then the cost includes expected taxes, $(1-m) + m\tau^*_{\text{wc}} = 1 - m(1-\tau^*_{\text{wc}})$, and the utility cost, θ_0. If the conflict occurs in district j, which happens with probability n, the cost is total output plus the utility cost, θ_1.

Because members of the legislature are homogeneous under $S = 0$, their problems are identical. They maximize (2.4) subject to (2.1) and (2.3). The first order condition implies,

[19] Notice that this effect is only due to the assumption that q depends on p, i.e. that a conflict is more difficult to fight when p is high. If the relationship in Equation (2.1) was not linear there would be an additional effect of p through the likelihood of conflict onset. This probability lowers the value of peace and therefore reduces the incentives to fight.

$$I'(m) = \frac{-p\delta^2}{1-\delta(1-q^*-p)}\left[\frac{\partial q^*}{\partial m}\left(\frac{(1-n)(1-m(1-\tau^*_{\text{WC}})+\theta_0)+n(1+\theta_1)}{1-\delta(1-q^*-p)}\right)-\frac{(1-n)}{\delta}\left(m\frac{\partial \tau^*_{\text{WC}}}{\partial m}-(1-\tau^*_{\text{WC}})\right)\right] \tag{2.5}$$

The LHS is the marginal benefit and the RHS the marginal cost of increasing m. The first term inside the square brackets captures the effect of m on the expected length of conflicts through its effect on q. The second term captures the fact that there is a higher probability of being in the WC, and so of paying τ_{WC} instead of $\tau_{\text{NWC}} = 1$.

Proposition 2

If $\theta_0 > \bar{\theta}_0$, $m^* = 1$ for any p and θ_1. Otherwise $\exists$ a constant $\underline{\theta}_1$, such that,

- *if $\theta_1 \leq \underline{\theta}_1$, $m^* = 1$ for any p.*
- *if $\theta_1 > \underline{\theta}_1$, $m^* \in (0, \bar{m})$ is unique (and then $q^* > 0$). Moreover in this case m^* is strictly decreasing in p and θ_1.*

Proof. See Appendix A. ■

If the cost of conflicts is sufficiently high for districts not directly affected by them, i.e. $\theta_0 > \bar{\theta}_0$, there is no commitment problem, and therefore no need to empower the executive ex-ante, as this would only reduce the exogenous benefit $I(m)$. Everyone in the legislature agrees ex-post on maximizing the resources to finance a military response to conflicts ($\tau^*_{\text{WC}} = 1$ from Proposition 1) and hence m is not a useful instrument to enlarge the military response. Also, and even if θ_0 is small, when a conflict in the own district is not costly enough, i.e. $\theta_1 < \underline{\theta}_1$, the ex-ante desired response is so small that the executive is fully constrained as well. In this case there exists the commitment problem, but the costs associated with it are so small that isn't worth to empower the executive.

Therefore to obtain low levels of executive constraints in the model it is necessary to assume a relatively low value for θ_0, and a relatively high value for θ_1. This means that the cost of conflicts needs to be asymmetric. If this is the case, $m^* < 1$. The commitment problem exists and it is sufficiently costly to find optimal to enforce the executive so he can react forcefully to conflicts. In this case constraints are strictly decreasing in p. An increase in this probability rises the marginal cost of constraining the executive due to a direct effect, because it rises the desired response to conflicts, and an indirect effect, coming from Proposition 1, as it reduces the ability to fight rebellions and hence makes more difficult to collect taxes ex-post.[20] An increase in θ_1 rises the desired response to conflicts, so m goes down to increase the size of the military response. In

[20]Notice that the direct effect of p, unlike the indirect effect through ex-post revenues, is because of the change in the likelihood of conflict onset, not because of the difficulty of fighting the conflict.

the case of θ_0 the indirect effect lowers the marginal benefit of constraining the executive because more revenues are collected for a given value of m, as shown in Proposition 1. Ex-post tax rates raise because the conflict is more costly for members financing the military response, even though it occurs in a different district. But, since a higher θ_0 implies a larger optimal response ex-ante, its effect on m is ambiguous.

Therefore, assuming everything else constant, we can conclude that the constraints imposed on the executive (m) in peacetime should be lower in countries where potential conflicts are more likely and difficult to be fought (higher p), but only when their costs are uncertain and highly asymmetric among members of the elite (high θ_1 and low θ_0).

3 The Evidence

This section implements cross-country TSLS regressions to test the main implication of the model for a sample of countries that became independent after WWII. The basic exercise is to try to explain political institutions at the time of institutional building, using the likelihood and expected persistence of a future civil conflict as an explanatory variable. The availability of data on the type of civil conflicts suggested by the model for the post-war era determines the time frame of our sample.

Empirical Strategy

[Figure 1 about here]

Figure 1 illustrates the theoretical relationships among the main variables in the model, conditional on observing $\theta_1 > \underline{\theta}_1$ and $\theta_0 < \bar{\theta}_0$. It also shows the expected effects on the likelihood of observing a conflict at any point in time, denoted by CC (Civil Conflict). This variable, not defined explicitly in the last section, is useful in explaining the empirical strategy. The exogenous variable is p, the probability of future civil conflicts. Relationship 3 exists by definition because, everything else constant, a higher probability means that we should observe more conflict in equilibrium. Likewise, q, the likelihood of a conflict ending, reduces CC, explaining 5. Link 2 is negative and exists by construction, because Equation (2.1) defines q as a function of p. Relationship 4, which comes from Proposition 1, means that more constraints on the executive, m, lowers the likelihood of ending a conflict. This is key in generating relationship 1, which is the main prediction of the model and the one we test in this section. Since a higher m reduces q, making a conflict more likely to be observed, the ruling class may prefer to lower m when facing a high p. This is the result in Proposition 2. Note that since p rises the marginal costs of increasing constraints, according to the model the presence of decreasing marginal benefits ensures the existence of this negative

relationship in our cross-country regressions.[21] Finally notice that there is no direct relationship between m and CC since the former is set before the latter is realized.

There are two important difficulties when trying to prove relationship 1. First we do not observe p. We only have good indicators for m and CC (as explained below). Second, links 4 and 5 make CC endogenous, implying that the correlation between CC and m is not a good object for characterizing relationship 1. Everything else constant, fewer constraints on the executive should reduce the likelihood of observing a civil war. Collier and Rohner (2008) find that this is true for poor countries using democracy as the institutional variable and different types of violence as explanatory variables. Boix (2008) finds that democracy increases the likelihood of guerrilla movements. He argues that this is because democracy constrains the possibilities of government repression, particularly in the case of small-scale conflicts. Similarly, Collier, Hoeffler, and Soderbom (2008) show that less democratic countries are less likely to revert to violence. Hegre, Ellingsen, Gates, and Gleditsch (2001) find that harshly authoritarian states experience fewer civil wars than intermediate regimes. A similar result is obtained by Sambanis (2001) when considering only ethnic civil wars. To solve the endogeneity problem we take advantage of a rich database on civil conflicts and apply a two-stage least squares strategy to better capture the particular form of relationship 3.

To capture institutional design, or the variable m in the model, we use the index Constraints on the Executive, from the Polity IV database. This variable has been used, among others, by Acemoglu and Johnson (2005) and Besley and Persson (2011). Unlike others, this variable explicitly measures how constrained the executive is in making arbitrary decisions, and so it seems an excellent mapping from the model into the data.[22] A particular benefit of using this variable is that it is not directly affected by the fraction of people with voting rights. This property is useful to test the model because our prediction is only about the constraints that the elite imposes on the chief executive, not about the constraints that the whole population imposes on the government or elite.

An additional issue is how to identify the period of institutional design. It is assumed that this is done during the first years after independence. This allows us to separate the effects of the risk of civil conflicts, for which the model has a clear prediction, from the effect of actual conflicts, for which we do not have a prediction. Therefore we resort to the empirical literature on the persistence of political institutions to link our dependent variable with current political and

[21] If the shape of the marginal benefit curve varies across countries then we will be capturing only the average effect, as the true quantitative effect would be heterogeneous as well. The same would happen if there is cross-country variation on the size of the (positive) effect of p on the marginal cost.

[22] In particular it *"...refers to the extent of institutionalized constraints on the decision-making powers of chief executives... imposed by any accountability groups [like] legislatures... the ruling party in a one-party state; councils of nobles or powerful advisors in monarchies; the military in coup-prone polities; and ... a strong, independent judiciary... [It captures] the checks and balances [in] the decision-making process."* (Marshall and Jaggers, 2007).

economic conditions (Acemoglu, Johnson, and Robinson, 2005; Acemoglu and Robinson, 2008).[23]

The theoretical predictions which Figure 1 illustrates are conditional on observing $\theta_1 > \underline{\theta}_1$ and $\theta_0 < \bar{\theta}_0$, i.e. conflicts generate asymmetric costs among members of the elite. A second characteristic these conflicts should possess to map into the model is that their cost distribution among members of the elite needs to be uncertain. With respect to the asymmetry of costs, external conflicts and revolutions, which affect the elite as a whole, would not generate the required asymmetry. But civil war is defined as intra-state war with at least one organized rebel army, therefore external conflicts and popular uprisings or revolutions are excluded from that definition. Wars of liberation for colonialism are also excluded as it is required that the national government is actively involved. Furthermore, as noted by Ray (2010), "*many [civil] conflicts appear to be largely ethnic, geographical, and religious in nature, while outright economic class struggle is relatively rare.*" Sambanis (2001) documents that more than 70% of war years in the period between 1960 and 1999 were ethnic instead of revolutionary wars, where the former are characterized by minorities seeking changes in their status. In particular one of the strongest relationships that the empirical literature has found is between civil conflicts and geographic conditions, including mountains, forests and long distances from the state's center (Fearon and Laitin, 2003; Collier and Hoeffler, 2004; Hegre and Sambanis, 2006). This illustrates the fact that most of these conflicts are, at least in the beginning, localized in specific regions, mainly because these environments benefit insurgents relative to more conventional armies.[24] Therefore they particularly affect members of the elite with economic interests on those regions, which suggests asymmetric costs.[25]

In terms of uncertainty, Kalyvas (2007) argues that an insight from case studies is that geography "may trump pre-war allegiances", as guerillas are typically strong in places where geography favors them but where there were no apparent grievances among the population to justify a conflict. Collier, Hoeffler, and Rohner (2009) analyze a sample of civil wars for the period 1965-2004 and find support for the "feasibility hypothesis" i.e., that where civil war is feasible it will occur without reference to motivation. In light of these results it is not surprising that one of the main sources of unrest that interacts with other features of the environment to facilitate civil wars is something as random as crop failure (Kalyvas, 2007). Accordingly, Miguel, Satyanath, and Sergenti (2004) use rainfall growth as an instrument for economic stagnation to explain, successfully, the onset of civil wars.

[23] An OLS regression shows that about 45% of the difference in the constraints imposed after independence persisted until 2014 in our sample of states that became independent after WWII.

