The Risk of Civil Conflicts as a Determinant of Political Institutions

Alvaro Aguirre[*]
University of Pennsylvania

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Abstract

This paper proposes a specific mechanism to explain differences in political institutions based on the asymmetric and uncertain costs of civil conflicts. Asymmetry implies that the net benefit of fighting an insurgency is not shared equally by elite's members. But uncertainty implies that these benefits are more evenly distributed ex-ante. The elite then faces a commitment problem. One way of solving it is empowering the executive so he may react forcefully to conflicts, despite the opposition of some fraction of the elite. In the model this group has to decide on the constraints imposed on the executive. Fewer constraints lead to higher risk of expropriation. But more constraints lead to a suboptimal response to conflicts. The main prediction is that, conditional on asymmetric and uncertain costs, the higher is the likelihood of a civil conflict in the future, the lower are the constraints imposed on the executive. The paper validates empirically this implication using two types of evidence. First, it uses a sample of former colonies that became independent after WWII and geographic variables to identify the exogenous component of the likelihood of civil conflicts at the moment of the independence. Second, it shows that the model is able to explain the political events in The Americas after independence. Countries less prone to internal conflicts were the ones that imposed more constraints on the executive during the second half of the nineteenth century.

1 Introduction

There is an 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 elite) is sufficiently constrained so it cannot engage in coercion and expropriation. Thus, adequate constraints on the decision-making powers of chief executives are associated with political institutions conductive to long-run economic growth. These findings have boosted a research agenda that tries to understand the determinants of institutional quality. In this context, conflict has received a growing attention to explain how societies are organized. Acemoglu and Robinson (2000) and Bueno de Mesquita and Smith (2009) study the influence of revolutionary threats on democratization, and Glasser and Schleifer (2002) argue that coercion through violence may explain differences on judicial independence. More generally, North et al. (2009) argue that social orders differ fundamentally with respect to the organization of intra-elite violence.

This paper proposes a specific mechanism to explain differences in political institutions based on a particular feature of civil conflicts that has not been explored before. In order to do this it develops a simple model of institutional building to study how intra-elite power is allocated under the risk of rebellions. In the model, if the benefit of fighting an insurgency is not internalized equally by elite's members, due for instance to regional interests, there is disagreement in terms of the size of a military response. But if there is uncertainty about who will be affected by future uprisings, disagreement is lower ex-ante, because expected benefits of fighting are shared more evenly among the 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. For a member of the elite, a joint commitment to a larger military response is the only way to avoid that other groups block a military reaction when a conflict occurs in his district. If we think on the process of institutional building as a stage in which the elite restricts policy-making in the future imposing constraints on the executive's decisions, then they will face a trade-off: more constraints lead to lower expropriation or a larger provision of public goods, but they also lead to an ex-ante suboptimal response to conflicts. Therefore we get the main implication of the model; a higher likelihood of a civil conflict in the future lead the elite to impose fewer constraints on the executive, even though that is not conductive to long run economic growth[1]. To validate empirically this prediction the paper investigates the effect of the incidence of civil conflicts on political institutions for a sample of countries that became independent after WWII, and for the former colonies in The Americas during the nineteen century.

Two features of civil conflicts are necessary to generate the main prediction of the model, their costs should be asymmetric and uncertain. It follows that external conflicts and revolutions, which affect the elite as a whole, would not generate the aforementioned effect on political institutions. The literature that studies modern civil wars has shown that most of them are ethnic, geographical, and religious in nature, while class struggle is rare (Ray, 2010). In particular one of the strongest

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[1]This paper is not about the most efficient way of designing institutions in order to avoid civil conflicts. Although there is not a consensus on that issue, there are constitutional theories that try to address it, like the consociational approach (Lijphart, 1995) and the incentives approach (Horowitz, 2002). However, most constitutions, even the relatively new ones in east Europe, seem to have a very large idiosyncratic component, despite these theories and the increasing involvement of international experts and practitioners in their design (Horowitz, 2002).

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, and therefore they particularly affect members of the elite with economic interests on those regions. With respect to the second condition there are reasons to expect that the distribution of the costs of modern civil wars is uncertain, mainly because geography may generate conflicts where there are no apparent reasons for it (Kalyvas, 2007). Thus the theory may be applied to most of modern civil wars, which have been the focus of recent economic research surveyed by Collier and Hoeffler (2007) and Blattman and Miguel (2010)[2].

An environment to which the model can be naturally applied is the post-independence period in The Americas. In this case historians have identify the possibility of uprisings by natives and slaves as an important risk for the elites (Coatsworth, 1988; Eakin, 2007; Williamson, 2009). Rebellions were costly, localized in certain regions but widespread, and, with very few exceptions, far from seizing power. The elite was geographically dispersed, since these were mainly agrarian and mining economies. These features are close to those needed by the model's main mechanism. In this dimension this paper belongs to the literature on the colonial origins of development (Engerman and Sokoloff, 1997; Acemoglu et al., 2001, 2002). The common theme is that the exploitation of natives by Europeans generated deep inequalities and institutions that concentrate political power in the hands of a small elite. A difference is that in this paper institutions regulating the relationship among members of the elite, and not between the elite and the rest of the population, are explained. The exploitation of the population in the colonies not only generated a concentration of political power in societies, but also within the group holding power. This had other consequences, like reducing the political power of new members of the elite that appeared when economies started to diversify, and whose interests were closer to democracy and long-run economic growth, or rising the stakes of politics, hindering the evolution of democratic institutions.

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). Thach (1969) studies the political environment before the convention in Philadelphia in 1787. He argues that it was mainly influenced by rebellions and the different experience of the states regarding executive power. With respect to the first issue, 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 the second issue: *"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*

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[2]The most important factor that violates these conditions is the abundance of natural resources like oil. However, as this is observable, it is possible to control for it in the empirical exercise.

to a legislature that threatened to surrender New York's claims in the Vermont region, distinguished it from the other states." The Shay's rebellion was defeated by an army financed voluntarily by wealthy Bostonians, as the states seemed powerless against upheavals (Maier, 2010). Therefore many delegates to the convention, influenced by the Shay's Rebellion or the experience of the states, wanted a strong national executive (Horowitz, 2002). 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".* Members of the elite were aware of the costs of empowering the national executive. Not only the experience with the British government taught them about it, 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[3].

In the model the government, or elite, is organized as a legislature. Legislative policymaking in each period is modeled using the legislative bargaining approach of Baron and Ferejohn (1989). The executive proposes taxes per district to finance military responses to civil conflicts. To be implemented the proposal needs to be approved by some fraction of legislators, which is defined in the first period. This fraction, the constraints on the executive in the model, captures the nature of political institutions. Civil conflicts are stochastic events that are costly for all the members of the elite, but particularly costly for the representative of the district where the conflict occurs, and the probability of ending it is increasing on the resources spent by the government. Because the executive can finance war without taxing his own district, and because legislators that are not affected directly by the conflict are likely worse off financing the military response, the lower is the fraction that has to approve the proposal -the winning coalition-, the larger is the military response. Even though most members of the elite prefer a small military response ex-post, initial uncertainty makes them to favor larger responses ex-ante. The only way to commit to this is lowering the fraction of legislators needed to approve the executive's proposals, although that raises the likelihood of being expropriated. The theoretical model shows also how the constraints on the executive rise when the costs of conflicts become more symmetric.

In the empirical part the paper implements econometric tests to validate the main implication of the model. The explanatory variable is constraints on the executive, from the Polity IV database. This variable is very useful to map the model into the data, as it refers to institutionalized constraints on the decision-making powers of chief executives imposed by any accountability group (Marshall and Jaggers, 2007). Two types of evidence are used to prove the main prediction of the model. First a sample of more than 80 countries, mostly from Africa, Asia, and Eastern Europe, that became independent after WWII, is used to show that a higher likelihood of a civil war in the future lowers the average constraints imposed on the executive during the first five years of 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

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[3]The recent experience of Peru illustrates how the response to civil conflicts may be obstructed by the system of check and balances. Only five months after his self-coup of 1992, which gave him exclusive powers, Alberto Fujimori ended the guerilla war faced by the government since 1980 in the highlands of Ayacucho. After this he won the 1995 presidential elections in the first round. In 2009 he was convicted for his role in killings and kidnappings, and for embezzlement and bribery. Other case, described in the empirical section, is the strong government of Porfirio Díaz in 1884, which was a fundamental cause for the reduction of rural rebellions in Mexico (Katz, 1988).

theoretical model, and follows previous empirical work on the causes of civil wars. Second, it is shown that the model is able to explain the political events in The Americas after independence. The econometric evidence shows that this fear affected the design of political institutions during the nineteenth century as predicted by the model. In particular countries less prone to this type of conflicts, proxied by the fraction of native and slaves population, were the ones that imposed more constraints on the executive after independence.

