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The Effects of Internal and External Conflict on Democratization Incentives

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Abstract

It has been argued that internal and external military threats can act as catalysts for democratization. While internal threats have an unambiguous effect in favor of democratization, as suggested by Acemoglu and Robinson (2000), the effects of external threats are less clear. On the one hand, wars may force concessions from elite players in exchange for military support (Ticchi and Vindigni (2008)) or may insulate military elites from irrelevance during transitions (Acemoglu, Ticchi, and Vindigni (2008)), on the other, they may help consolidate the internal dominance of the ruling elite (Powell (2006)).

This paper presents a simple model which shows the conditions under which external threats may either favor or harm democratization process.

Keywords: Democratization, Revolution, War.

JEL Clasification: D74, F51, H11, N40.

"It was possible, no doubt, to imagine a society in which wealth, in the sense of personal possessions and luxuries, should be evenly distributed, while power remained in the hands of a small privileged caste. But in practice such a society could not long remain stable....[T]he only way of [increasing production without redistribution] was by continuous warfare. . . [War] eats up the surplus of consumable goods, and it helps to preserve the special mental atmosphere that a hierarchical society needs. . . The war is waged by each ruling group against its own subjects, and the object of the war is not to make or prevent conquests of territory, but to keep the structure of society intact. . . War is Peace."
–George Orwell

1 Introduction

How do internal and external threats affect the choice of political systems? This paper explores the joint effects of internal and external threats on the

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decisions by an autocratic elite to democratize. While there is a strong consensus that internal threats generate pressures to democratize, the effects of external threats on pressures to democratize may be less clear: recent work by Ticchi and Vindigni (2008) and Acemoglu, Ticchi, and Vindigni (2008) suggests that external threats may foster democratization; in contrast Powell (2006) argues that the group in power may invade another country in order to consolidate its position domestically. This paper presents a simple model in which there may be internal and external threats and studies how these may affect democratization decisions. Inequality, costs of conflict and costs of invasion determine whether external threats lead to autocratic consolidation or lead to democratization. In addition, the paper contributes to the ongoing discussion on the causes for democratic peace by arguing that unstable autocracies have incentives to incur in costly wars in order to protect their domestic position.

1.1   Brief Description of the Model

There is a domestic country which consists of two types of individuals: rich and poor. The rich hold control of power and oppose redistribution. There can be two threats to the position and existence of the ruling class. External threats, in which the domestic country faces a foreign enemy which attempts to invade it, and internal threats in which the poor may revolt against the rich. There can be two reasons for an external war to occur: the rich may voluntarily start a war against a foreign enemy, or a foreign power may start a war against the domestic country, an event that occurs with a fixed probability. Although both types of war have the same politico-economic consequences, the are also quite different in nature: as it will be shown, an involuntary war may force democratization on an otherwise stable autocracy, as suggested by Ticchi and Vindigni (2008) but a voluntary war does just the opposite: it consolidates a weak non-democracy.[1] As in Ticchi and Vindigni (2008), the war is won when the poor join the war effort and lost otherwise. Internally, the poor can choose to revolt against the rich. It is assumed that the poor can revolt only either after a war or in periods of peace.[2]

The model has the following time structure: there is an initial distribution of resources. The rich, who have control of government, choose whether to start a war, otherwise a war still starts with a fixed probability. The rich then decide whether to democratize. If there is a war and the rich have not democratized,

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[1] Since the model assumes that the net benefit to war for the domestic country is negative, rationales to enter a war other than political survival are omitted. In practice, the decision to start a war may be closely related to postive expected gains from war. The results in that case would differ, but the main idea does not. Wars, whether costly or profitable affect the domestic distribution of resources, which in turn affects de facto power.

[2] Given the assumptions of the model, if the poor revolted prior to the war, the end result would be invasion, as division in facing the foreign threat leads to failure. In any case, the poor have the option of joining the war effort or not, which would also lead to invasion. This assumption simplifies the model but is not without loss of generality. Furthermore, it is not uncommon to see individuals "wrap themselves around the flag" and support the government in times of war.

then the rich choose an offer as to how to share the costs of war, to which the poor decide whether to accept or not. If the poor accept, the country successfullt fends off the external threat; otherwise the country gets invaded, in which case, the rich are killed and the poor enslaved. If the country has no foreign threat or if the war has been won, the poor have the option of starting a costly revolution. The social class with the larger proportion of aggregate resources wins the revolt. If the poor win, the rich are killed.

Since war is costly, the rich have no incentive to ever start a war in stable non-democracies, as the two main effects of war work against the rich. War reduces the resources available to the rich and may also be destabilizing. Since the rich and the poor face different costs from invasion, it is possible that the rich may have to employ more resources than the poor in facing the foreign threat. This may in turn reduce the power differential domestically and reduce the stability of non-democracy. When a non-democracy is unstable, the story is different. Although there can be cases when a nondemocracy is unsustainable, there can also be cases in which war can strenghten a nondemocracy. Again, depending on the costs of invasion for the poor, it may be the case that the war affects the distribution of resources in such a way that future revolution is either unfeasible (i.e. when the poor is substantially weakened by the costs of war) or undesirable (i.e. when the distribution of resources is such that resource differentials no longer justifiy the costs of revolution), the rich may indeed have incentives to start an avoidable, costly war for domestic political reasons.

1.2 Related Literature

This paper is related to three strands of literature: models of conflict technology, theories of democratization and international relations.

1.2.1 Political Economy of Conflict

The use of violence to appropriate resources is an alternative economic activity to production. This literature goes back at least to Haavelmo (1954). This theoretical framework was later developed by Hirshleifer (1991), Grossman (1994), Grossman and Kim (1995), Grossman and Iyigun (1995), Grossman and Iyigun (1997), Skaperdas (1992), Rosendorff (2001), Alesina and Spolaore (2007) and Hafer (2006). In these models, conflict is modeled through a contest function (e.g. Tullock (1981)) between two players in which the expected gains for player A from conflict are increasing in the amount of effective resources devoted to fighting by player A and decreasing on the effective resources employed by player B. This expected gain is usually interpreted as the share of contested resources earned by each player if they are divisible or as the probability of winning when dealing with a winner-take-all framework. There is a cost implicit in those formulations in terms of the resources devoted to war, which are taken from other productive means. The implications of these models are well known: conflict is costly and increased resources used to incur inconflictual activities raise the expected gains. As a result and for simplicity, I take a reduced form approach

in which the two contests in my model, external war and revolution, take a very simple form. Both revolutions and wars are winner-take-all events with explicit costs. Finally, the conflict functions' outcomes take a simple criteria: revolutions are won by the poor if and only if they have more resources in aggregate than the rich, wars are only won if and only if there is participation by both the rich and the poor.[3]

1.2.2 The Political Economy of Democratization

There is a long tradition of economic theories of democratization. For example, Lipset (1959) argued that democratization part of a development process which included increased economic growth and industrialization.

Recent theories have focused on inter-class conflict. Acemoglu and Robinson (2000), argue that elites use redistribution to prevent revolutions. Since de facto power, i.e. the ability to successfully revolt against the richmount a revolution is a probabilistic event, the rich may not be able to credibly commit to future redistribution. This commitment problem can make the poor willing to revolt even as the rich redistributes. Revolutionary threats, in turn, force the rich to extend the franchise, in order to solve the commitment problem.

Boix (2003) presents a similar model in which the elite face random exogenous costs for repressing the poor to sustain the oligarchy. When repression costs are large with respect to the degree of inequality, the elite have incentives to democratize. Similarly in Rosendorff (2001), democratization arises when it becomes too costly to combat the poor. In contrast to Acemoglu and Robinson (2000), and Boix (2003), Rosendorff (2001) endogenizes repression costs by using a Tullock (1981) type contest function. In Feng and Zak (1999) political freedoms are a normal good. Increases in income raise protests in favor of political freedoms. Once a certain threshold is reached, the dictator has no alternative but to democratize. Cervellati, Fortunato, and Sunde (2008) and Cervellati, Fortunato, and Sunde (2007) focus on the conditions under which a social contract can emerge between the rich and the poor in which both group endogenously agree not to arm. They, like Boix (2003), argue that an important condition which leads to democracy is a low level of inequality, which reduces redistributive costs for the rich. In their models, high levels of inequality are conducive to oligarchy, intermediate levels may be conducive to a state of nature and low levels are conducive to democracy.[4]

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[3]Simple, reduced-form contest functions are quite standard: for example, in Feng and Zak (1999) democratization is forced once a certain threshold of civil unrest is reached. In Cervellati, Fortunato, and Sunde (2008) and Cervellati, Fortunato, and Sunde (2007) predation (and protection) is a binary decision with a fixed cost and its outcome depends on pairwise binary decisions. Boix (2003) presents a model where autocracy is preserved through repression, a policy with a random cost. Finally, in Acemoglu and Robinson (2000), Acemoglu and Robinson (2001) and Acemoglu and Robinson (2006) the poor have de facto power with a fixed probability. If the poor have de facto power in a given period, then the poor can choose to successfully revolt, although at the cost of a fixed proportion of total wealth.

[4]At intermediate levels, the rich may be willing to arm to prevent democratization, which causes inefficiencies. In that aspect both oligarchies and democracies lead to efficient outcomes and transitions are inefficient. Acemoglu, Ticchi, and Vindigni (2006) make a similar

In contrast, some authors argue that franchise extension is the result of intra-elite interactions. Lizzeri and Persico (2004) develop a model in which gradual franchise extension reduces intra-elite conflict by diffusing expenditure from private projects into projects poised to benefit a wider base. Llavador and Oxoby (2005) develop a model in which a faction of an divided elite promotes franchise extension to achieve its desired policy. Weingast (1979) argues that democratization requires elites to solve a political "prisoner's dilemma" and protect one another from abuses by the state. North, Wallis, and Weingast (2009) develop this idea and argue that a impersonal protection of rights for all members of the elite is a prerequisite for "open societies". While these are important explanations, they are ignored in this model which assumes representative social classes to focus on inter-class conflict.

