

# On Wars and Political Development. The Role of International Conflicts in the Democratization of the West\*

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First Draft: June 2003

This Draft: February 2004

## Abstract

We investigate the role played by international conflicts in the processes of national political development and in particular in the transition from autocracy toward democracy. We argue that, if a country is endangered by some outside threat, its elite may be forced to concede democracy (or the Welfare State) to the masses, in order to increase their war effort, and along it the survival chances of the country and of the elite itself. In other words, we claim that international conflicts can drive the process of democratization at the national level by increasing the need that the elite has of the patriotism of the masses, which is endogenously higher when their political power, and more generally their welfare, is so.

Keywords: Autocracy, Democracy, Wars, Redistribution.

JEL Classification Numbers: D72, D74, H56, N40, P16.

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\*We would like to thank Roland Bénabou, Viviana Bonazzoli, Torsten Persson, Howard Rosenthal, Giuseppe Travaglini and seminar participants at Institute for International Economic Studies (Stockholm), University of Urbino and Princeton University for useful comments. We are especially grateful to Daron Acemoglu and James Robinson for many useful conversations, comments and suggestions. The usual disclaimers apply.

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*“The basis of democratization is everywhere purely military in character... Military discipline meant the triumph of democracy because the community wished and was compelled to secure the cooperation of the non-aristocratic masses and hence put arms, and along with arms political power, into their hands.”*

*(Max Weber, General Economic History, pp. 325-326).*

*“The purpose of victory is to live in a better world than the old world; that each individual citizen is more likely to concentrate upon his war effort if he feels that his Government will be ready in time with plans for that better world.”*

*(Sir William Beveridge, Social Insurance and Allied Services, p. 171).*

## **1 Introduction**

The process of politico-economic development of the Western world and of other countries has been marked, during the XIX and XX century, by the progressive diffusion of democracy (e.g. Rueschemeyer et al., 1992) as well as by the increasing redistribution of income promoted by the governments (e.g. Lindert, 1994 and 1996).

According to the standard positive theory of taxation and redistribution (e.g. Meltzer and Richard, 1981), these trends are strongly related in that the extension of franchise, the consolidation of democratic institutions and, more fundamentally, the transfer of some political power from the elite (people with income above average) to the masses (people with income below average), should be expected to generate the support for a greater fiscal redistribution of resources among its citizens. The rationale behind this argument is straightforward and well understood: increasing the political voice of those people with pre-tax income below average cannot but increase fiscal redistribution, as these people benefit without ambiguity from it, and are able to tilt public policies more in their favor. The following question then naturally suggests itself: suppose that the political voice of the masses in a country is endogenous in some way and decided by a government representing the interests of the economic elite only. Why would this government want to empower the masses? In

other words, given that democratization involves a reallocation of political power from the elite to the masses, and given that the two classes have conflicting interests over redistributive policies, why would the rich elite, and a government which expresses only their interests, want to democratize at all?

A first answer to this question has been provided by Acemoglu and Robinson (2000, 2001 and 2003) who argue that the elite may transfer the political power or provide income redistribution to the masses in order to prevent social unrest and revolutions. A similar explanation can be found in Conley and Temimi (2001). Lizzeri and Persico (2004) offer a new rationale by arguing that a majority of the elite may favor an extension of the franchise despite the absence of a threat from the disenfranchised if this leads politicians to adopt policies with more diffuse benefits.<sup>1</sup>

This paper attempts to provide a new answer to the fundamental question raised above on the rationale behind a process of transition from an oligarchic to a democratic government. In particular, we concentrate the attention on the inter-state military competition, which has received attention from political scientists and historians but not from economists. We analyze the role that warfare among nations plays in the processes of democratization at the national level, as well as for the development of the Welfare State, with particular regard to the historical experience of the West.

Our theory of institutional change rests on two key factual assumptions: fragmentation and military rivalry among states, and the widespread use of a military technology based on mass-armies. We argue that, under these conditions, an oligarchy controlling the government of a nation may decide of its own to alter the politico-economic *status quo* by empowering or enriching the masses, in order to induce them to take some costly action which is beneficial to the elite itself, and which would not be undertaken otherwise. By credibly promising some redistribution of income

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<sup>1</sup>Buorguignon and Verdier (2000) present a model where individual turn-out rates, within a democratic regime, depend on the levels of education of the people. This is endogenous and tends to increase with economic development. There is thus more a model of the extension of political participation within a given political regime rather than one of political transitions across regimes.

to the masses, or by conceding democracy if no credible promises can be made, the elite actually increases the latter's attachment to the country, in that the welfare that the masses enjoy increases relative to the ex-ante *status quo* with no redistribution. As a result, the masses have potentially more to lose in case of war, and are thus willing to fight harder to prevent a military defeat. In the end, the resulting higher martial effectiveness of a mass-army can more than compensate the elite for the income loss due to fiscal redistribution.

Scholars of political and historical sociology have recognized that the processes of modernization of European nations do not simply take place in parallel but continuously affect each other due to the ongoing and unique competition, political, economic and military present within the European state system. The importance of the interplay between the process of development of European countries and international relations and conflicts has been first stressed in the pioneering studies of comparative constitutional history of Hintze (1975), and later in the works of Tilly (1975, 1990 and 1993), Skocpol (1979), Giddens (1987), Mann (1990) and Porter (1994).<sup>2</sup> Moreover, Skocpol (1992 and 1995) and Keyssar (2000) argue that military conflicts, and in particular the Civil War, have been of primary importance for the creation and development of a Welfare State as well as for the extension of the voting right in the U.S.

Moreover, the theory of political development has recognized the importance of ensuring a wide popular support and legitimation to the government. For instance, Almond and Powell (1966) argue that the process of development of a political system includes ensuring an appropriate level

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<sup>2</sup>Some scholars including Andreski (1967) have argued that the need to motivate mass armies is a critical factor behind the extension of social and political rights in very many civilizations and historical eras. Interesting examples of non-Western countries whose elites were forced to make significant concessions to the masses to sustain conscription include ancient China, where several successful revolutions took place also as a result of the military training of the peasants. To the contrary, countries such as Egypt after the Hyksos invasion at the middle of the second millennium, ancient India, and Japan until the Meiji restoration did not adopt conscription, and were all characterized by a very sharp social stratification. In this paper, though, we intend to focus specifically on the process of democratization of the Western world, as the most significant instance of extension of political, rather than just social, citizenship ever observed.

of loyalty and commitment to the nation, increasing the participation of various groups to public decision making, and guaranteeing an appropriate amount of redistribution of income and wealth. Ardant (1975) argues that at some point, during the process of state-building, the need of ensuring the loyalty and commitment of the majority of the population to the nation becomes a compelling one. From that point on, the state power can be increased only conditionally on a substantial increase in the participation in governmental affairs of the general population.<sup>3</sup>

In this paper, we integrate all these arguments and analyze formally the role played by international military rivalry on the process of national political and institutional change of the West in the Contemporary Age. In particular, our theory sheds some new light on such facts as the joint process of social and military modernization of Prussia during the XIX century, the extension of franchise and development of the Welfare State in the U.S., and the social and political reforms implemented in several European countries during and in the aftermath of the two World Wars. Moreover, this work can explain how the absence of international conflicts in Africa and Latin America may have had a negative effects on the political development of the countries of these two continents.

Finally, notice that our theory provides an explanation of the process of democratization of the West which is complementary to Acemoglu and Robinson's one. Indeed, whereas Acemoglu and Robinson explain the different paths of institutional evolution observed across European countries (e.g. Britain versus Prussia/Germany) essentially in terms of domestic politics, focusing on the

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<sup>3</sup>The relevance of inter-state military competition has not gone unnoticed also to economists and economic historians, who have remarked its importance for the economic development of Europe. Specifically, authors such as Jones (1981) and Landes (1969) among the others, have argued that outside military threats can act as a powerful stimulus on governments not to block the adoption of more efficient technologies, in spite of the resistance of those social groups having vested interests in the operation of relatively obsolete ones and therefore a preference for policies of innovation-blocking (e.g. the Luddites). More recently, Kennedy (1988) has emphasized the role played by the political fragmentation typical of Europe, as opposed to Ming China or the Ottoman Empire, at the eve of the Modern Age, in explaining how European economic and military fortunes culminated in the advent of the European world leadership.

different strength of the workers' movement and hence of the revolutionary threat faced by the elite of different nations, our account of it is rooted in geopolitical factors. The relevance and complementarity of both theories is implicitly recognized for instance by Giddens (1987, ch. 9, p. 234), who writes that: "As soon as the unification of Germany occurred Bismarck established universal male suffrage, as a response to what he saw as the military exigencies of the new state. In countries lacking a proximate revolutionary background and not so directly involved in European war, most notably Britain, the extension of franchise tended to be halting. Only with the experience of the First World War, in which conscription was not introduced until the armed forces had suffered huge losses, was universal male suffrage instituted. Once more, this was done in explicit recognition of the ties between citizenship rights and military obligations."

The paper is organized as follows. Section 2 presents the baseline model. Section 3 discusses in particular how the equilibrium depends on a statistics of income inequality. Section 4 presents some historical and statistical evidence supporting our central argument. Section 5 concludes.

## 2 The Baseline Model

The economy is populated by a continuum of measure one of infinitely lived agents divided in two classes, rich ( $r$ ) and poor ( $p$ ), or the elite and the masses. The former have a pre-tax income equal to  $y_t^r$  and the latter to  $y_t^p$ , with  $y_t^r > y_t^p, \forall t$ . Time is discrete and the aggregate (and average) output is denoted as  $\bar{y}_t$ . The income of each class and the mean income is random, reflecting the realization of an (aggregate) shock relative to the military fortunes and misfortunes of the country; the stochastic process describing the evolution of income is specified below. We assume the absence of any "social mobility", which implies that an individual belongs to one of the two classes only forever.

Let  $\rho \in (0, 1)$  indicates the measure of the set of the rich and  $(1 - \rho)$  the measure of the set of the poor; we assume that  $\rho < \frac{1}{2}$ , meaning that the (potential) median voter is a poor, and that fiscal policy in a democracy reflects the preferences of the poor only. All agents are risk-neutral

and future welfare is discounted at rate  $r > 0$  equal to the market interest rate, so that income is always entirely consumed and there is no asset accumulation.

Fiscal policy is about the inter-class redistribution of income. Income is taxed at a proportional tax  $\tau$  and the government revenues are redistributed with a lump-sum transfer  $\Upsilon$  to all agents. The government budget is always balanced, so that  $\Upsilon_t(\tau) = \tau \bar{y}_t$ , and the post-tax and transfer income of group  $i \in \{r, p\}$  is equal to  $\tilde{y}_t^i(\tau) = (1 - \tau) y_t^i + \Upsilon_t(\tau)$ .

We also assume the existence of an upper bound to the tax rate  $\tau$ , which is constrained to be strictly smaller than one.