The next section presents the model. Then the empirical evidence from countries that became independent after WWII is shown in the first part of Section 3. In the second part the implications of the model for the post-independence period in The Americas is discussed and tested. The last section concludes.

2   The Model

The Environment

The economy is divided in $N+1$ 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 $s_{-j} = 0$. As will be clear later there are only three states for an individual member: $s = (s_j, s_{-j}) \in \{(0,0),(1,0),(0,1)\}$. 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. Output in each district and state is given by

$$ y_j = \begin{cases} 1 & \text{if } (0,0) \\ 0 & \text{if } (1,0) \\ 1/\theta < 1 & \text{if } (0,1) \end{cases} $$

Then $\theta > 1$ captures the fact that a conflict is costly for all regions, independently on where it occurs. Agents are risk neutral, and flow utility is $u_j = (1 - \tau_j)y_j - s_j\zeta$, where τ_j is the tax rate in district j, and $\zeta > 0$ captures the fact that a conflict may destroy the factors available for production. Notice that the pair (θ, ζ) determines how asymmetric are the costs of conflicts. In particular the lower is θ and the higher is ζ, the more asymmetric are the costs of conflicts.

The transitional probabilities between states are given by p, which captures the exogenous probability of conflict onset, and q, which captures the endogenous probability of ending a conflict. In particular, 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 to observe a conflict in district j after observing peace in the country is $p/(N+1)$. If there is a conflict in district j the probability of ending it is q. Finally it is assumed that a conflict can move to other district with probability $pN/(N+1)$ if it is not terminated in the current period[4]. Defining $n = 1/N$, all of this is captured by the following transition matrix for individual states:

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[4] This is necessary when restricting the existence of a conflict to only one district at any point in time, as it is done here to reduce the number of states and simplify the model. If it is assumed that the conflict can not move then it may be better for a member to maintain the conflict in other district because in that case the probability of having a conflict in his own district is zero. This worsen the commitment problem.

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

In case of conflict tax revenues are used to finance a military response. Thus the probability of ending a conflict, q, depends positively on these resources, which are denoted by T,

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

where the normalization by the constant N helps with the algebra later.

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 how persistent, or difficult to be fought it is. This assumption follows the finding in the empirical literature on civil wars, where (exogenous) geographic conditions influence both their onset and persistence. It is also useful to map the model into the data in the next section. For simplicity the following function is assumed for q:

$$
q = max\left\{0, Q\left(\lambda T\right) - p\right\} \tag{1}
$$

where it is assumed that $Q' > 0$, $Q'' < 0$, $Q(0) = 0$, and $Q(1) \leq 1$. Then, 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, so the results are characterized as a function of a threshold value for m denoted by $\bar{m}$. To have $0 < \bar{m} < 1$ we further assume $Q(\lambda/\theta) > p$. In equilibrium, if $m < \bar{m}$ then $q > 0$. The positive constant $\lambda < 1$ captures how efficient the government is in collecting taxes and investing the revenues in the military response. Finally the linearity of q on p greatly simplifies the algebra.

Taxes need to be set every period there is conflict in a district ($S = 1$). Policymaking is modeled using the legislative bargaining approach of Baron and Ferejohn (1989). Each district has a member on 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, he can not commit to future proposals, and he dislikes conflicts[5]. He proposes the set $(\tau_j)_{j=1}^{N+1}$, which defines a 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 $S = 0$. As members of the legislature are ex-ante identical there is no disagreement, and so we may assume that m is chosen by unanimity[6]. After that it is assumed exogenous. As usual, if $m > 0$, the subset of members whose votes are decisive for approving the proposal is called the minimum winning coalition (WC).

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[5]Assuming that the agenda setter is a member of the legislature does not change the results but introduces an asymmetry that complicates the solution of the model, because the policy function is different when the conflict arise in the district of the executive. An alternative is to assume that the probability of conflict in his district is zero. In this case the solution will be similar, the only difference would be the addition of the tax rate set for his district, which would maximize his utility.

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

To keep the model simple it is assumed that taxes are zero when there is peace. 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 linearly the flow utility in every state. Possible benefits are a lower probability of expropriation or a higher provision of public goods. These are not modeled explicitly since this has been done before, and because the focus is on the costs of having more constraints. However $I'(m)$ could be a function of other exogenous variables, which will affect the equilibrium level of m as well. One of these determinants may be the degree of heterogeneity inside the elite. When the elite is more heterogeneous it may be easier for the executive to expropriate, for example distorting relative prices, or it may be more costly an uneven provision of public goods. Thus elite heterogeneity may rise the marginal benefit of constraining the executive, something that will be useful for analyzing the empirical results. Now we can define the value functions for individual j and each state (s_j, s_{-j}),

$$
\begin{bmatrix} V_j(0,0) \\ V_j(1,0) \\ V_j(0,1) \end{bmatrix} = I(m) + \begin{bmatrix} 1 \\ -\zeta \\ \frac{1-E(\tau)}{\theta} \end{bmatrix} + \delta \begin{bmatrix} 1-p & q & q \\ np & 1-(1-n)p-q & np \\ (1-n)p & (1-n)p & 1-np-q \end{bmatrix} \begin{bmatrix} V_j(0,0) \\ V_j(1,0) \\ V_j(0,1) \end{bmatrix}
$$

(2)

where δ is the discount rate.

Equilibrium

The focus is on Markov equilibria. 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 the 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 as the executive can not commit to future proposals. After this function is characterized the first period problem can be solved, which consists on finding m^* that maximizes the utility of the members of the legislature under $S = 0$. Finally the effects of $(p, \theta, \zeta, \lambda)$ on m^* can be explored, which will guide the empirical exercise.

First fix $m > 0$. The problem of the executive is very simple. Because conflicts are costly for him and he does not bear the costs of financing a military response, he chooses $(\tau_j)_{j=1}^{N+1}$ to maximize q as defined in Equation (1). If he does not face any constraint he would set $\tau_j = 1$ in all the N districts in peace, so q takes its maximum value, $q = Q(\lambda/\theta) - p > 0$. 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,

$$
V_{\text{WC}}(0,1) = I(m) + \frac{1-\tau_{\text{WC}}}{\theta} + \delta\left[qV_j(0,0) + (1-n)pV_j(1,0) + (1-(1-n)p-q)V_j(0,1) \right] \geq
$$

$$
I(m) + \frac{1}{\theta} + \delta\left[(1-n)pV_j(1,0) + (1-(1-n)p)V_j(0,1) \right]
$$

The LHS is the utility of a member of the WC of accepting the proposal, while the RHS is the value of the status-quo, where there are no tax revenues to finance the military response to a conflict, and so $q = 0$. It is easy to see that this condition is equivalent to,

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$$\delta q[V_j(0,0) - V_j(0,1)] \geq \frac{\tau_{\mathrm{wc}}}{\theta}$$

The LHS of this expression is the future total gain for an individual member of the legislature of a military response, and the RHS its cost for member j. The former depends on how efficient is the government fighting the conflict, and the expected value of ending it. The higher is this term, the higher is the tax rate the executive is able to set to members of the WC. As efficiency is decreasing on m, the higher is this term the lower is τ_{wc}. Likewise, as the expected value of ending the conflict is increasing on θ, the higher is this term the higher is τ_{wc}. Notice that the constraint does not depend on $V(1,0)$. This is in part what makes m relevant: once a conflict has erupted in some other district a member of the elite has a lower incentive to finance a military response than before its onset, when it is uncertain if the conflict will ocurr in his district. As he can not commit ex-ante to some given amount of resources to finance the response, he may find optimal to change the institutional environment so he, or anybody else when a conflict occurs in his district, finds more difficult to block a proposal.