[24] Kalyvas (2007) enumerates additional causes for the observation that most insurgencies begin and are fought primarily in the rural countryside. Gurr (1993) argues that most of the negative impact of state expansion is felt among ethnonationalists and indigenous peoples, and given their situations, regional rebellion is a more feasible strategy than urban protests.

[25] This does not require that the members of the elite actually live in the region as the model assumes. For instance a conflict can affect a port from which some goods, produced in other regions of the country, are exported. Thus conflicts need to affect certain regions, but the elite does not need to be dispersed throughout the country.

Another dimension which is relevant for mapping the model into the data is the warfare technology. According to Kalyvas (2011), the character of civil wars have changed over time. After being primarily conventional wars before the Second World War, civil wars became primarily irregular wars thereafter. The sense of symmetry between the rival sides is lost in irregular and guerrilla warfare, where the rebels have the military capacity to challenge the state, but they lack the capacity to confront it in a direct and frontal way. The indirect and low-level engagement of rebels that characterize this type of conflict and their prevalence during the second half of the last century reinforces the idea that civil wars, particularly after WWII, are suitable to test the main prediction of the model. Later, as an additional exercise to test the main prediction of the model, we estimate separately the effects of the risk of different types of conflicts on political institutions.

All of these findings suggest that most modern civil wars meet the main requirements imposed by the model in terms of the asymmetry and uncertainty of their costs. This justifies the empirical strategy of estimating the effect of the risk of these types of conflicts on political institutions.

To overcome the endogeneity problem geographic conditions are used as an instrument, exploiting the strong relationships the empirical literature has found between civil conflicts and geographic variables to capture the exogenous likelihood and persistence of civil wars. As argued by Hegre and Sambanis (2006), "*rough terrain is ideal for guerrilla warfare and difficult for a government army to control. Mountain areas, giving advantage to rebel troops, allow the rebels to expand the scope of conflict, whereas forests provide cover, particularly against detection or aerial attack*". This is consistent with theories that focus on feasibility to explain the causes of civil conflicts: a rebel group exists as a result of unusual conditions that enable it to be viable during the period of violent conflict (Collier and Hoeffler, 2007). Therefore we include a measure of how rough is the territory as an instrument.

Additionally, and also following previous empirical literature on civil conflicts, we use rainfall variability as an additional instrument. In particular, studies that exploit within-country variation in the exogenous determinants of conflict have found significant effects resulting from weather shocks. Hsiang, Burke, and Miguel (2013) analyze 60 studies from multiple disciplines that quantify the influence of climate on human conflict, and find that large deviations from normal precipitation systematically increase the risk of conflict. In our cross-sectional framework we claim that in countries with historically larger rainfall variability the incidence of extreme weather shocks is more important, raising the likelihood of conflict.[26] Since we are interested in both onset and persistence, we think it is better to include rough terrain and rain volatility together as instruments instead on including only one of them.[27]

[26]In doing so we take into account that the countries in our sample are poor and probably not able to offset the effect of these events with better infrastructure. The model implies that, at least in terms of their effect on conflict, political institutions may be an offsetting mechanism.

[27]Hsiang, Burke, and Miguel (2013) also find strong and significant effects of deviations from mild temperatures on conflict. We built an instrument of temperature variability but its significance explaining the risk of conflict in

The following equations are estimated to test the main prediction of the model,

$$CC_j = \sum_{t=indep}^{2013} \frac{CC_{jt}}{2013 - indep + 1} = \alpha_0 + \alpha_1 RT_j + \alpha_2 RV_j + \alpha_k X_{kj} + \upsilon_j \tag{3.1}$$

$$XC_{j,indep} = \beta_0^{\text{TSLS}} + \beta_1^{\text{TSLS}} \hat{CC}_j + \beta_k^{\text{TSLS}} X_{kj} + \epsilon_j^{\text{TSLS}} \tag{3.2}$$

Equation (3.1) is the first-stage regression. The dependent variable, CC_j, is the average since independence of CC_{jt}, which takes a value of 1 if there is a civil war in country j and year t. Our source is the UCDP/PRIO Armed Conflict Dataset (Harbom, Melander, and Wallensteen, 2008). UCDP/PRIO defines armed conflict as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in a year." In particular, CC_{jt} takes a value of one when internal armed conflict occurs between the government of a state and one or more internal opposition group(s) regardless of intervention from other states. Thus the endogenous explanatory variable CC_j not only captures the onset of a civil war, but also how persistent it is, as required by the model. There are other data sets with detailed information about civil wars. However, to our knowledge, the UCDP/PRIO Dataset is the only one that includes conflicts with as low as 25 battle-related deaths in a year. As discussed above low scale conflicts are more likely to meet the requirements of the model, so we prefer this dataset.[28] This also allows us to distinguish between small and large conflicts, an exercise we implement below. Since we have a sample of countries that became independent at different times, in the robustness analysis below we control for time varying variables like GDP per capita and population, and for the year of independence, to show that the estimated relationship is not due to time effects.

Regarding our instruments, RT_j is the rough terrain variable used by Fearon and Laitin (2003), Hegre and Sambanis (2006), and Esteban, Mayoral, and Ray (2012), corresponding to the proportion of the country that is mountainous. RV_j is our measure of rain volatility in country j, defined as the log of the ratio between one plus the average monthly maximum rainfall and one plus the average monthly minimum rainfall. The source is Parker (1997).

Equation (3.2) is the second-stage regression. The variable $XC_{j,indep}$ is the five year average of constraints on the executive after independence. The variable $\hat{CC}_j$ is the predicted value of CC_j using the estimated parameters from Equation (3.1). Therefore when estimating Equation (3.2) we are not assuming that elites know the future occurrence of conflicts. We use data on the realization of conflicts but only to extract the parameters associating them with geography. The assumption is

our framework was relatively low compared to rough terrain and rain variability.

[28] When distinguishing civil wars between different technologies of rebellion we use the data on large conflicts onset constructed by Sambanis (2001) and Kalyvas and Balcells (2010), which is based on the Correlates of War dataset, and results are consistent with our baseline estimations. This shows the robustness of the main results to alternative measures of conflict.

that this relationship was roughly known at that time and hence by observing geographic conditions elites were able to have some idea of future risks.

Notice that our instruments are chosen to capture primarily the type of conflicts for which our theory predicts there is a negative relationship with political institutions. Boix (2008) for instance shows that geography plays a stronger role in explaining guerrilla warfare than civil wars. Below we show that this is also the case in our estimations. This would imply that if other type of conflicts are still included in CC_j despite the discussion above, they would not be well captured by the instruments, and hence, unlike in the OLS case, the second-stage coefficients would not include their effects.[29]

Additional control variables for our baseline estimations, included in the vector X_{kj}, are ethnic fractionalization, whether the country was a British colony at the moment of independence, and whether the existence of oil reserves was known at the moment of independence. The source for the fractionalization variable is Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg (2003), and there are good theoretical reasons to expect it to have a significant effect on the incidence of civil wars (Collier and Hoeffler, 2007; Kalyvas, 2007; Blattman and Miguel, 2010). The dummy for British colonies is included because the literature that studies the late decolonization process concludes that these colonies were more likely to establish good institutions (see e.g. Smith, 1987).[30] Finally the existence of oil reserves is included as an additional explanatory variable as oil has been linked to both conflict and political institutions. This variable takes a value of one when the existence of oilfields was known at the moment of independence. The source for this variable is Humphreys (2005). We select these variables as controls in our baseline estimations because previous works have identified a possible effect on civil wars and/or political institutions, they are exogenous, and they do not depend on the year of independence. In the robustness analysis we include a large set of controls that do not clearly meet these properties.

All the data used in the baseline estimations is reported in Appendix B. In Table 1 we report summary statistics, together with the correlation matrix in the lower panel. In our sample of 97 countries there are 11 countries with the lowest possible XC, which is zero, and 19 countries with the highest value, which is 1. The mean is at the middle of the range, 0.5, and the median is 0.4. In the case of civil conflict the distribution is more skewed, with a mean of 0.15 and a median of 0.04. A third of the countries haven't experienced the type of conflict we consider. On the other extreme Myanmar is the only country with conflict every year since independence, and Israel has spent 97%

[29]The case of Israel is illustrative in this respect. Through inter-state armed conflicts Israel occupied or annexed vast territories, which gave rise to a number of intrastate conflicts (UCDP Conflict Encyclopedia, Uppsala University). Clearly in this case the main mechanism of the model does not apply. Accordingly CC is more than three times $\hat{CC}$ in the case of Israel.

[30]Since we restrict the sample to countries that obtained their independence after WWII most of them are either British or French former colonies. In a robustness exercise we include a dummy for French colonies together with dummies for socialist legal origin, former USSR countries, or Eastern European countries.

of the time in conflict.[31] Finally the correlation matrix shows a negative correlation between the instruments and XC, and a positive correlation between these and CC. The correlation between them is relatively small (-0.09).

According to the model we expect $\beta_1^{TSLS} < 0$. To get a clearer sense of the magnitude of the model's mechanism in the regressions we normalize the value of CC by its mean. Therefore the coefficient of interest measures the percentage change in XC (which goes from 0 to 1) when moving from a country with zero conflict to one with the average incidence of conflict, such as Lebanon, Central African Rep., or Papua New Guinea.

Empirical Results

[Table 2 about here]

Results are shown in Table 2. In the first column we show the OLS estimation with civil conflict as the only explanatory variable, and the coefficient is not significant and very close to zero. The first-stage regression results are shown in column (2), where we can see that both instruments are highly significant and have the expected sign, although they may be weak as deduced from the low level of the F-statistic relative to the critical values reported by Stock and Yogo (2005). In order to control for this problem we perform the Conditional LR test (Moreira, 2003), which is robust to weak instruments and has been implemented by Alcalá and Ciccone (2004), Nunn (2008), and Brückner and Ciccone (2011), among others. In this and the rest of the tables significance levels for the TSLS coefficient on Civil Conflict are based on this test. In column (3) we show the second stage, again without other explanatory variables. The coefficient becomes negative and significant at the 1% confidence level.[32]

In the last three columns of Table 2 the additional explanatory variables are included in the regressions. The effect of civil war in the OLS case remains not significant and very close to zero, while in the TSLS case the coefficient remains highly significant and negative.[33] The difference between the OLS and TSLS coefficients may be explained by many factors, including measurement error. However, from the model point of view, this difference was expected, as it may be due to

[31] These two countries are far from the rest. The third and forth countries, India and Angola, have values of 0.81 and 0.79, respectively. Below we drop Myanmar and Israel from the sample as a robustness exercise (see footnote 34).

[32] The traditional t-test slightly underestimates the significance of the coefficient, as under weak instruments there is a bias toward the OLS coefficient, which in this case is close to zero. We also estimate the regressions using the LIML method, for which the critical values reported by Stock and Yogo (2005) are smaller, and results do not change much.