**Assumption 1:**  $\tau \leq \tau_{\max} < 1$ .<sup>4</sup>

At each point in time, a country can be either in peace or in war; the current state of the external relations of the country is described by a random variable  $\mu$ , which assumes the two values  $\{\mu^w, \mu^p\}$  corresponding to war and peace respectively. The aggregate state  $\mu$  evolves according to the following stochastic process:  $\mu_t = \mu^w$  with probability  $q \in (0, 1)$  if  $\mu_{t-1} = \mu^p$ ,<sup>5</sup> and  $\mu_t = \mu^p$  with probability one if  $\mu_{t-1} = \mu^w$ . In other words, a country can be with some positive probability at war or at peace at time  $t$  if it was at peace at  $t - 1$ , but it cannot be at war for two periods in a row. When  $q$  is relatively high, the country is engaged in some war relatively often. Vice versa, a relatively low value of  $q$  corresponds to the case of a country that faces relatively rare outside threats; in the limit instance of  $q = 0$ , the country is never at war. Notice also that the probability of war is taken here as purely exogenous and independent on the political regime of the country.<sup>6</sup>

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<sup>4</sup>The introduction of this assumption is made only for the sake of simplifying the analysis. It would be straightforward to derive it as an equilibrium outcome by assuming that taxation involves some distortions that dissipate part of the income taxed. For instance, one could assume that if income is taxed at the flat rate  $\tau$ , the total actual government revenues are  $\Upsilon = [\tau - \phi(\tau)] \bar{y}$ , where  $\phi(\cdot)$  is an increasing and convex function of  $\tau$ . Moreover, taxation of income at a 100% rate would violate a realistic incentive-compatibility constraint of the rich if income is thought as labor income and higher income is the result of higher work effort.

<sup>5</sup>Clearly,  $\mu_t = \mu^p$  with probability  $(1 - q)$  if  $\mu_{t-1} = \mu^p$ .

<sup>6</sup>We are abstracting from any possible effect of the presence or absence of democracy on the likelihood that a country may be in war. In the final part of the paper, we return briefly on this point when discussing the possible

War has potentially two direct effects, which are both conditional on a military defeat. First, whenever a military defeat occurs, the elite has the option to reset the political system, and in particular to (re-)establish its dictatorship if the country was democratic. Second, a military defeat affects individual and aggregate income levels as follows.

**Assumption 2:** Let  $I_t^w$  be an indicator function equal to one if  $\mu_t = \mu^w$  and the country loses the war, and zero if it wins the war. We assume that:

- (i) if  $\mu_{t-1} = \mu^p$ , or if  $\mu_{t-1} = \mu^w$  and  $I_{t-1}^w = 0$ , then  $y_t^i = y^i$ ,  $i \in \{r, p\}$ .
- (ii) if  $\mu_{t-1} = \mu^w$  and  $I_{t-1}^w = 1$ , then  $y_t^i = \varepsilon y^i$ ,  $i \in \{r, p\}$ , with  $\varepsilon \in [0, 1)$ .

In words, if a country is defeated in a war at some time, the income of each class falls from  $y^i$  to  $\varepsilon y^i$  in the following period, and then it re-switches back to  $y^i$ : the effect of losing a war is a *temporary output loss*. One could think that part of national income gets disrupted as a result of the fighting, or that it gets grabbed by the winner as war prey.<sup>7</sup> An immediate implication of Assumption 2 is that the aggregate (and average) level of income is  $\rho y^r + (1 - \rho)y^p \equiv \bar{y}$  in times corresponding to (i), and  $\rho \varepsilon y^r + (1 - \rho)\varepsilon y^p = \varepsilon \bar{y}$  in times corresponding to (ii).

Without loss of generality, we assume that all and only the poor serve in the army when the country is engaged in some war. This assumption is much stronger than needed as what is essential for our purposes is that the army is sufficiently large and made-up by sufficiently many poor. In other words, we are really assuming the existence of a mass-army based on the conscription of a large number of poor, normalized to  $(1 - \rho)$  for simplicity. Moreover, the poor can put two levels of effort in the military service during war times: high ( $e = e^H$ ) or low ( $e = e^L$ ); in equilibrium, all of them will make the same decision. Let the cost of the military effort in terms of utility (and income) be such that such that  $C(e^L) = 0$  and  $C(e^H) = C > 0$ . The war effort of the poor affects

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extensions of our model.

<sup>7</sup>The important thing here is that the income loss following a military defeat is higher than the one after a victory. Moreover, we could have assumed that a military defeat affects asymmetrically the income of the two classes, for example, by damaging relatively more the rich (e.g. Piketty, 2001). None of our key results depends on this assumption however.



positively the probability  $P$  that the country has of winning a war, conditional on being involved in one. We assume for simplicity that  $P(\int e = (1 - \rho)e^L) = 0$  and  $P(\int e = (1 - \rho)e^H) = 1$ .

Finally, the expected lifetime utility of a member of group  $i \in \{r, p\}$  at time zero can be represented as

$$U_0^i = E_0 \sum_{t=0}^{\infty} \left( \frac{1}{1+r} \right)^t \{ (1 - \tau_t) y_t^i + \tau_t \bar{y}_t - C(e_t^i) \}$$

where  $C(e_t^r) = 0$  for all  $t$  given that, by assumption, the rich do not serve in the army.

## 2.1 The Elite-Masses Game

We assume that in the *status quo* the country is ruled by an oligarchic government representing the rich only, which remains in office until the decision to democratize the political system is eventually taken by the latter. The decision to introduce democracy or to promise some fiscal redistribution without any political change is taken by the elite with one goal only: inducing the masses to put a high military effort in war times so to avoid income losses. This may be necessary when the pre-tax income of the poor is too low relatively to the cost of war effort because in this case the masses have not enough interests at stake during times of hostilities, and therefore may not want to bear the burden of the defence of the country. Redistributing income, or political power, is then a way that the elite has to increase the “nationalism” of the masses, namely their eagerness to fight hard to defend the country, and therefore the interests of the elite itself. It is now clear the importance of assuming the existence of a mass-army. Democracy or income redistribution is needed since it serves the purpose of motivating a large number of poor. If the army was small and professional, it would not be necessary to transform political institutions in order to convince it to fight properly. In other words, one of the factors that drive democratization processes in our model is the use of a military technology based on mass-armies and conscription which was adopted in most European countries, and elsewhere, through the 19<sup>th</sup> and 20<sup>th</sup> century.

Our basic argument bypasses the free-rider problem potentially arising here, just as in most collective actions instances. Even if fighting hard can be advantageous for the poor as a class in

presence of a sufficiently generous redistribution of income, why would any particular poor want to do so at some cost rather than free-ride his or her peers? We ignore this problem by assuming the existence of some coordination mechanism or institution (e.g. a political party) which induces each poor to do what is actually best for his or her class as a whole. Another solution is based on the assumption that each poor can control some other poor and induce a punishment if he does not behave in the class interest. In this way, the elite-masses game actually reduces to the strategic interaction between the representative member of each of the two classes.

Let  $S_t \in \{D, R\}$  indicate the state of the political system at time  $t$ : if the country is democratic,  $S_t = D$ , while  $S_t = R$  if the country is non democratic. Following Acemoglu and Robinson (2000), we assume that at any point in time  $t$  such that  $S_t = R$ , the rich can decide either to democratize, and therefore to transfer all the political power to the poor, or not to democratize, and eventually grant some fiscal transfers to the poor, while retaining all power for themselves. Since fiscal policy is decided by pure majority voting under democracy and given that the poor are the majority, it follows that the democratic fiscal policy will reflect the preferences of the poor only. As the poor have income below average and taxation entails no distortions, the tax rate set in a democratic political equilibrium is equal to  $\tau_t^p = \tau_{\max}$ ,  $\forall t$ , such that  $S_t = D$ , namely the maximum possible level of  $\tau$ , which is the one maximizing the post-tax and transfer income of the poor.

If the elite does not wish to grant democracy to the masses, it may still meet their incentive-compatibility constraint by promising an appropriate intertemporal income transfer scheme.

Summarizing the structure of the game, at each point in time, events take place in the following sequence.

1. The realization of  $\mu$  is revealed: the country is either in war or peace.
2. If the country is not democratic, the rich decide whether or not to democratize, and if not the value of the tax  $\tau$  and of the related subsidy. If the country is democratic, the poor decide fiscal policy and implement it.
3. In case of conflict, the poor decide their level of war effort after redistribution has been operated.

4. The outcome of the conflict, if one took place, is revealed: the country either wins or loses the war.
5. If the war is lost, the rich have the option to (re-)establish their dictatorship.

## 2.2 Characterization of the Equilibrium

To characterize the politico-economic equilibrium of this game, we start by breaking down the expression of the present discounted value of the lifetime utility of the two players into a system of recursive equations satisfied by the respective Bellman values in the different possible states of the world.

Let  $I_t^\varepsilon$  be an indicator function equal to 1 if  $\mu_{t-1} = \mu^p$ , or  $\mu_{t-1} = \mu^w$  and  $I_{t-1}^w = 0$ , and equal to  $\varepsilon$  if  $\mu_{t-1} = \mu^w$  and  $I_{t-1}^w = 1$ .<sup>8</sup>  $V^r(\mu^p, \tau_t, I_t^\varepsilon, S_t)$  indicates the Bellman value of being rich ( $r$ ) when the country is in peace, income is taxed at rate  $\tau_t \in [0, \tau_{\max}]$ , the indicator function take the value  $I_t^\varepsilon$ , under the political system  $S_t$ .  $V^r(\mu^w, \tau_t, I_t^\varepsilon, S_t)$  corresponds to the case where the country is in war. By standard arguments, the Bellman values of the rich satisfy the following system of functional equations:

$$V^r(\mu^p, \tau_t, I_t^\varepsilon, S_t) = I_t^\varepsilon \tilde{y}^r(\tau_t) + \frac{qV^r(\mu^w, \tau_{t+1}, 1, S_{t+1}) + (1-q)V^r(\mu^p, \tau_{t+1}, 1, S_{t+1})}{1+r}$$

and

$$V^r(\mu^w, \tau_t, 1, S_t) = \tilde{y}^r(\tau_t) + \frac{PV^r(\mu^p, \tau_{t+1}, 1, S_{t+1}) + (1-P)V^r(\mu^p, \tau_{t+1}, \varepsilon, S_{t+1})}{1+r}.$$

In brief, by a simple recursion, the value of being rich when the country is in peace is equal to the post-tax income of the rich, plus the expected present discounted value of being rich next period. The first component is equal to either  $\varepsilon \tilde{y}^r(\tau_t)$  or  $\tilde{y}^r(\tau_t)$ , depending on whether the country

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<sup>8</sup>In other words, this indicator function is equal to 1 in  $t$  if the country was in peace at  $t-1$  or it was in war and won it.  $I_t^\varepsilon$  takes the value  $\varepsilon$  if the country lost a war in  $t-1$ .

has suffered or not a military defeat in the previous period. The second component is taken over the probability distribution of being in war and in peace respectively at  $t + 1$  (conditional on  $\mu_t = \mu^p$ ) which has the support  $\{q, 1 - q\}$ ; notice that  $I_{t+1}^\varepsilon = 1$  in either case since  $\mu_t = \mu^p$ . Similarly, from the second equation we observe that the value of being rich in war times is equal to the pre-tax income  $\tilde{y}^r(\tau_t)$ , as by assumption a country cannot be at war for two periods in a row, plus the expected present discounted value of being rich next period. This is taken over the (endogenous) probability distribution of war victory and loss, depending on the effort of the masses, with support  $\{P, 1 - P\}$ .<sup>9</sup>