Finally, external conflict can also contribute to democratization. Ticchi and Vindigni (2008), model wars are probabilistic events. War outcomes depend on whether the poor support the war efforts.[5] The rich make redistribution promises in order to entice the poor to support the efforts. There is a problem of credibility. If near future external threats are high, democratization does not occur as the rich have little incentive to renege on their promises and fall to a foreign power in the near future. Alternatively, if the threats are low, there is little incentive to commit to any redistribution scheme. At intermediate levels of threat, the rich may not be able to credibly commit to a redistributive policy, so they democratize to credibly commit to redistribution and entice support.

Wars may also contribute to democratization by preserving the institutional need for a military in democratic transitions. In Acemoglu, Ticchi, and Vindigni (2008), the rich establish a military that protects the rich from the poor. To prevent the military from revolting, the rich offers an "efficiency wage" which is above the market wage of the soldiers. In the absence of external threats, the preservation of the military is at risk if there is a transition to democracy. For that reason, military agents have incentives to revolt and establish a military dictatorship if democratization is attempted. External threats may preserve the need for a military and thus reduce the incentives for the military to revolt in the case of democratization.

argument by claiming that elites may establish inefficient, corruptible bureaucracies in emerging democracies to prevent redistribution, so that emerging democracies are worse than full fledged democracies or autocracies. Besley and Persson (2008) make a similar argument, where democratization generates uncertainty about the benefits of investments in state capacity leading to underinvestment. A similar argument was made with respect to unstable autocracies in McGuire and Olson (1996) and Olson (2000).

[5] More precisely, they require a certain level of support, which requires the participation of at least a proportion of the poor, but partial participation by the poor is an off-equilibrium event: there is either full participation or no participation. I take a similar approach in my model, where war outcomes are determined by whether the poor support the war effort, although since I assume representative agents with no collective action problems, the decision is made collectively.

1.2.3 The Political Economy of Military Conflict

A related strand of literature focuses on how political institutions inform decisions to go to war. Fearon (1995) proposes that in a conflict between two countries, private information with respect to the other's resolve can lead to escalating conflict. If backing down affects leaders domestically, there are stronger incentives to fight, once escalation has taken place. Since democracies have higher domestic political costs from backing down, they may show more resolve in times of conflict but may try to avoid conflict when possible. Bueno De Mesquita and Siverson (1995) make a similar argument: war failure may have a greater impact on the possibilities of political survival for democracies than non-democracies.[6] As a result, democracies may show more resolve for winning a conflict but a lower willingness to start one. Hess and Orphanides (1995) and Hess and Orphanides (2001) present models in which democratic leaders choose to go to war to inform to the public of their war leadership abilities if current economic performance is poor. Blomberg and Hess (2002) present statistical links between poor domestic economic performance and subsequent conflict. More recently, Glaeser (2006) proposed a similar argument in which the decision to go to war has to do with making one's military leadership a relevant electoral consideration and thus generating replacement costs. Additionally, Glaeser (2006) explores the possibility of using informational structures in order to affect public opinion with respect to the enemy and thus justifying the invasion. This might suggest that culture may play an important role. It can also suggest that autocracies, with greater control of the information apparatus may be more prone to war. Other explanations for the idea of democratic peace, first proposed by Kant (2005) include Doyle (1986) who argues that a more democratic culture and institutional constraints may lead to peaceful resolution of conflicts and Rummel (1983) who argues that exchange societies generate "overlapping groups and multiple centers of power", thus reducing the likelihood of military conflict.

I contribute to the literature on democratic peace by showing that if autocrats face a substantial domestic threat, they may be more willing to begin even a costly war, if it helps it consolidate power domestically. This explanation may rationalize the behavior of leaders who incur in costly wars with their neighbors without a clear positive benefit from war (e.g. Saddam Hussein's invasion of Kuwait and war with Iran). It is also consistent with the finding by Bueno De Mesquita and Siverson (1995) that autocrats more likely to start costly wars, yet less committed to success. Finally, it is also consistent with Powell (2006) who argues that war should be modeled as a commitment problem. In his view, commitment issues may be the most plausible explanation for wars. For example, he argues that concessions cannot prevent war in a dynamic framework, as concessions only strenghten the enemy. Powell (2006) also suggests that if there

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[6] A weakness in these arguments is that while political survival may be more responsive to bad outcomes, the cost of political survival in non-democracies should be substantially larger than in democracies as physical and economic integrity may be closely linked to political survival.

are competing factions domestically, then the faction in power may invade a foreign country to gather resources to defeat its domestic opponent: if there is no credible way to ensure deterrence from the domestic challenge, war may be ensured. My model is similar, except that in the model, I place stronger restrictions on the leader's ability to fight a war. In particular, I explicitly assume that the war is costly and that support from the challenger, in my case the poor, is needed to succeed military. Furthermore, the poor rationally supports the war effort and bear some of its costs.

The paper is structured in the following way: Section 2 structures the model and presents the results. Section 3 discusses the implications of the model and links them to the related literature. Section 4 concludes.

2 Model

2.1 Agents

A proportion $\beta < \frac{1}{2}$ of the individuals in a domestic country are rich. Each one has an identical claim to a proportion $\lambda > \beta$ of all the resources available in the domestic country, normalized to 1. The remaining proportion of individuals, $1 - \beta$ constitute the poor and have an identical claim to the remainder of resources. The total amount of resources available to a representative rich and a representative poor are: $\frac{\lambda}{\beta} > 1$ and $\frac{1-\lambda}{1-\beta} < 1$ respectively. Finally, there is no free rider problem, so the group acts like a representative agent.[7]

2.2 Conflict Technology

2.2.1 Wars (External Conflict)

When a war takes place between the domestic country and a foreign country the domestic country wins if and only if both the rich and the poor join the effort together. War is costly. The total resources available in the domestic country after a war has taken place are $1 - c > 0$. Alternatively, if the war is lost, the rich get killed and the poor get slaved. Total resources available to the poor if the domestic country loses the war are $s \in [0, 1 - \lambda]$.[8]

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[7] This simplifying assumption is employed in Acemoglu and Robinson (2000) and Acemoglu and Robinson (2001)) with one caveat. The authors argue that transitive de facto power depends on whether the poor can solve the collective action problem and mobilize against the rich, and assume that to be a probabilistic event. In this model, for simplicity I just assume that there is no collective action problem and make revolt feasibility non-stochastic.

[8] As mentioned previously, the war conflict function is reduced form and similar to that used by Ticchi and Vindigni (2008). The interpretation of s is varied. It could be interpreted as slavery, in which foreign slaves are treated worse than domestic serfs. Additionally, the imposition of foreign cultural or religious customs on the invaded country may reduce the welfare of the people. Finally, in principle it could be possible for $s > 1 - \lambda$, as when some indian tribes supported the Spaniard invasion of Mexico against the Aztecs who dominated them, but it does not add to the analysis.

2.2.2 Revolutions (Internal Conflict)

The poor can revolt against the rich. The poor can only revolt against the rich if there is no external threat (i.e. times of peace or if the external threat has been defeated). Revolution outcome depends on resource availability: The poor succeeds in its revolt attempt if and only if they hold more aggregate resources than the rich.[9] If the revolt succeeds, the poor eliminate the rich and expropriate all of their resources. Alternatively if the rich win, they eliminate the poor and the resources of the poor are lost. Additionally, revolutions are inefficient, so there is a cost $\rho < 1$ to the surviving party.[10]

The game is summarized in Figure 1 and follows the following structure, where $\pi_j = \{\pi_j^r, \pi_j^p\}$ denotes the payoffs to the rich and poor at endnode $j = \{1, .., 9\}$.

2.3 Timing of Events

1. War or Peace. Node A: The rich decide whether or not to start a war against a foreign power. If the rich start a war, the game advances to node $B1$, otherwise, the game advances to node N.

2. Node N: nature decides with probability $p < 1$ whether a war begins, in which case the game advances to node $B1$ (times of war). Otherwise, the game advances to node $B2$ (times of peace).

3. Democracy or Autocracy. Node $B1$: The rich decide whether to democratize or preserve the autocracy. If the rich democratize, then all of the resources and the costs of war are equally shared by all individuals. The rich and the poor fight side by side and defeat the enemy. The game reaches endnode 1. If the rich do not democratize the games advances to node C. Node $B2$: If the rich democratize in times of peace, then all resources are equally shared and the game reaches endnode 6. If the rich do not democratize, the game advances to node $E2$.[11]

4. Offer by the Rich. Node C: The rich decide how to share the burden of war. The rich choose the share of the war costs, $\sigma \in [0, 1]$, which is borne by the rich. The game moves to node D.

5. The Decision to Join the War Effort. Node D: The poor decide whether to accept the proposal by the rich. If the poor accept the proposal, they

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[9] As previously explained, the contest function is reduced form in which the group with most aggregate resources wins. The intuition is that having more resources means translates into higher fighting capacity. Finally, without loss of generality when both groups have the same amount of resources, the rich win.

[10] This is a simplifying assumption but the idea is that a larger proportion of the income of the rich may be expropriable (e.g. land, capital or governmental posts) whereas the income of the poor may primarily come from labor.

[11] The implicit assumption is that there are no costs of taxation and that resources are redistributed as equal lump sums. As and thus all resources are taxed (the preferred policy to the poor majority).

bear a proportion $(1 - \sigma)$ of the costs of war, c, and join the war effort. The war is won, and the game advances to node $E1$. If the poor refuse to join the war effort, the war is lost. The game reaches endnode 5.

6. Revolt or Keep Non-democratic Regime. Node $E1$: The poor decide whether to start a revolution or keep the regime. If the poor start a revolution, then the game advances into node $R1$, otherwise the game reaches endnode 4. Node $E2$: The poor decide whether to start a revolution or keep the regime. If the poor start a revolution, then the game advances into node $R2$, otherwise the game reaches endnode 9.