To solve for the equilibrium value of τ_{wc} we need to know how the relative value of peace, $V_j(0,0) - V_j(0,1)$, is affected by it. 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 $E(\tau) = (1/\theta)(m\tau_{\mathrm{wc}} + (1-m))$ in (2), this equation can be used to express the relative value of peace as a function of τ_{wc} and the exogenous parameters,

$$V_j(0,0) - V_j(0,1) = \frac{1}{1 - \delta(1-q-p)}\left[1 - m\frac{(1-\tau_{\mathrm{wc}})}{\theta}\right] > 0$$

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

$$\frac{\delta q(\theta - m)}{1 - \delta(1-p) + \delta q(1-m)} \geq \tau_{\mathrm{wc}} \tag{3}$$

and tax revenues will be,

$$T = \frac{m(\tau_{\mathrm{wc}} - 1) + 1}{\theta}$$

Proposition 1.

- *For every $m \in (0,1]$ there is a unique $\tau_{wc}^* > 0$, which, together with $\tau_{NWC}^* = 1$, is proposed and accepted each period when $S = 1$.*

- *There exist constants $\bar{\theta} > 1$ and $\bar{m} \in (0,1)$ such that the functions $\tau_{wc}^* = \tau_{wc}(m)$ and $q^* = q(m)$ are strictly decreasing on m if $m \in (0,\bar{m})$ and $\theta < \bar{\theta}$. If $\theta > \bar{\theta}$, then $\tau_{wc}^* = \tau_{NWC}^* = 1$.*

- *Fixing $m > 0$, τ_{wc}^* is increasing on θ and λ, and decreasing on p; q^* is increasing on λ, and decreasing on p; and both τ_{wc}^* and q^* are independent of ζ.*

Proof. See Appendix. ∎

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 are θ and λ, and

the lower are p and m. A higher θ means that the conflict is more costly for the members of the districts which finance the military response. This is why, for $\theta > \bar{\theta}$, there will be no commitment problem and so m would not constraint the response to conflicts. Conflicts with high θ may be those when the whole elite is threatened, i.e. interstate wars and revolutions, or when the elite's main source of power is affected, like oilfields. The effect of θ on q^* is ambiguous as the former has a negative effect on the tax base. If the environment is more prone to conflicts, which is captured by a higher p, the efficiency 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[7]. Similarly, if the government is less efficient (lower λ), taxes fall, making even larger the negative effect on q. Taxes also fall with m. As this ratio rises there will be fewer districts paying the maximum tax. That has both a direct and an indirect effect on q, as the lower efficiency 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 only below $\bar{m}$, $q > 0$. Finally, as taxes are set once a conflict has erupted and they are used to end that specific conflict, ζ is not relevant for the WC at the moment they evaluate the proposal[8].

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,

$$V_j(0,0) = \frac{1}{(1-\delta)} \left[I(m) + \frac{1}{(1-\delta(1-q^*-p))} \left(1 - \delta(1-q^*) + \delta p \left((1-n)m\frac{(1-\tau_{\text{wc}}^*)}{\theta} - n\zeta \right) \right) \right] \quad (4)$$

Because members of the legislature are homogeneous under $S = 0$, their problems are identical. They maximize (4) subject to (1) and (3). The first order condition implies,

$$I'(m) = -p\delta^2 \left[\frac{\partial q^*}{\partial m} \left(\frac{1 - (1-n)m(1-\tau_{\text{wc}}^*)/\theta + n\zeta}{1 - \delta(1-q^*-p)} \right) - \frac{(1-n)}{\delta\theta} \left(m\frac{\partial \tau_{\text{wc}}^*}{\partial m} - (1-\tau_{\text{wc}}^*) \right) \right] \quad (5)$$

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 trough its effect on q. A marginal decrease on q has an expected cost equal to the flow utility without conflicts, minus the expected flow utility if there is a conflict. The second term captures the fact that there is a higher probability of being in the WC, and so to pay τ_{wc} instead of $\tau_{\text{nwc}} = 1$.

Proposition 2.

If $\theta > \bar{\theta}$, $m^* = 1$ for any p, λ and ζ. Otherwise $\exists$ constants $\underline{\zeta}$ and $\bar{\zeta}$, where $\underline{\zeta} < \bar{\zeta}$, and such that,

- *if $\zeta < \underline{\zeta}$, $m^* = 1$ for any p, λ and ζ.*

- *if $\zeta > \bar{\zeta}$, $m^* \in (0,1)$ is unique. Moreover, m^* is strictly decreasing on p and ζ.*

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[7]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 (1) were not linear there would be an additional effect of p trough the likelihood of the onset of a conflict. This probability lowers the value of peace and therefore reduces the incentives to fight.

[8]This last result is obtained because of the assumption that q does not affect the probability that the ongoing conflict may move to other districts.

Proof. See Appendix. ∎

To analyze the results notice that at this stage members of the elite decide on the optimal response to conflicts, q^*. We can see this in Equation (4), where the costs of m manifest only trough that variable. Then the exogenous parameters may have either a direct effect on the marginal cost, because they change the desired response to conflicts, or an indirect effect, coming from Proposition 1, as they affect the ability to collect taxes ex-post. All ζ, θ, and p have a direct positive effect on the marginal cost of m. All of them rise the expected cost of conflicts, making members of the legislature willing to spend more on future military reactions to them. In the case of ζ there is no indirect effect, so it is clear that m needs to go down to reduce the size of the military response. If ζ is too low, the proposition shows that $m^* = 1$: if conflicts are not costly then there are no costs of imposing more constraints. In the case of θ the indirect effect, and so the total effect on the RHS, is ambiguous. As shown in Proposition 1, ex-post tax rates rise because the conflict is more costly for members financing the military response, even though it occurs in a different district. Therefore the effect of θ on m is ambiguous. But, if θ is above some threshold $\bar{\theta}$, there is no commitment problem, so again there are no costs of imposing constraints on the executive. An increase on p rises the marginal cost trough both the direct and the indirect effects. This latter effect is due to the reduction in revenues ex-post after an increase on p due to the lower efficiency of a military campaign. The effect on m is then unambiguous, it falls, rising T and the marginal benefit of m[9]. A change in λ has an ambiguous effect on the marginal cost, and therefore its effect on m is also ambiguous. On the one hand lower efficiency means lower capacity to collect taxes ex-post, and therefore m should be lower for the same value of q^*. But on the other hand, even ex-ante, legislators are less willing to finance military campaigns, and so they are not willing to bear the costs of a higher m. Finally it is worth to notice that a more heterogeneous elite, a possible determinant of $I'(m)$ as explained above, would lead to higher levels of m[10].

Then, the negative effect of p on m, which is the main implication of the model, depend on the thresholds $\bar{\theta}$ and $\bar{\zeta}$. If $\theta \geq \bar{\theta}$ and $\zeta < \bar{\zeta}$ then there is no commitment problem. In the first case everyone in the legislature agrees ex-post on maximizing the resources to finance a military response to conflicts, in the second the ex-ante desired response is so small that the lack of commitment is not a problem. In these cases m has only benefits, and then $m^* = 1$. Therefore, assuming everything else constant, we can conclude that the constraints imposed on the executive (m) in peace times 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 asymmetric among members of the elite (high ζ and low θ).

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

[10]Heterogeneous elites facing a high risk of uprisings can show similar levels of m than homogeneous elites facing a low risk of uprisings, but the former will show much more persistent civil conflicts, and a higher cost derived from expropriation or under provision of public goods.

3 The Evidence

This section tries to validate empirically the main predictions of the model described in the last paragraph. For doing so two different exercises are implemented. First the model is tested using a sample of countries that became independent after WWII. Second the model is used to explain the experience of former colonies in The Americas during the nineteenth century. Different strategies are used in each of these exercises to try to capture the likelihood of conflicts and how difficult these may be to be fought by the elites, and how they impose uncertain asymmetric costs to its members.

A common feature of both exercises is the use of the variable Constraints on the executive, from the Polity IV database, to capture the institutional design, or the variable m in the model. Unlike other measures, this index measures explicitly how constrained the executive is in taking arbitrary decisions, and so it is very useful to map the model into the data. 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). A particular benefit of using this variable is that it is not directly affected by the fraction of people with voting rights. Best scores are possible with large groups excluded (and vice versa). For instance, South Africa under apartheid, and the US before the National Voting Rights Act of 1965, had the best score, while France today does not. This is in line with the model because its prediction is only about the constraints that the elite imposes on the chief executives, not about the constraints that the whole population imposes on the government or elite.