Similarly,  $V^p(\mu^p, \tau_t, I_t^\varepsilon, S_t)$  indicates the Bellman value of being poor ( $p$ ) when the country is in peace, income is taxed at rate  $\tau_t$ , the indicator function is  $I_t^\varepsilon$ , under the political system  $S_t$ .  $V^p(\mu^w, \tau_t, I_t^\varepsilon, S_t | e = e^z)$  corresponds to the case where there is a war and the poor exert a war effort equal to  $z \in \{H, L\}$ . These Bellman values are such that the following functional equations are satisfied simultaneously

$$V^p(\mu^p, \tau_t, I_t^\varepsilon, S_t) = I_t^\varepsilon \tilde{y}^p(\tau_t) + \frac{qV^p(\mu^w, \tau_{t+1}, 1, S_{t+1}) + (1 - q)V^p(\mu^p, \tau_{t+1}, 1, S_{t+1})}{1 + r}$$

and

$$V^p(\mu^w, \tau_t, 1, S_t) = \max_{e_t \in \{e^L, e^H\}} \tilde{y}^p(\tau_t) - C(e_t) + \frac{PV^p(\mu^p, \tau_{t+1}, 1, S_{t+1}) + (1 - P)V^p(\mu^p, \tau_{t+1}, \varepsilon, S_{t+1})}{1 + r}.$$

The first equation states that the value of poor agents when the country is in peace is equal to their post-tax and transfer income,  $\tilde{y}^p(\tau_t)$  or  $\varepsilon \tilde{y}^p(\tau_t)$ , plus the expected present discounted value of being poor next period, taken with respect to the (conditional) probability of war and peace. Notice that  $I_{t+1}^\varepsilon = 1$  in either case since  $\mu_t = \mu^p$ . The second equation shows that the value of being poor in war times is equal to the post-tax income  $\tilde{y}^p(\tau_t)$ , minus the cost of the optimally set

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<sup>9</sup>We remind that  $I_{t+1}^\varepsilon = 1$  in case of military victory and that  $I_{t+1}^\varepsilon = \varepsilon$  in case of defeat.

war effort, plus the expected present discounted value of being poor next time, which is taken over the probability distribution of war victory. In case of victory  $I_{t+1}^\varepsilon = 1$  and in case of loss  $I_{t+1}^\varepsilon = \varepsilon$ .

As we know, the only rationale for redistribution and regime transitions in this model is to induce the poor to put a high effort during war times. By virtue of the following assumption, a one-period redistribution at the maximum possible tax rate is not sufficient to meet the incentive-compatibility constraint of the poor.

**Assumption 3:**  $C > \tau_{\max} (\bar{y} - y^p) + \frac{(1-\varepsilon)y^p}{1+r} \equiv C_{\min}$ .

This inequality states that the (per-period) cost of high war effort  $C$  is greater than the maximum possible gain from exerting it, which is the sum of the gain from one period redistribution (at the maximum tax rate) and the discounted potential income loss avoided in case of military victory.<sup>10</sup> This assumption implies the elite must necessarily promise to the poor an intertemporal redistribution scheme. This scheme must also be credible as long as the rich maintain the control of the political system because in this case they can always deviate from any redistribution promise made to the poor.

Summarizing, whenever the rich have control of the government, they can implement either one of the following three strategies: (i) granting to the poor some income redistribution (the “Welfare State”) while retaining all political power; (ii) democratizing the political system; (iii) granting no redistribution and retaining the control of the political system. In the first two instances, the rich try to induce the poor to put high effort in war times and concede them some form of redistribution with this goal, while in the third one they do not try to do so, and therefore do not allow for any income redistribution. Let us proceed by examining each of this three cases.

### Case 1. Welfare State but no Democracy.

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<sup>10</sup>The latter must be discounted since, by assumption, a military defeat causes an income loss one period after the war is fought.

We focus on *trigger-strategies equilibria*, under the assumption that the poor revert to the expectation of no redistribution ( $\tau^r = 0$ ) forever if, and as soon as, the rich do deviate from the promised redistribution path. With no substantial loss of generality, we concentrate the analysis on equilibria where the time-path of taxation proposed by the elite to the masses is constrained to be some *constant*  $\bar{\tau}$ . Hence,  $E_t^p(\tau_{t+s}^r) = \bar{\tau}$ ,  $\forall s > 0$  if  $\tau_{t-1}^r = \bar{\tau}$ , and  $E_t^p(\tau_{t+s}^r) = 0$ ,  $\forall s > 0$  if  $\tau_{t-1}^r \neq \bar{\tau}$ , where  $E_t^p(\cdot)$  indicates the expected value operator of the poor at time  $t$  on the tax rate  $\tau^r$  chosen by the rich. Similarly, we assume that the rich revert to the expectation that the poor put low war effort forever, when income is redistributed at rate  $\bar{\tau}$  if, and as soon as, the poor do so once. Therefore,  $E_t^r(e_{t+s}^z) = e^H$ ,  $\forall s > 0$  if  $e_{T(t)} = e^H$ , where  $T(t) \equiv \max\{u \in [0, t) : \mu_u = \mu^w\}$ , and  $E_t^r(e_{t+s}^z) = e^L$ ,  $\forall s > 0$  if  $e_{T(t)} = e^L$ , where  $E_t^r(\cdot)$  is the expected value operator of the rich at time  $t$  on the war effort  $e$  exerted by the poor.

We now proceed to characterize this trigger-strategies equilibrium of the elite-masses game assuming, for the time being, that one exists. Since this must be a Nash equilibrium, no profitable deviations around it by either player must exist. With this in mind, we first derive the incentive-compatibility constraint of the poor, which is of course potentially binding in war times only. Recall that, in times of hostilities, the poor decide their war effort after the fiscal policy decision of the government has been taken, which means that they can “cheat” on the rich (benefit of redistribution without putting high effort) at the most once. This implies that the constant tax rate  $\tau^H$  that must be promised to the poor forever in order to induce them to put the high level of effort level ( $e = e^H$ ) in war times must be such to let the Bellman value of being poor and putting a high effort in every (including the present) war period, given that income is permanently taxed and redistributed at rate  $\tau^H$ , be greater or equal to the post-tax and transfer income of the poor,  $\tilde{y}^p(\tau^H)$ , plus the discounted Bellman value of being poor in peace times, when no redistribution is ever granted and no war effort is ever exercised. Formally,  $\tau^H$  satisfies the following weak inequality

$$V^p(\mu^w, \tau^H, 1, R | e = e^H) \geq \tilde{y}^p(\tau^H) + \frac{V^p(\mu^p, 0, \varepsilon, R | e = e^L)}{1+r} \quad (1)$$

that can be rewritten as<sup>11</sup>

$$V^p(\mu^w, \tau^H, 1, R | e = e^H) \geq V^p(\mu^w, 0, 1, R | e = e^L) + \tau^H(\bar{y} - y^p). \quad (2)$$

**Claim 1.** The minimum constant tax rate ( $\bar{\tau} = \min \tau^H$ ) that must be promised to the poor in order to induce them to put a high level of effort is<sup>12</sup>

$$\bar{\tau} = \frac{(r+q)[(1+r)C - (1-\varepsilon)y^p]}{(1+r+q)(\bar{y} - y^p)}. \quad (3)$$

**Proof:** see Appendix. ■

It is clear that there can not be an equilibrium with redistribution or regime change for all parameter values such that the minimum constant tax rate  $\bar{\tau}$  required by the poor to exert high effort is higher the maximum level  $\tau_{\max}$ . Therefore, we concentrate the attention to the case where the parameters are such that  $\bar{\tau} \leq \tau_{\max}$ .

From Assumption 3, it is immediate to verify that  $\bar{\tau}$  is always positive. Moreover, notice that  $\bar{\tau}$  is an increasing function of  $q$ . Intuitively, if war becomes more frequent, the poor are called to fight more often and, therefore, more redistribution must be given to the masses in order to compensate them for having to fight hard more frequently. For a similar reason,  $\bar{\tau}$  is positively related to the cost of war effort  $C$ . The fraction  $\varepsilon$  of income not lost in case of military defeat positively affects the minimum tax rate required by the poor: the lower is their income loss due to a war defeat and the lower their return and incentive to fight hard.

We now continue the analysis by computing the tax rates that the rich are willing to bear so to induce the poor to exert high effort in war times. These tax rates are different in war and peace times and we now determine their value.

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<sup>11</sup>We are using the fact that  $\tilde{y}^p(\tau) = y^p + \tau^H(\bar{y} - y^p)$  and  $V^p(\mu^w, 0, 1, R | e = e^L) = y^p + \frac{V^p(\mu^p, 0, \varepsilon, R | e = e^L)}{1+r}$ .

<sup>12</sup>Notice that  $\bar{\tau}$  is the minimum level of  $\tau^H$  and, therefore, equations (1) and (2) hold with equality sign when we consider  $\tau^H = \bar{\tau}$  while they hold with strict inequality if  $\tau^H > \bar{\tau}$ .

The maximum constant tax rate  $\tau_w^r$  that the rich are willing to bear *in war times* (conditionally on retaining the control of the political system) equates the Bellman value of being rich when income is permanently taxed and redistributed at rate  $\tau_w^r$  and the poor always put high war effort, to the corresponding Bellman value obtaining when income is never redistributed and the poor choose a low war effort. Formally,  $\tau_w^r$  is implicitly defined by the following equation

$$V^r(\mu^w, \tau_w^r, 1, R | e = e^H) = V^r(\mu^w, 0, 1, R | e = e^L). \quad (4)$$

**Claim 2:** The maximum constant tax rate that the rich are willing to accept in war times conditional on the poor putting a high effort in military service is given by

$$\tau_w^r = \min \left\{ \frac{(r+q)(1-\varepsilon)y^r}{(1+r)(1+r+q)(y^r - \bar{y})}, 1 \right\}. \quad (5)$$

**Proof:** see Appendix. ■

The maximum constant tax rate  $\tau_p^r$  that the rich are willing to accept *in peace times* (conditionally on retaining the political power) equates the Bellman value of being rich when income is permanently taxed and redistributed at rate  $\tau_p^r$  and the poor always put high effort in wars, to the corresponding Bellman value obtaining when no income is ever redistributed and the poor always choose to put a low level of effort in wars. Formally,  $\tau_p^r$  is defined by the following expression

$$V^r(\mu^p, \tau_p^r, 1, R | e = e^H) = V^r(\mu^p, 0, 1, R | e = e^L). \quad (6)$$

**Claim 3:** The maximum constant tax rate that the rich are willing to bear in war times to induce the poor to put a high war effort is

$$\tau_p^r = \min \left\{ \frac{q(1-\varepsilon)y^r}{(1+r)(1+r+q)(y^r - \bar{y})}, 1 \right\}. \quad (7)$$



**Proof:** see Appendix. ■

The relationship between the tax rates defined by (5) and (7) is straightforward.