[33] Results for the other controls are mixed. Fractionalization is neither significant in explaining institutions in the second-stage (column 4), nor it is in explaining conflict in the first-stage (column 7). The British colony dummy has a significant and positive effect. Oil reserves have both a direct positive, and an indirect negative effect through conflicts in the TSLS case.

the fact that more executive constraints lead to a lower probability of observing a conflict (links 4 and 5 in Figure 1), as this reversed causality should only be captured by the OLS specification. In terms of magnitudes the estimations imply that a country with the lowest risk of conflict was able to impose 22% of additional constraints on the executive at the moment of independence than a country with average conflict risk.[34]

Instruments Validity

It has been argued that geography, through its effects on the disease environment and land productivity, influenced the incentives for settlement by colonialists and the distribution and level of income per capita during colonial times, and therefore political institutions (Engerman and Sokoloff, 1997, 2002; Acemoglu, Johnson, and Robinson, 2001, 2002; Easterly and Levine, 2003). Our instruments RT and RV may be capturing this effect, although there is neither a formal theory nor empirical evidence in the literature linking these specific variables to political institutions.[35] Another possible mechanism is that RT made the enforcement of law difficult, obstructing the state centralization process. It is not clear however the sign the relationship between RT and executive constraints this mechanism should generate. If RT hinders the imposition of executive authority then the sign would be positive, which is the opposite than what we find. Since alternative mechanisms are impossible to discard in this subsection we evaluate statistically the validity of our instruments and the effects of relaxing the strict exogeneity assumption.

Sargan tests, reported in Table 2, reject over-identification in our baseline estimations. In column (1) of Table 3 we run a reduced form of our baseline specification, i.e. we directly include the two instruments in an OLS regression without the conflict variable. While RV is highly significant, RT is only significant at the 10% confidence level. In column (2) we use only RV as an instrument and the coefficient on RT in the second-stage is positive and not significant, meaning that if it is capturing an alternative channel this would have the opposite effect on political institutions than the one tested.[36] When in column (3) we use only RT as an instrument the coefficient on conflict

[34]Results are robust to changes in the sample. We drop the 10% smallest or largest countries (in terms of size or population) and results are similar. The same happens when using 3 instead of 5 years for average XC. When dropping the two countries with extremely high values of CC, Myanmar and Israel (see footnote 31), coefficients are larger (-0.32 and -0.28 without and with controls, respectively) and still very significant. Coefficients are also larger (-0.4 and -0.37) and highly significant when we drop from the sample the 8 countries where a conflict occurred in the year of independence.

[35]Brückner and Ciccone (2011) find that democratic conditions improve after severe rain shocks. Notice however that this relationship is between the realization of a climate shock and institutions. Here we focus on the relationship between the risk of having these shocks and ex-ante institutional design. Moreover the sign of the relationship found by Brückner and Ciccone (2011) would be the opposite.

[36]This is consistent with RT affecting negatively the capacity of the state to extend its authority to all of its territory. Herbst (2000) proposes a similar idea for Africa but primarily focusing on population density (one of the controls used below).

is still significant, but it is smaller. The coefficient on RV is very far from being significant but it is negative.

[Table 3 about here]

Despite these results there can always be questions about the validity of our instruments, particularly in the cross-section setting of our specifications. Since results in Table 3 suggest that it is unlikely that RT is capturing alternative effects in our estimations, and since we show below that RV is relatively more important for testing the model's prediction, we focus now on the validity of this last variable as an instrument.[37] In particular we now explore if the results are robust when relaxing the exogeneity assumption. In doing this we follow the methodology proposed by Conley, Hansen, and Rossi (2012), which has been implemented by Fatás and Mihov (2012) and Nunn and Wantchekon (2011) among others. The idea is to make inference on the coefficient of interest assuming a certain distribution for the direct effect of the instruments on the dependent variable. Assume that, unlike RT, RV has an effect on $XC_{j,indep}$ which is not related to the risk of conflicts. Then equations (3.1) and (3.2) would be written as

$$CC_j = \alpha_0 + \alpha_1 RT_j + \alpha_2 RV_j + \alpha_k X_{kj} + \upsilon_j \tag{3.3}$$

$$XC_{j,indep} = \beta_0^{\text{TSLS}} + \beta_1^{\text{TSLS}} \hat{CC}_j + \beta_k^{\text{TSLS}} X_{kj} + \gamma RV_j + \epsilon_j^{\text{TSLS}} \tag{3.4}$$

with $E[CC \cdot \epsilon] \neq 0$, $E[RT \cdot \epsilon] = 0$, and $E[RV \cdot \epsilon] = 0$. If we are certain that $\gamma = \gamma_0$ then inference on β_1^{TSLS} can be made by running the following regression,

$$XC_{j,indep} - \gamma_0 RV_j = \beta_0^{\text{TSLS}} + \beta_1^{\text{TSLS}} \hat{CC}_j + \beta_k^{\text{TSLS}} X_{kj} + \epsilon_j^{\text{TSLS}} \tag{3.5}$$

where if $\gamma_0 = 0$, i.e. exclusion holds with certainty, we get the same results shown before. Likewise Conley, Hansen, and Rossi (2012) show that we can use a prior distribution $N(\mu_\gamma, \sigma_\gamma^2)$ for γ and get

$$\hat{\beta}_1^{\text{TSLS}} \sim N(\beta_1^{\text{TSLS}} + a\mu_\gamma, \sigma_{2SLS}^2 + a^2\sigma_\gamma^2)$$

where σ_{2SLS}^2 is the typical variance from the TSLS estimation and a depends on the data.

[Figure 2 about here]

[37] In the next subsections we pursue some robustness exercises. We explore differences between different type of conflicts and find that results are stronger in those cases where asymmetric cost are more likely. In these cases RV is the most important determinant of conflict. Later we include many additional controls in our estimations to discard possible alternative channels. Most of the additional controls are more strongly correlated with RV than with RT. This is particularly the case of latitude, the wheat-sugar ratio, income per capita, income, and urbanization, all variables that may be more accurately capturing settlement patterns and development.

First we assume $\gamma = \gamma_0$ is known and generate 90% confidence intervals for β_1^{TSLS} for different values of γ_0. Results are shown in the left panel of Figure 2. The red lines form the interval and we can see that even assuming $\gamma_0 = -0.05$, i.e. more than half of the total effect estimated in reduced form in column (1) of Table 3, the coefficient of interest is still significant at the 10% level. In blue we present the 90% CI but adjusting for weak instruments using the methodology proposed by Mikusheva (2010) and now the coefficient is significant for values below -0.065.

In the right panel we use a prior distribution for γ. First we take some constant δ assuming γ is distributed normally with mean $-\delta/2$, and variance such that $P(\gamma > -\delta) = 95\%,\ 97.5\%$, and 99.5%. Hence we use the notion of a bound to set the distribution of γ. The red lines in the right panel form the 90% CI. We can see that the coefficient is still significant when assuming a bound close to -0.06. It is important to take into account that these CI do not adjust for weak instruments and hence we should expect them to underestimate the true significance of the coefficient on conflict. We show with a horizontal dashed line the lower bound of the CI adjusting for weak instruments assuming $\delta = 0$ to give some idea of this underestimation. In blue we show also the 90% CI when assuming that the exclusion restriction holds only in expected value, i.e. $\mu_\gamma = 0$ and σ_γ^2 is such that δ accumulates 95% or more of the distribution. In this case the bound for significance is as high as the total effect of RV in the reduced form regression which results are presented in column (1) of Table 3.

Therefore the estimated effect of the risk of civil conflicts on political institutions is strong enough so it survives a relaxation of the exclusion restriction. In the next subsections we show that it is stronger when considering conflicts that are closer to the ones described in the model and it survives the inclusion of a large set of control variables.

Conflict Heterogeneity

The UCDP/PRIO Armed Conflict Dataset allows us to distinguish between minor and large conflicts. We exploit this to test if, as predicted by the model, results are stronger for smaller conflicts for which it is more likely to observe uncertain and asymmetric costs.[38] Low-scale conflicts are defined as those where battle-related deaths are between 25 and 999 in a year. Large conflicts are those conflicts with more than 999 battle-related deaths in a year. This is the typical threshold used in the literature to define a conflict as a civil war.[39] Minor conflicts comprise about 70% of the episodes captured in Table 2. In the left panel of Table 4 we present our baseline estimations presented in Table 2, but redefining the variable CC_{jt} to take the value one either when there is only a minor conflict (columns 1 and 2) or when there is a major conflict (columns 3 and 4). As

[38]The claim is that the positive effect of conflict risk on the marginal costs of increasing constraints is larger for this type of conflicts. As marginal benefits are independent of the type of conflicts according to the model, the effect on m^* should be larger as well.

[39]Since the threshold of 999 deaths is arbitrary we experiment with different thresholds below, both in absolute terms and as a percentage of total population, and obtain similar results.

before, and to make results comparable we normalize in the regressions the new variables by their means.

[Table 4 about here]

Table 4 shows that the size of the coefficient of interest, although highly significant in both cases, differs between minor and major conflicts, the first being about 75% larger. This suggests that the estimated effect from the risk of conflicts on political institutions is mostly driven by these smaller conflicts. Another interesting feature of the results relates to the first-stage estimations (column 2 for minor conflicts, and 4 for major conflicts). Overall the relationship between our instruments and the conflict variables is better in the case of minor conflicts. This means, as suggested above, that our instruments are really capturing the type of conflicts that generate the main prediction of the model. We also observe that RT is more correlated with major conflicts than with minor conflicts, and the opposite is true in the case of RV, which is actually not significant in the first-stage for major conflicts. This on the other hand raises the value of the Sargan statistic, which is an expected result. As RV is only relevant in explaining institutions through minor conflicts, considering only major conflicts means that most of the effect of this variable is excluded from the regression, even though it is included as an instrument. What is interesting here is that RV is indeed excluded when introducing major conflicts as the endogenous variable. This suggests that it is unlikely that its significance in Table 2 in explaining political institutions through conflict is due to its correlation with an omitted variable, reinforcing the results from the Sargan tests and from relaxing the exogeneity assumption.