7. Revolution Outcomes. Node $R1$: If the rich have more after-war aggregate resources than the poor, the revolution fails. The game reaches endnode 2. If the poor have more after-war aggregate resources than the rich, the revolution succeeds and the game reaches endnode 3. Node $R2$: If the rich have more aggregate resources than the poor, the revolution fails. The game reaches endnode 7. If the poor have more aggregate resources than the rich, the revolution succeeds and the game reaches endnode 8.

2.4 Solving the Model

The model is a subgame perfect Nash equilibrium and can thus be solved by backward induction. Let us first focus on the actions by the poor.

2.4.1 The Decision to Revolt in Times of Peace

In order for the poor to choose to revolt, it is necessary for a) the revolt to succeed and b) the revolt to be desirable. Assuming that the revolt succeeds, the poor revolt if the payoffs are desirable, that is only if:

$$\frac{1 - \lambda}{1 - \beta} < \frac{1 - \rho}{1 - \beta}$$

or in other words, if $\lambda > \rho$.[12]

Now the revolt is successful only if the aggregate resources of the poor are greater than those of the rich, that is, if $\lambda < 1 - \lambda$, which can be reexpressed as $\lambda < \frac{1}{2}$.

This analysis can be summarized in the following lemma:

Lemma 1 *In times of peace, the poor revolts against the rich if and only if $\rho < \lambda < \frac{1}{2}$ and allow the autocracy to be preserved otherwise.*

2.4.2 The Decision to Revolt in Times of War

We compare the payoffs to the poor from a successful revolution to those under autocracy after a war has taken place.

Revolt is desirable in an afterwar period only if:

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[12] Without loss of generality, ceteris paribus, the poor prefer not to revolt.

$$1 - c - \rho > 1 - \lambda - (1 - \sigma)c$$

which may be reexpressed as:

$$\frac{\lambda - \rho}{c} > \sigma \tag{RDC}$$

Let σ^* define the minimum level of σ under which revolt remains undesirable, then

$$\sigma^* = \left\{ \begin{array}{c} 0 \text{ when } \rho \geq \lambda \text{ (RD1)} \\ \frac{\lambda - \rho}{c} \text{ when } \lambda \in (\rho, \rho + c] \text{ (RD2)} \\ \{\emptyset\} \text{ when } \lambda > \rho + c \text{ (RD3)} \end{array} \right\} {}^{13}$$

In order to see if revolt is feasible, we compare the afterwar resources of the rich to those of the poor.

Revolt is feasible in an afterwar period only if:

$$1 - \lambda - (1 - \sigma)c > \lambda - \sigma c$$

which may be reexpressed as:

$$\sigma > \frac{2\lambda + c - 1}{2c} \tag{RFC}$$

Let σ^{**} define the maximum level that σ can take under which revolt remains unfeasible, then

$$\sigma^{**} = \left\{ \begin{array}{c} 1 \text{ when } \lambda > \frac{1+c}{2} \text{ (RF1)} \\ \frac{2\lambda + c - 1}{2c} \text{ when } \lambda \in [\frac{1-c}{2}, \frac{1+c}{2}] \text{ (RF2)} \\ \{\emptyset\} \text{ when } \lambda < \frac{1-c}{2} \text{ (RF3)} \end{array} \right\} {}^{14}$$

From these conditions we can determine when the poor allows the autocracy and when they revolt.

Lemma 2 *After a war, the poor preserve the autocracy if either $\sigma > \sigma^{***}$ or $\sigma < \sigma^{**}$ and revolt otherwise.*

Corollary 1 *If $\sigma^* \leq \sigma^{**}$ revolt threats are not credible.*

2.4.3 Joining the War Effort

Assuming that the poor do not revolt after the war, the poor join the war effort if and only if the payoff from joining is equal or greater than their payoff under foreign invasion, that is, the poor join the war effort if and only if

$$\frac{s}{1 - \beta} \leq \frac{1 - \lambda - (1 - \sigma)c}{1 - \beta}$$

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[13] RD1 implies that revolt is always undesirable. RD2 mplies that the rich can prevent revolt by choosing any value of σ greater or equal to $\frac{\lambda - \rho}{c}$. Finally, RD3 implies that revolt is always desirable regardless of the value of σ.

[14] RF1 implies that revolt never takes place. RF2 implies that revolt may be prevented by choosing any value of σ less o equal to $\frac{2\lambda + c - 1}{2c}$ and RF3 implies that revolt is always feasible.

Which can be reexpressed as:

$$\sigma \geq \frac{s + \lambda + c - 1}{c} \tag{WJC}$$

Let σ^{***} denote the minimum value of σ under which the poor would join the war effort, then

$$\sigma^{***} = \left\{ \begin{array}{l} 0 \text{ when } s \leq 1 - \lambda - c \text{ (WJ1)} \\ \frac{s + \lambda + c - 1}{c} \text{ when } s > 1 - \lambda - c \text{ (WJ2)} \end{array} \right\}^{15}$$

From combining these three conditions, the minimum level of σ required for the poor to join the war effort and not revolt after the war can be found.

2.4.4 Finding $\widehat{\sigma}_{poor}$

The rich require three conditions to be willing to preserve the autocracy when war has begun: they require to come up with a the lowest value of σ which ensures that a) the poor are willing to join the war effort and b) the poor will not revolt afterwards, in addition, they require the rents from autocracy to remain higher than the rents from democratizing.

Let $\widehat{\sigma}_{poor}(s, c, \lambda, \rho)$ denote the minimum value of σ which ensures war participation and no revolt.

Claim 1 *When either $\rho \geq \lambda$ or $\lambda \geq \frac{1+c}{2}$ then $\widehat{\sigma}_{poor} = 0$ if $s \leq 1 - c - \lambda$ and $\widehat{\sigma}_{poor} = \frac{s + \lambda + c - 1}{c}$ otherwise.*

Under these conditions, the poor do not pose a revolutionary threat to the rich. For that reason, it is only necessary to offer a value of σ sufficient to ensure war participation.

Claim 2 *If $\lambda \in [\frac{1-c}{2}, \frac{1+c}{2}]$ and $s \leq 1 - c - \lambda$ then $\widehat{\sigma}_{poor} = 0$.*

Under these conditions, the poor are willing to participate in war even if they bear all the costs. This allows the rich to select a value of $\widehat{\sigma}_{poor} = 0$, under which the poor do not pose a revolutionary threat after a war has taken place.

Claim 3 *When $\lambda \in (\rho, \rho + c]$ and $\lambda \in [\frac{1-c}{2}, \frac{1+c}{2}]$ and $s > 1 - c - \lambda$, then, $\widehat{\sigma}_{poor} = \frac{\lambda - \rho}{c}$ if and only if $\frac{1-c}{2} < s < 1 - c - \rho$ and $\widehat{\sigma}_{poor} = \frac{s + \lambda + c - 1}{c}$ otherwise.*

This is the most interesting case as it is the interior solution.If $\sigma^{***} \leq \sigma^{**}$ then σ^{***} is sufficiently low so that revolt is unfeasible. If $\sigma^{**} < \sigma^{***} < \sigma^*$, revolt is both feasible and desirable at σ^{***} so the rich is forced to take a larger share of the costs, as to make revolt undesirable. Finally, if $\sigma^* < \sigma^{***}$ then the rich must bear such a large cost of the war, that the poor no longer finds it desirable to revolt against the rich.

Claim 4 *When $\lambda \in (\rho, \rho + c]$ and $\frac{1-c}{2} > \lambda$, $\widehat{\sigma}_{poor} = \frac{\lambda - \rho}{c}$ if and only if $s < 1 - c - \rho$, otherwise $\widehat{\sigma}_{poor} = \frac{s + \lambda + c - 1}{c}$.*

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[15] If $s \leq 1 - \lambda - c \implies \frac{2 + \lambda + c - 1}{c} < 0$, so the poor always join the war effort.

Under these conditions, revolt is always feasible. The only way to prevent revolt is to make it undesirable by choosing a large value of σ. If $s < 1 - c - \rho$ then the rich must offer σ^* to prevent revolt. If $s \geq 1 - c - \rho$, σ^{***} is sufficiently high to make revolt undesirable.

Claim 5 *When $\lambda > \rho + c$, $\lambda \in [\frac{1-c}{2}, \frac{1+c}{2}]$ and $s > 1 - c - \lambda$, $\widehat{\sigma}_{poor} = \frac{s+\lambda+c-1}{c}$ if and only if $s \leq \frac{1-c}{2}$, otherwise, there is no value which prevents reform from taking place.*

Under these conditions, revolt is always desirable. This means that revolt may only be prevented if the value of σ required to ensure war participation is sufficiently low, so as to ensure that revolt is unfeasible.

Claim 6 *When $\rho + c < \lambda < \frac{1-c}{2}$ then there is no value of σ which may prevent revolt.*

Here revolt is always feasible and desirable, as the value of λ is so high with respect to revolutionary costs that there is no way to make it undesirable. In addition, the agreggate resources of the rich are so little with respect to total resources that there is no way to prevent revolt from taking place.

From all these claims, we can construct the value of σ required to ensure both war participation and deterrence from revolt.

Proposition 1 (Acceptable Offers to the Poor) *The value of $\widehat{\sigma}_{poor}(s, c, \rho, \lambda)$ takes the following values:*

    I. $\widehat{\sigma}_{poor}(s, c, \rho, \lambda) = 0$: When $s \leq 1 - c - \lambda$ and either
    A) $\rho \geq \lambda$
    or B) $\lambda \geq \frac{1-c}{2}$.
    II. $\widehat{\sigma}_{poor}(s, c, \rho, \lambda) = \frac{s+\lambda+c-1}{c}$: When either A) $s > 1 - c - \lambda$ and either
    A) $\rho \geq \lambda$
    or B) $\lambda > \frac{1+c}{2}$
    or C) $s \leq \frac{1-c}{2} \leq \lambda \leq \frac{1+c}{2}$ and $\lambda > \rho$
    or D) $s > 1 - c - \rho$ and $\rho < \lambda < \rho + c$ and $\lambda \leq \frac{1+c}{2}$.
    III. $\widehat{\sigma}_{poor}(s, c, \rho, \lambda) = \frac{\lambda-\rho}{c}$ When $\rho < \lambda < \rho + c$ and $s < 1 - c - \rho$ and either
    A) $\frac{1-c}{2} \leq \lambda \leq \frac{1+c}{2}$ and $\frac{1-c}{2} < s$.
    or B) $\lambda < \frac{1-c}{2}$.
    IV. $\widehat{\sigma}_{poor}(s, c, \rho, \lambda) \in \{\emptyset\}$: When $\lambda > \rho + c$ and either
    A) $\lambda < \frac{1-c}{2}$
    or B) $\lambda \in [\frac{1-c}{2}, \frac{1+c}{2}]$ and $s > \frac{1-c}{2}$.