**Remark 1:**  $\tau_p^r$  is always lower than  $\tau_w^r$ .

In other words, the rich are always willing to concede more redistribution to the poor in war than in peace time in order to elicit a high effort from them. This is very intuitive: in peace times war looks as a relatively less important threat because it will take place sometime in the future and future welfare is discounted at some strictly positive rate  $r$ .<sup>13</sup> Therefore, the rich are less willing to pay for the war effort of the poor when the country is not presently engaged in a war.

The schedules  $\tau_p^r(q)$  and  $\tau_w^r(q)$  are both increasing functions of  $q$ . The higher the probability of war and the higher the tax rate that the rich are willing accept in order (both in period of peace and of war) to induce the poor to put a high war effort so to avoid frequent income losses.

We now show that the existence of an equilibrium with redistribution (and no democracy) in trigger-strategies depends on the probability of war  $q$ . If war is relatively frequent, that is if  $q$  exceeds a threshold  $q^*$ , then the rich will grant a certain amount of income redistribution determined by the tax rate  $\bar{\tau}(q)$  forever. If  $q < q^*$ , then an equilibrium with redistribution without the transfer of political power to the masses is not sustainable in trigger strategies.

**Result 1:** If the equation  $\tau_p^r(q) = \bar{\tau}(q)$  has a solution  $q^* \in [0, 1]$ , then the elite-masses game has a trigger-strategies equilibrium whenever  $q \in [q^*, 1]$ . This equilibrium is such that:

- (i) the rich always retain the control of the political system;
- (ii) income is permanently redistributed at rate  $\tau_t = 0, \forall t < T$  and  $\tau_t = \bar{\tau}$  as defined by (3),  $\forall t \geq T$ , where  $T \equiv \inf \{t \in \mathbb{N}: \mu_t = \mu^w\}$ ;
- (iii) the masses always put high effort in war times.

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<sup>13</sup>Indeed, it is also immediate to verify that  $\lim_{r \rightarrow 0} \tau_w^r = \lim_{r \rightarrow 0} \tau_p^r$ . In other words, the maximum willingness to pay of the rich for the war effort of the poor is state-independent if future welfare is not discounted.

The following condition on the cost of high effort in war guarantees the existence of  $q^*$

$$C \leq (1 - \varepsilon) \frac{(\bar{y} - y^p) y^r + (1 + r)^2 (y^r - \bar{y}) y^p}{(1 + r)^3 (y^r - \bar{y})} \equiv C^* \quad (8)$$

and the value of such threshold is

$$q^* = \frac{r(1 + r)(y^r - \bar{y})[(1 + r)C - (1 - \varepsilon)y^p]}{(1 - \varepsilon)(\bar{y} - y^p)y^r - (1 + r)(y^r - \bar{y})[(1 + r)C - (1 - \varepsilon)y^p]}. \quad (9)$$

If (8) is not satisfied, i.e.  $C > C^*$ ,  $\bar{\tau}(q) > \tau_p^r(q)$  for all  $q \in [0, 1]$  and, therefore, there would not be an equilibrium with redistribution without transfer of political power.

**Proof:** Observe first that whenever  $\bar{\tau}(q) \leq \tau_p^r(q)$  the rich are available to accept a constant tax rate to redistribute income (so to induce the poor to put always a high effort in war) higher than the tax rate required by the poor. Given that  $\tau_p^r(q)$  is always lower than  $\tau_w^r(q)$ , the promise of the rich to tax income at  $\bar{\tau}(q)$  is credible independently on the state of the world (i.e. that we are currently in war or peace time). Assume now that  $\tau_p^r(q) < \bar{\tau}(q) \leq \tau_w^r(q)$ . In this case the rich would find convenient to promise to the poor to redistribute income at the tax rate  $\bar{\tau}(q)$  during war times in order to induce them to exert a high effort. However, as soon as peace times come (i.e.  $\mu$  switches from  $\mu^w$  to  $\mu^p$ ) the rich find optimal not to fulfil their promise to redistribute income at  $\bar{\tau}(q)$  and will set a zero tax rate. Given that this promise is not time-consistent, an equilibrium with redistribution is not sustainable in this case. Therefore, even during war periods the maximum tax rate at which the rich can credibly promise to redistribute income is given by the schedule  $\tau_p^r(q)$ . If (8) is satisfied, then there exists a unique value of  $q^* \in [0, 1]$  such that  $\tau_p^r(q^*) = \bar{\tau}(q^*)$  and this threshold is defined by (9). In this case,  $\tau_p^r(q) > \bar{\tau}(q)$  for all  $q \in (q^*, 1]$ , while  $\tau_p^r(q) < \bar{\tau}(q)$  when  $q \in [0, q^*)$ . Indeed, from (7) we know that  $\tau_p^r(q = 0) = 0$  and from (3) that  $\bar{\tau}(q = 0) > 0$ , which means that  $\tau_p^r(q) < \bar{\tau}(q)$  when  $q < q^*$ . If inequality (8) holds, then  $\tau_p^r(q = 1) \geq \bar{\tau}(q = 1)$  and this proves that  $q^*$  exists and is unique.<sup>14</sup> Finally, as the war effort of the poor is not needed before

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<sup>14</sup>Inequality (8) and Assumption 3 imply that the cost of high war effort  $C$  is bounded from above and from below,

period  $T$ , the rich do not need to promise them any redistribution before that time. Therefore, if  $q \in [q^*, 1]$ , the policy announcement of the rich  $S_t = R, \forall t, \tau_t = 0, \forall t < T$  and  $\tau_t = \bar{\tau}, \forall t \geq T$ , is credible and induces the poor to put high effort in every war period after time  $T$ . ■

Intuitively, when the threat of war is relatively infrequent ( $q < q^*$ ), the rich have no way to convince the poor to put high effort in war times since they are not able to promise them a credible incentive-compatible redistribution scheme, as long as they retain the control of the political system. Indeed, given that  $\tau_p^r(q) < \bar{\tau}(q)$  the rich are not going to stick to their promise to tax and redistribute income at rate  $\bar{\tau}(q)$  once  $\mu$  switches from  $\mu^w$  to  $\mu^p$ . Vice versa, the trigger-strategies equilibrium considered is sustainable when the war threat is relatively frequent, namely when  $q$  exceeds the threshold  $q^*$ . Acemoglu and Robinson (2000) derive a similar result, in the sense that in their model a promise of redistribution without democracy is credible and sets-off a revolutionary threat provided that the revolution constraint is binding sufficiently often.<sup>15</sup>

Moreover, notice that the existence of an equilibrium with redistribution, namely of a region where  $\tau_p^r(q) > \bar{\tau}(q)$ , requires that the cost of war effort is not too high ( $C \leq C^*$ ). The value of  $q^*$  is strictly increasing  $C$  because the higher the cost of war effort and the higher the minimum tax rate (i.e. redistribution) that the poor require to exert it.

The threshold  $q^*$  is also strictly increasing in  $\varepsilon$ , in  $r$ , in  $y^p$  and in  $y^r$ , but decreasing in  $\bar{y}$ . The first two results are quite intuitive: as the output loss caused by a military defeat falls (higher  $\varepsilon$ ), and it is constrained to belong to the interval  $(C_{\min}, C^*)$ . The following inequality guarantees that the interval  $(C_{\min}, C^*)$  is not empty:  $(1 - \varepsilon)y^r > (1 + r)^3(y^r - \bar{y})\tau_{\max}$ .

<sup>15</sup>The authors interpret in this light the ability of Bismarck, but not of other European governments such as those of France and England, of achieving the goal of domestic social stability by introducing the Welfare State only, and not democracy. In particular, in these authors's view, the existence of a high revolution probability in Germany depended on the remarkable strength of the German Social Democratic party, as opposed to the weakness of its counterparts in France and in England. In our model instead, it is one geopolitical characteristics of Prussia-Germany to have made credible the strategy of redistribution without democracy, namely the high exposure of that country to international wars, due to both its geographic position, situated at the core of Europe, and to its lack of natural territorial boundaries (see the Section on the historical evidence for a deeper discussion of this point).

the need of obtaining a high effort from the masses become less compelling and, similarly, it does so when future welfare is discounted at a higher rate.<sup>16</sup> As  $y^p$  increases, holding  $\bar{y}$  constant, the tax payments of each poor (for any given tax rate) increases while the lump-sum transfer remains unaffected. Hence, to meet the incentive-compatibility constraint of the masses, it is necessary to promise them a more generous redistribution plan, which is why  $q^*$  actually increases in the end.<sup>17</sup> Moreover, as  $y^r$  increases (maintaining constant  $\bar{y}$ ) the income taxed away from the rich for any given level of the tax rate also increases. This clearly increase the region where it is not convenient to provide the redistribution. Finally, as  $\bar{y}$  increases, fiscal transfers increase holding constant  $\tau$ , meaning that the tax rate itself can be reduced and the incentive-compatibility constraint of the poor can be still simultaneously be met. Therefore, in presence of a lower rate of income taxation, the threshold  $q^*$  will fall. In other words, in this model, development actually acts so to stabilize the autocratic rule rather than destabilizing it.

## Case 2. Democratization.

If  $q < q^*$ , the elite can not induce the poor to put high effort during war times by offering a time-consistent redistribution scheme. However, as we show next, the introduction of democracy may allow to solve this problem. We focus again on a *trigger-strategies equilibrium*, under the assumption that the rich revert to the expectation that the poor put low war effort forever if, and as soon as, they do so once. We remind that the rich have the option to reset the political system whenever a war is lost, namely when the poor do not put high effort in war times. Finally, it is clear that the fiscal policy decision of a democratic government reflects the preferences of the poor only, that is  $\tau_t = \tau_{\max}$ ,  $\forall t$  such that  $S_t = D$ .

Therefore, the no-deviation condition of the poor around the equilibrium with democracy reads

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<sup>16</sup>Recall that in our model a military defeat generates an output loss in the future.

<sup>17</sup>Higher  $y^p$  also means that the disruption of the income of the poor generated by a military defeat is higher and this should induce the poor to put a high level of effort. However, the first effect dominates.

$$V^p(\mu^w, \tau_{\max}, 1, D | e = e^H) \geq \tilde{y}^p(\tau_{\max}) + \frac{V^p(\mu^p, 0, \varepsilon, R | e = e^L)}{1+r} \quad (10)$$

which can be rewritten as<sup>18</sup>

$$V^p(\mu^w, \tau_{\max}, 1, D | e = e^H) \geq V^p(\mu^w, 0, 1, R | e = e^L) + \tau_{\max}(\bar{y} - y^p). \quad (11)$$

Given that  $V^p(\mu^w, \tau_{\max}, 1, D | e = e^H) = V^p(\mu^w, \tau_{\max}, 1, R | e = e^H)$ , it is immediate to verify that (11) is satisfied if and only if  $\bar{\tau}(q) \leq \tau_{\max}$ , which we assume to be the case for all  $q$ .<sup>19</sup>

We now determine the region where the rich find convenient to give democracy to the poor. This is the case if

$$V^r(\mu^w, \tau_{\max}, 1, D | e = e^H) \geq V^r(\mu^w, 0, 1, R | e = e^L) \quad (12)$$

namely when the Bellman value of being rich in war times given that the government is democratic and the poor always put high military effort does exceed the Bellman value of being rich in war times, when the government is not democratic, no redistribution is granted and the poor put low military effort.