Lacina and Gleditsch (2005) collect data on the number of deaths for the conflicts considered in the UCDP/PRIO Armed Conflict Dataset. The median number of deaths per conflict in our sample is 790. Since this number is close to the 999 threshold results don't change much when using the median as the threshold to define small and large conflicts. Specifically the coefficient on minor conflicts is -0.3, and the one on mayor conflicts is -0.15, and both remain highly significant. The data on deaths also allows us to define a threshold in terms of deaths per capita. Using data from Maddison (2008) we define the threshold as the median number of deaths per capita in conflicts occurred in the countries considered in our samples. Now the coefficient on small conflicts is -0.27, while the one on major conflicts is -0.21.[40]

As discussed earlier there is significant heterogeneity among civil wars, or major conflicts as defined previously. Kalyvas and Balcells (2010) identify a key source of heterogeneity which is very useful to examine in detail the effect of the risk of civil wars in political institutions as predicted

[40]Both when defining the threshold in absolute terms and with respect to deaths per capita the first-stage F statistic is reduced in the case of minor conflicts, which suggests that instruments are weaker than with the 999 threshold. However he test that is robust to weak instruments shows that the coefficients are highly significant. We also use a threshold defined with respect to the size of the country but we don't observe differences in the size of the coefficients.

by the model. This is the rebellion technology, and in particular the relative balance of power between the state and the rebels, which determines their war-fighting strategies. The category which better captures the features of conflicts required by the model is the one defined as irregular war, which emerges when the military technologies of the rebels lag vis-á-vis those of the state.[41] In the other categories the military technologies of states and rebels are matched. Conventional wars occur when technology is high while symmetric nonconventional wars emerge when technology is poor, mainly in countries with failed states. We use the data constructed by Kalyvas and Balcells (2010) to distinguish the effect of the risk of different types of warfare in political institutions.[42] In our sample almost 48% of wars are defined as irregular, 38% as conventional, and only 14% as symmetric nonconventional.

Results are presented in the right panel of Table 4, again normalizing the conflict variable by its respective mean.[43] The first thing to notice is that the results when all conflicts are considered (columns 5 and 6) are very similar than those for major conflicts (columns 3 and 4). This suggests that our estimations are robust to the source of data and to the inclusion of duration. The main difference seems to be the value of the Sargan statistic, which is expected to be high because of the reasons already mentioned, but now is much higher. When separating the type of conflicts in the estimations we see a similar pattern than for minor versus major conflicts, but now is for irregular versus conventional civil wars. Now we even find a statistically significant difference between the two coefficients. The one on irregular wars in column (7) is negative and statistically significant. The one on conventional war in column (9) is not significantly different from zero.[44] This is in line with the model prediction since, unlike conventional war, irregular wars are more likely to have asymmetric costs for the elites. We observe a similar pattern in the first-stage as well, although the strength of RT, and the weakness of RV, is visible in both types of wars. The rise in the Sargan statistic is larger in the case of conventional wars (column 9), and stays at relatively low levels in the case of irregular wars (column 7), while the F-statistic is greater in the last case.

Since the results seem to be stronger in both the first and second-stages for minor instead of major conflicts, and for irregular instead of conventional wars, we conclude that the significant and negative effect of the risk of conflict on political institutions found in our baseline estimations is likely due to the mechanism proposed by the model.

[41] This form of warfare gained importance by the support of the superpowers to states and rebels during the post war era. Irregular wars are more likely to be won by the incumbents compared to the other forms of warfare. Although this is expected to be the case in minor conflicts as well, irregular wars are more costly because of the higher threshold of deaths needed to be categorized as such.

[42] This data only includes major wars, only includes war onset and not duration, and it is based on the data on civil wars constructed by Sambanis (2001), who uses among other sources the Correlates of War data set.

[43] We do not present results for symmetric nonconventional conflicts because they are only a few and hence results are not very reliable.

[44] The derived 90% confidence interval applying the method proposed by Mikusheva (2010), robust to weak instruments, covers both negative and positive values.

Robustness Analysis

We now control for a large set of additional variables to rule out alternative channels. We first control for a series of geographic features that may be correlated with our instruments but for which there is no well-known relationship with conflict. Next we control for variables that are both outcomes of geography and possible determinants of political institutions, mainly demographics and development at the time of independence. In the last part of this subsection we control for additional variables associated with the nature of colonial rule to further discard other mechanisms. In total we include almost 30 new controls to our baseline regressions. Since including them or a subset of them altogether generally reduces the precision of the estimates because of the lost degrees of freedom, we pursue a factor analysis at the end of this subsection to try to control for different features at the same time.

Alternative Geographic Features

[Table 5 about here]

In Panel A of Table 5 we introduce variables capturing alternative geographic measures as controls.[45] The first set of variables control for the correlation of RT and RV with agricultural productivity and the disease environment. The first variable is the percentage of fertile soil in each country constructed by Nunn and Puga (2012). In the first column we can see that the effect of this variable on the constraints imposed on the executive is positive and significant. But more importantly the coefficient on civil conflict, although smaller, remains significant at the 1% confidence level according to the robust Conditional LR test. In column (2) we control for the fraction of land that can be used in agriculture (from the WDI), in column (3) we include a variable measuring the percentage of the country with a tropical climate constructed by Nunn and Puga (2012), and in column (4) we control for latitude, a variable widely used to capture different geographic features, including the disease environment (see e.g. Easterly and Levine, 2003). Again controlling for these variables does not alter the relationship between expected conflicts and institutions, which remains highly significant. Moreover they do not significantly affect institutions once civil conflict is instrumentalized.

To control for cropping patterns and their effects on settlement (see e.g. Engerman and Sokoloff, 1997) we include the wheat-sugar ratio constructed by Easterly (2007).[46] This variable may also capture the exogenous component of inequality and hence may be a determinant of conflict onset as well. In column (5) we show the results. The new control is not significant in explaining our dependent variable and the coefficient on conflict is still very significant. In column (6) we control

[45] All the estimations include the controls used in Table 2, but we do not report them to save space.

[46] Easterly (2007) reports this ratio for 51 countries in our sample. We recompute the ratio following his description using data from FAO. The correlation between the two series is close to 0.85 for the common sample.

directly for the disease environment including the percentage of the country area with malaria in 1966 constructed by The Center for International Development. Again results are unchanged.

The next set of variables tries to measure coastal access, an exogenous factor that may have affected income per capita before independence as well. We use the average distance to the nearest ice-free coast, which was constructed by Nunn and Puga (2012), and a dummy variable that takes the value 1 when the country is landlocked. When introduced as controls in columns (7) and (8) the relationship between conflict and institutions is unchanged, and none of them are significant in the TSLS estimation. Finally in column (9) we include the number of neighboring countries to control for the likelihood of inter-state conflicts, for which the main prediction of the model does not apply, and again results remain unchanged.

We conclude that other geographic variables do not alter the results regarding the estimated relationship between the risk of conflict and institutions, which remains negative and very significant. Moreover, with only the exception of fertile soil, these variables do not significantly explain post independence institutions.[47]

Demography and Development

We can go one step further and control for variables linking geography and institutions other than the risk of conflicts. As suggested above geography may have affected settlement patterns of colonialists and income per capita and the distribution of wealth at the moment of independence. It may have influenced the distribution of the population within countries as well, generating different degrees of centralization. All of these factors may have affected post independence institutions. To consider these alternative channels we now control for population, the size of the country, population density, GDP, GDP per capita, the level of urbanization, and the share of agricultural land occupied by family farms.[48] All of these variables are measured in the year of independence, except for size. The source of the data is Maddison (2008) for population and GDP, Parker (1997) for size, the WDI for urbanization, and Vanhanen (2003) for family farms.

Results are shown in Panel B of Table 5. The relationship between the risk of conflicts and our indicator of political institutions remains negative and significant when controlling for this set of variables. According to the robust Conditional LR test it remains highly significant in all cases. The significance falls under 1% when controlling for GDP per capita (column 5). The implied p-value controlling for weak instruments is 0.016. Population, population density, and GDP, are the only significant controls in the second-stage, although their endogeneity makes it difficult to

[47]When including the nine additional controls considered in Panel A of Table 5 together, civil conflict is significant only at a 10% confidence level according to the Conditional LR p-value. This is probably due to the lost degrees of freedom, something we try to overcome with the estimation of common factors at the end of this section.

[48]This last variable captures the degree of concentration and therefore inequality in the ownership of land and has been used by Boix (2008) and Easterly (2007) to explain the onset of civil wars and as a proxy for inequality respectively, among others.

infer a causal relationship.

In sum, despite their potential endogeneity, both with respect to conflict and institutions, demographics and development features do not much affect our estimated coefficient, which remains negative and highly significant. Additionally this exercise is helpful to test for the presence of time effects, particularly when controlling for income and urbanization, as we include in our sample groups of countries that achieved their independence at very different times.[49]

Colonial Rule

We now examine and reject several possible explanations for the relationship between geography and institutions related to the colonial experience of the countries in the sample, as opposed to conflict risks. In part this was already done, as the controls introduced above are closely related to colonial rule, both as determinants and outcomes. Here we control for a set of additional measures identified previously as determinants of colonial rule.

In Panel C of Table 5 we first include colonial origin and legal origin as additional controls. For colonial origin (column 1) we add dummies for Eastern European countries, i.e. formerly communist European states outside the Soviet Union, and for countries that were members of it. For legal origin (column 2) we add dummies for countries with Common, Socialist, and Civil law systems (La Porta, de Silanes, and Shleifer, 2008). The relationship of interest regarding the effect of conflicts on political institutions is still highly significant under the robust Conditional LR test.

African countries may be influencing the results. They have geographic conditions (both RT and RV) that are prone to conflicts, and they have, on average, worse political institutions. To test this alternative we include a dummy variable for African countries in column (3). The relationship of interest is basically unchanged, as it remains negative and highly significant when adjusting for weak instruments. The first-stage is unchanged; once controlling for geography, African countries do not experience more conflicts than non African countries. Another reason to expect differences between African and non African countries is the consequences of the slave trade. Nunn and Puga (2012) show that this generated a positive relationship between small-scale ruggedness and current income per capita, but only in Africa. We include their variable of ruggedness and an interaction with the African dummy in column (4), but the coefficient on civil conflict remains negative and highly significant.

According to Acemoglu, Johnson, and Robinson (2002) pre-colonial development influenced the quality of institutions established by Europeans. These authors argue that urbanization and population density in 1500 capture initial development and hence the incentives for colonial settlement. Unfortunately the data is available only for about one third of the countries in our sample. We

[49] Although the coefficient on civil conflict loses significance when the controls are included altogether (if not linearly dependent), the coefficient remains very significant when including population, GDP, and population density together, the significant controls in Panel B of Table 5.

instead use the data constructed by Nunn and Puga (2012) of population density in 1400, which is available for almost all of the countries in our sample. Results are reported in column (5). The coefficient of interest capturing the effect of the risk of conflicts on institutions is still negative and highly significant. A more direct measure of state development during and before colonial times is the State Antiquity Index developed by Bockstette, Chanda, and Putterman (2002). This index captures the presence of a supra-tribal polity in present-day countries from year 1 to 1950.[50] We include the average of the index from the year 1 to 1850 in column (6), and the average from 1850 to 1950 in column (7), to roughly capture pre-colonial and colonial periods respectively. In both cases the coefficient of interest is still highly significant.

Finally in the last columns we investigate whether our estimations are capturing some sort of time effects, introducing as additional controls the year of independence in column (8), and dummies for countries that achieved their independence after 1961 in column (9) (roughly half of the sample), and after 1989 in column (10) (mostly from Eastern Europe and Asia). In all cases the relationship between civil conflict and institutions is unchanged, making the presence of a time effect in our estimations unlikely.[51]

In sum the results in this subsection make it unlikely that the relationship estimated in the baseline regressions is due to characteristics of colonial rule.