Now we must study whether at the minimum value of σ required to ensure both participation and deterrence from revolt by the poor, the rich prefers to preserve the autocracy than to democratize.

2.4.5 The Decision by the Rich to Preserve Autocracy

In times of war, the rich prefers to preserve the autocracy only if

$$\frac{\lambda - \widehat{\sigma}_{poor}c}{\beta} \geq 1 - c \qquad \text{(AW)}$$

and democratizes otherwise.

In times of peace, the rich knows that the poor revolt if and only if $\rho < \lambda < \frac{1}{2}$ and preserve the autocracy otherwise. Since the rich is better off under autocracy, the rich would democratize only if $\rho < \lambda < \frac{1}{2}$.

2.4.6 The Decision to Start a War

If revolt is imminent in times of peace, then the rich can preemptively start a war if that will lead to consolidation of power in a postwar period. The rich start a war if and only if in times of peace revolt is imminent and the payoffs from afterwar autocracy are greater than the payoffs of democracy in times of peace, that is:

The rich start a war if and only if $\rho < \lambda < \frac{1}{2}$ and

$$\frac{\lambda - \widehat{\sigma}_{poor}c}{\beta} \geq 1 \qquad \text{(WAR)}$$

Notice that inequality (WAR) makes inequality (AW) redundant.

Let us study how the different values of s, λ, ρ and c determine the decisions of the rich to start wars, democratize and/or offer to share the costs of war:

First we focus on the cases where $\widehat{\sigma}_{poor} = 0$.

Clearly, since $\widehat{\sigma}_{poor} = 0$, $\frac{\lambda}{\beta} = \frac{\lambda - \widehat{\sigma}_{poor}c}{\beta} > 1 > 1 - c$, so AW and WAR always hold.

Claim 7 *When $s \leq 1 - c - \lambda$:*

If A) $\rho \geq \lambda$ or if B) $\rho < \lambda$ and $\lambda \geq \frac{1}{2}$, then the rich preserves autocracy in both peace and war, proposes $\sigma = 0$ and never starts a war. If C) $\rho < \lambda$ and $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$, then the rich starts a war, preserves autocracy and proposes $\sigma = 0$.

It follows from $s \leq 1 - c - \lambda$ that the poor would join the war effort even if $\widehat{\sigma}_{poor} = 0$. In A) revolt either too costly and in B revolt is unfeasible. In C) the poor would revolt in times of peace. Since the rich can transfer all the war costs to the poor it can strenghten its domestic position by starting a war.

Now let us consider the cases where $\widehat{\sigma}_{poor} = \frac{s + \lambda + c - 1}{c}$. In this case, AW holds if and only if

$$\frac{\lambda - \left(\frac{s+\lambda+c-1}{c}\right)c}{\beta} \geq 1 - c$$

which may be reexpressed as

$$s \leq (1 - \beta)(1 - c) \qquad\qquad\qquad (\text{AW***})$$

and WAR holds if and only if

$$\frac{\lambda - (\frac{s+\lambda+c-1}{c})c}{\beta} \geq 1$$

which may be reexpressed as

$$s \leq 1 - c - \beta \qquad\qquad\qquad (\text{WAR***})$$

Notice that $1 - c - \beta < (1 - c)(1 - \beta)$.

Claim 8 *When $s > 1 - c - \lambda$:*

If $(1 - \beta)(1 - c) \geq s$ and A) $\rho \geq \lambda$ or B) $\lambda \geq \frac{1+c}{2}$ the rich preserves autocracy in both peace and war, proposes $\sigma = \frac{s+\lambda+c-1}{c}$, finally, the rich never start a war.

If $s > (1 - \beta)(1 - c)$ and C) $\rho \geq \lambda$ or D) $\lambda \geq \frac{1+c}{2}$, the rich preserves autocracy in times of peace and democratizes in times of war, evidently, the rich never starts a war.

In A) and C) revolt is undesirable in times of peace and in cases B) and D) it is unfeasible. As a war starts, the rich requires to share a proportion $\frac{s+\lambda+c-1}{c}$ of the costs, which makes it too costly for the rich to preserve the autocracy.

Claim 9 *When $\frac{1-c}{2} \geq s > 1 - c - \lambda$ and $\rho < \lambda$:*

If A) $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$, then the rich preserve autocracy in both peace and war, and propose $\sigma = \frac{s+\lambda+c-1}{c}$. The rich never start a war.

If B) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ and $1 - c - \beta < s$ the rich democratize in times of peace and preserve autocracy in times of war by offering $\frac{s+\lambda+c-1}{c}$, finally, the rich do not start a war.

If C) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ and $1 - c - \beta \geq s$ the rich opportunistically start a war, and preserve autocracy by offering $\frac{s+\lambda+c-1}{c}$.

In A) since $\frac{1}{2} \leq \lambda$ revolt is unfeasible in times of peace now, since $s \leq \frac{1-c}{2}$ the value of $\frac{s+\lambda+c-1}{c}$ is low so autocracy is preferred by the rich to democracy in times of war. In B) and C) since $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ revolt is feasible in times of peace, so autocracy cannot be a solution in times of peace. Since $s \leq \frac{1-c}{2} < \frac{(1-\beta)(1-c)}{2}$ the value of $\frac{s+\lambda+c-1}{c}$ is low, so autocracy is preferred by the rich to democracy in times of war. The decision to start a war for the rich depends on whether the value of democracy and peace is greater than the value of autocracy and war, that is whether $1 - c - \beta \geq s$.

Claim 10 *When $s \geq 1 - c - \rho$ and $\rho < \lambda \leq \rho + c$:*

If A) $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ and $(1 - \beta)(1 - c) \geq s$, autocracy is preserved both in war and peace, and the rich offer $\frac{s+\lambda+c-1}{c}$ to the poor.

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If B) $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ *and* $(1-\beta)(1-c) < s$, *autocracy is preserved in times of peace and the rich democratizes in times of war.*

If C) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $1-c-\beta \geq s$, *the rich start a war and preserve autocracy by offering* $\frac{s+\lambda+c-1}{c}$ *to the poor.*

If D) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $1-c-\beta < s \leq (1-c)(1-\beta)$, *the rich democratize in times of peace and preserve the autocracy in times of war by offering* $\frac{s+\lambda+c-1}{c}$ *to the poor but do not start war.*

If E) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $s > (1-c)(1-\beta)$ *the rich democratize both in times of war and peace.*

In A) and B) autocracy is secure in times of peace but can only be preserved in times of war if s is sufficiently low. In C), D) and E) autocracy is not secured in times of peace. If s is sufficiently low then the rich can use war to preserve autocracy (C), if s is of an intermediate range, then the rich is actually worse off by war but it allows the rich to preserve autocracy by making the poor bear the majority of the costs (E). Finally, if s is sufficiently high then the rich has to democratize in either case.

A similar analysis can be made for those cases in which $\widehat{\sigma}_{poor} = \frac{\lambda-\rho}{c}$.

Now the rich preserve the autocracy in times of war if and only if

$$\frac{\lambda - (\frac{\lambda-\rho}{c})c}{\beta} \geq 1-c$$

which can be reexpressed as

$$\rho \geq \beta(1-c) \tag{AW*}$$

and when revolt cannot be prevented in times of peace, the rich start a war if and only if

$$\frac{\lambda - (\frac{\lambda-\rho}{c})c}{\beta} \geq 1$$

which can be reexpressed as

$$\rho \geq \beta \tag{WAR*}$$

The following analysis can be constructed:

Claim 11 *When* $\frac{1-c}{2} < s < 1-c-\rho$ *and* $\rho < \lambda \leq \rho + c$

If A) $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ *and* $\rho \geq \beta(1-c)$ *then autocracy is preserved both in war and peace, and the rich offer* $\frac{\lambda-\rho}{c}$ *to the poor.*

If B) $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ *and* $\rho < \beta(1-c)$ *then autocracy is preserved in times of peace and the rich democratizes in times of war.*

If C) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\beta \leq \rho$, *then the rich start a war and preserve autocracy by offering* $\frac{\lambda-\rho}{c}$ *to the poor.*

If D) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\beta(1-c) \leq \rho < \beta$, *then the rich democratize in times of peace and preserves the autocracy in times of war by offering* $\frac{\lambda-\rho}{c}$ *to the poor.*

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If E) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\rho < \beta(1-c)$ *the rich democratize both in times or peace and war.*

The analysis is similar to the previous claim, the main difference is that now the rich is trying to make revolt undesirable by offering $\sigma = \frac{\lambda-\rho}{c}$.

Claim 12 *When* $s \geq 1 - c - \rho$ *and* $\rho < \lambda \leq \rho + c$ *and* $\lambda < \frac{1-c}{2}$:

If A) $\beta \leq \rho$ *the rich start a war to preserve autocracy and offer* $\frac{\lambda-\rho}{c}$ *to the poor.*

If B) $\beta(1-c) \leq \rho < \beta$ *the rich democratize in times of peace and preserve the autocracy by offering* $\frac{\lambda-\rho}{c}$ *to the poor in times of war*

If C) $\rho < \beta(1-c)$ *the rich democratize both in times of peace and war.*

Now let us focus on the analysis for the case where $\widehat{\sigma}_{poor} \in \{\emptyset\}$.