**Result 2:** Let  $q^{**}$  be defined implicitly by the condition  $\tau_{\max} = \tau_w^r(q^{**})$  and therefore equal to

$$q^{**} = \max \left\{ \frac{(1+r)^2 (y^r - \bar{y}) \tau_{\max} - r(1-\varepsilon) y^r}{(1-\varepsilon) y^r - (1+r)(y^r - \bar{y}) \tau_{\max}}, 0 \right\}. \quad (13)$$

Assuming that redistribution through welfare is excluded, then whenever  $q \geq q^{**}$  the elite-masses game has a trigger-strategies equilibrium such that:

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<sup>18</sup>We are using the definition of  $\tilde{y}^p(\tau_{\max})$  and the fact that  $V^p(\mu^w, 0, 1, R | e = e^L) = y^p + \frac{V^p(\mu^p, 0, \varepsilon, R | e = e^L)}{1+r}$ .

<sup>19</sup>If there are values of  $q$  such that  $\bar{\tau}(q) > \tau_{\max}$ , then a transition to democracy is not an equilibrium because the poor will never exert high effort in war times.

- (i) the rich grant democracy at time  $T \equiv \inf \{t \in \mathbb{N}: \mu_t = \mu^w\}$ ;
- (ii) income is permanently redistributed at rate  $\tau_t = 0, \forall t < T$ , and  $\tau_t = \tau_{\max}, \forall t \geq T$ ;
- (iii) the masses always put high war effort.

**Proof:** We just need to show that (12) is satisfied for all  $q \geq q^{**}$ . Observe that

$$V^r(\mu^w, \tau_{\max}, 1, D | e = e^H) = V^r(\mu^w, \tau_w^r, 1, R | e = e^H) \Big|_{\tau_w^r = \tau_{\max}}$$

and that  $V^r(\mu^w, \cdot, 1, R | e = e^H)$  is a strictly decreasing function of  $\tau_w^r$  and depends on  $q$  only through  $\tau_w^r$ . At  $q = q^{**}$ ,  $\tau_{\max} = \tau_w^r(q)$ ; since  $\tau_w^r(q)$  is strictly increasing in  $q$ , it follows that  $V^r(\mu^w, \tau_{\max}, 1, D | e = e^H) > V^r(\mu^w, \tau_w^r, 1, R | e = e^H)$  when  $q > q^{**}$ . Given that from (4) we know that  $V^r(\mu^w, \tau_w^r, 1, R | e = e^H) = V^r(\mu^w, 0, 1, R | e = e^L)$ , then (12) holds for all  $q > q^{**}$ . That is, when  $q > q^{**}$ , the rich are willing to buy the high war effort of the poor by democratizing the political system. Moreover, since the country is never attacked before  $T$  by definition, the rich do not ever need the high effort of the poor before that time, and therefore do not need to democratize before as well. Finally, since the poor always put high war effort when needed, the rich never reset the political system. ■

Clearly, assuming that  $q^{**} < q^*$ , the decision of conceding democracy is convenient for the rich only for those values of  $q \in [q^{**}, q^*)$ , because for  $q \geq q^*$  the rich can induce the poor to put high effort by credibly promising an incentive-compatible redistribution scheme whose tax rate is always lower than the democratic one ( $\bar{\tau}(q) \leq \tau_{\max}$ ). The following Result clarifies the conditions under which this happens.

**Result 3:** If the following condition on the cost of war effort is satisfied

$$C > \frac{(1 - \varepsilon)(1 + r)^2 (y^r - \bar{y})(y^r - y^p) \bar{y} \tau_{\max} - r(1 - \varepsilon)^2 (y^r)^2 (\bar{y} - y^p)}{(1 + r)^3 (y^r - \bar{y})^2 \tau_{\max}} \equiv C^{**} \quad (14)$$

then  $q^{**} < q^*$ . This implies that the rich will provide a time-consistent redistribution plan to the masses for their high effort during war times when  $q \in [q^*, 1]$  and they will grant democracy if  $q \in [q^{**}, q^*)$ . If (14) is not satisfied, then  $q^{**}$  is higher than  $q^*$  and democracy is never conceded.

**Proof:** The condition in (14) is obtained by combining (13) and (9).<sup>20</sup> ■

If  $q^{**} > 0$ , then for all  $q \in [0, q^{**})$  the rich cannot commit to concede to the poor an incentive-compatible redistribution scheme and are also not willing to democratize the political system. Therefore, they accept to lose a war with probability one whenever the country is attacked<sup>21</sup> and the equilibrium of the game is such that  $\tau_t = 0$ ,  $S_t = R$ ,  $\forall t$ , and  $e_t = e^L$  for all  $t$  such that  $\mu_t = \mu^w$ .

Finally notice that there is a positive relationship between  $q^{**}$  and both  $\varepsilon$  and  $\tau_{\max}$ . A decrease in  $\varepsilon$ , namely a more disruptive war, lowers  $q^{**}$  and therefore it increases the probability that democracy or income redistribution are provided. This effect comes from the higher income loss of the rich generated by a military defeat. Similarly, a reduction in  $\tau_{\max}$  also lowers  $q^{**}$  because the income loss of the rich generated by the democratic taxation goes down.

We can at this point summarize all the results derived so far on the characterization of the equilibrium of the elite-masses game, which is done in the Proposition 1. Let  $\sigma_t^r$  indicates the strategy of the rich and  $\sigma_t^p$  the strategy of the poor at time  $t$ .

**Proposition 1:** Suppose that  $S_0 = R$ . Assuming that  $0 < q^{**} < q^* < 1$ , the trigger-strategies equilibrium of the elite-masses game is the following:

(i) if  $q \in [q^*, 1]$ , then

$$\{\sigma_t^r = (S_t = R, \tau_t = 0)\}_{t=0}^{T-1},$$

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<sup>20</sup>By combining (8) and (14) we get the condition  $(1 - \varepsilon)y^r > (2 + r)(y^r - \bar{y})\tau_{\max}$  which guarantees that  $C^{**} < C^*$ . Therefore,  $0 \leq q^{**} < q^* < 1$  if  $C \in (C^{**}, C^*)$ .

<sup>21</sup>It is clear that the normalization to zero of the low level of the war effort of the poor, together with the corresponding war victory probability, does not involve any substantial loss of generality. The equilibrium would have the same structure even if  $P(e^L) > 0$ .

$$\{\sigma_t^r = (S_t = R, \tau_t = \bar{\tau}); \sigma_t^p = (e_t = e^H), \text{ if } \mu_t = \mu^w \}_{t=T}^\infty.$$

(ii) If  $q \in [q^{**}, q^*)$ , then equilibrium is

$$\{\sigma_t^r = (S_t = R, \tau_t = 0)\}_{t=0}^{T-1}, \{\sigma_T^r = (S_T = D)\}, \{\sigma_T^p = (e_T = e^H)\}$$

$$\left\{ \begin{array}{l} \sigma_t^p = (e_t = e^H, \tau_t = \tau_{\max}), \text{ if } \mu_t = \mu^w; \\ \sigma_t^p = (e_t = e^H, \tau_t = \tau_{\max}), \text{ if } \mu_t = \mu^p \end{array} \right\}_{t=T}^\infty.$$

(iii) If  $q \in [0, q^{**}]$ , we have that

$$\{\sigma_t^r = (S_t = R, \tau_t = 0)\}_{t=0}^\infty, \{\sigma_t^p = (e_t = e^L), \text{ if } \mu_t = \mu^w\}_{t=0}^\infty.$$

### 3 Inequality, Redistribution and Regime Transitions

According to a variety of positive theories of taxation and redistribution (see for example Meltzer and Richard, 1981), income inequality is a critical determinant of fiscal policy outcomes in democratic regimes. Hence, it is natural to ask the question of how the equilibrium of our model is affected by variations of some statistics of income inequality, holding constant the aggregate and mean income.

To incorporate conveniently an explicit measure of income inequality in our framework, we follow Acemoglu and Robinson (2003) and reparametrize the model in the following way. Let  $y^p = \frac{\theta \bar{y}}{1-\rho}$  and  $y^r = \frac{(1-\theta)\bar{y}}{\rho}$ , where  $\theta \in (0, 1 - \rho)$  is an inverse index of income inequality. A decrease of  $\theta$  corresponds to an increase in the income of the rich and to a fall in the income of the poor with a constant average income, and therefore to an increase in the inequality of the income distribution.

We can now ask how a variation in  $\theta$  affects the threshold probabilities  $q^*$  and  $q^{**}$  so to understand how an increase in the inequality changes the probability of transition toward democracy.



The minimum constant tax rate required by the poor to put high war effort becomes

$$\bar{\tau} = \frac{(r + q) \left[ (1 + r) C - (1 - \varepsilon) \frac{\theta \bar{y}}{1 - \rho} \right]}{(1 + r + q) \left( \bar{y} - \frac{\theta \bar{y}}{1 - \rho} \right)}$$

which is increasing in  $\theta$  if  $C > \frac{(1 - \varepsilon) \bar{y}}{(1 + r)}$ , and vice versa. The intuition is clear: as  $\theta$  increases, society is more equal and the income of the poor higher. This leads to two effects. First, for any given tax rate the poor receive a lower net income transfer and, therefore, for any given level of effort  $C$  and probability of war  $q$  they require a higher tax rate. Second, given that their income is higher they lose more from a military defeat. Hence, they need to be compensated with a lower tax rate to put a high level of effort. The result is that the first effect more than compensates the second one whenever the cost of effort is high enough and vice versa.

The maximum tax rate that the rich are willing to accept in peace times in exchange of high war effort of the masses is now equal to

$$\tau_p^r = \frac{q(1 - \varepsilon)(1 - \theta)}{(1 + r)(1 + r + q)(1 - \theta - \rho)}$$

and it is clear that this schedule is increasing in  $\theta$ . As  $\theta$  goes down, inequality increases, the rich become richer and, for any given  $q$ , the tax rate they are willing to accept goes down. Then, an increase in  $\theta$  has in principle an ambiguous effect on  $q^*$  given that this threshold is implicitly defined by the condition  $\tau_p^r(q^*) = \bar{\tau}(q^*)$ . However, we now have that

$$q^* = \frac{r(1 + r) \left[ (1 + r) C - \frac{(1 - \varepsilon) \theta \bar{y}}{(1 - \rho)} \right]}{\frac{(1 - \varepsilon)(1 - \theta) \bar{y}}{(1 - \rho)} - (1 + r) \left[ (1 + r) C - \frac{(1 - \varepsilon) \theta \bar{y}}{(1 - \rho)} \right]}$$

and it is immediate to verify that it is always negatively related to  $\theta$ . This means that an increase in income inequality (lower  $\theta$ ) leads to a higher  $q^*$ , so reducing the region where an equilibrium with redistribution of income is sustainable.

The maximum constant tax rate that the rich are willing to accept in war times if the poor exert high effort in military service can be rewritten as

$$\tau_w^r = \frac{(r+q)(1-\varepsilon)(1-\theta)}{(1+r)(1+r+q)(1-\theta-\rho)}.$$

Taking the derivative of  $\tau_w^r$  with respect to  $\theta$ , it turns out that it is positive. Given that  $q^{**}$  is implicitly defined by the condition  $\tau_{\max} = \tau_w^r(q^{**})$ , it is clear that an increase in inequality (lower  $\theta$ ) increases  $q^{**}$ . These findings are summarized in the following Result.