It would be informative to see the results when all the additional control variables are included together in the regressions. However due to the large number of controls results would be very unreliable because of the lost degrees of freedom. One way of solving this problem is by estimating principal factors. This allows us to capture a large fraction of the variance of the controls in just a few variables. We compute the principal factor for each category of control variables: geography (included in Panel A of Table 5), demography and development (Panel B), and colonial rule (Panel C). Once estimated we include these factors as exogenous regressors in TSLS estimations.[52]

[Table 6 about here]

Results are presented in Table 6. We first include each factor separately in columns (1) to (3). Only geography is not significant and the coefficient of interest remains negative and highly

[50] Bockstette, Chanda, and Putterman (2002) use the index to show that earlier state development is a good predictor of recent rates of economic growth, while Hariri (2012) use it to show that early development was an impediment to democracy outside Europe because it constrained institutional transplantation.

[51] When including all of the controls from Panel C of Table 5 the coefficient looses significance, but it is still significant at the 5% according to the Conditional LR p-value.

[52] The only variables not included in the analysis are GDP per capita and population density (they are linearly dependent of GDP, population, and size), the wheat-sugar ratio (because it reduces the sample size considerably) and the dummies for independence (we include the year of independence). Factors capture 53%, 67%, and 45% of total variance from geography, development, and colonial rule respectively, and they are strongly correlated (more than 0.5 in absolute terms) with tropical climate, latitude, malaria, population, GDP, size, colonial and legal origin, the dummy for Africa, and independence.

significant in all cases. In column (4) all the factors are included together and only colonial rule is significant. We do not show the first-stage results to save space but both geography and development are significant explaining conflict, while the instruments remain very significant. Finally we can see that the coefficient on conflict remains negative and highly significant in all the specifications according to the Conditional LR p-value.

4 Conclusions

This paper explores a specific mechanism to explain differences in political institutions, which have been identified as one of the main determinants of GDP per capita today by an extensive empirical literature. A theoretical model shows that, when the elite faces a high risk of uprisings from the rest of the population, and the costs of these conflicts are uncertain and asymmetric for members of the elite, they may find it optimal to set lower constraints on the executive even if this is costly for them due to a higher risk of expropriation or a lower provision of public goods. This is because the members of the elite face a commitment problem. Ex-ante, when they know there is a probability of facing a particularly costly conflict, they are willing to finance a larger response to conflicts than ex-post, when the conflict has erupted but has primarily affected other members of the elite. Lower constraints on the executive are a commitment device as their ex-post preferences about the military response have a lower probability to influence the actual response. Therefore, together with the literature on the effect of political institutions on income per capita, this paper provides a channel to explain the effect of civil conflicts on long-run development, a link that seems to be missing in the related literature.

This paper also presents empirical evidence that is consistent with the main prediction of the model. In particular, a higher risk of future civil conflicts, determined by geographic conditions, is associated with lower constraints imposed on the executive at the moment of independence in countries that achieved independence after WWII. The estimations also show that these effects are stronger when countries face a risk of minor conflicts and irregular civil wars. These results are in line with the main prediction of the model since in these cases the costs of conflicts are more likely to be asymmetric and uncertain. The paper implements a robustness analysis consisting of the introduction of a large set of variables as controls to the baseline estimations. It is shown that other geographic variables, demographic features, the level of development, and colonial rule characteristics, cannot account for the significant relationship between our instruments and political institutions. Additionally it is shown that the results are robust to the relaxation of the exclusion restriction. All this allows us to conclude that, in line with the theoretical model, this relationship is probably explained by the risk of civil conflicts.

Appendix A

Proof of Proposition 1

It is clear that the proposed and accepted tax rates in any period when $S = 1$ are $\tau^*_{\text{NWC}} = 1$ and the highest value consistent with expression (2.3) for τ^*_{WC}. Uniqueness follows directly. If there is no $\tau_{\text{WC}} \in [0, 1]$ consistent with this expression then the unique solution to the executive's maximization problem is $\tau^*_{\text{WC}} = 0$ and $\tau^*_{\text{NWC}} = 1$. If there is only one $\tau_{\text{WC}} \in [0, 1]$ consistent with the inequality then that tax rate and $\tau^*_{\text{NWC}} = 1$ is the unique solution. Finally if there are multiple $\tau_{\text{WC}} \in [0, 1]$ consistent with it then the unique solution is the maximum of them and $\tau^*_{\text{NWC}} = 1$. In the three cases it is clear that we have a unique q^*. For the second part define

$$LHS(\tau_{\text{WC}}) = \frac{\delta q(1 - m + \theta_0)}{1 - \delta(1 - p) + \delta q(1 - m)}$$

and notice that

$$\frac{\partial LHS(\tau_{\text{WC}})}{\partial \tau_{\text{WC}}} = mQ'(T) \left[\frac{\delta(1 - m + \theta_0)(1 - \delta(1 - p))}{(1 - \delta(1 - p) + \delta q(1 - m))^2} \right] > 0 \tag{A.1}$$

$$\frac{\partial^2 LHS(\tau_{\text{WC}})}{\partial \tau^2_{\text{WC}}} = m^2 \left[\frac{\delta(1 - m + \theta_0)(1 - \delta(1 - p))}{(1 - \delta(1 - p) + \delta q(1 - m))^2} \right] \left[Q''(T) - \frac{2Q'(T)Q'(T)\delta(1 - m)}{1 - \delta(1 - p) + \delta q(1 - m)} \right] < 0 \tag{A.2}$$

where the inequality follows from the negative sign of the term inside the second brackets. Then the LHS of expression (2.3), $(LHS(\tau_{\text{WC}}))$, is strictly increasing and strictly concave in τ_{WC}. Now define $\bar{\theta_0}$ as the value of θ_0 for which $LHS(1) = 1$, $\bar{\theta_0} = (1 - \delta(1 - p))/(\delta\,(Q(1) - p))$. Thus $\bar{\theta_0}$ only depends on the exogenous parameters δ and p. Now we define $\bar{m}$ as the value for which $LHS(0) = 0$, and so $\bar{m}$ solves $Q((1 - m)) = p$, and we have $0 < \bar{m} < 1$ since $Q(1) > p$ and $Q(0) = 0$. This constant $\bar{m}$, which is the minimum $_{\text{WC}}$ such that $q \geq 0$ when $\tau_{\text{WC}} = 0$, is only a function of the exogenous parameter p. Since T, and thus $Q\,(T) - p$, are continuous, strictly increasing in τ_{WC}, and decreasing in m (strictly decreasing if $\tau_{\text{WC}} < 1$) it follows that if $m < \bar{m}$, $q > 0$ for any τ_{WC} and any θ_0. This also implies that $LHS(0) > 0$. Notice that $LHS(\tau_{\text{WC}})$ is increasing in θ_0 whenever $q > 0$. Therefore if $m < \bar{m}$ and $\theta_0 < \bar{\theta_0}$, $LHS(\tau_{\text{WC}})$ is increasing in θ_0 and so $LHS(1) < 1$.

Therefore we have that if $m \in (0, \bar{m})$ and $\theta_0 < \bar{\theta_0}$, $LHS(0) > 0$ and $LHS(1) < 1$. This, together with inequalities (A.1) and (A.2) imply that in this case there is a unique value that makes expression (2.3) hold with equality, and therefore this is the unique solution τ^*_{WC} to the executive's maximization problem. We also know that $\partial LHS(\tau^*_{\text{WC}})/\partial \tau_{\text{WC}} < 1$, since otherwise there is always a higher tax solving the executive problem. We can then define $H(\tau_{\text{WC}}) = LHS(\tau_{\text{WC}}) - \tau_{\text{WC}}$ and apply the implicit function theorem to show that the function $\tau^*_{\text{WC}} = \tau_{\text{WC}}(m)$ is well defined, differentiable, and that the derivative $\partial \tau^*_{\text{WC}}/\partial m$ is a continuous function. The same follows for $q^* = q(m)$ since for this range of parameters q is continuous and strictly increasing in τ_{WC}. To prove that these functions are strictly decreasing is sufficient to show $\partial H(\tau_{\text{WC}})/\partial m < 0$ (because $\partial H(\tau_{\text{WC}})/\partial \tau_{\text{WC}} < 0$):

$$\frac{\partial H(\tau_{\text{WC}})}{\partial m} = - \frac{\delta \left[Q'(T)(1 - \tau_{\text{WC}}) \left(\theta_0 + (1 - \tau_{\text{WC}})(1 - m) \right) + q(1 - \tau_{\text{WC}}) \right]}{1 - \delta(1 - p) + \delta q(1 - m)} < 0 \tag{A.3}$$

Therefore if $m \in (0, \bar{m})$ and $\theta_0 < \bar{\theta_0}$, τ^*_{WC} is strictly decreasing in m, then T and q are strictly decreasing in it as well. Finally if $\theta_0 > \bar{\theta_0}$ $LHS(1) > 1$ for any m, and so the executive proposes $\tau^*_{\text{WC}} = 1$, which is always accepted. This proves the first part of the second bullet of the proposition (the last part is proved below).

For the third part, i.e. to show that τ^*_{WC} is increasing in θ_0 and decreasing in p, we need to show $\partial H(\tau_{\text{WC}})/\partial \theta_0 > 0$, and $\partial H(\tau_{\text{WC}})/\partial p < 0$. The first one can be easily seen above. For the last one we have,

$$\frac{\partial H(\tau_{\text{WC}})}{\partial p} = \frac{\delta(m(1 - \tau_{\text{WC}}) - (\theta_0 + 1))}{1 - \delta(1 - p) + \delta q(1 - m)} < 0$$

It follows that, if $\theta_0 < \bar{\theta_0}$, q^* is st. increasing in θ_0, and st. decreasing in p (remember $\partial \bar{\theta_0}/\partial p > 0$). Finally $H(\tau_{\text{WC}})$ is not a function of θ_1 so both τ^*_{WC} and q^* are independent of it.