Claim 13 *When* $\rho + c < \lambda$

If A) $\frac{1-c}{2} > \lambda$ *or if B)* $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $s > \frac{1-c}{2}$, *the rich democratizes both in times of peace and war.*

If C) $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ *and* $s > \frac{1-c}{2}$, *then autocracy is preserved in times of peace and the rich democratize in times of war.*

In all of these cases, revolt is always desirable. In cases A) and B) revolt is always feasible. The difference between A) and B) is that in case B) if s had been lower, the rich would have been able to prevent war by making an offer that would make revolt unfeasible. In case C) revolt is unfeasible in times of peace but s is so high that the rich would have to make such a commitment to the war that it would become prey to the poor once the war was over.

From this analysis, the solution set can be presented as five propositions which consider the total possible space:

Proposition 2 (Imminent Democratization) *If either of the following conditions are met, democratization is imminent and the results are unaffected by the presence of war:*

If A) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\rho < \lambda \leq \rho+c$ *and* $s > \max\{(1-c)(1-\beta), 1-c-\rho\}$

or

if B) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\rho < \lambda \leq \rho+c$ *and* $\rho < \beta(1-c)$ *and* $\frac{1-c}{2} < s < 1-c-\rho$

or

if C) $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\lambda > \rho + c$ *and* $s > \frac{1-c}{2}$ *or*

if D) $\lambda < \frac{1-c}{2}$ *and* $\rho < \lambda \leq \rho + c$ *and* $\rho < \beta(1-c)$ *and* $s < 1 - c - \rho$ *or*

if E) $\frac{1-c}{2} > \lambda > \rho + c$.

Clearly in these cases, revolt is both feasible and desirable in times of peace. In times of war, there are

A) The main difference between A) and B) is that in A) $\sigma^{***} > \sigma^*$. For that reason, in A) $\widehat{\sigma}_{poor} = \frac{s+c+\lambda-1}{c}$ whereas in B) $\widehat{\sigma}_{poor} = \frac{\lambda-\rho}{c}$. In both cases, s causes the value of $\widehat{\sigma}_{poor}$ to be so high that democratization ecmoes desirable

to preserving the autcoracy. Case C) is the corner of Case B) when revolt is always desirable (i.e. there is no level of σ^* to prevent revolt). Case D) is the corner of Case B) under whic revolt is always feasible. This means that the rich must always offer σ^*. Finally, Case E) explores the corner case in which revolt is always feasible and desirable regardless of s.

Proposition 3 (Secure Autocracy) *If either of the following conditions are met, autocracy is secure from both internal and external threats:*

if A) $s \leq 1 - c - \lambda$ and $\rho \geq \lambda$ in which case the rich offers $\sigma = 0$ or

if B) $s \leq 1 - c - \lambda$ and $\rho < \lambda$ and $\lambda \geq \frac{1}{2}$ in which case the rich offers $\sigma = 0$

If C) $(1 - \beta)(1 - c) \geq s \geq 1 - c - \lambda$ and $\rho \geq \lambda$, in which case, the rich offer $\sigma = \frac{s+c+\lambda-1}{c}$ or

if D) $(1 - \beta)(1 - c) \geq s \geq 1 - c - \lambda$ and $\lambda \geq \frac{1+c}{2}$, in which case, the rich offer $\sigma = \frac{s+c+\lambda-1}{c}$ or

if E) $\frac{1-c}{2} \geq s > 1 - c - \lambda$ and $\lambda > \rho$ and $\frac{1}{2} < \lambda \leq \frac{1+c}{2}$, in which case the rich offer $\sigma = \frac{s+c+\lambda-1}{c}$ or

if F) $(1 - c)(1 - \beta) \geq s > 1 - c - \rho$ and $\rho < \lambda < \rho + c$ and $\frac{1}{2} < \lambda \leq \frac{1+c}{2}$, in which case the rich offer $\sigma = \frac{s+c+\lambda-1}{c}$ or

if G) $\beta(1 - c) \leq \rho < \lambda < \rho + c$ and $\frac{1}{2} < \lambda \leq \frac{1+c}{2}$ and $\frac{1-c}{2} < s < 1 - c - \rho$, in which case the rich offer $\sigma = \frac{\lambda-\rho}{c}$.

Cases A, C and D) show the corners under which revolt is either never desirable (A) and C)) or feasible (D)). Now in cases A) and B), s is so low that the rich can impose all the costs of war upon the poor. This allows the rich in B) to keep revolt non-feasible. In C) and D) the rich have to share the costs of war but the burden is still sufficiently low that it prevents democratization from becoming a more attractive choice. In case E) s is so small $\sigma^{***} < \sigma^{**}$, so revolt is not feasible since s and the rich definitely prefer to preserve autocracy, as $s \leq \frac{1-c}{2} \implies s < (1 - \beta)(1 - c)$. In case F), s is sufficiently high that $\sigma^* < \sigma^{***}$, which means that the level of σ required to entice participation by the poor is sufficient large to make revolt undesirable, but still s is sufficiently low that the rich still prefer to preserve the autocracy. Finally, in case G) s is at an intermediate level which forces the rich to offer $\frac{\lambda-\rho}{c}$ to the poor as $\sigma^{**} < \sigma^{***} < \sigma^*$. Still, even at $\sigma = \frac{\lambda-\rho}{c}$, the costs of democratizing are so high with respect to the costs of preserving the autocracy, that the rich preserve autocracy. The reason lies in the relationship between β and ρ: a high cost of revolution reduces the incentives for the poor to revolt, which in turn lowers the war burden for the rich (raising their value of autocracy); In contrast, a high value of β implies that the aggregate income of the rich is distributed among many agents, so the wealth dilution effect from democratization is less significant for higher values of β.

Proposition 4 (Ticchi-Vindigni: War leads to Democratization) *If either of the following conditions are met, autocracy is preserved in times of peace but war forces the rich to democratize:*

if A) $s > (1 - \beta)(1 - c)$ and $\rho \geq \lambda$ or

if B) $s > (1-\beta)(1-c)$ *and* $\frac{1+c}{2}$ *or*
if C) $s > \max\{(1-c)(1-\beta), 1-c-\rho\}$ *and* $\rho < \lambda < \rho + c$ *and* $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ *or*

if D) $\frac{1-c}{2} < s < 1-c-\rho$ *and* $\rho < \lambda < \rho+c$ *and* $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ *and* $\rho < \beta(1-c)$ *or*

if E) $s > \frac{1-c}{2}$ *and* $\lambda > \rho + c$ *and* $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$.

In the Ticchi and Vindigni (2008) model, democratization comes from re-distribution commitment issues. Since my model is a static one, the issues in not of commitment for the rich but rather either of imposibility of the poor to commit to not revolting or of an increased cost of preserving autocracy in the presence of high costs from war. In any case, the results are similar.

Cases A) and B) represent strict corner solutions in which revolt can def-initely be prevented in an afterwar setting but since s is so high, the cost of preserving the autocracy becomes too large with respect to democratizing. In Case D) s is at an intermediate level which makes $\sigma^{**} < \sigma^{***} < \sigma^*$ and thus would force the rich to offer $\sigma = \frac{\lambda - \rho}{c}$. This time, in contrast to Proposition 3.G), the value of β is sufficiently large with respect to ρ, that although it may be possible to preserve the autocracy, it is no longer optimal for the rich to do so, so they democratize. E) is the corner case, of the previous scenario. Here, the problem is that $\sigma^{**} < \sigma^{***} \leq 1 < \sigma^*$ so, now there is no value of σ which is sufficiently high to ensure war participation but sufficiently low to prevent revolt from taking place after the war. In other words, war makes it impossible for the poor to commit to not revolting. Finally, in case C) s is so large, that the rich require to share such a large proportion of the costs, that preserving the autocracy becomes too costly.[16]

Proposition 5 (Undesired War Prevents Democratization) *If either of the following conditions are met, the rich do not start a war. In times of peace, the rich democratize, in times of war, the rich preserve the autocracy:*
if A) $1-c-\beta < s \leq \frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\rho < \lambda$, *in which case* $\sigma = \frac{s+c+\lambda-1}{c}$ *or*
if B) $(1-c)(1-\beta) \geq s > \max\{1-c-\beta, 1-c-\rho\}$ *and* $\rho < \lambda < \rho + c$ *and* $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$, *in which case* $\sigma = \frac{s+c+\lambda-1}{c}$ *or*
if C) $\frac{1-c}{2} < s < 1-c-\rho$ *and* $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\beta(1-c) \leq \rho < \beta < \lambda < \rho+c$, *in which case* $\sigma = \frac{\lambda-\rho}{c}$ *or*
if D) $s < 1-c-\rho$ *and* $\frac{1-c}{2} > \lambda$ *and* $\beta(1-c) \leq \rho < \beta < \lambda < \rho + c$, *in which case* $\sigma = \frac{\lambda-\rho}{c}$.

In all these cases, autocracy is untenable in times of peace. Regardless, the cost of war is so large that the rich would prefer to democratize than to start a war. As war is bestowed upon the country, the war costs become sunk and now

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[16] Technically, by allowing the rich to commit to redistribution of resources in autocracy (i.e. to allow $\sigma > 1$) it may become possible to eliminate case 3.E. Even then, we would still have Proposition 3.C, so Proposition 3 does not disappear with the introduction of broader redistribution posibilities. Furthermore, in a dynamic setting, it is likely that empowering the poor makes autocracy less tenable in the long run.

the decision to preserve the autocracy becomes independent from war. For that reason, the rich are able to preserve the democracy. In case A) s is sufficiently low that $\sigma^{***} < \sigma^{**}$, so that as the poor bear most of the costs from war, they are no longer capable of revolting. In case C) s is at an intermediate level, which causes $\sigma^{**} < \sigma^{***} < \sigma^*$, so the rich are forced to offer $\sigma = \frac{\lambda-\rho}{c}$ which now makes revolt undesirable. Case D) is a corner solution case of C). The main difference is that now since $\frac{1-c}{2} > \lambda$, $\sigma^{**} < 0$ so the rich would be forced to offer $\sigma = \frac{\lambda-\rho}{c}$ even for low levels of s. Finally, in case B), s is so large that the level of σ required to ensure participation makes revolt undesirable.