3.1 Civil Wars in The Post War Period

This section implements cross-country IV 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 civil war in the future as an explanatory variable. It is assumed that the institutional building process occurs immediately after independence. The availability of good data on civil conflict only for the post-war era explains the period selected for the estimations.

As predicted by the model there are some conditions civil wars should possess to generate the main mechanism. Basically they need to impose uncertain and asymmetric costs among members of the elite. With respect to the asymmetry of costs, external conflicts and revolutions, which affect the elite as a whole, would not generate the aforementioned effect on political institutions. 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 (Collier and Hoeffler, 2007). 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."* 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 over conventional armies[11]. Therefore they particularly affect members of the elite with economic interests on those regions.

In terms of uncertainty, Kalyvas (2007) argues that an insight from case studies is that geography "may trump pre-war allegiances," as most of the guerillas are strong in places where geography favors them but where there were no apparent grievances among the population to justify a conflict. Moreover, one of the main sources of unrest that interact with other features of the environment to facilitate civil wars is crop failure (Kalyvas, 2007). In line with this, Miguel et al. (2004) use rainfall growth as an instrument for economic stagnation to explain, successfully, civil wars. Natural resources, which rise the payoff of rebellion (Collier and Hoeffler, 2004), may be the most important factor reducing the uncertainty of the allocation of the costs of conflict, as rebels would try to appropriate these resources. However not all natural resources are geographically concentrated. Illegal drugs like cocaine, hash, and heroin, timber resources, and alluvial diamond mining, all being identified as very important financing civil wars, are more widely dispersed than oil or pit mining (Buhaug and Gates, 2002). Furthermore, to assess this problem, explanatory variables are introduced in the regressions to control for natural resources availability.

Of course, and as the model predicts, civil wars are endogenous. Everything else constant, fewer constraints on the executive should reduce the persistence and the likelihood of onset of a civil war[12]. Moreover, by construction conflict occurs after the constraints on the executive are set. To overcome this problem geographic variables are used as instrument, exploiting the strong relationships the empirical literature has found between civil conflicts and geographic conditions 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 the conclusion by Kalyvas (2007) that geography "may trump pre-war allegiances," and more generally, 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). The empirical literature on civil war has also found significant time effects when explaining the onset of civil wars, probably due to the effect of the Cold War. To control for that the year of independence is used as an additional instrument.

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

$$XC_{indep} = \beta_0^{\text{OLS}} + \beta_1^{\text{OLS}} CC_j + \beta_k^{\text{OLS}} X_{kj} + \epsilon_j^{\text{OLS}} \tag{6}$$

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[11]Kalyvas (2007) enumerate additional causes for the observation that most of the insurgencies begin and are fought primarily in the rural countryside.

[12]An alternative hypothesis is that better institutional constraints limit the stake of politics and the pay-off from overthrowing the government, lowering the incidence of violence (North et al., 2009; Besley and Persson, 2011). In this case these institutional constraints must be very difficult to change, as they should persist after the government is overthrown. Another effect is that lower constraints generate more intra-elite conflict. The regression results may help to determine which effect is more important.

$$CC_j = \sum_{t=indep}^{2008} \frac{CC_{jt}}{2008 - indep + 1} = \alpha_0 + \alpha_1 RT_j + \alpha_2 INDEP_j + \alpha_k X_{kj} + v_j \tag{7}$$

$$XC_{indep} = \beta_0^{\text{IV}} + \beta_1^{\text{IV}} \hat{CC}_j + \beta_k^{\text{IV}} X_{kj} + \epsilon_j^{\text{IV}} \tag{8}$$

The variable XC_{indep} is the five year average of constraints on the executive after independence. CC_{jt} is a variable that takes a value of 1 if there is a civil war in country j and year t. The source is the UCDP Dyadic Dataset (Harbom et al., 2008). UCDP 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) with or without intervention from other states[13]. Then 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. RT_j is the rough terrain variable used by Fearon and Laitin (2003), corresponding to the proportion of the country that is mountainous. $INDEP_j$ is the year of independence of country j and $\hat{CC}_j$ is the predicted value of CC_j using the estimated parameters from Equation (7).

Additional control variables, including in the vector X_{kj}, are fractionalization, whether the country was an British colony, and whether it was known the existence of oil reserves at the moment of independence. The source of fractionalization is Humphreys (2005). This variable has been used extensively in empirical papers to explain civil wars but without success, although there are good theoretical reasons to expect a significant effect of it on the incidence of civil wars (Collier and Hoeffler, 2007; Kalyvas, 2007; Blattman and Miguel, 2010). Fractionalization could be a determinant of $I(m)$ and therefore may be an explanatory variable for the constraints on the executive as well. However in this case fractionalization may ocurr inside the elite, which may be less important than differences between the elite and the rest of the population in the data. 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. Smith (1987) enumerates a series of reasons the British were favored at the time they withdraw from their colonies. Among them is the fact that in the last decades of colonialism the British implemented reforms which associated the peoples in the colonies closely to their own governing, something not observed in the French, Portuguese or Belgian colonies. Finally the existence of oil reserves is included as an additional explanatory variable to control for conflicts where uncertainty about the distribution of costs among the elite is low, or when the costs of conflicts are high for everyone inside that group (high θ in the model). This variable takes a value of one when it was known at the moment of independence the existence of oilfields. In particular an interaction of this variable with the civil conflicts' variable is introduced. The source is Humphreys (2005), complemented for some countries with information from other sources when it was not available.

Therefore, according to the model, we expect $\beta_1^{IV} < 0$ and $\beta_1^{IV} < \beta_1^{OLS}$. We also expect a positive interaction between oil reserves and conflict. Results are shown in Table 1. In the first column Equation (6) is estimated with civil war as the only dependent variable, and the coefficient

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[13]The other conflicts are extrasystemic armed conflict between a state and a non-state group outside its own territory (this includes colonial and imperial war) and interstate armed conflict between two or more states.

	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) IV	(6) Inst	(7) Inst
Civil Conflict	0.093	−0.976*	0.040	−1.145***	−2.005***		
	0.171	*0.500*	*0.170*	*0.429*	*0.410*		
Fractionalization			−0.027	0.103	0.039		0.153*
			0.136	*0.126*	*0.119*		*0.083*
British Colony			0.212***	0.219***	0.192**		−0.041
			0.079	*0.083*	*0.077*		*0.050*
Oil Reserves			0.104	0.217**	−0.291		0.113**
			0.083	*0.093*	*0.196*		*0.050*
Civil Conflict × Oil Reserves					2.681***		
					0.823		
Rough Terrain						0.029*	0.033**
						0.015	*0.015*
Independence						−0.004***	−0.005***
						0.001	*0.002*
R^2	0.004	0.042	0.105	0.178	0.278	0.108	0.195
Observations	86	86	86	86	86	87	87
Sargan statistic		0.024		0.083	0.096		

Table 1: Constraints on the Executive and Civil Conflicts

is not significant. When Equation (8) is estimated, again without other explanatory variables, the coefficient becomes negative and significant, as expected. The first-stage regression results are shown in column (6), where we can see that both instruments are significant. In columns (3) and (4) the additional explanatory variables are included in the regressions. The effect of civil war is unchanged. Fractionalization is not significant, although it has a negative effect trough civil conflicts when estimating Equation (8), as it has a significant effect on CC in the first stage regression (column 7). British colony has a significant and positive effect in the second stage regression, as expected. Oil reserves have both a direct positive, and an indirect negative effect when estimating Equation (8). This may be explained by the interaction effect with civil wars that the model predicts. This interaction is included in column (5). We can see now that the effect of civil wars on the constraints imposed on the executive is almost twice as large as before for countries without oil reserves, but for countries with oil reserves the coefficient becomes not significant, a result that is in line with the main predictions of the model.

3.2 The Americas after Independence

In the aftermath of independence the new countries in The Americas, particularly in Latin America, suffered a vacuum of political power, which led to lack of governance and numerous armed conflicts. The first decades were chaotic and disorganized; there was little institutionalization, and almost not agreed upon national goals or ideology (Wiarda, 2005). The wars of independence unleashed a crisis with power struggles between regional elites or caudillos for control of the new independent countries, predatory militarism, and clashes between civilians and the military, or between the church and anticlerical forces. Besides internal wars and economic stagnation, Latin America fell victim of foreign interventions and numerous border wars, specially in Central America (Bates et al., 2007)[14].