It is possible to re-define the threshold for m. Take first $m = \bar{m}$, so $LHS(0) = 0$. Notice that for values $\tau_{\text{WC}} > 0$ inequalities (A.1) and (A.2) still hold, and $LHS(1) < 1$ if $\theta_0 < \bar{\theta_0}$. Then we can have two cases depending on the slope of $LHS(\tau_{\text{WC}})$ at $\tau_{\text{WC}} = 0$ when $m = \bar{m}$, which is only a function of the exogenous parameters. If this slope is lower than 1, we know there is only one value consistent with expression (2.3) holding with equality, i.e. $\tau_{\text{WC}} = 0$. In this case the threshold defined above is the relevant one, and if $m \geq \bar{m}$ and $\theta_0 < \bar{\theta_0}$, $\tau^*_{\text{WC}} = 0$. But if the slope is greater than one then we have two values consistent with expression (2.3) holding with equality. In this case the larger one, which is greater than zero, will be the solution to the executive's maximization problem. Moreover at this

point all the conditions listed above for the implicit-function theorem hold, and therefore τ^*_{WC} is still continuous and strictly decreasing in m. This happens until there is only one positive tax consistent with expression (2.3) holding with equality. For this tax there is a certain value of m which is greater than $\bar{m}$ and lower than one. Then we can re-define the threshold with this value of m as $\tilde{m} > \bar{m}$ and all the results hold. Additionally we know that for all $m > \tilde{m}$ there is no value consistent with expression (2.3) and so $\tau^*_{\text{WC}} = 0$. ***QED.***

Proof of Proposition 2

From Proposition 1 we know that if $\theta_0 \geq \bar{\theta_0}$ then $\tau^*_{\text{WC}} = 1$ and $q^* = Q(1) - p > 0$ for any m. Then the RHS of Equation (2.5) is zero, and so $m^* = 1$ follows from $I'(m) > 0$.

To see the case when $\theta_0 < \bar{\theta_0}$, notice that $V(0,0)$ can be discontinuous at $m = \bar{m}$. So first assume there is a unique solution $m^{**} < \bar{m}$ to equation 2.5. In this case we have two possible equilibria, m^{**} or 1, because 1 is preferred to any $m > \bar{m}$. But there exists a constant $\tilde{\theta_1}$ such that if $\theta_1 > \tilde{\theta_1}$, m^{**} is the unique equilibrium. To see this notice that if $m < \bar{m}$ then $q > 0$ (which is independent of θ_1), and $\frac{\partial V(0,0;m=1)}{\partial \theta_1} = \frac{-\delta p n}{(1-\delta)(1-\delta(1-p))} < \frac{-\delta p n}{(1-\delta)(1-\delta(1-q-p))} = \frac{\partial V(0,0;m^{**}<\bar{m})}{\partial \theta_1}$ and so $V(0,0;m=1) - V(0,0;m^{**})$ is strictly decreasing in θ_1. Therefore $\tilde{\theta_1}(p,\theta_0)$ is defined as the value that makes $V(0,0;m=1) - V(0,0;m^{**}) = 0$. Now we need to show the uniqueness and existence of that m^{**}. Using the implicit-function theorem and some algebra we get,

$$-\frac{\partial T^*}{\partial m} = 1 - \tau^*_{\text{WC}}\left[1 - \frac{\partial \tau^*_{\text{WC}}}{\partial m}\frac{m}{1-\tau^*_{\text{WC}}}\right] = (1-\tau^*_{\text{WC}})\left[\frac{1-\delta(1-p-q^*)}{1-\delta(1-p)+\delta q^*(1-m)-\delta Q'(T^*)\, m\,(\theta_0 + T^* - \tau^*_{\text{WC}})}\right] > 0 \quad \text{(A.4)}$$

where the inequality follows from the proof of Proposition 1: if $\theta_0 < \bar{\theta_0}$ and $m \in (0, \bar{m})$, $\partial \tau^*_{\text{WC}}/\partial m > 0$. Substituting this into Equation (2.5),

$$I'(m) = \frac{RHS(m)}{1-\delta(1-q^*-p)} \equiv \frac{p\delta(1-\tau^*_{\text{WC}})}{1-\delta(1-q^*-p)}\left[\frac{\delta Q'(T^*)\left((1-n)(T^*+\theta_0)+n(1+\theta_1)\right) - (1-n)(1-\delta(1-Q(T^*)))}{1-\delta(1-p)+\delta q^*(1-m)-\delta Q'(T^*)\, m\,(\theta_0+T^*-\tau^*_{\text{WC}})}\right] \quad \text{(A.5)}$$

Since (A.4) is finite and strictly positive, the denominator of the term inside the brackets is strictly positive, and so the sign of $RHS(m)$ depends on the sign of the numerator inside the square brackets. Call this term num. Notice first that it is continuous and strictly increasing in θ_1. So there exists $\hat{\theta_1}(p,\theta_0)$ such that for all $\theta_1 > \hat{\theta_1}(p,\theta_0)$, $RHS(m) > 0$ (when $m < \bar{m}$). In this case,

$$\begin{aligned}\frac{\partial RHS(m)}{\partial m} &= -\frac{\partial \tau^*_{\text{WC}}}{\partial m}\frac{RHS(m)}{(1-\tau^*_{\text{WC}})} + \frac{p\delta^2(1-\tau^*_{\text{WC}})}{den}\Big(Q''(\,T^*)\frac{\partial T^*}{\partial m}(rev)\Big) \\ &\quad -\frac{\delta RHS(m)}{den}\big[(1-2m)Q'(T^*)\frac{\partial T^*}{\partial m} - q^* - Q''(T^*)\frac{\partial T^*}{\partial m}m(tax) - Q'(T^*)(tax) + Q'(T^*)\,m\frac{\partial \tau^*_{\text{WC}}}{\partial m}\big] > 0\end{aligned}$$

where den is the denominator, rev is the first term inside the parentheses in the numerator, and tax is the last term inside the parentheses in the denominator, of the term inside the brackets in Equation (A.5). Because τ^*_{WC} and T^* are decreasing in m, and because $RHS(m) > 0$, we have that every term but $(1-2m)Q'(T^*)\frac{\partial T^*}{\partial m}$ are strictly positive. But since $p \geq Q(1/2)$, $m \leq \bar{m} \leq 1/2$, so this term is positive as well and $RHS(m)$ is strictly increasing in m when $0 < m < \bar{m}$. Additionally $RHS(0)$ is finite. Therefore if $\theta_1 > \bar{\theta}_1(p,\theta_0) = max(\hat{\theta_1}(p,\theta_0), \tilde{\theta_1}(p,\theta_0))$ (implying $RHS(\bar{m}) > I'(\bar{m})(1-\delta(1-q^*-p))$, and since $I'(m) > 0$, $I'(0) = \infty$, and $I''(m)(1-\delta(1-Q(T^*)))+I'(m)\delta Q'(T^*)\frac{\partial T^*}{\partial m} < 0$, there exists a unique solution $m^{**} \in (0,\bar{m})$ to Equation 2.5, and that solution constitute the unique solution to the legislators' problem. If $\theta_1 \leq \bar{\theta}_1(p,\theta_0)$, $m^* = 1$, as either $RHS(m) < 0$ or that level is preferred to m^{**} as defined above.

Since, for $\theta_1 > \bar{\theta_1}$ and $\theta_0 < \bar{\theta_0}$, $m^* \in (0,\bar{m})$, and since along that range for m, $RHS(m)$ is strictly increasing in m, and $I'(m)(1-\delta(1-q^*-p)$ is strictly decreasing in m, we can define $G(m) = I'(m)(1-\delta(1-Q(T^*))) - RHS(m)$, where $G(m^*) = 0$, and use the implicit-value function to prove the last part of the proposition. To do this it is enough to show that, when $G(m) = 0$, $\partial RHS(m)/\partial \theta_1 > 0$ and $\partial RHS(m)/\partial p > 0$. Because τ^* is independent of θ_1, the first inequality follows directly from Equation (2.5). In the second case,

$$\begin{aligned}\frac{\partial RHS(m)}{\partial p} &= \frac{RHS(m)}{p} - \frac{\partial \tau^*_{\text{WC}}}{\partial p}\frac{RHS(m)}{(1-\tau^*_{\text{WC}})} + \frac{p\delta^2(1-\tau^*_{\text{WC}})}{den}\Big(Q''(T^*)\frac{\partial T^*}{\partial p}(rev)\Big) \\ &\quad -\frac{\delta RHS(m)}{den}\big[(1-2m)Q'(T^*)\frac{\partial T^*}{\partial p} + m - Q''(T^*)\frac{\partial T^*}{\partial p}m(tax) + Q'(T^*)\,m\frac{\partial \tau^*_{\text{WC}}}{\partial p}\big] > 0.\end{aligned}$$

Because τ^*_{WC} and T^* are decreasing in p and $\bar{m} \leq 1/2$, and because $RHS(m) > 0$, every term but $-\frac{\delta RHS(m)m}{den}$ is positive. Using the IVT we have $\partial\tau^*_{\text{WC}}/\partial p = \delta[m(1-\tau^*_{\text{WC}}) - (\theta_0+1)]/den < 0$. Thus, the second term of $\partial RHS(m)/\partial p$ can be re-written as $\delta([(\theta_0+1) - m(1-\tau^*_{\text{WC}})]/den)/(RHS/(1-\tau^*_{\text{WC}}))$. Combining this term with $-\delta RHS(m)m/den$ we obtain $(1+\theta_0)/(1-\tau^*_{\text{WC}}) - 2m > 1+\theta_0-2m > 1-2m > 0$. This proves the last part of the proposition. ***QED.***