Proposition 5 is an interesting and unexplored case in the literature with important implications for foreign policy. Clearly, there is a shock which is affecting the distribution of income (or power) and affecting revolt possibilities. In contrast to the standard models, this shock is strenghtening rather than debilitating the status quo. An example where this may have occured is Sadam's war against Iran. In that instance, Sadam's invasion in 1980 may have strengthened the emerging Khomeini regime.

Proposition 6 (Orwell-Powell: Opportunistic War) *If either of the following conditions are met, the rich opportunistically starts a war to prevent democratization*

if A) $1 - c - \beta \geq s > 1 - c - \lambda$ *and* $s \leq \frac{1-c}{2} \leq \lambda < \frac{1}{2}$ *and* $\rho < \lambda$, *in which case* $\sigma = \frac{s+c+\lambda-1}{c}$ *or*

if B) $1 - c - \beta \geq s \geq 1 - c - \rho$ *and* $\rho < \lambda \leq \rho + c$ *and* $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$, *in which case* $\sigma = \frac{s+c+\lambda-1}{c}$ *or*

if C) $\frac{1-c}{2} < s < 1 - c - \rho$ *and* $\beta \leq \rho < \lambda \leq \rho + c$ *and* $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$, *in which case* $\sigma = \frac{\lambda-\rho}{c}$ *or*

if D) $\beta \leq \rho < \lambda \leq \rho + c$ *and* $s < 1 - c - \rho$ *and* $\lambda < \frac{1-c}{2}$, *in which case* $\sigma = \frac{\lambda-\rho}{c}$ *or*

if E) $s \leq 1 - c - \lambda$ *and* $\rho < \lambda$ *and* $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$, *in which case* $\sigma = 0$.

This time, war is started by an otherwise unstable regime. In case E), s is so small that the poor bear all the costs from war. By starting a war and passing all the war burden to the poor, the rich make revolt unfeasible. In A), s is still sufficiently small, that although now the rich must bear part of the burden, the burden of the poor is sufficiently high to ensure that revolt is no longer feasible, that is, $\sigma^{***} < \sigma^{**}$. Also, since s is small with respect to β and c, the rich find it desirable to start war. In cases C-E), the rich bear such a large burden of war, that revolt is no longer desirable for the poor. Cases C) and D) are analogous to Proposition 5.C and 5.D respectively, with the difference that now ρ are substantially high that the cost of preserving the autocracy is sufficiently low to offset the costs of war, c, after taking the wealth dillution effect into account (where dillution is larger the smaller β is). Finally, case B), as in Proposition 5.B), s is considerable large which makes $\sigma^{***} > \sigma^{**}$. Still, β and c are sufficiently small to ensure that starting a war to preserve autocracy is still preferred to democratization.

3 Conclusions

This paper presents a model which studies the link between internal conflict, external conflict and democratization. In contrast to the standard view which suggests that conflict in general contributes to democratization, this paper studies the conditions under which external threats may contribute to democratization. In particular, if the elite is either very entrenched or very vulnerable, the decision to go to war does not directly affect political outcomes. On the other hand, at intermediate levels of stability, an external war may either debilitate or strenghten the domestic regime leading to either democratization or consolidation. There are three possibilities: as suggested by Ticchi and Vindigni (2008), war may destroy an otherwise stable democracy by making it unfeasible (Proposition 4.D-E) or undesirable (Proposition 4.A-C) for the rich to sustain the autocracy. In contrast, if war is bestowed upon autocrats, then the costs of fighting it become sunk and to the extent that the rich can share the war burden with the poor in such a way as to make revolt either undesirable, by reducing inequality to a point where revolutionary costs are greater than the benefits from expropriation (Proposition 5.B-D) or unfeasible, by making debilitating the poor through war (Proposition 5.A). Finally, if the benefits from preserving the autocracy, the rich may be tempted to start costly wars to prevent democratization.

This result is interesting, because it sheds insight as to why autocratic regimes may be more prone to war. While Powell (2006) has already proposed a similar idea, this model endogeneizes the payoffs from joining the war effort for the losing domestic party and shows how the decision to join the war effort is affected. This idea that autocrats may start wars to prevent democratization links interestingly with the work by Hess and Orphanides (1995) Hess and Orphanides (2001) on democracies, and Glaeser (2006) on both democracies and non-democracies, in which leaders may enter in unprofitable wars. Its value is larger in studying why non-democracies may be more likely to enter into conflicts that they can lose, an empirical regularity suggested by Bueno De Mesquita and Siverson (1995). Furthermore, it provides a more feasible explanation for the phenomenon: Bueno De Mesquita and Siverson (1995) argue that autocracies may be more willing to start wars and less committed to winning them since their political survival is less linked to military success than democracies where bad military outcomes may prompt the people to vote leadership out. This idea misses the point that in contrast to democracy, political survival is closely linked to physical survival in non-democracies. This of course raises the stakes of war for the individual in power, so that explanation seems unlikely. In contrast, if political survival is endogenous to the distribution of power in non-democracies, then it is likely that the internal effects of wars on the distribution of power may have be a more important consideration on the decisions to start a war. This point raises an empirical discussion: are stable or unstable autocracies more likely to start wars? If stable autocrats are more likely to start wars, this would provide evidence in favor of Bueno De Mesquita and Siverson (1995), whereas the opposite would suggest that the view espoused by this paper and by Powell

(2006) is more likely.

The model also presents a starting point towards the construction of several interesting reserch questions. For example, 1) It would be interesting to expand this line of research into a two country model where both internal and external considerations affect military decisions in a general equilibrium context. 2) It would be interesting to see how the effects of economic growth on the domestic distribution of power affects military decisions. If technology progress exhibits a human capital bias, then economic growth may lead to reduced inequality as suggested in Cervellati, Fortunato, and Sunde (2008). If de facto power depends on resource allocation, increased growth and equality may reduce autocratic stability, increasing incentives for external conflict.

Finally, the value of s has very important implications in this model. For that reason, it would be interesting to see how s may be affected. In a sense, s is the inverse of the motivation that the people may have in joining the war effort. A high s implies little preference for domestic rule versus foreign rule. One reason why the people may have a preference for the domestic government versus the foreign invader, may have to do with cultural or religious differences. For example, Richardson (1960) shows that differences between Islam and Christianity and within Christianity led to wars. Wilkinson (1980) shows that general cultural, ethnic, religious and language differences increase conflict. Iyigun (2008a) has shown that the threat of Islam reduced internal conflict within Christianity to fight against a common enemy. In Iyigun (2008b) military technology depends on cultural differences, as increased differences increase military motivations. A second consideration with respect to s may have to do with the foreign invasor's objectives or international institutional settings, where more sanguine invaders may be fought more enthusiatically. Alternatively, international prohibitions on the enslavement of enemies, or or on military brutality, as those established by the Geneva Convention may reduce the incentives for the people to fight effectively against a foreign enemy. A further analysis of both cultural and institutional motivations for military activity would also be an interesting area of research.

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4 Appendix 1: Proofs

Proof of Lemma 1. If the poor do not revolt, their payoff is $\frac{1-\lambda}{1-\beta}$. If $\lambda \geq \frac{1}{2}$ revolt fails. The payoff to the poor are: $0 < \frac{1-\lambda}{1-\beta}$. If $\lambda < \frac{1}{2}$ the payoff would be $\frac{1-\rho}{1-\beta} \gtrless \frac{1-\lambda}{1-\beta} \Longleftrightarrow \lambda \gtrless \rho$. ∎

Proof of Lemma 2. $\sigma \in [0,1]$. Assuming that revolt is feasible, it is desirable if and only if $\frac{1-c-\rho}{1-\beta} > \frac{1-\lambda-(1-\sigma)c}{1-\beta} \Longleftrightarrow \lambda > \rho + \sigma c$. If $\lambda \leq \rho$ then no value of σ can make $\lambda > \rho + \sigma c$ hold. If $\lambda \in (\rho, \rho + c]$ then $\lambda > \rho + \sigma c$ if and only if $\sigma < \frac{\lambda - \rho}{c}$. Finally, if $\lambda > \rho + c$ then $\lambda > \rho + \sigma c$. Clearly if revolt is not feasible, the poor do not revolt as the payoff of a failed revolt is 0 versus a value $\frac{1-\lambda-(1-\sigma)c}{1-\beta} > 1$ of preserving the autocracy. Revolt is feasible if and only if $1 - \lambda - (1-\sigma)c > \lambda - \sigma c \Longleftrightarrow \lambda < \frac{1-c+2\sigma c}{2}$. If $\lambda > \frac{1+c}{2}$ then $\lambda < \frac{1-c+2\sigma c}{2}$ even if $\sigma = 1$, If $\lambda < \frac{1-c}{2}$ then the value holds even if $\sigma = 0$, finally, when $\lambda \in \left[\frac{1-c}{2}, \frac{1+c}{2}\right]$ then $\lambda < \frac{1-c+2\sigma c}{2}$ if and only if $\sigma > \frac{2\lambda-c-1}{2c}$, or in other words, revolt is unfeasible as long as $\sigma = \frac{2\lambda-c-1}{2c}$. ∎

Proof of Corollary 1. If $\sigma \leq \sigma^* \Longrightarrow \sigma \leq \sigma^{**}$ and it follows from lemma 2 that revolt is not feasible. If $\sigma \geq \sigma^{**} \Longrightarrow \sigma \geq \sigma^*$ revolt is not desirable. ∎

Proof of Claim 1. It follows from lemma 2 that the poor would not revolt if either $\rho \geq \lambda$ or $\lambda \geq \frac{1+c}{2}$. The rich must offer the minimum value that ensures war participation. It follows from inequality WJ1 that this value is $\widehat{\sigma}_{poor} = 0$ if $s \leq 1 - \lambda - c$ and from WJ2 that it is $\widehat{\sigma}_{poor} = \frac{s+\lambda+c-1}{c}$ otherwise. ∎