**Result 4:** An increase in the degree of income inequality (i.e. a lower level of  $\theta$ ) increases both  $q^*$  and  $q^{**}$ . Therefore, higher inequality reduces the overall region where democracy or redistribution are granted to the masses. The region where the welfare state is provided  $q \in [q^*, 1]$  is unambiguously smaller (and the level of redistribution as measured by  $\bar{\tau}$  is also lower if the cost of war effort is sufficiently high) while the one where democracy is granted  $q \in [q^{**}, q^*)$  may well increase or decrease.

In sum, according to the picture that this Section has sketched, more equality tends to increase redistribution in this model in two separate ways. It does so directly, by increasing the rate at which an oligarchic government must tax and redistribute income (at least when the war effort cost is sufficiently high).<sup>22</sup> And it does so also indirectly, by making redistribution and/or transition to a democratic political regime more likely to happen.<sup>23</sup>

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<sup>22</sup>The tax rate in a democratic regime is not affected by income inequality given that in our framework the poor set it at the maximum possible level.

<sup>23</sup>This is equivalent to say that the “inaction range”, i.e. the region where democracy or income redistribution are not granted, is always smaller in a more equal society, but the range where democracy is established may increase or decrease as  $\theta$  increases.

## 4 Historical Evidence

Our model explains the process of democratization of Europe as the result of the interaction of two factors: the military competition between nations within a fragmented states system *and* the diffusion of the model of the mass-army formed by conscripts. We emphasize that an external conflict can create the need for a reallocation of political power among social classes with different interests, to the extent that this enables the country to deal with an outside threat better than it would have otherwise had. In particular, an external conflict can induce the ruling elite to empower the masses, by democratizing the political system of the country, or at least to adopt redistributive policies beneficial to them, in order to increase the masses' patriotism, effort in war, and thus the overall chances of victory. By preventing a military defeat through social or political concessions to the masses, the elite actually protects primarily itself against the event of a more severe income loss.

The importance of interplay between warfare and the political development of Europe since the Early Modern Era has been repeatedly stressed by scholars of historical sociology and comparative history. For example, Tilly (1975, 1990 and 1993) argues that the development of the state in Europe has been greatly affected by warfare. According to Tilly, constant external threats have induced governments to expand the state's powers and bureaucracy in order to maximize the extraction of fiscal revenues, so as to increase the chances of military success. Downing (1992) claims that the development of parliamentary institutions in Europe since the end of the Medieval and the beginning of the Early Modern Age has been significantly affected by transformations in military technology, in the direction of the creation of large permanent armies, that took place steadily over the period 1500-1700. During these two centuries, weapons based on gunpower technology became dominant and, on top of that, infantry became more important than chivalry. The number of men employed in armed forces during peacetime increased dramatically from a few tens of thousands in 1500 to several hundred of thousands in 1700. According to Downing, the fiscal burden imposed by infantry armies and the constantly binding threat of war, forced sovereigns to accept the development of

parliamentary institutions, which were responsible to raise taxes, and the related spread of political power and consolidation of political rights. With the very same purpose of increasing the extraction of fiscal revenues, sovereigns granted royal charters to cities, which granted economic and political rights to the citizens, and permitted the access of the urban elites to the parliaments. Skocpol (1979, ch. 1, p. 21) in her classic work on social revolutions writes that “Recurrent warfare within the system of states prompted European monarchs and statesmen to centralize, regiment, and technologically upgrade armies and fiscal administrations. And, from the French Revolution on, such conflicts caused them to mobilize citizen masses with patriotic appeals.”

With the French Revolution, the secular process of popular integration and identification with the state induced by war reached a fundamental turning point. In the August of 1793, the Committee of Public Safety proclaimed the *levée en masse* in attempt to take care of the precarious military situation of the Republic. As Giddens (1987, ch. 9, p. 233) writes, “In France, the *levée en masse* was specifically established in such a way as to associate citizenship with active participation in matters urgently affecting the state and as a means of fostering feelings of national loyalty.” Indeed, the *levée en masse* meant the constitution of a mass-army recruited with conscription, which eventually evolved in the Napoleonic *Grand Armée* that, in 1813, was able to call up as many as 1,300,000 men.<sup>24</sup> One other notable innovation introduced with the 1789 Revolution, reinforcing

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<sup>24</sup>The France *levée en masse* is not at all the first example of conscription observed: indeed, important examples of non-professional armies, as well as of association between military service and political (or economic) rights are present since Antiquity. Two remarkable examples of democratic conscription in ancient history are those of Athens and of the early Roman Republic. “The Athenian hoplites and sailors of Marathon and Salamis were true citizen levies of a democratic people. They received no pay, furnished their own arms and equipment... Delbrück states that in the Periclean Age more than eighty per cent of Athens’ male citizens were enrolled in the citizen-militia.” (Beukema, 1941, p. 22). In the Roman Republic, soldiers were drawn from the whole body of free-born Roman citizens capable of bearing arms, in the age from seventeen to sixty. “This requirement (of military service) automatically placed the wealthy in the cavalry, the less well-to-do in various categories of heavy and light infantry, and left the *proletarii*, a numerous class, at home as “getters of children”. Men of no property, they were deemed devoid of patriotism.” (Beukema, 1941, p. 22). Few instances of conscription were observed in the Middle Age. One remarkable, albeit short-lived, example of conscription is to be found in the North Italian communes of the thirteenth century, which

the relation between citizenship rights and nationalism, was the abolition of the aristocratic dominance of the officer corps. The successes of Napoleon and of the new warfare model introduced by France generated a major effort for social and military reforms across Europe, but in no other country as much as in Prussia, after the French army defeated it in the battles of Jena and of Auerstadt (1806).

#### 4.1 The Case of Prussia

The age of the reform started in Prussia in 1806, after and in consequence of the military defeat inflicted by Napoleon to the Prussian army in that year, which was instrumental in creating both the awareness of the need and a wide political support for a substantial transformation of the *status quo*. Eventually, Prussia (and later Germany) took the lead of the process of military and social reforms implemented across Europe in the XIX century. A major reason for the eagerness of the Prussian government to undertake many radical reforms (and for the relative lack of opposition to them by the Junkers) was the exceptional external military challenge that Prussia (and later Germany) constantly faced due to the geographic position (located at the center of Europe and between the East and the West) and configuration (shaped by the lack of natural boundaries protecting the national territory from invasion by foreign armies). As Huntington (1957, ch. 2, p. 33) writes “Lacking natural boundaries, and with her territories scattered all over Germany, Prussia was uniquely dependent upon strong military force to maintain her independence and integrity. The rulers of Prussia had been aware of this since the middle of the seventeenth century and had poured tremendous resources and manpower into the maintenance of an efficient standing army throughout the eighteenth century.”

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approached democracy in their social and political organization. In the Modern Age, important progresses toward the creation of a mass army were first made in Sweden. A system of nationwide conscription created during the reign of Gustavus Vasa (1523-60) enabled Sweden to field the first truly national army. Almost a century later, during the reign of Gustavus Adolfus (1611-32), Sweden fielded the first mass army in Europe, counting as many as 180,000 soldiers. Whereas 82% of these were mercenaries, the remaining 32,000 were conscripted, representing 3% of the country's population of 1.12 inhabitants in 1830, an extraordinary figure for any era.

The reforms promoted by Gneisenau and Scharnhorst radically transformed the Prussian army into a military organization based on conscription similar to the *Grand Armée*. The law of September 3, 1814, required all Prussians subjects to serve five years in the standing army (three on active service and two in the reserve) and fourteen years in the militia, or *Landwehr*. Interestingly, the Prussian military reformers expressed a positive judgment on the French Revolution, which was based on the power that the political innovations introduced by it had of improving the military might of the country by sustaining the creation of a motivated and disciplined mass-army. Gneisenau in particular recognized the existence of a solid relation between the external freedom of the state, as guaranteed by a powerful army, and the popular support of the government (Rusconi, 1999, ch. 1, p. 74). Indeed, the civil and economic reforms implemented were essentially instrumental to the goal of creating an efficient mass-army, which, as the reformers recognized, required a substantial socio-political modernization of Prussia.

More or less in parallel to the military reforms, the Prussian government implemented a number of important social and civil reforms as well, under the leadership of von Stein and Hardenberg. One major socio-economic reform undertaken was the abolition of serfdom (1807), aimed at the creation of a class of small land owners. Skocpol (1979, ch. 2, p. 108) writes that: “Serfs were given their personal freedom. And universal military conscription was begun, a measure that allowed the Prussian armies to expand suddenly and to benefit from the increased enthusiasm of citizens newly benefited by the reforms or aroused to hostility by several years of French intervention and financial exactions.” One other important administrative reform involved the creation of a representative organ at the municipal level, based on a relatively large suffrage.

Social reforms continued later in the century under the leadership of Bismarck. Compulsory sickness insurance was introduced in 1883, an accident insurance in 1884 and 1885 and a pension system providing assistance to the aged and to the disabled in 1889. As a result, by the end of the XIX Germany had established the most comprehensive system of social insurance and of work protection in the world. Interestingly, Bismarck himself regarded the integration of the masses and the achievement of domestic accord as instrumental to a successful external expansion.

## 4.2 France, Britain and the U.S.

The success of the Prussian social and military model, apparent with the victory reported by this country over France in the war of 1870, induced several other European nations, including France itself and Britain, to adopt similar institutional reforms in the period between the end of XIX and the beginning of the XX century

France indeed pioneered at the end of the XVIII century the type of civil and military reforms that transformed Prussia, and Germany into the first modern states during the following century. The *levée en masse*, first ordered in 1793 by the Revolutionary government, together with the high standard of professionalism and competence of the officer corps, were the key of the success of the Napoleonic campaigns. However, the French reforms were short-lived. France did not return to universal conscription and to a mass army until 1875, essentially in consequence of the defeat suffered during the Franco-Prussian War, which rendered clear to all the superiority of the Prussian social and military model. Also, between the last decade of the XIX and the beginning of the XX century, the French government introduced a sequence of reforms inspired to the Prussian social legislation, including the provision of health care assistance (1893), miners' pensions (1894), assistance for the aged and disabled (1905) and old age pensions (1910).

In Britain, warfare provided also a major stimulus to political and social reforms in the XIX century, since the end of the Napoleonic Wars. Demands for parliamentary and suffrage reforms mounted after the victory over Napoleon at the battle of Waterloo in 1815, and culminated eventually in the Reform Act of 1832. As Porter (1994, ch. 4, p. 137) writes: "Though many factors contributed to its passage, the Act is another example of mass military service generates democratizing pressures; as many as one in six adult males had served in the army or navy at the peak periods of the war with France, and their service was evoked in the parliamentary debate over the Act." It is interesting to observe at this point that this episode shows that war can be a major cause of political change even in victor countries, and not necessarily only in defeated ones, for instance by facilitating the outbreak of a social revolution, as more frequently argued. Indeed, this

fact is consistent with the basic proposition of our theory, since the extension of franchise after a military victory can be interpreted as the fulfillment of the promise made by the elite to the masses in war times of more political power in exchange of hard fighting.