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[14]Notable exceptions of countries that achieve order early were Brazil, which maintained the system of monarchy, Chile, which established a centralized republican government, and North America. In the first two countries it has been documented that the elites were relatively homogeneous at that time as well (Collier and Sater, 2004; Williamson, 2009)

After a short predominance of radicals, who favored wide popular participation following the spirit of the wars of independence, conservatives dominated politics. This group supported the rebuilt of the colonial order so as to secure the authority over the lower classes. In constitutional terms, see e.g. Loevman (1993), Gargarella (2004) and Wiarda (2005), they supported a strong presidency. They saw the executive as a national authority with the means to prevent internal disorders, and so they invested him with extraordinary powers during internal or external crises, when he could declare the state of emergency, suspend the constitution, and rule by decree. They also defended centralist governments, weak parliaments and courts, and a powerful army, which was constitutionally obliged to step in when disorder broke out. Consequently, authoritarian governments were common throughout the region in the aftermath of independence.

The rise of conservatives in almost every country after 1820 in the context of intra-elite conflicts can be potentially explained by the model. According to its main prediction, fragmented countries were more prone to this type of conflicts, and so more concentration of power would be necessary inside the elite. Other source of instability and chaos in the decades after independence identified by historians was the Spanish and Portuguese colonial system, which had provided absolutely no training in self-government and certainly none in democracy (Wiarda, 2005, p.7). This may explain the large differences in terms of political institutions between countries in Latin America and the former British colonies in North America in the aftermath of independence[15].

Nevertheless we do not test the model empirically trying to explain the events occurred during these decades. There is not much variance during that period in terms of executive power, beyond the differences between North America and Latin America. Neither there is data to capture the incidence nor the main features of the conflicts, which need to comply with the main requirements described in the previous section in order to observe the main mechanism of the model. Finally, if there was a serious effort in building institutions during these decades, the process was probably influenced by the ongoing conflicts in most of the countries, again making less clear the mapping of the model into the data. To overcome these problems the focus of the empirical exercise is on racial conflicts, for which we have better proxies and that, according to the model, should have affected political institutions after the "lost decades" following independence.

Indeed historians have identified the fear to a race war as one of the main causes for the lack of revolutionary support by the elites in the Americas at the end of the nineteenth century, mainly because the colonial pact also consisted on the effective maintenance of the internal colonialism of white over non-white which the Catholic monarchy had been able to provide (Williamson, 2009, p.203). The white oligarchies in The Americas did not have representative political institutions or access to high government posts. But this was the price that had to be paid for the massive legitimacy of the Catholic monarchy, that could best evoke loyalty to the established order from the Indian communities and the lower classes of Hispanics, blacks and mixed-bloods in the colonies (Williamson, 2009, p.115). In short, the elite needed imperial protection from the slaves and indigenous peasants that surrounded them (Bates et al., 2007). Any direct attack on the monarchy

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[15]The different political paths followed by Latin and North America are analyzed by North et al. (2000), who emphasize the effects of the colonial heritage, disagreement, and belief systems, which did not limit the stakes of political decisionmaking in Latin America. The hypothesis proposed by this paper is not analyzed by the authors.

ran the risk of loosing what kept the system from collapsing in bloody chaos. It was only in the first decade of the nineteenth century, when external forces destroyed the royal authority in the Peninsula itself that the American elites were pushed in that direction. When the king faltered, settler elites in the empire understood they could no longer rely on Spain to protect them (Bates et al., 2007).

The most spectacular and notorious indigenous uprising in the Colonial period exploded across Peru in 1780, led by Túpac Amaru (Eakin, 2007). Other notable episodes were the revolt by the Aymara speakers in Upper Peru, the *comunero* revolt in Colombia, the local revolts linked to the Hidalgo movement in Mexico, and a mulatto revolt in the northeastern province of Bahia in Brazil, in the last decades of the eighteen century. Although these uprisings had important costs for the elites -including in some cases indiscriminately slaughtering of whites-, they were far from seizing political power, and all of them were brutally suppressed, being the Haitian Revolution -a colony where roughly 95% of the population were slaves-, the only successful non-white rebellion in the colonial period in The Americas, and an event that kept alive the fear of race war among the elites throughout the continent in the nineteenth century.

Rebellion by the lower classes continued to be endemic after independence. Katz (1988), analizing rural rebellions in Mexico, argues that rural revolts between 1810 and 1920 affected that country much more than such revolts had ever influenced the territory during the colonial period. This was particularly the case in central Mexico, where rebellions became more common, larger, and bloodier, and repression more pronounced. Between 1840 and 1870 there was an unprecedent resurgence of village revolts, race wars, and regional rebellions (Coatsworth, 1988). According to Katz (1988) and in line with the model, one of the reasons for this was the greater strength of the Spanish crown relative to the new Mexican state. Moreover he argues that post-independence rebellions became less common around 1884 due, among other factors, to the begning of the strongest state that independent Mexico had ever known led by Porfirio Díaz, despite the masive expropriation of villagers' lands by wealthier classes that begun in the late nineteenth century.

Coatsworth (1988) surveys the literature on rural rebellions since the end of the seventeenth century in Latin America[16]. This literature consists mainly in case studies and therefore is not exhaustive. Most of the events studied took place in Mexico, Guatemala, Peru, Bolivia, and Brazil. In the case of revolts involving Mesoamerican and Andean villages, Coatsworth (1988) distingueshes three main types: land invasions, village riots, and "caste" wars. All of these involved high dgrees of violence, including theft and assassinations, and they were mostly directed against the rural elites: land owners in the first case, public officials in the second case, and whites in the third case. Caste wars, regional uprisings directed to the expulsion or elimination of non-indian authority, were the largest revolts, while the most common and prolonged revolts involved formal and informal alliances between Indian villagers and non-Indian low classes. Finally slave-based rebolts consisted on plantation riots and uprisings, slave insurrections, and maroon warfare. Slave insurrections, although uncommon, usually sough the expulsion of extermination of the European elite and, together with caste wars, could araise from small rioting trough contagion, a danger recognized by rulling classes troughout Latin America (Coatsworth, 1988, p.30).

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[16]Although the author recognizes that rebellions in cities and towns were also very common and similar to rural rebellions, they are not included in his analysis

Because the analysis is based on case studies for certain countries only, numbers are not very informative. However they give a lower bound on the number of conflicts. Coatsworth (1988) reports 521 village riots and uprisings, and 286 slave-based rebolts, from 1700 to 1899. In the case of regional, "peasant", and caste wars, he reports 6 events before 1810, and 42 thereafter; 23 in Mexico, 8 in Brazil, 7 in Peru, and 10 in other countries (Argentina, Barbados, Bolivia, Ecuador, El Salvador, Guatemala, and Jamaica). In the case of Mexico these rebellions took place in 15 different regions. A similar pattern is observed in Brazil and Peru. This shows that they were not folcalized only in some specific regions. Of 31 maroon wars and slave insurrections recorded between 1700 and 1832, 13 ocurred in the Guianas, Surinam, and Venezuela, and the rest were spread throughout the Caribbean islands and the mainland.

The model in this paper predicts that fear to race war also affected the institutions built after independence. The main features of this type of conflicts resemble those needed by the main mechanism of the model, and there are good reasons to think that these risks persisted for long time during the nineteenth century. This is because independence was a political, and not a social or economic revolution. White elites still employed coerced non-white labor in agrarian or mining economies. Therefore the risk of uprisings was virtually unchanged. Moreover there are reasons to expect that the risk of uprisings by indians and salves was even higher after the lost decades following independence. The better long-run economic prospects in the economies increased this risk as, for example, landowners tried to enlarge their land posessions at the expense of the lower classes, or as the demand for forced labor increased (Coatsworth, 1988).

Indeed it has been documented by historians that the risk of uprisings by the lower classes, together perhaps with the risk of intra-elite conflicts, was among the main reasons for the establishment of autocratic regimes throughout the continent after independence. The trade-off facing the new political elite was similar to the one highlighted in the model: "...a contradiction appeared: the only coherent political ideology available to [the elites] was liberalism, but democratic values such as liberty and equality ... tended to undermine state authority in regionally dispersed societies which were still seigniorial, hierarchical, racially divided and often based on slavery." (Williamson, 2009, p.233). Eakin (2007) concludes that much of US history in the aftermath of the revolution is about how to implement the ideals of the founding fathers, while in Latin America, where the elites all read, discussed, and exchanged the ideas of the age, the presence of liberal ideals and principles is very weak and minimal, and the focus is on war and maintaining elite control (Eakin, 2007, p.199).

