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

Davide Ticchi and Andrea Vindigni[†]

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Abstract

We investigate the role played by international conflicts in the processes of national political development with particular attention to the transition from autocracy toward democracy. We argue that, if a country is endangered by some outside threat, its elite may find optimal to concede democracy or income redistribution to the masses in order to increase their patriotism and their war effort. This in turn increases the chances of victory of the country so avoiding to the elite severe income losses. We provide historical evidence for some Western countries that confirms this theory.

Keywords: Autocracy, Democracy, Wars, Redistribution.

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

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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 as well as by the increasing redistribution of income promoted by the governments. 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 2005) 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 another 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. Along the same line, Llavador and Oxoby (2005) present a model where ideological parties representing elites manipulate the allocation of voting rights in order to influence implemented policies and analyze how the extension or reduction of franchise affect economic growth.¹

This paper provides a new answer to the fundamental question raised above on the rationale behind a process of transition from an oligarchic to a democratic government. We focus on the role played by the making and preparation for warfare among nations in the processes of democratization 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, both of which are essential. The first one is the existence of fragmentation and rivalry within a states system, generating at least the concrete threat of the outbreak of a military conflict (if not actual hostilities), and therefore the need to undertake the appropriate actions to cope with it. The second assumption, equally important, is that of 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 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

¹Buorguignon 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.

be undertaken otherwise. By credibly promising some redistribution of income to the masses, or by conceding democracy if no credible promises can be made, the elite actually increases the welfare that the masses enjoy 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 more than compensates the elite for the income loss due to fiscal redistribution. We wish to emphasize, though, that our theory does not claim that militarization as such has a positive influence on the development of democratic forms of government, but only a certain form of it, namely based on the deployment of mass-armies recruited with conscription from all segments of society, rather than on professional militaries made of volunteer soldiers.²

We also present an extension of the baseline model to analyze the possible effects of the income distribution in the transition from autocracy to democracy. We show that an increase in the degree of income inequality reduces the overall parametric region where democracy or redistribution are granted to the masses. However, while the increase in income inequality always reduces the region where the welfare state is provided, more inequality has an ambiguous effect on the region where democracy is granted.

Our theory sheds some new light on many important cases of politico-economic development of Western countries during the XIX and XX century. In particular, we can explain the joint process of social and military modernization of Prussia and France during the XIX century, the extension of franchise and development of the Welfare State in the U.S.,³ and the social and political reforms

²Downing (1992) argues for instance that the international warfare mounting among European nations at the beginning of the modern era, had the effect of wiping out the parliamentary institutions existing in Continental Europe which, he claims, contained the seeds of modern representative democracy. Downing's claim is not in contradiction with our theory as the military technology adopted in the West all through the modern era was essentially based on the deployment of professional militaries.

³The case of the U.S. is a particularly interesting one because its elite hardly ever faced a concrete revolution threat from the masses, the critical factor stressed by Acemoglu and Robinson (2000, 2001, 2003). Moreover, the intra-elite conflict emphasized by Lizzeri and Persico (2004) as well as by Llavador and Oxoby (2003), was probably

implemented in several European countries during and in the aftermath of the two World Wars, indeed the period when democratization made the greatest progresses in the West.⁴ We argue as well that the concession of the voting right to women in the XX century can be interpreted as the counterpart of their participation to the waging of the total wars, for instance by substituting the men at the front in factories and other productive activities. Moreover, our model can explain how the absence of international conflicts in Africa and Latin America during the XX century may have had a negative effects on the political development of the countries of these two continents. Finally, it should be remarked that a causal relation between changes in the military organization resulting in an extension of military duties to broader portions of society, and a politico-institutional evolution toward more inclusive or “democratic” forms of government, can be observed in the history of the Western (as well as non-Western) world, well before the XIX century.⁵ Thus, while the focus of our paper is on the impact of mass warfare on the birth of modern democracy and welfare state, our theory of regime transitions, and in particular its core proposition according to which political rights are the counterpart of military duties, has potentially a much wider interpretative scope. We shall briefly return on this point when presenting the historical evidence corroborating our theory.

much less serious in this country than Europe, due to the absence of a feudal heritage. However, the U.S. were involved in mass warfare in both the XIX (the Civil War) and XX century (the two World Wars, the Korean and the Vietnam War) and thus our theory, unlike the others, can account for the “puzzle” of the American democratization, as explained at greater length below.