The social reforms implemented at the beginning of the XX century were also inspired by the success of the Prussian-German model and by the desire to imitate it. Lloyd George and Winston Churchill were among the most outspoken proponent of the imitation of the Bismarckian model of social legislation, which the Asquith government eventually did at the beginning of the XX century with the introduction of a system of pensions for the elderly (1908), and of the National Insurance Bill (1911).

The birth and development of the Welfare State in the U.S. represents an other very important historical example of the effects of mass conflicts on income redistribution, as clarified by Skocpol (1992 and 1995), in a number of studies dedicated to the history of social policy in that country. Whereas the United States were a full democracy (for white males) at the time of the Civil War, "...the first widespread program of honorable public social provision to develop in U.S. democracy was *not* workingmen's insurance or pensions for the poor alone, as in the fledgling foreign welfare states of the day. Rather, America's first national system of public social provision benefited a socioeconomically, ethnically, and, even racially diverse category of Union veterans and their dependents" (Skocpol, 1995, ch. 2, p. 40). The American Civil War was an early "democratic" war as the entire male adult citizenry was subject to call to military service. Indeed, the Civil War was "by far the most devastating war the United States has ever experienced" (Skocpol, 1995, ch. 2, p. 43), with 2,213,000 soldiers, representing 37% of the northern men between the ages of 15 and 44 in 1860, serving in the Union army and navy, and a total of as many as 264,511 mortal casualties.

Also, in his extremely well documented account of the history of franchise in the U.S., Keyssar (2000) argues that the process of expansion and retrenchment of the right to vote in that country reflects the dynamic conflict between class tensions, pushing to its restriction, and the exigencies of war, fostering its diffusion. Keyssar (2000, p. xxi) writes that: "...Yet alongside these factors



was another, less celebrated force: war. Nearly all of the major expansions of the franchise that have occurred in American history took place either during or in the wake of wars. The historical record indicates that this was not a coincidence: the demand of both war itself and preparedness for war created powerful pressures to enlarge the right to vote. Armies had to be recruited, often from so-called lower orders of society, and it was rhetorically as well as practically difficult to compel men to bear arms while denying them the franchise..." The same author identifies later in his work even more precisely the reason behind the willingness of the middle-upper classes to extend franchise, as he writes (ch. 2, p. 36), "Why did voting members of the community sometimes elect to share their political power with others? In numerous cases, it was because they saw themselves as having a direct interest in enlarging the electorate. One such interest was military preparedness and the defense of the republic. In the wake of the Revolutionary War and again after the War of 1812, many middle-class citizens concluded that extending the franchise to the "lower orders" would enhance their own security and help to preserve their way of life, by assuring that such men would continue to serve in the army and the militia." Indeed, the need of providing sound economic and legal incentives to the poor in order to raise a revolutionary army was well understood by the most radical leaders of the American revolution including Franklin, who voiced his view at the constitutional convention in opposition to a call for a national freehold qualification, arguing that it was in the national interest to enfranchise everyone who might be called to serve in case of need (Keyssar, 2000, ch. 1, p. 15).

### **4.3 Total Wars and Democratization in the XX Century**

The waging of a total war of the type of the two world conflicts of the XX century requires the mobilization of both soldiers and civilians and the consent and active participation of the masses, to an extent hardly ever observed before in the course of history. For instance, between 1914 and 1918 the United Kingdom mobilized as many as 6.2 million men, corresponding to 13% of its total population, while Germany and France drafted roughly 20% of their population, namely 13.25 and 8.2 million men respectively. The corresponding figures relative to World War Two are even more

impressive. Indeed, the degree of militarization of social life reached in the XX century has no counterpart in the entire European history, with the only exception the period of ancient history going from the rise of the Greek city-states, in particular Sparta and Athens, to that of the Roman Republic and Empire.

The regulation and institutionalization of the class struggle became thus an imperative in times of total warfare. During the first half of the twentieth century, the middle and the working classes were progressively integrated in the politics of their national state and became as a result increasingly eager to fight for the national cause. This process, which had indeed already started in the North during the American Civil War, was to continue in Europe during the two World Wars. The First, and then the Second World War accelerated sharply tendency to increase the political voice of the masses and of social reforms. Michael Mann (1988, ch. 5, p. 158) writes that: "... But also, the experience of the middle class before the war - progress through the nation - now became more generalized to the people as a whole. The people sacrificed but not for nothing. A bargain was struck, fairly explicitly, at the end of the war there would be extension of the franchise (probably including women) and welfare reforms." Porter (1994, ch. 5, p. 150) writes that: "As the only full-scale wars ever fought among industrialized powers, the First and Second World Wars produced permanent changes in the internal organization and structure of virtually all European states." The form of the modern state born from the two World Wars was articulated in a *mass state*, in which political participation and privilege are divorced from class or economic status as well as a *welfare state*, which takes care of the well-being of its citizens. And everywhere in Europe the working class movement requested political participation in exchange of war participation. Porter (1994, ch. 1, p. 19) writes that: "Only the promise of a better world can give meaning to a terrible conflict. Since, in the age of mass armies, the lower economic strata usually contribute more of their blood in battle than the wealthier classes, war often gives impetus to social welfare reforms."

Marwick (1974) and Andreski (1967) also discuss extensively the political and economic gains generated by the waging of total wars, fought with conscripted soldiers, for the working class and for women. Indeed, the process of democratization of Europe, while far from being completed at

the end of the XIX century, accelerated during the First World War. Near the end of the war, the British Parliament passed the Representation of the People Act, extending franchise to all adult males and many females. The number of qualified voters raised from 8 to 21 million, corresponding to three quarters of the adult population: for the first time in history the House of Commons would be elected by a majority of British citizens. In Germany, universal suffrage had been formally introduced as early as in 1871, however the real political power belonged to the Bundesrat, which was controlled by Prussia. In turn, Prussia was ruled, through a three-tiered voting system, by its economic elite which included both industrialists and the Junkers. A major impulse toward an electoral reform of the system in the direction of the creation of an effective democracy came by the endurance of World War I. Chancellor von Bethman-Hollweg warned at some point the Prussian war cabinet that the continuation of war required an electoral reform. The Kaiser eventually promised the abolition of the three-tiered electoral system at the end of the war in the January of 1916 and in his Easter Degree of 1917 (Porter, 1994, ch. 5, p. 173). France and Italy had already established universal male suffrage before World War One, and the war reinforced the popular willingness to extend franchise to women as well. However, this was not to be the case in both countries until 1944 and 1945 respectively. The many explanation of this delay, particularly as far as France is concerned, include the resistance of many Catholics, the prominence of the preoccupation with the reconstruction, and the fact that the war registered only a small percentage increase in female employment. Albeit with delay, women also were eventually rewarded for their effort in running the war economy, just as men for their effort at the front.

Along with the extension of voting rights, total wars also stimulated a boom in welfare expenditures in each belligerent nation, which were not to revert to the previous level at the end of the hostilities. In 1915, Lloyd George created a Welfare and Health Section within the Munitions Ministry uncharged of taking care of the well-being of its employed; this act helped establishing the principle of state's responsibility for the workers's welfare. In 1919, a Ministry of Health, conceived during the war period, was eventually created; in the same year a major public housing program was passed and so was, one year later, general unemployment insurance. In June 1941,

the British government appointed an Interdepartmental Committee chaired by Sir Beveridge, to make recommendations on post-war reforms of social insurance and workers' compensation. Interestingly, Beveridge himself was well aware of the importance of social reforms for motivating the war effort of the members of the lower classes. The reports of the Beveridge Committee created widespread expectations of extensive welfare reforms in the post-war period, which were eventually implemented by the Labor government elected after the end of the hostilities. Between 1945 and 1948 as much as 20% of the nation's industry was nationalized, the National Health Service was created together with a comprehensive social insurance program. Overall, welfare expenditures as a share of GNP grew in Britain from 4% of the period prior to 1914 to 8% in the 1920's and eventually rose to 18% by 1950. Similar developments were observed elsewhere in Europe. For instance, during World War One, the French government established a *Fond du Chomage* of 20 million francs for dislocated workers and military dependents, mandated a minimum wage in some regions and intervened in labor disputes. In the years after World War Two, the development of the French Welfare State restarted after a relative stagnation during the inter-wars years. For instance, in the October of 1945, a national system of comprehensive social security protection including unemployment compensation, sickness benefits came into effect.

Finally, it is noteworthy that the world wars, and particularly the Second one, have had a profound impact on the development of the welfare state even in such neutral countries as Sweden and Switzerland. Indeed, despite their neutrality, both of these countries were threatened by Germany, so the Second World War impelled a high degree of social mobilization and cooperation. At the end of the conflict, the Swedish government lead by the Social Democratic party introduced a number of new welfare programs, including a universal (as opposed to means-tested) pension system, sick pay and child allowances. Also, a constitutional amendment was introduced in Switzerland to increase the role of the government into economic affairs, together with an income-compensation plan for all men liable for military service.

#### 4.4 Africa and Latin America

It has been widely argued that the process of political development of African and Latin American countries has followed a very different path from the one typical of European countries. For instance, Herbst (2000) and Centeno (2002) argue respectively that the low exposure to international military conflicts, due to geographic as well as social and economic factors, was a crucial determinant of the pattern of political and institutional change distinguishing African and Latin American countries, and resulting in both a relative weakness of the state as well in a relative absence of democracy.<sup>25</sup> In particular, Herbst (2000) explains the remarkable stability of the African state system by arguing that the physical geography of Africa imposes exceedingly high costs of projecting authority beyond the political core. Hence, African states, to the contrary of the European ones, have historically had little incentives to enlarge their territory. This is also reflected by the fact that African states' borders, set somewhat artificially by the Europeans at the Berlin Conference of 1885, have changed very little after Decolonization.<sup>26</sup> Centeno (2002) argues that the Latin American state system has always been remarkably peaceful due to the lack of incentives for nations to wage (total) wars against each other. The extreme rarity of major international conflicts has in turn been responsible for the historical weakness of Latin American states and, on top of that, for their slow transition to democracy, not compelled by the need of the mobilization of the masses for sustaining the war effort.<sup>27</sup> Indeed, similarly to the case of Africa, the contemporary Latin American states' borders correspond quite closely to those set by the European colonizers in the eighteenth century, again reflecting the almost total absence of international conflicts in this continent.

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<sup>25</sup>We thank James Robinson for bringing these books to our attention.

<sup>26</sup>As Herbst (2000, ch. 4, p. 106) writes: "While there are many reasons for the relative lack of international war, the fact that territorial competition was not a significant motivation for either the colonialists or the rulers of independent Africa undoubtedly has been a significant factor."

<sup>27</sup>Centeno (2002, ch. 4, p. 30-31) claims that: "The Latin American states were never strong enough to demand full conscription. Perhaps more important, there was never a perceived need for the kind of social upheaval implied by mass armies. The state did not need the population, as soldiers or even as future workers, and thus could afford to exclude it."

In sum, we can think to Africa and Latin America as states system characterized by a frequency of international conflicts low enough to fall in what, in our model, is the institutional “inaction range”, namely the parametric region of  $q$  where the elite prefers to bear the consequences of a military defeat rather than paying the price of mobilizing the masses for war through the concession of welfare or democracy.