The discussion so far makes clear then that the existence of oppressed non-whites; Indians, blacks, mulattoes, and even mestizos, generated a risk of conflicts for the white elites similar to those highlighted by the model. It follows that a variable measuring non-whites as a fraction of total population may be a good explanatory variable for the constraints imposed on the executive throughout the region. Unfortunately there are only measures of Indians and blacks available, so we focus on these groups only. Mahoney (2003) estimates Indians and blacks as a fraction of total population for different countries in Latin America for the years around 1800. This variable is complemented with data from McEvedy and Jones (1978) to expand the sample to most of the former colonies in The Americas. Figure 1 shows the results. This fraction ranges from roughly 1% in Uruguay and Costa Rica, to more than 90% in Jamaica. The first two countries, together with
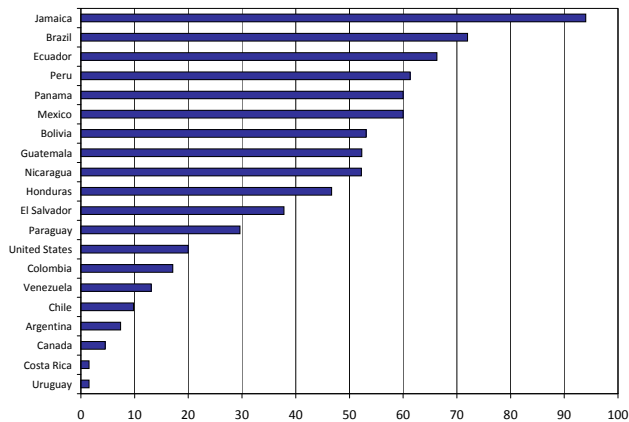
Figure 1: Blacks and Indians in The Americas, % of total pop, circa 1800

Chile and Argentina which show low indigenous populations as well, have been identified as the countries with the most democratic institutions in Latin America (Drake, 2009)[17]. On the other hand Jamaica only obtained its independence in 1962, a fact that may have been motivated by the example of Haiti (Eakin, 2007)[18].

But it is not easy to identify the period of institutional building in The Americas. It took decades of civil discord before most of the countries could bring about enough order to construct functioning governments (Drake, 2009, p.15). Countries that moved to less autocratic political institutions made it slowly, only after the negative economic and political effects of the wars of independence started to be overcame, and with the help of new groups inside the elites that appeared when the economies started to diversify. As stated by Williamson (2009), only after about 1850 overseas demand began to pull a few Latin American economies out of stagnation, and this led to a degree of political consolidation and, in some republics, to a period of constitutional politics and the rule of law (Williamson, 2009, p.234)[19]. Liberals started to dominate politics. This group, who particularly benefited from the overseas trade and the new economic opportunities, supported the creation of a modern liberal state, following the US constitution. They tried to constrain the potential abuses of the executive trough limits on the president's terms of office and no reelection, and trough restrictions on his powers of veto and the elimination of the executive's exceptional

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[17]The US, which shows the highest constraints on the executive since independence (and much higher than Latin American countries), appears as a country with not a low but moderate fraction of Indians and blacks, between Colombia and Paraguay. However blacks in the US were not dispersed as most of them went to the colonies in the south. This is something that, according to the model, weakens the main mechanism as uncertainty about the distribution of the costs of uprisings falls. Moreover there were important institutional differences between the south, with oligarchic institutions, and the north, with more democratic institutions (Kim, 2009).

[18]Because of its late independence Jamaica is included in the previous estimations for the post-war period, but not in the estimations below for The Americas.

[19]An additional problem in identifying the period of institutional building is that countries in Latin America have adopted a large number of constitutions since independence, more than 12 per country on average. But, despite this, the basic institutions of governments have changed little, including centralism, separation of powers, presidentialism, weak legislatures and judiciaries, elections, and other virtually immutable features (Drake, 2009, p.27).
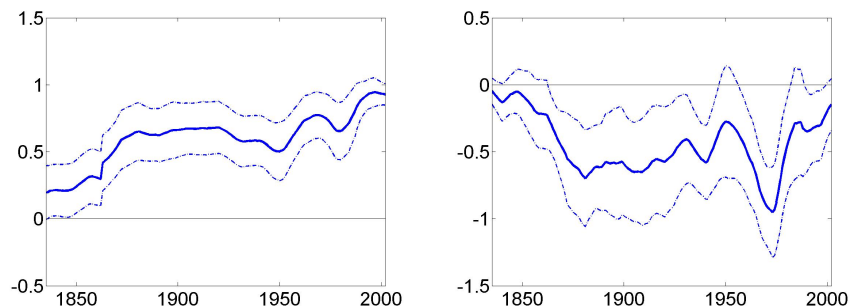
Figure 2: Natives, Blacks, and Political Institutions: Regression Results

powers (Gargarella, 2004; Drake, 2009).

In this context the model helps to understand which countries developed political institutions that constrained the power of chief executives after the political and economic chaos following independence, when better economic conditions and the diversification of the economy pushed by international factors led to order and a period of institutional building[20]. By 1870 liberals dominated politics almost in every country, but not in all of them they were able, or willing, to establish political institutions consistent with the liberal principles described above. To capture the process of institutional design, and how it was affected by the fear of uprisings, we run the following regression for every year since 1835,

$$XC_{j,t} = \beta_{0,t} + \beta_{1,t}NP_{j,indep} + \beta_{2t}XC_{j,indep} + \epsilon_{j,t}$$

where

$$NP_{j,indep} = \left(\frac{blacks + indians}{pop}\right)_{j,indep}$$

The inclusion of constraints on the executive at the moment of independence as an additional explanatory variable captures other features that may have affected institutions, like the colonial system of government or the process of independence. As there is not too much variance across countries in terms of initial constraints, results are very similar when this variable is not included.

Results are shown in Figure 2. In the left panel the sequence of $\beta_{0,t}$ is plotted. We observe a rise in this coefficient from 1830 to 1900, consistent with the facts documented in the last paragraphs. But in the right panel we can see that this was the case only in countries with small Indian and black population. The graph shows the sequence for $\beta_{1,t}$, and it can be seen that it becomes negative and significant in the second half of the nineteenth century. It is interesting to see that this coincides with the period of economic recovery and political domination of liberals. Therefore, as documented by Eakin (2007) (p.220), liberals sided with the option of authoritarian governments once they obtained the political power in countries like Mexico and Brazil, but extended political participation in countries like Chile, Argentina, Uruguay, and Costa Rica. It also coincides with

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[20]According to the model the risk of racial conflicts explains the intensity of the political problems in the aftermath of independence: because of this risk, political power needed to be concentrated by certain groups inside the elites. But this raised the expected pay-off from controlling the government, increasing the incentives to fight of each faction.
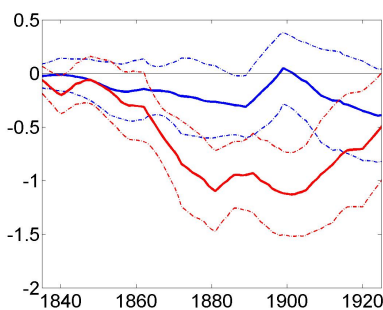
Figure 3: Natives, Blacks, Rough Terrain, and Political Institutions: Regression Results

the generalized economic recovery and the emergence of new sectors in the economy. The latter may have increased the marginal benefits of constraining the government as explained in the last section. As this happened countries able to constraint their executive, because of a low risk of internal conflicts, did it. On the other hand, the strong economic recovery may have increased the risk of uprisings in countries with large indian and slave populations, as argued by Coatsworth (1988), contributing to the observed divergence as well.

It can also be seen in Figure 2 that the coefficient capturing the likelihood of uprisings stays significant for most of the twentieth century. Because race uprisings like the ones highlighted by the model became less likely this shows that the effects on political institutions explained by the model had very persistent effects. This may be either because the political process makes them persistent, or because authocratic regimes had effects on other determinants of political institutions. One possible mechanism would be to rise social inequalities. This, together with the industrialization of the economy, may lead to the process of democratization proposed by Acemoglu and Robinson (2000, 2006), as larger social movements start to push for more political inclusion[21].