⁴Sweden and Switzerland, like the U.S., are two countries historically not much threatened by the explosion of a social revolution. Despite being neutral, both of them were instead seriously threatened of invasion by Germany during the First and, especially, the Second World War. As we document in Section 4, important sociopolitical reforms of the kind our theory predicts did take place in both countries during, and in the immediate aftermath of, the two World Wars.

⁵A particularly significant example in this respect is provided by the history of Athens in the age of Solon and Pericles (VI and V century BC), when the citizenships rights were substantially extended toward the lower classes, to cope with the increasing need of military manpower of the state, for both the army (the hoplite phalanx) and the navy (e.g. Beukema, 1941, Dolman, 2004). See also Andreski (1968) for the discussion of several other examples of expansion of political and social citizenships rights triggered by changes in the military technology away from professional armies.

Our paper is related to an important body of literature collocated across political science, sociology and legal history, which argues that warfare significantly affects various dimensions of the political development of nations. The importance of international relations and conflicts for the process of political development of European countries has been originally stressed in the pioneering studies of comparative constitutional history of Hintze (1975) who first argued that the form of domestic political institutions is very much shaped by the (more or less compelling) need of dealing with the threat posed by other nations. Focusing on the relation between warfare and state-building (the development of the capability of the state to extract fiscal resources from society), Tilly (1975, 1990, 1993) argued that the former has been the critical factor driving the expansion of the economic power of Western European states since the early modern era. Skocpol (1979) also argued that social revolutions cannot be properly understood abstracting from the influence that international relations, and in particular international conflicts, have on domestic politics.

The works of Giddens (1987), Mann (1990), Porter (1994) and Dolman (2004) are the most closely related to this paper, as they focus on the relation between warfare and the democratization of the West (and development of the Welfare State) and suggest the existence of a link between them similar to the one featured in our model.⁶ Also, Skocpol (1992, 1995) and Keyssar (2000) argue that military conflicts, and in particular the Civil War, have been of primary importance for

⁶Earlier contributions in the same vein in the political sociology literature include the works of Titmuss (1958), of Andreski (1968) and of Therborn (1977). Titmuss (1958), in a famous study of the development of the Welfare State in England, argued that mass warfare can be waged effectively only if social inequalities are reduced enough to sustain the “discipline” required. However, he did not clearly identify the causal mechanism linking mass warfare and redistribution, as we do in this work. Andreski (1968, p. 27) went even further, writing that “The passive resistance of the masses is most dangerous to the ruling group when the state is fighting for survival. At such times, if the willing co-operation of the masses is militarily essential, an effort must be made to win them over, to convince them that they are fighting for themselves. [...] For these reasons, the technical and military circumstances, which make willing co-operation of the masses in the war effort more or less essential, are the most powerful among the factors which determine the extent of social inequalities.” Lastly, Therborn (1977) argued that mass-warfare lead to democracy in the XIX and XX century through the need of mobilizing the masses, and by “defeat.” That is, as a result of a military setback weakening the repressive capacity of an incumbent oligarchic regime.

the creation and development of a Welfare State as well as for the extension of the voting right in the U.S.

The paper is organized as follows. Section 2 presents the baseline model. In Section 3, we show how the equilibrium is affected by income inequality. Section 4 presents various pieces of evidence supporting our central argument. Section 5 concludes.