There is also a distinction between the nature of European wars and the African and Latin American ones. The former were *total wars* and second *limited conflicts* with a substantially lower income/wealth disruption (Centeno, 2002). The wars fought in Europe since the French Revolutions and the Napoleonic campaigns have been characterized by a unique level of disruption, never to be observed elsewhere. In our model, the degree of disruptiveness of war is expressed by the parameter  $\varepsilon$ : a total war can be associated with a low value of  $\varepsilon$  and a limited war with a high one. Indeed, we know that the upper bound of the inaction range,  $q^{**}$ , is strictly increasing in  $\varepsilon$ . Hence, the inaction range is also to be expected to be larger in Latin America and Africa according to our theory, due to very nature of warfare in these continents.

#### **4.5 Some Evidence on the Martial Effectiveness of Democracies**

We have argued that a prominent reason why the elites may want to concede democracy to the masses is to increase the military effectiveness of the army. More precisely, according to our theory, democratic armies should be more effective in wars than non democratic ones as the soldiers of the former are more motivated to fight since wars put at greater stakes their interests.

The argument of the military superiority of democracies is not an incontrovertible one. A tradition of thought, which includes the classic contribution of Alexis de Toqueville (1969) on *Democracy in America*, has argued that democracies would be inferior to autocracies in the of crafting of foreign policies and in the making of war. Indeed, despite the concerns of Toqueville and of others, democracies do win wars. According to a recent study of Reiter and Stam (2002) based on a large body of empirical evidence relative to 572 battles fought between 1815 and 1992, democracies clearly display greater martial virtues than non-democracies. For instance, since 1815

democracies have won over three quarters of the conflicts in which they have been engaged, and 76% of the single battles fought. These facts raise of course of question of which particular features of democratic states are responsible of their remarkable military performance. Reiter and Stam find that democratic armies are more effective than autocratic ones, even after controlling for such factors as the greater level of economic development that typically characterizes democratic states, and which affects in an obvious way the ability of waging a war of a country. In particular, Reiter and Stam find that democratic soldiers are significantly superior in military effectiveness, as represented by leadership and initiative on the battlefield (ch. 3, pp. 78-83). The authors interpret these empirical findings in a way that are consistent with our basic proposition that democratic soldiers are more motivated to fight and do so better. For instance, Reiter and Stam (ch. 3, p. 61) write that: “States must ask citizens to make individual sacrifices, whether to pay taxes, to sacrifice their liberty by serving in the military, or to risk their lives on the battlefield. Soldiers are more likely to accept the dangers of the battlefield and place their lives at risk if they are serving in a military overseen by a government grounded in democratic political institutions. They are more likely to perceive the war effort and the leadership itself as reflecting their own interests if the need for popular consent constraints the government and can and can be removed from office if it fails to hold up its end of the social contract.”

#### **4.6 Wars, Revolutions and Democracy**

While focusing on international conflicts as driving force of social and political reforms at the national level, we do not deny the importance of the extreme consequences, including the explosion of social revolutions, of domestic inter-class rivalry, recently emphasized by other authors (e.g. Acemoglu and Robinson, 2000). Our basic argument is to be properly interpreted as a complementary story to a revolutions-driven theory of political change. The factors stressed by the two theories are in fact likely to interact closely in the explanation of salient episodes of political change. Quite often, revolutionary outbreaks have appeared to be closely related to a nation’s involvement in some international war. A most notable example of the interplay between domestic and interna-

tional conflicts in inducing non-smooth political transformations in the XX century history is the one of the fall of the Tzarist regime and of the October Revolution in Russia during the World War One (e.g. Pipes, 1994). Many other salient cases can also be mentioned, including French involvement in the American War of Independence, which helped prepare the ground for the French Revolution, the wave of insurrections across Europe fueled by the Napoleonic Wars, and the French debacle in the Franco-Prussian War of 1870, which gave rise to the Commune of Paris. Presumably, the immediate aftermath of an international war is a period in which the incumbent government representing the *status quo* social order, and its repressive apparatus, is relatively weak, particularly in the case of a defeat. During this period, therefore, a social revolution has more chances of success and is more likely to take place. We wish to emphasize, however, that at some level our argument is independent from the revolution-threat theory. That is, the war effort incentive-compatibility constraint of the masses can well be binding, while the revolution-constraint needs not to be simultaneously so, and vice versa.

## 5 Conclusions

This paper has attempted to shed some new light on two major and related facts of the politico-economic development of the West in the last two centuries: the progressive diffusion of democracy and extension of the Welfare State. Our theory focuses on the interaction between international conflicts among nations and the domestic “class struggle” between rich and poor. We have argued that democracy and fiscal redistribution of income, are concessions that the national elites may be forced to do to the masses in order to increase their nationalism, and war effort, when two basic conditions are met. The first one is the presence of a significant outside threat, as represented by the possible military conflict, and implied risks, with some foreign enemy power. The second one is a particular state of the art of the military technology, based on the deployment of mass-armies recruited on the base of universal mandatory conscription, rather than on mercenary troops, or small scale professional armies. In other words, our model stipulates the existence, under some



specific conditions, warfare “causes” democracy. This relation arises if some geopolitical (sufficient international fragmentation and military rivalry) as well as technological (the adoption of the model of the mass-army and mandatory conscription) preconditions hold.<sup>28</sup> At the eve of the Contemporary Age, Europe constituted indeed a system of rival national states, and the model of the mass-army was imposing itself, at least since the French *levée en masse* of 1793, and the stunning success of the Napoleonic campaigns, as the most efficient form of military organization, soon to be adopted by most European states.

## 6 Appendix

### 6.1 Proof of Claim 1

The value functions of the poor in war and in peace times when they put high effort and the rich retain the control of the political power satisfy the following system of two equations

$$V^p(\mu^p, \tau, 1, R | e = e^H) = \tilde{y}^p(\tau) + \frac{qV^p(\mu^w, \tau, 1, R | e = e^H) + (1 - q)V^p(\mu^p, \tau, 1, R | e = e^H)}{1 + r}$$

$$V^p(\mu^w, \tau, 1, R | e = e^H) = \tilde{y}^p(\tau) - C + \frac{V^p(\mu^p, \tau, 1, R | e = e^H)}{1 + r}$$

since we have assumed that the war is won with certainty when the poor put high effort (i.e.  $P = 1$ ).

This system of functional equations has the following solution<sup>29</sup>

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<sup>28</sup>Thus, in particular, a technological shock leading to the replacement of either type of army with the other one should have, according to our theory, important socio-political consequences. This result is in agreement with the famous argument of Lynn White Jr. (1962), according to which the origin of the feudal society lays in the introduction in Europe of the stirrup, and in the consequent military revolution leading to the supremacy of chivalry. Andreski (1967) discusses many other instances of social and political transformations triggered by shocks to the military technology.

<sup>29</sup>In this case as well as in the next ones, we omit the solution of the value functions, like  $V^p(\mu^p, \tau, 1, R | e = e^H)$ , that we do not use in the following steps. However, these expressions are straightforward to derive and can be

$$V^p(\mu^w, \tau, 1, R | e = e^H) = (1+r) \frac{(1+r+q)\tilde{y}^p(\tau) - (r+q)C}{r(1+q+r)}. \quad (15)$$

Moreover, the Bellman value of being poor when the rich control the political system, no redistribution is ever granted and they put a low level of effort is in war times, satisfies the following system of three equations<sup>30</sup>

$$V^p(\mu^p, 0, I_t^\varepsilon, R | e = e^L) = I_t^\varepsilon y^p + \frac{qV^p(\mu^w, 0, 1, R | e = e^L) + (1-q)V^p(\mu^p, 0, 1, R | e = e^L)}{1+r}$$

and

$$V^p(\mu^w, 0, 1, R | e = e^L) = y^p + \frac{V^p(\mu^p, 0, \varepsilon, R | e = e^L)}{1+r}.$$

The solution implies that

$$V^p(\mu^w, 0, 1, R | e = e^L) = \frac{r(1+r+q)\tilde{y}^p(\tau) + [1+(r+q)\varepsilon]y^p}{r(1+r+q)}. \quad (16)$$

The minimum constant tax rate  $\bar{\tau}$  consistent with the satisfaction of the no-deviation condition of the poor around the equilibrium is obtained by substituting the equations (15) and (16) into (2), which holds with the equality sign in this case. Simple algebra shows that the expression for  $\bar{\tau}$  is that reported in (3).

## 6.2 Proofs of Claims 2 and 3

The value functions of the rich (under the assumption that they retain the political power) in war and in peace times, when income is taxed and redistributed at the constant rate  $\tau$  and the poor always put high effort in war periods, satisfy the following system of functional equations

obtained by the authors upon request.

<sup>30</sup>We remind the reader that the first expression generates two equations because the indicator function  $I_t^\varepsilon$  can be equal to  $\varepsilon$  or 1. Moreover, these equations are written taking into account that the probability of winning a war when the poor put low effort is equal to zero.

$$V^r(\mu^p, \tau, 1, R | e = e^H) = \tilde{y}^r(\tau) + \frac{qV^r(\mu^w, \tau, 1, R | e = e^H) + (1-q)V^r(\mu^p, \tau, 1, R | e = e^H)}{1+r}$$

$$V^r(\mu^w, \tau, 1, R | e = e^H) = \tilde{y}^r(\tau) + \frac{V^r(\mu^p, \tau, 1, R | e = e^H)}{1+r}.$$

The solution implies that

$$V^r(\mu^p, \tau, 1, R | e = e^H) = V^r(\mu^w, \tau, 1, R | e = e^H) = \frac{1+r}{r} \tilde{y}^r(\tau). \quad (17)$$

The value functions of the rich (which retain the control of the political system) when no redistribution is ever granted and the poor always put low effort in war times, satisfy the following system of functional equations

$$V^r(\mu^p, 0, 1, R | e = e^L) = y^r + \frac{qV^r(\mu^w, 0, 1, R | e = e^L) + (1-q)V^r(\mu^p, 0, 1, R | e = e^L)}{1+r}$$

$$V^r(\mu^w, 0, 1, R | e = e^L) = y^r + \frac{V^r(\mu^p, 0, \varepsilon, R | e = e^L)}{1+r}$$

$$V^r(\mu^p, 0, \varepsilon, R | e = e^L) = \varepsilon y^r + \frac{qV^r(\mu^w, 0, 1, R | e = e^L) + (1-q)V^r(\mu^p, 0, 1, R | e = e^L)}{1+r}.$$

The solution of this system of equations is

$$V^r(\mu^p, 0, 1, R | e = e^L) = \frac{[q(r+\varepsilon) + (1+r)^2] y^r}{r(1+q+r)} \quad (18)$$

$$V^r(\mu^w, 0, 1, R | e = e^L) = \frac{[1+r + (r+q)(r+\varepsilon)] y^r}{r(1+q+r)}. \quad (19)$$

Claim 2, i.e. the tax rate  $\tau_w^r$  in (5) is obtained by substituting the equations (17) and (19) into (4).

Claim 3, namely the tax rate  $\tau_p^r$  in (7) is derived from the substitution of the equations (17) and (18) into (6).

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