It is worth emphazing that the empirical results are not a direct outcome of the exclusion of these groups from political participation. Ethnic friction, together with social inequalities, was probably behind the difficulties in achieving democracy in Latin America. But in this case the effect is on the institutions regulating the relationship among the members of the elite, and not between them and the rest of the population[22]. To confirm that the results really correspond to the mechanism predicted by the model an interaction term with rough terrain (RT), the instrument for civil conflict used in the last subsection, is introduced. As argued above this variable captures how difficult is to fight an uprising, thus the effect of a larger fraction of opressed population should have a larger effect on the constraints imposed on the executive in countries with a higher value for this variable. As more explanatory variables are included in the regression, results should be taken carefully because of the small sample.

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[21]Following this logic it is interesting to see that precisely countries that suffered from authocratic governemnts in previous decades were the ones that saw interrumped the first process of democratization, that was reflected in an increase on the constraints imposed on the executive, around 1950.

[22]As explained above, constraints on the executive is only indirectly related to the fraction of population voting in elections. Moreover the fraction of the population voting in elections was much lower than the fraction of whites in the population at that time (Colomer, 2004).

Results are shown in Figure (3). The red line corresponds to the marginal effect of NP in the country with the 90 percentile value of RT (between the value of Peru and Honduras), and the blue line the marginal effect for a country with the 10 percentile value of RT (between the value of Brazil and Paraguay). As expected the effect is significant only in countries with high values of RT, suggesting that the channel is the one predicted by the model: a larger population of indian and blacks meant a higher probability of a civil conflicts, and when these were difficult to fight, the elite needed to organize in a certain way so to make easier the response to these events.

Appendix

Proof of Proposition 1

Suppose for all the prove that $m > 0$. It is clear that the proposed and accepted tax rates in any period when $S = 1$ are $\tau^*_{\text{NWC}} = 1$ and, in the case of τ^*_{WC}, the solution to Equation (3). Since T, and thus $Q(\lambda T) - p$, are continuous, strictly increasing on τ_{WC}, and decreasing on m, there exists $\bar{m}$ such that if $m < \bar{m}$, $q > 0$ for any τ_{WC}. Notice that $\bar{m}$ solves

$$Q\left(\frac{\lambda(1-\bar{m})}{\theta}\right) = p$$

so $0 < \bar{m} < 1$. Although $m \geq \bar{m}$ does not necessarily imply $q = 0$, for the characterization of the equilibrium we focus in the case when $0 < m < \bar{m}$. Define

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

Take first the case when $m < \bar{m}$. Then

$$\frac{\partial LHS(\tau_{\text{WC}})}{\partial \tau_{\text{WC}}} = \lambda Q'(\lambda T)\left(\frac{m}{\theta}\right)\left[\frac{\delta(\theta - m)(1 - \delta(1-p))}{(1 - \delta(1-p) + \delta q(1-m))^2}\right] > 0 \tag{9}$$

$$\frac{\partial^2 LHS(\tau_{\text{WC}})}{\partial \tau_{\text{WC}}^2} = \lambda\left(\frac{m}{\theta}\right)^2\left[\frac{\delta(\theta - m)(1 - \delta(1-p))}{(1 - \delta(1-p) + \delta q(1-m))^2}\right]\left[Q''(\lambda T) - \frac{2\lambda Q'(\lambda T)Q'(\lambda T)\delta(1-m)}{1 - \delta(1-p) + \delta q(1-m)}\right] < 0$$

Additionally, since always $q > 0$, $LHS(0) > 0$. Then the LHS of Equation (3), ($LHS(\tau_{\text{WC}})$), is strictly increasing and concave on τ_{WC}, and it is larger than zero when $\tau_{\text{WC}} = 0$. We know then that there exists a unique value $\tau_{\text{WC}} = t > 0$ such that $LHS(t) = t$. It follows that if $t > 1$, then the unique solution to the executive problem is $\tau^*_{\text{NWC}} = \tau^*_{\text{WC}} = 1$. Otherwise, the unique solution is $\tau^*_{\text{NWC}} = 1$ and $\tau^*_{\text{WC}} = t > 0$.

If $m \geq \bar{m}$ there exists $\bar{\tau}_{\text{WC}} \in (0, 1]$, such that if $\tau_{\text{WC}} < \bar{\tau}_{\text{WC}}$, $LHS(\tau_{\text{WC}}) = 0$. Then if $\bar{\tau}_{\text{WC}} \leq t$, we know there exist points t_1 and t_2, with $t_1 < t < t_2$ such that $LHS(t_1) > t_1$ and $LHS(t_2) < t_2$, and so $LHS(t) = t$, so we have the same result than before. If $\bar{\tau}_{\text{WC}} > t$, there is no such a point, only $\tau^*_{\text{WC}} = 0$ and $\tau^*_{\text{NWC}} = 1$ is accepted, and $q^* = 0$. This proves the first point.

It follows from above that the functions $\tau^*_{\text{WC}} = \tau_{\text{WC}}(m)$ and $q^* = q(m)$ are well defined. Now suppose that $\theta < \bar{\theta}$, where $\bar{\theta}$ solves $LHS(1) = 1$, or

$$\delta Q(\delta/\theta)(\theta - 1) - (1 - \lambda(1-p)) = 0$$

The term on the left is independent of m, and it is increasing on θ because

$$\frac{\partial(Q(\lambda/\theta)(\theta - 1))}{\partial \theta} = Q(\lambda/\theta) - Q'(\lambda/\theta)(\lambda/\theta^2)(\theta - 1) > \frac{Q(\lambda/\theta)}{\theta} > 0$$

where the first inequality follows from the concavity of Q and the fact that $Q(0) = 0$. This implies that, for any m, if $\theta \geq \bar{\theta}$, $\tau_{\text{WC}} = 1$. Otherwise, and under $m < \bar{m}$, $\tau_{\text{WC}} < 1$. Now it is necessary to show that if $\theta < \bar{\theta}$ and $m < \bar{m}$, the functions $\tau^*_{\text{WC}} = \tau_{\text{WC}}(m)$ and $q^* = q(m)$ are strictly decreasing on m. We can show this using the implicit-function theorem. Define $H(\tau_{\text{WC}}) = LHS(\tau_{\text{WC}}) - \tau_{\text{WC}} = 0$. Then it is sufficient to show $\partial H(\tau_{\text{WC}})/\partial m < 0$ and $\partial H(\tau_{\text{WC}})/\partial \tau_{\text{WC}} < 0$,

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

Using $H(\tau_{\text{WC}}) = 0$ in Equation (9), we get

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

where the first inequality follows from the concavity of Q and the fact that $Q(0) = 0$, while the last follows from the fact that $m\tau_{\text{WC}} < T\theta = m(\tau_{\text{WC}} - 1) + 1$, and that the term in the square brakets is lower than one. This implies

that τ_{wc}^* is decreasing on m, and then T an q are decreasing on it as well. This proves the second part of the proposition.

For the third part the implicit-function theorem can be used for the range $\tau_{\mathrm{wc}}^* \in (0,1)$. Outside that range we know τ_{wc}^* is constant. Then, to show that τ_{wc}^* is increasing on θ and , and decreasing on p, we need to show $\partial H(\tau_{\mathrm{wc}})/\partial \theta > 0$, $\partial H(\tau_{\mathrm{wc}})/\partial \lambda < 0$, and $\partial H(\tau_{\mathrm{wc}})/\partial p < 0$,

$$\frac{\partial H(\tau_{\mathrm{wc}})}{\partial \theta} = \frac{\delta \left(Q(\lambda T) - \frac{\lambda T Q'(\lambda T)}{\theta}\left(\theta - \tau_{\mathrm{wc}} - m(1-\tau_{\mathrm{wc}})\right)\right)}{1 - \delta(1-p) + \delta q(1-m)} > \frac{\delta Q(\lambda T)\left(1 - \frac{\theta - \tau_{\mathrm{wc}} - m(1-\tau_{\mathrm{wc}})}{\theta}\right)}{1-\delta(1-p)+\delta q(1-m)} > 0$$

where, again, the first inequality follows from the concavity of Q and the fact that $Q(0) = 0$.

$$\frac{\partial H(\tau_{\mathrm{wc}})}{\partial \lambda} = \frac{\delta T Q'(\lambda T)}{1 - \delta(1-p) + \delta q(1-m)}\left[\theta - m - \tau_{\mathrm{wc}}(1-m)\right] < 0$$

$$\frac{\partial H(\tau_{\mathrm{wc}})}{\partial p} = \frac{\delta(m(1-\tau_{\mathrm{wc}}) - \theta)}{1-\delta(1-p)+\delta q(1-m)} < 0$$