Proof of Claim 2. It follows from WJ1 that if $s \leq 1 - \lambda - c$, $\sigma^{***} = 0$ and it follows from applying RF2 to lemma 2 that $\sigma^{***} = 0 \leq \sigma^{**}$ and therefore, as long as the rich offer $\widehat{\sigma}_{poor} = \sigma^{***} = 0$ the poor join war and do not revolt. ∎

Proof of Claim 3. It follows from $\lambda \in (\rho, \rho + c]$ and $\lambda \in [\frac{1-c}{2}, \frac{1+c}{2}]$ and $s > 1 - \lambda - c$, that $\sigma^* = \frac{\lambda-\rho}{c}$, $\sigma^{**} = \frac{2\lambda+c-1}{2c}$ and $\sigma^{***} = \frac{s+c+\lambda-1}{c}$ are interior values as RD2, RF2 and WJ2 hold. Revolt is feasible and desirable at $\widehat{\sigma}_{poor} = \sigma^{***}$ if and only if $\sigma^{**} < \sigma^{***} < \sigma^*$ which holds if and only if $\frac{2\lambda+c-1}{2c} < \frac{s+c+\lambda-1}{c} < \frac{\lambda-\rho}{c}$ which holds if and only if $\frac{1-c}{2} < s < 1 - c - \rho$. When these conditions are met, the rich cannot make revolt non-feasible. For that reason, they must offer $\widehat{\sigma}_{poor} = \sigma^* = \frac{\lambda-\rho}{c}$ to make revolt non-desirable. If $\frac{1-c}{2} < s < 1 - c - \rho$ then the minimum value required to entice wa participation by the poor, σ^{***} is sufficiently low to make revolt unfeasible ($\frac{1-c}{2} \geq s$) or sufficiently high to make revolt undesirable ($s \geq 1 - c - \rho$) or both ($\sigma^{**} \geq \sigma^{***} \geq \sigma^*$). ∎

Proof of Claim 4. It follows from $\frac{1-c}{2} > \lambda$ that RF3 holds so there is no value of σ which can make revolt unfeasible. The only way to prevent revolt is to make it undesirable. The rich therefore require to make sure that a) revolt is undesirable and b) the poor are willing to join. That is, they need to choose $\widehat{\sigma}_{poor} = \max\{\sigma^{***}, \sigma^*\}$. Since $\lambda \in (\rho, \rho + c]$ it follows from RD2 that $\sigma^* = \frac{\lambda - \rho}{c}$. Notice that if WJ1 holds, then clearly $\sigma^* \geq \sigma^{***} = 0$ as WJ1 and $\lambda > \rho$ imply that $s < 1 - c - \rho$. So the interesting case arises if WJ2 holds, in which case, $\widehat{\sigma}_{poor} = \sigma^{***} = \frac{s+c+\lambda-1}{c}$ if and only if $\sigma^{***} \geq \sigma^*$ if and only if $s \geq 1 - c - \rho$ and ∎

Proof of Claim 5. It follows from $\lambda > \rho + c$ that RD3 holds so there is no value of σ which makes revolt undesirable. The only way to prevent revolt is by by making it unfeasible. Since $\lambda \in [\frac{1-c}{2}, \frac{1+c}{2}]$, it follows from RF2 that $\sigma^{**} = \frac{2\lambda+c-1}{2c}$. It follows from WJ2 that since $s \geq 1 - c - \lambda$, the rich must offer at least $\sigma^{***} = \frac{s+\lambda+c-1}{c}$ to ensure war participation from the poor. At this level, the poor preserve the autocracy if and only if revolt is unfeasible, that is if and only if $\sigma^{***} \leq \sigma^{**}$ which holds if and only if $\frac{s+\lambda+c-1}{c} \leq \frac{2\lambda+c-1}{2c}$ which holds if and only if $s < \frac{1-c}{2}$. ∎

Proof of Claim 6. It follows from $\frac{1-c}{2} > \lambda \geq \rho + c$ that RF3 and RD3 holds which means that no value of σ can make revolt either undesirable or unfeasible so the poor always revolt. ∎

Proof of Proposition 1. I.A) follows from claim 1, I.B) follows from combining claim 1 and claim 2. II.A and II.B) follows from claim 1. II.C) follows from combining claims 3 and 5 II.D) follows from combining claim 3 for the case where $s < 1-c-\rho$ fails and claim 4. The difference is that in claim 3 $s > 1-c-\lambda$ is redundant, since $s > 1 - c - \rho > 1 - c - \lambda$. III.A) follows from claim 3. The only difference between the two is that since $\frac{1-c}{2} \leq \lambda \leq \frac{1+c}{2}$ and $s > \frac{1-c}{2}$, $s > 1 - c - \lambda$ becomes redundant since $\frac{1-c}{2} \geq 1 - c - \lambda$ for $\frac{1-c}{2} \leq \lambda \leq \frac{1+c}{2}$. III.B) follows from claim 4. IV.A) follows from claim 6 and IV.) follows from claim 5, the difference is that we can see that $s > 1 - c - \lambda$ is redundant since $\lambda \geq \frac{1-c}{2}$ and implies that $\frac{1-c}{2} \geq 1 - c - \lambda$, so $s > \frac{1-c}{2} \geq 1 - c - \lambda$. ∎

Proof of Claim 7. A and B) When $\lambda \leq \rho$, or when $\lambda > \rho$ and $\frac{1}{2} \leq \lambda$, it follows from lemma 1 that the poor do not revolt in times of peace. It follows from Proposition 1.I that since $s \leq 1-c-\lambda$, and either A) $\lambda \leq \rho$ or B) $\lambda \geq \frac{1}{2} > \frac{1-c}{2}$, $\widehat{\sigma}_{poor} = 0$. Since the poor do not revolt in times of peace, the rich never start a war. C) since $\frac{\lambda}{\beta} = \frac{\lambda - \widehat{\sigma}_{poor}c}{\beta} > 1 > 1 - c$ the rich never democratizes. If $\lambda > \rho$ and $\frac{1}{2} \leq \lambda$ then the poor would revolt in times of peace, so the rich would have to democratize. Since $s \leq 1 - c - \lambda$, and $\lambda \geq \frac{1-c}{2}$ it follows from claim 1 that $\widehat{\sigma}_{poor} = 0$. This means that in times of war, the rich gets $\frac{\lambda}{\beta} = \frac{\lambda - \widehat{\sigma}_{poor}c}{\beta} > 1$, in times of peace, the rich has to democratize and thus gets 1, for that reason, the rich always starts a war (i.e. war always holds). ∎

Proof of Claim 8. It follows from lemma 1 and from Proposition 1.II.A-B) that if $s > 1 - c - \lambda$ and either $\lambda \leq \rho$ or B) $\lambda \geq \frac{1+c}{2}$ the poor do not revolt in either times of war or peace, and that $\widehat{\sigma}_{poor} = \frac{s+c+\lambda-1}{c}$. This means that in times of peace the rich do not start a war and preserve the autocracy. In times of war, the rich democratize if and only if AW*** fails, that is, if and only if

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$s < (1-\beta)(1-c)$. ∎

Proof of Claim 9. It follows from Proposition 1.II.C) that if $\frac{1-c}{2} \geq s > 1-c-\lambda$, $\rho < \lambda$ and $\frac{1-c}{2} \leq \lambda \leq \frac{1+c}{2}$, $\widehat{\sigma}_{poor} = \frac{s+c+\lambda-1}{c}$. In times of war, the rich democratize if and only if $s > (1-\beta)(1-c)$ but since $\beta < \frac{1}{2}$ then $(1-\beta)(1-c) > \frac{1-c}{2} > s$, so the rich never democratize. A) if $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$, then it follows from lemma 1 that the poor do not revolt in times of peace and therefore the rich do not start war, nor do they democratize. B and C) If $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$, then it follows from lemma 1 that the poor revolt in times of peace. Since in times of war, the poor do not revolt, the rich must decide whether to democratize in times of peace or start a war. If the rich democratize they earn 1, if they start a war, they earn $\frac{s+c-1}{\beta}$, so the rich democratize if and only if $\frac{1-s-c}{\beta} < 1 \iff s > 1-c-\beta$ and start a war otherwise. ∎

Proof of Claim 10. It follows from Proposition 1.II.D that when $s \geq 1-c-\rho$ and $\rho < \lambda \leq \rho+c$ and $\frac{1-c}{2} \leq \lambda \leq \frac{1+c}{2}$, $\widehat{\sigma}_{poor} = \frac{s+c+\lambda-1}{c}$. A-B) If $\lambda \geq \frac{1}{2}$, it follows from lemma 1 that the poor do not revolt in times of peace, for that reason, the rich never start a war. If a war has taken place, then the rich prefer $\widehat{\sigma}_{poor} = \frac{s+c+\lambda-1}{c}$ to democratization if and only if AW*** holds which holds if and only if $s \leq (1-\beta)(1-c)$. C-E) In times of war, autocracy is preserved if and only if $s \leq (1-\beta)(1-c)$. In times of peace, it follows from lemma 1 that when $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$, since $\rho < \lambda$, it follows that the rich cannot preserve the revolt in times of peace. The rich therefore decide between democratizing and starting a war. The rich start a war if WAR*** holds, that is, if $s \leq 1-c-\beta$. Now clearly, since $1-c-\beta < (1-c)(1-\beta)$, it follows that there can be three possibilities: if $s > (1-c)(1-\beta)$, the rich prefers to democratize both in times of peace and in times of war. If $1-c-\beta < s \leq (1-c)(1-\beta)$, then once a war has started the rich prefers to preserve the autocracy and offer $\widehat{\sigma}_{poor} = \frac{s+c+\lambda-1}{c}$, but war is too costly for the rich that they prefer to democratize in times of peace. Finally, if $s \leq 1-c-\beta$, the rich prefer to start a war in times of peace and preserve the autocracy by offering $\widehat{\sigma}_{poor} = \frac{s+c+\lambda-1}{c}$. ∎