Appendix B: Data

		Indep	*XC*	*CC*	*RV*	*RT*	*FRAC*	*BC*	*Oil*
1	Jordan	1946	0	0	4.32	2.72	0.59	1	0
2	Lebanon[1]	1946	0.33	0.15	5.26	4.06	0.13	0	0
3	Syria	1946	0.60	0.12	3.78	1.86	0.54	0	0
4	Pakistan	1947	0.40	0.27	2.99	3.78	0.71	1	1
5	Israel	1948	1	0.97	4.89	0.99	0.34	0	1
6	South Korea	1948	0.30	0	2.89	2.29	0.00	0	0
7	Sri Lanka	1948	1	0.38	1.67	2.12	0.41	1	0
8	Myanmar/Burma	1948	1	1.00	4.98	3.60	0.51	1	1
9	North Korea	1948	0.33	0	2.99	2.26	0.04	0	0
10	Indonesia[2]	1949	0.73	0.57	1.92	2.44	0.74	0	1
11	Taiwan	1949	0.17	0	1.52	3.86	0.27	0	0
12	India	1950	1	0.81	3.81	2.63	0.42	1	1
13	Libya	1951	0.33	0.02	4.55	1.95	0.79	0	0
14	Cambodia[3]	1953	0	0.49	3.47	0.69	0.21	0	0
15	Laos[4]	1954	0.67	0.27	4.33	3.61	0.51	0	0
16	Morocco	1956	0.17	0.28	4.47	3.85	0.48	0	0
17	Sudan	1956	0.40	0.72	4.28	2.01	0.71	1	0
18	Malaysia	1957	1	0.19	1.08	2.75	0.59	1	1
19	Guinea	1958	0	0.04	5.78	1.44	0.74	0	0
20	Jamaica	1959	1	0	2.43	1.34	0.41	1	0
21	Singapore[5]	1959	1	0	0.41	0.00	0.39	0	0
22	Tunisia	1959	0	0.02	2.79	1.34	0.04	0	0
23	Benin[6]	1960	0.27	0	3.27	0.00	0.79	0	0
24	Burkina Faso	1960	0.33	0.02	5.63	0.00	0.74	0	0
25	C.A.R.	1960	0	0.15	3.63	1.69	0.83	0	0
26	Ivory Coast	1960	0	0.07	2.47	0.34	0.82	0	0
27	Cameroon	1960	0.33	0.06	2.51	2.93	0.86	0	0
28	Congo (Braz)	1960	0.43	0.09	5.68	0.00	0.87	0	1
29	Cyprus[7]	1960	0.98	0.00	3.65	2.30	0.09	1	0
30	Gabon	1960	0.17	0.02	4.54	0.07	0.77	0	1
31	Ghana	1960	0	0.06	2.41	0.00	0.67	1	0
32	Madagascar	1960	0.33	0.02	3.51	3.52	0.88	0	0
33	Mali	1960	0.33	0.13	5.86	0.34	0.69	0	0
34	Mauritania	1960	0.47	0.11	4.65	0.00	0.62	0	0
35	Niger	1960	0.33	0.13	5.24	1.13	0.65	0	0
36	Nigeria	1960	1	0.19	2.88	1.22	0.85	1	1
37	Senegal[8]	1960	0.33	0.19	5.54	0.00	0.69	0	0
38	Somalia	1960	1	0.44	4.58	2.61	0.81	1	0
39	Chad	1960	0	0.69	5.77	2.25	0.86	0	0
40	Togo	1960	0.33	0.02	2.41	0.00	0.71	0	0
41	Zaire/Congo[9]	1960	0	0.35	4.02	1.65	0.87	0	0
42	Rwanda	1961	0	0.30	3.14	4.31	0.32	0	0
43	Sierra Leone	1961	0.67	0.21	5.42	0.99	0.82	1	0
44	Tanzania	1961	0.33	0	5.03	3.12	0.74	1	0
45	Burundi[10]	1962	0.30	0.33	3.04	4.32	0.30	0	0
46	Algeria	1962	0.10	0.44	4.93	2.82	0.34	0	1
47	Trinidad & T	1962	1	0.02	1.77	0.00	0.65	1	1
48	Uganda[11]	1962	0.93	0.69	1.32	2.34	0.93	1	0
49	Kenya	1963	0.60	0.02	2.58	3.31	0.86	1	0
50	Kuwait	1963	0.23	0	3.37	0.00	0.66	1	1
51	Malawi	1964	0	0	5.39	2.28	0.67	1	0
52	Zambia	1964	0.30	0	5.45	0.18	0.78	1	0
53	Gambia	1965	0.67	0.02	6.22	0.00	0.79	1	0
54	Botswana	1966	0.67	0	4.68	0.00	0.41	1	0
55	Guyana	1966	0.90	0	1.37	1.19	0.62	1	0
56	Lesotho	1966	0.80	0.02	2.32	4.42	0.25	1	0
57	Mauritius	1968	1	0	3.04	0.00	0.46	1	0
58	Swaziland	1968	0.17	0	2.50	2.79	0.06	1	0
59	Fiji	1970	1	0	1.07	0.34	0.55	1	0
60	U.A.R.	1971	0.33	0	3.61	0.00	0.63	1	1
61	Bahrain	1971	0.13	0	2.94	0.00	0.50	1	1
62	Bangladesh	1972	0.47	0.45	4.98	0.00	0.05	0	0
63	Guinea Bissau	1974	0.33	0.05	5.54	0.00	0.81	0	0
64	Angola	1975	0.33	0.79	4.77	2.37	0.79	0	1
65	Comoros	1975	0.40	0.05	1.71	3.39	0.00	0	0
66	Cape Verde	1975	0.67	0	4.74	2.87	0.42	0	1
67	Mozambique	1975	0.17	0.44	2.24	1.22	0.69	0	0
68	Papua NG	1975	0.67	0.15	2.32	3.60	0.27	0	0
69	Suriname	1975	0.67	0.03	1.40	1.69	0.73	0	0
70	Vietnam	1976	0.33	0	2.90	3.01	0.24	0	0
71	Djibouti	1977	0.17	0.14	3.26	1.59	0.80	0	0
72	Solomon Islands	1978	1	0	0.38	0.00	0.11	1	0
73	Zimbabwe	1980	0.60	0	5.28	1.36	0.39	1	0
74	Namibia	1990	0.67	0	4.38	2.48	0.63	0	0
75	Yemen[12]	1990	0.17	0.25	3.18	3.34	0.08	0	0
76	Armenia	1991	0.60	0	1.79	2.81	0.13	0	0
77	Azerbaijan	1991	0.30	0.30	1.79	3.28	0.20	0	1
78	Belarus	1991	0.87	0	0.88	0.00	0.32	0	0
79	Estonia	1991	1	0	0.69	0.00	0.51	0	0
80	Georgia	1991	0.67	0.22	1.56	4.12	0.49	0	0
81	Croatia	1991	0.33	0.13	0.72	1.53	0.37	0	1
82	Kazakhstan	1991	0.30	0	0.98	4.00	0.62	0	1
83	Kyrgyzstan	1991	0.50	0	1.46	4.05	0.68	0	0
84	Lithuania	1991	1	0	0.69	0.00	0.32	0	0
85	Latvia	1991	1	0	0.69	0.00	0.59	0	0
86	Moldova	1991	0.87	0.04	1.09	0.00	0.55	0	0
87	Macedonia	1991	0.67	0.04	0.63	2.24	0.50	0	0
88	Serbia[13]	1991	0.13	0.13	0.72	2.67	0.57	0	0
89	Slovenia	1991	1	0	0.72	2.34	0.22	0	1
90	Tajikistan	1991	0.33	0.43	2.82	4.41	0.51	0	0
91	Turkmenistan	1991	0.03	0	1.39	2.56	0.39	0	0
92	Ukraine	1991	0.73	0	1.09	1.74	0.47	0	0
93	Uzbekistan	1991	0	0.13	1.39	3.09	0.41	0	1
94	Czech Republic	1993	1	0	1.29	1.15	0.32	0	1
95	Eritrea	1993	0.33	0.14	3.18	2.48	0.65	0	0
96	Slovakia	1993	0.83	0	1.15	2.14	0.25	0	1
97	South Africa[14]	1994	1	0	2.30	2.16	0.75	0	1

Notes: *Indep* is the year of independence (first year in Polity after WWII), XC is executive constraints, CC is civil conflict (in the regressions is normalized by its mean), RV is rainfall variability, RT is rough terrain, $FRAC$ is fractionalization, BC is the dummy for British colony (the year before independence), and Oil is the dummy for oil reserves (at the time of independence). See the text for details, and Table 1 for summary statistics. [1] Independence recognized by France in 1943, but the region was under allied control until the end of WWII. [2] Independence proclaimed in 1945, but recognized by the Netherlands in 1949. [3] First two years of XC are coded as transition. The average is taken for 1955-1957. [4] First year with valid XC is 1958. That value is used. [5] Fourth year of XC coded as missing. The average is for 1959-1962. [6] Fourth and fifth years of XC coded as transition. Linear interpolation is used. [7] First year with valid XC is 1965. That value is used. [8] Fourth and fifth years of XC coded as transition. Linear interpolation is used. [9] Third year of XC coded as transition. Linear interpolation is used. [10] Fourth year of XC coded as transition. Linear interpolation is used. [11] Fifth year of XC coded as transition. Linear interpolation is used. [12] First three years of XC coded as transition. Average is taken for 1993-1994. Data for $FRAC$ is from Humphreys (2005). [13] Yugoslavia from 1991 to 2002, Serbia & Montenegro until 2005. [14] Political transition used as independence year.

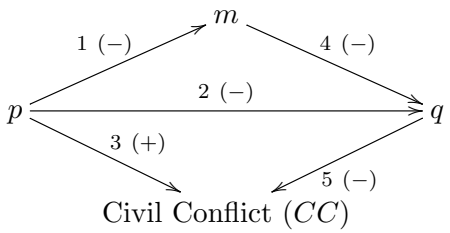
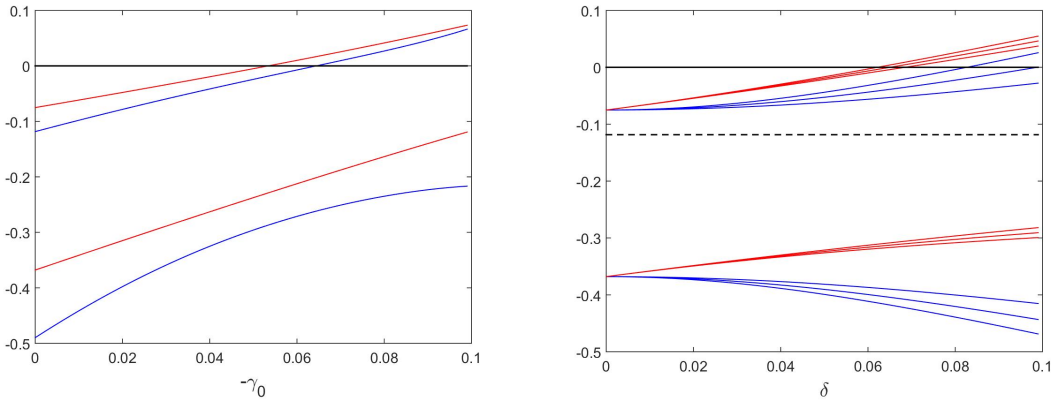


Figure 1: Theoretical Predictions Conditional on $\theta_1 > \underline{\theta}_1$ and $\theta_0 < \bar{\theta}_0$



Notes: We use specification (4) of Table 2 to construct CI relaxing the exogeneity assumption (see text for details). Left panel: Red (blue) lines are 90% CI assuming $\gamma = \gamma_0$ (adjusting for weak instruments using the methodology proposed by Mikusheva, 2010). Right Panel: Red (blue) lines are 90% CI assuming γ is distributed normal with mean $-\delta/2$ (0), and variance such that $P(\gamma > -\delta) = 95\%$, 97.5%, and 99.5% using the Local-to-Zero Approximation method proposed by Conley, Hansen, and Rossi (2012). The horizontal dashed line is the lower bound of the 90% CI assuming $\gamma = 0$ but adjusting for weak instruments using the methodology proposed by Mikusheva (2010).

Figure 2: Sensitivity Analysis to Weak Exogeneity

	XC	*CC*	*RV*	*RT*	*FRAC*	*BC*	*Oil*
Average	0.50	0.15	3.07	1.83	0.52	0.32	0.25
Median	0.40	0.04	2.99	2.01	0.55	0	0
St. Dev.	0.35	0.23	1.64	1.41	0.25	0.47	0.43
Max	1	1	6.22	4.42	0.93	1	1
Min	0	0	0.38	0	0	0	0
	Correlation Matrix						
CC	0.04						
RV	-0.34	0.26					
RT	-0.15	0.23	-0.09				
FRAC	-0.10	0.09	0.30	-0.22			
BC	0.30	0.02	0.10	-0.12	0.13		
Oil	0.16	0.23	-0.07	0.02	0.03	0.07	

Notes: *XC* is executive constraints, *CC* is civil conflict (in the regressions is normalized by the mean), *RV* is rainfall variability, *RT* is rough terrain, *FRAC* is fractionalization, *BC* is the dummy for British colony (at the time of independence), and *Oil* is the dummy for oil reserves (the year before independence). See the text and Appendix B for details.