As q^* is increasing on τ_{wc} and , and decreasing on p, it follows that q^* is increasing on λ, and decreasing on p. Finally $H(\tau_{\mathrm{wc}})$ is not a function of ζ so both τ_{wc}^* and q^* are independent of it.

$$\textbf{\textit{QED.}}$$

Proof of Proposition 2

From Proposition 1 we know that if $\theta \geq \bar{\theta}$ then τ_{wc}^* and q^* are constant. Then the RHS of Equation (**??**) is zero, and so $m^* = 1$ follows from the fact that $I'(m) > 0$. To see the case when $\theta < \bar{\theta}$, assume first $m > 0$. In this case notice first that

$$-\frac{\partial T^*}{\partial m} = \frac{1 - \tau_{\mathrm{wc}}^*}{\theta}\left[1 - \frac{\partial \tau_{\mathrm{wc}}^*}{\partial m}\frac{m}{1 - \tau_{\mathrm{wc}}^*}\right] \leq 0$$

where the inequality follows from the proof of Proposition 1: $\tau_{\mathrm{wc}}^* < 1$ if $\theta < \bar{\theta}$, and $\partial \tau_{\mathrm{wc}}^*/\partial m \geq 0$ ($= 0$ iff $m > \bar{m} > 0$). Suppose $m < \bar{m}$. Then, using the implicit-function theorem and some algebra we get,

$$-\frac{\partial T^*}{\partial m} = \frac{1 - \tau_{\mathrm{wc}}^*}{\theta}\left[\frac{1 - \delta(1-p-q^*)}{1 - \delta(1-p) + \delta q^*(1-m) - \delta \lambda Q'(\lambda T^*) m \left(1 - T^* + (1-\tau_{\mathrm{wc}}^*)/\theta\right)}\right] > 0 \tag{10}$$

Replacing this into Equation (**??**),

$$RHS(m) = \frac{p\delta(1 - \tau_{\mathrm{wc}}^*)}{\theta}\left[\frac{\delta \lambda Q'(\lambda T^*)(1 - (1-n)(1/\theta - T^*) + n\zeta) - (1-n)(1 - \delta(1 - Q(\lambda T^*)))}{1 - \delta(1-p) + \delta q^*(1-m) - \delta \lambda Q'(\lambda T^*) m \left(1 - T^* + (1-\tau_{\mathrm{wc}}^*)/\theta\right)}\right] \tag{11}$$

Since (10) is positive, this expression is positive if and only if the denominator of the term inside the brakets is positive. Call this term num. Notice first that it is continuos and strictly increasing on m:

$$\frac{\partial num}{\partial m} = \delta \lambda^2 Q''(\lambda T^*)\frac{\partial T^*}{\partial m}\left(1 - (1-n)(1/\theta - T^*) + n\zeta\right) > 0$$

Also num is continuous and strictly increasing on ζ. So there exists $\hat{\zeta}(m)$ such that for all $\zeta > \hat{\zeta}(m)$, $RHS(m) > 0$ (when $m < \bar{m}$). Moreover $\hat{\zeta}(m)$ is decreasing on m, which implies that if $\zeta > lim_{m \to 0}\hat{\zeta}(m)$, $RHS(m) > 0$ for all $m < \bar{m}$, and that if $\zeta < \hat{\zeta}(1)$, $RHS(m) < 0$ for all $m < \bar{m}$. If $m > \bar{m}$ then $RHS(m) = 0$, and $RHS(0) < \infty$. Then, given $I'(m) > 0$, $I'(0) = \infty$, and $I''(m) < 0$, when $\zeta < \hat{\zeta}(1)$ we have $m^* = 1$ for any value of the other parameters. Then define $\underline{\zeta} = \hat{\zeta}(1)$ and the first bullet in the proposition is proven.

Now take the case when $\zeta > lim_{m \to 0}\hat{\zeta}(m)$. Taking the partial derivative,

$$\begin{aligned}
\frac{\partial RHS(m)}{\partial m} &= -\frac{\partial \tau_{\mathrm{wc}}^*}{\partial m}\frac{RHS(m)}{(1 - \tau_{\mathrm{wc}}^*)} + \frac{p\delta^2(1 - \tau_{\mathrm{wc}}^*)}{\theta\,den}\left\{\lambda^2 Q''(\lambda T^*)\frac{\partial T^*}{\partial m}(rev)\right.\\
&\quad -RHS(m)\left[(1-m)\lambda Q'(\lambda T^*)\frac{\partial T^*}{\partial m} - q^* - \lambda^2 Q''(\lambda T^*)\frac{\partial T^*}{\partial m}m(tax)\right.\\
&\quad \left.\left.-\lambda Q'(\lambda T^*)(tax) + \lambda Q'(\lambda T^*)m\left(\frac{\partial T^*}{\partial m} + \frac{1}{\theta}\frac{\partial \tau_{\mathrm{wc}}^*}{\partial m}\right)\right]\right\} > 0
\end{aligned} \tag{12}$$

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 brakets in Equation (11). Because τ^*_{wc} and T^* are decreasing on m, and because $RHS(m) > 0$, we have that this term is strictly increasing on m when $0 < m < \bar{m}$. If $m > \bar{m}$ then $RHS(m) = 0$. Finally $RHS(0)$ is finite. Since $I'(m) > 0$, $I'(0) = \infty$, and $I''(m) < 0$, then there exists a unique $m^* > 0$ that maximizes the utility of every legislator under $S = 0$. If $lim_{m\to\bar{m}}I'(m) < lim_{m\to\bar{m}}RHS(\bar{m})$ then $m^* < \bar{m}$, otherwise $m^* = 1$. But $lim_{m\to\bar{m}}RHS(\bar{m})$ is increasing on ζ. Define $\tilde{\zeta}$ the value of ζ that makes $lim_{m\to\bar{m}}I'(m) = lim_{m\to\bar{m}}RHS(\bar{m})$, and $\bar{\zeta} = \max\{\tilde{\zeta}, lim_{m\to 0}\hat{\zeta}(m)\}$. Thus if $\zeta > \bar{\zeta}$, the unique m^* is strictly positive and lower than one. This proves the first part of the second bullet in the proposition.

Since, for $\zeta > \bar{\zeta}$ and $\theta < \bar{\theta}$, $m^* \in (0, \bar{m})$, and since along that range for m, $RHS(m)$ is strictly increasing on m, and $I'(m)$ is strictly decreasing on m, the implicit-value function can be used to prove the last part of the proposition. Define $G = I'(m) - RHS(m)$. Then it is enough to show that, when $G = 0$, $\partial RHS(m)/\partial\zeta > 0$ and $\partial RHS(m)/\partial p > 0$. Because τ^* is independent of ζ, the first inequality follows directly from Equation (5). In the second case,

$$
\begin{aligned}
\frac{\partial RHS(m)}{\partial p} \;=\; & \frac{RHS(m)}{p} - \frac{\partial\tau^*_{\text{wc}}}{\partial p}\frac{RHS(m)}{(1-\tau^*_{\text{wc}})} + \frac{p\delta^2(1-\tau^*_{\text{wc}})}{\theta\,den}\left\{\lambda^2 Q''\left(\lambda T^*\right)\frac{\partial T^*}{\partial p}(rev)\right. \\
& - RHS(m)\left[(1-m)\lambda Q'\left(\lambda T^*\right)\frac{\partial T^*}{\partial p} + m - \lambda^2 Q''\left(\lambda T^*\right)\frac{\partial T^*}{\partial p}m(tax)\right. \\
& \left.\left. -\lambda Q'\left(\lambda T^*\right)m\left(\frac{\partial T^*}{\partial p} + \frac{1}{\theta}\frac{\partial\tau^*_{\text{wc}}}{\partial p}\right)\right]\right\} > 0
\end{aligned}
\tag{13}
$$

Because τ^*_{wc} and T^* are decreasing on p, and because $RHS(m) > 0$, every term but $-RHS(m)m$ is positive. But notice that the first term, $RHS(m)/p$, is larger than $RHS(m)m$, so $RHS(m)/p - RHS(m)m > 0$, and so the partial derivate is strictly positive. This proves the last part of the proposition.

QED.

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