Proof of Claim 11. If $\frac{1-c}{2} < s < 1-c-\rho$ and $\rho < \lambda \leq \rho+c$ it follows from Proposition 1.III.B that $\widehat{\sigma}_{poor} = \frac{\lambda-\rho}{c}$. A-B) When $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$, it follows from lemma 1 that there is no revolt in times of peace. If a war starts, then the rich preserve the autocracy and revolt if and only if AW* holds, that is if $\rho \geq \beta(1-c)$ and democratizes otherwise. C-E) If $\frac{1-c}{2} \leq \lambda < \frac{1}{2}$, then since $\rho < \lambda$, it follows from lemma 1 that in times of peace, the poor revolt. It follows from WAR* that if and only if $\rho \geq \beta$ the rich prefer to start a war and offer $\widehat{\sigma}_{poor} = \frac{\lambda-\rho}{c}$ than to democratize. When $\rho < \beta$ the rich prefer to democratize in times of peace but it follows from AW* that if a war starts sporadically, they still offer $\widehat{\sigma}_{poor} = \frac{\lambda-\rho}{c}$ to the poor if $\rho \geq \beta(1-c)$. Finally, if $\rho < \beta(1-c)$ then the rich prefer to democratize both in times of peace and war. ∎

Proof of Claim 12. If $s < 1-c-\rho$ and $\rho < \lambda \leq \rho+c$ and $\lambda < \frac{1-c}{2}$, it follows from Proposition 1.III.A) that if a war takes place, $\widehat{\sigma}_{poor} = \frac{\lambda-\rho}{c}$. Since $\lambda < \frac{1-c}{2} < \frac{1}{2}$ and $\rho < \lambda$ it follows from lemma 1 that the poor always revolt in times of peace. It follows from WAR* that the rich prefer to start a war if and only if $\rho \geq \beta$ and democratize otherwise. Now if the rich democratize in

times of peace (i.e. if $\rho < \beta$), but a war starts sporadically, the rich may prefer to preserve the autocracy and offer $\widehat{\sigma}_{poor} = \frac{\lambda - \rho}{c}$ if and only if $\rho \geq \beta(1 - c)$ and democratize otherwise. ∎

Proof of Claim 13. A) Since $\rho < \rho + c < \lambda < \frac{1-c}{2} < \frac{1}{2}$ to follows from lemma 1 that the poor always revolt in times of peace and from Proposition 1.IV.A) that the poor always revolt in times of war, so the rich must democratize in order to prevent revolt. B) Since $\rho < \rho + c < \lambda$ and $\lambda < \frac{1}{2}$ it follows from lemma 1 that the poor always revolt in times of peace. Since $\rho + c < \lambda$ and $\frac{1-c}{2} \leq \lambda \leq \frac{1}{2} < \frac{1+c}{2}$ and $s > \frac{1-c}{2}$, It follows from Proposition 1.IVB) that if there is no value to ensure war participation and prevent revolt in times of peace, so the rich is forced to democratize. C) Since $\frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ the poor do not revolt in times of peace. Finally, since $\frac{1-c}{2} < \frac{1}{2} \leq \lambda \leq \frac{1+c}{2}$ and $\rho + c < \lambda$ and $s > \frac{1-c}{2}$, It follows from Proposition 1.IVB) that if there is no value to ensure war participation and prevent revolt in times of peace, so the rich is forced to democratize. ∎

Proof of Proposition 2. A) follows from Claim 10.E), B) follows from Claim 11.E), C) follows from Claim 13.B). D) follows from Claim 12.C) and E) follows from Claim 13.A). ∎
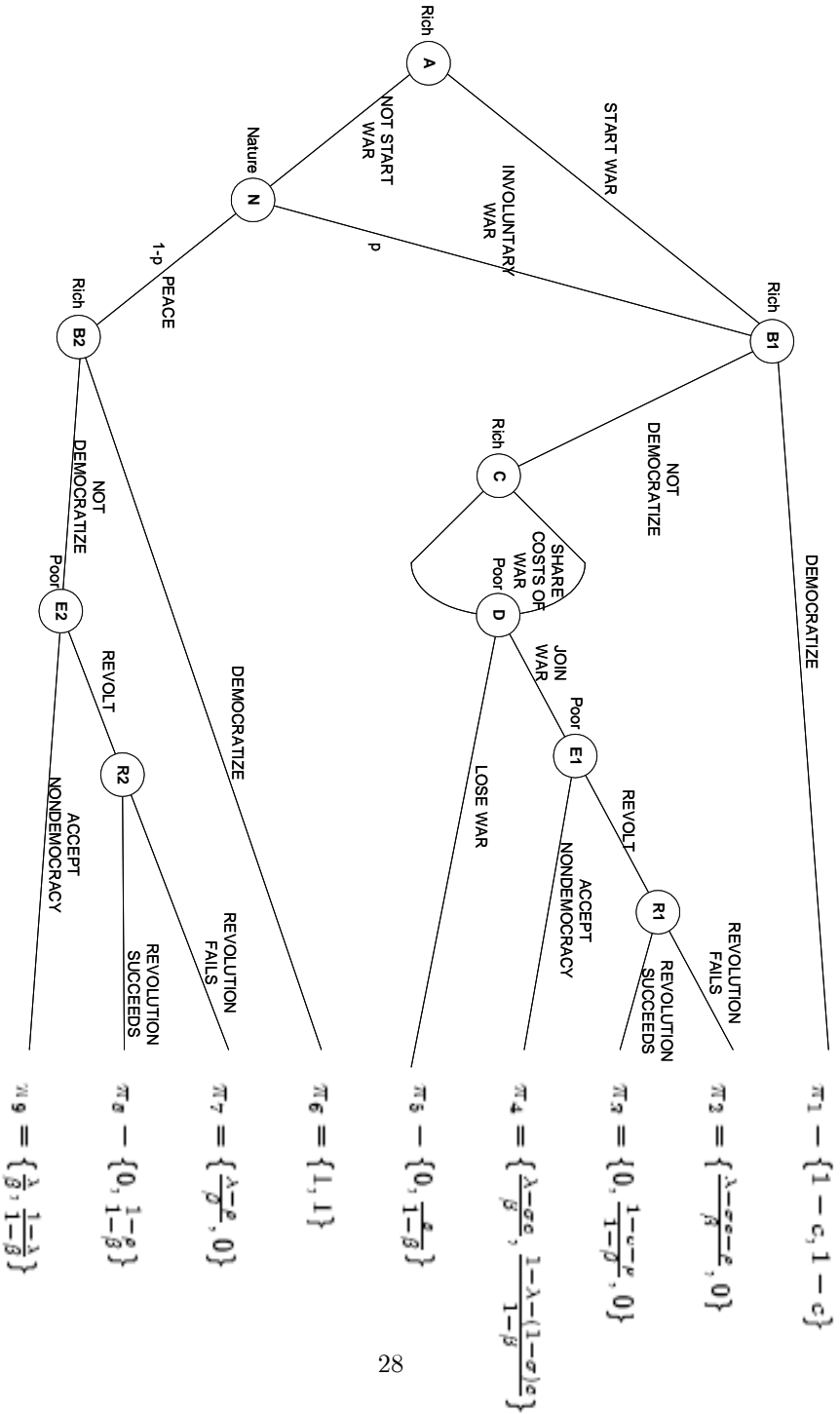
Proof of Proposition 3. A) and B) follows directly from Claim 7.A) and B) respectively. C) and D) follow from Claim 8.A) and B) respectively. E) follows from claim 9.A). F) follows from Claim 10.A) and G) follows from Claim 11.A). ∎

Proof of Proposition 4. A) and B) follow from Claim 8.C) and D) respectively. C) follows from claim 10.B). D) follows from Claim 11.B). E) follows from Claim 13.C). ∎

Proof of Proposition 5. A) follows from claim 9.B) (it follows from $\lambda > \beta$ and $s > 1 - c - \beta$, that $s > 1 - c - \lambda$ becomes redundant). B) follows from Claim 10.D). C) follows from Claim 11.D). D) follows from Claim 12.B). ∎

Proof of Proposition 6. A) follows from Claim 9.C). B) follows from Claim 10.C). C) follows from Claim 11.C. D) follows frm Claim 12.A). E) follows from Claim 7.C). ∎

5 Appendix 2 Figures

Figure 1. Extensive Form Game

Rich **A**

NOT START WAR

START WAR

Nature **N**

INVOLUNTARY WAR

p

1-p   PEACE

Rich **B2**

Rich **B1**

NOT DEMOCRATIZE

DEMOCRATIZE

Rich **C**

SHARE COSTS OF WAR

JOIN WAR

Poor **D**

LOSE WAR

Poor **E1**

REVOLT

ACCEPT NONDEMOCRACY

R1

REVOLUTION FAILS

REVOLUTION SUCCEEDS

NOT DEMOCRATIZE

DEMOCRATIZE

Poor **E2**

REVOLT

ACCEPT NONDEMOCRACY

R2

REVOLUTION FAILS

REVOLUTION SUCCEEDS

$\pi_1 - \{1-c, 1-c\}$

$\pi_2 = \{\frac{\lambda - \sigma a - \rho}{\beta}, 0\}$

$\pi_3 = \{0, \frac{1-\rho-\rho}{1-\rho}, 0\}$

$\pi_4 = \{\frac{\lambda - \sigma a}{\beta}, \frac{1-\lambda-(1-\sigma)a}{1-\beta}\}$

$\pi_5 - \{0, \frac{1-\rho}{1-\beta}\}$

$\pi_6 = \{1, 1\}$

$\pi_7 = \{\frac{\lambda - \rho}{\beta}, 0\}$

$\pi_8 - \{0, \frac{1-\rho}{1-\beta}\}$

$\pi_9 = \{\frac{\lambda}{\beta}, \frac{1-\lambda}{1-\beta}\}$

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