Table 1: Descriptive Statistics, Main Variables.

	(1) OLS	(2) FST	(3) TSLS	(4) OLS	(5) FST	(6) TSLS
Civil Conflict	0.008		-0.235^{***}	0.002		-0.222^{***}
	0.027		*0.092*	*0.023*		*0.087*
Fractionalization				-0.196	0.347	-0.084
				0.122	*0.714*	*0.176*
British Colony				0.227^{***}	0.009	0.226^{*}
				0.076	*0.350*	*0.116*
Oil Reserves				0.115	0.834^{*}	0.291^{**}
				0.087	*0.433*	*0.139*
Rough Terrain		0.275^{***}			0.283^{***}	
		0.083			*0.099*	
Rainfall Variability		0.258^{***}			0.257^{**}	
		0.090			*0.106*	
R^2	0.001	0.131	0.137	0.129	0.193	0.254
Observations	97	97	97	97	97	97
Sargan statistic			0.609			0.899
F-statistic		8.111			8.594	

Notes: Dependent variables are $XC_{j,indep}$, for OLS and TSLS estimations, and CC_j for FST estimations (see the text for details). Civil conflict is normalized by its mean. Robust standard errors are in italics. In TSLS estimations significance levels for the endogenous regressor are based on the robust to weak instruments test by Moreira (2003). * means significant at 10%, ** significant at 5%, and *** significant at 1%. The constant is not shown.

Table 2: Executive Constraints and the Risk of Civil Conflicts.

	(1) OLS	(2) TSLS	(3) TSLS
Civil Conflict		-0.298^{***}	-0.141^{*}
		0.153	*0.100*
Fractionalization	-0.096	0.007	-0.047
	0.123	*0.285*	*0.156*
British Colony	0.235^{***}	0.238^{*}	0.236^{**}
	0.072	*0.139*	*0.095*
Oil Reserves	0.098	0.346^{**}	0.215
	0.084	*0.153*	*0.151*
Rough Terrain	-0.040^{*}	0.044	
	0.022	*0.061*	
Rainfall Variability	-0.077^{***}		-0.040
	0.018		*0.036*
R^2	0.270	0.270	0.270
Observations	97	97	97

Notes: The dependent variable is $XC_{j,indep}$ (see the text for details). The first-stage in TSLS estimations (columns 2 and 3) include RT and RV as regressors. Civil conflict is normalized by its mean. Robust standard errors are in italics. In TSLS estimations significance levels for the endogenous regressor are based on the robust to weak instruments test by Moreira (2003). * means significant at 10%, ** significant at 5%, and *** significant at 1%. The constant is not shown.

Table 3: Executive Constraints and Civil Conflicts, Effect of Instruments.

	Intensity				*War Technology*					
	Minor Conflicts		*Major Conflicts*		*All (88)*		*Irregular (42)*		*Conventional (33)*	
	(1) TSLS	**(2) FST**	**(3) TSLS**	**(4) FST**	**(5) TSLS**	**(6) FST**	**(7) TSLS**	**(8) FST**	**(9) TSLS**	**(10) FST**
Civil Conflict	-0.251^{***}		-0.142^{***}		-0.144^{***}		-0.186^{***}		$-0.023^{\S}$	
	0.096		*0.073*		*0.083*		*0.091*		*0.058*	
Fractionalization	-0.135	-0.060	-0.041	1.240^{*}	-0.090	1.054	-0.146	0.397	-0.186	0.992
	0.205	*0.858*	*0.160*	*0.754*	*0.148*	*0.669*	*0.189*	*0.955*	*0.116*	*0.815*
British Colony	0.164	-0.264	0.302^{***}	0.609	0.198^{**}	-0.118	0.283^{**}	0.363	0.205^{**}	-0.807^{**}
	0.120	*0.340*	*0.114*	*0.564*	*0.093*	*0.294*	*0.121*	*0.433*	*0.092*	*0.364*
Oil Reserves	0.309^{**}	0.832^{*}	0.234^{*}	0.838	0.172^{*}	0.362	0.241	0.677	0.126	0.342
	0.149	*0.483*	*0.128*	*0.652*	*0.105*	*0.396*	*0.158*	*0.599*	*0.085*	*0.639*
Rough Terrain		0.201^{*}		0.463^{***}		0.335^{***}		0.352^{***}		0.345^{**}
		0.105		*0.137*		*0.098*		*0.136*		*0.172*
Rainfall Var.		0.282^{**}		0.203		0.036		0.147		-0.103
		0.125		*0.131*		*0.094*		*0.133*		*0.138*
R^2	0.268	0.160	0.213	0.153	0.166	0.130	0.210	0.095	0.130	0.090
Observations	97	97	97	97	97	97	97	97	97	97
Sargan statistic	0.116		3.329		8.710		2.796		15.755	
F-statistic		8.218		5.684		6.459		5.122		2.269

Notes: The dependent variable in columns (1), (3), (5), (7) and (9) is $XC_{j,indep}$ and in columns (2), (4), (6), (8) and (10) is CC_j for minor/major conflicts and all/irregular/conventional civil wars respectively (see the text for details). Civil conflict is normalized by its mean. Robust standard errors are in italics. In TSLS estimations significance levels for the endogenous regressor are based on the robust to weak instruments test by Moreira (2003). * means significant at 10%, ** significant at 5%, and *** significant at 1%. § The IC adjusted for weak instruments based on the methodology proposed by Mikusheva and Poi (2006) includes negative and positive values for the coefficient (see footnote 44). The constant is not shown.

Table 4: Executive Constraints and the Risk of Conflicts. Heterogeneous Effects

A. Alternative Geographic Features

	Fertile soil (1)	Agric. land (2)	Tropical climate (3)	Latitude (4)	Wheat-Sugar (5)	Malaria (6)	Distance to coast (7)	Land-locked (8)	Boundaries (9)
Civil Conflict	-0.158^{***}	-0.218^{***}	-0.203^{***}	-0.219^{***}	-0.217^{***}	-0.224^{***}	-0.206^{***}	-0.220^{***}	-0.235^{***}
	0.086	*0.086*	*0.081*	*0.099*	*0.089*	*0.088*	*0.090*	*0.091*	*0.094*
Control	0.004^{**}	0.001	0.001	-0.001	0.002	0.048	-0.110	-0.008	0.020
	0.002	*0.002*	*0.001*	*0.004*	*0.025*	*0.119*	*0.108*	*0.111*	*0.026*
R^2	0.313	0.252	0.252	0.258	0.284	0.283	0.282	0.254	0.263
Observations	97	96	97	97	88	92	97	97	97

B. Demography and Development

	Log Population (1)	Log Size (2)	Population density (3)	Log GDP (4)	Log GDP pc (5)	Urbani-zation (6)	Family farms (7)
Civil Conflict	-0.232^{***}	-0.273^{***}	-0.230^{***}	-0.159^{***}	-0.259^{**}	-0.235^{***}	-0.223^{***}
	0.104	*0.123*	*0.103*	*0.073*	*0.180*	*0.132*	*0.089*
Control	0.106^{**}	0.045	0.055^{**}	0.067^{**}	-0.084	-0.001	0.002
	0.051	*0.047*	*0.022*	*0.027*	*0.125*	*0.004*	*0.002*
R^2	0.238	0.260	0.238	0.241	0.197	0.248	0.245
Observations	91	97	91	91	91	96	94

C. Colonial Rule

	Colonial Origin[1] (1)	Legal Origin[1] (2)	Africa (3)	Ruggedness & Africa[2] (4)	Log Pop Density 1400 (5)	State Antiquity Index 1-1850 (6)	1850-1950 (7)	year (8)	Independence post 1961 (9)	post 1989 (10)
Civil Conflict	-0.201^{***}	-0.167^{***}	-0.159^{***}	-0.175^{***}	-0.192^{***}	-0.309^{***}	-0.247^{***}	-0.216^{***}	-0.233^{***}	-0.194^{***}
	0.098	*0.083*	*0.076*	*0.082*	*0.079*	*0.125*	*0.089*	*0.112*	*0.099*	*0.095*
Control	[0.02]	[0.00]	-0.227^{***}	0.013	0.106^{*}	0.013^{*}	-0.007	-0.002	-0.089	0.068
			0.082	*0.050*	*0.059*	*0.008*	*0.007*	*0.005*	*0.123*	*0.130*
R^2	0.294	0.366	0.290	0.309	0.252	0.357	0.365	0.245	0.244	0.271
Observations	97	97	97	97	95	84	84	97	97	97

Notes: The dependent variable is $XC_{j,indep}$ (see the text for details). The table shows the results of TSLS estimations using RT and RV as instruments. All the specifications include as controls Fractionalization, British Colony, and Oil Reserves. Panel B: population, density, income, urbanization, and family farms are measured in the year of independence. Panel C: (1) the p-value for joint signification test is reported. (2) Africa and Ruggedness are included but their coefficients are not reported. Civil conflict is normalized by its mean. Robust standard errors are in italics. Significance levels for the endogenous regressor are based on the robust to weak instruments test by Moreira (2003). * means significant at 10%, ** significant at 5%, and *** significant at 1%. The constant is not shown.

Table 5: Executive Constraints and Civil Conflicts, Robustness Analysis

	(1)	(2)	(3)	(4)
Civil Conflict	-0.211^{***}	-0.221^{***}	-0.179^{***}	-0.149^{***}
	0.084	*0.096*	*0.085*	*0.076*
Geography	-0.045			-0.097
	0.053			*0.061*
Development		0.145^{**}		0.050
		0.072		*0.085*
Colonial Rule			0.102^{**}	0.157^{***}
			0.051	*0.049*
R^2	0.262	0.235	0.376	0.384
Observations	91	87	83	76

Notes: The dependent variable is $XC_{j,indep}$ (see the text for details). Geography, Development, and Colonial Rule are the principal components of the controls included in panels A, B, and C, of Table 5, respectively (see footnote 52 for details). The table shows the results of TSLS estimations using RT and RV as instruments. All the specifications include as controls Fractionalization, British Colony, and Oil Reserves. Civil conflict is normalized by its mean. Robust standard errors are in italics. Significance levels for the endogenous regressor are based on the robust to weak instruments test by Moreira (2003). * means significant at 10%, ** significant at 5%, and *** significant at 1%. The constant is not shown.

Table 6: Executive Constraints and Civil Conflicts, Geography, Development, and Colonial Rule

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