2 The Baseline Model

Time, indexed by t , is discrete. The economy is populated by a continuum of measure 1 of infinitely lived agents divided in two classes, rich (r) and poor (p), or the elite and the masses. The rich have a pre-tax income equal to y_t^r and the poor to y_t^p , with $y_t^r > y_t^p, \forall t$. Let $\rho \in (0, 1)$ denote the fraction of the rich and $1 - \rho$ the fraction of the poor. All members of the elite are identical and the same is true for all poor. We assume the absence of any “social mobility”, which implies that an individual belongs to one of the two classes forever. We also assume that $\rho < 1/2$, meaning that under full democracy the median voter is a poor and the fiscal policy reflects the preferences of the poor only. The aggregate (and average) output is denoted as $\bar{y}_t = (1 - \rho) y_t^p + \rho y_t^r$. 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. All agents are risk-neutral and future welfare is discounted at rate $r > 0$.

Fiscal policy is about the inter-class redistribution of income. Income is taxed at a proportional rate τ and the government revenues are redistributed with a lump-sum transfer Υ to all agents. The government budget is always balanced, so that $\Upsilon_t(\tau) = \tau \bar{y}_t$, and the post-tax income of each individual of group $i \in \{r, p\}$ is equal to $\tilde{y}_t^i(\tau) = (1 - \tau) y_t^i + \Upsilon_t(\tau)$. We assume the existence of an upper bound to the tax rate τ , which is constrained to be strictly smaller than one, i.e. $\tau \leq \tau_{\max} < 1$.⁷ Since the poor have income below average and taxation entails no distortions, the

⁷This assumption simplifies the analysis without playing any important role in the derivation of the results. On the other hand, 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

tax rate that maximize their post-tax income, and therefore chosen under full democracy, is τ_{\max} . We also assume that initially the country is ruled by the rich elite which decides the fiscal policy and eventually the democratization of the political system by extending the franchise to the poor.

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 μ which can take the two values, μ^w and μ^p , corresponding to war and peace respectively. The aggregate state variable μ evolves according to the following stochastic process: $\mu_t = \mu^w$ with probability $q \in [0, 1]$ if $\mu_{t-1} = \mu^p$, and $\mu_t = \mu^p$ with probability 1 if $\mu_{t-1} = \mu^w$. In other words, a country can be with some positive probability q at war 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.⁸

We assume that the mass-army is the efficient military technology and that all and only the poor serve in the army when the country is engaged in some war.⁹ The poor can put two levels of effort in the military service during war times: high ($e = e^H$) or low ($e = e^L$).¹⁰ The cost of the military effort in terms of utility (and income) is normalized to zero if it is low, i.e. $C(e^L) = 0$, so that $C(e^H) = C > 0$. Given that all poor are identical, they all make the same decision in equilibrium. The war effort of the poor affects positively the probability P that the country has of the flat rate τ , the total actual government revenues are $\Upsilon = [\tau - \phi(\tau)]\bar{y}$, where $\phi(\cdot)$ is an increasing and convex function of τ . 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.

⁸Notice also that the probability of war is taken here as purely exogenous and independent on the political regime of the country. In other words, we are abstracting from any possible effect of the presence or absence of democracy on the likelihood that a country may be at war.

⁹This assumption is stronger than needed as what is essential for our purposes is only that the army is made-up by a large fraction of the poor.

¹⁰We will think to the “military effort” of the masses in a broad sense, including of course the effort put by the soldiers on the battlefield, but also that one put by the women mobilized to serve on the “home front”, such as those substituting the conscripted men in factories and elsewhere.

winning a war, conditional on being involved in one. At a certain point, without loss of generality, we will assume that the probability of winning a war is zero if the poor put low effort and one if they exert high effort, i.e. $P(\int e = (1 - \rho)e^L) = 0$ and $P(\int e = (1 - \rho)e^H) = 1$.

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 1. 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 other words, if a country is defeated in a war at some time, the income of each class falls from y^i to εy^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.¹¹ An immediate implication of Assumption 1 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). Therefore, 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.

Let $S_t \in \{D, R\}$ denote the state of the political system at time t . If $S_t = D$ both rich and poor can vote, the country is democratic, and $\tau_t = \tau_{\max}$. If $S_t = R$ the country is not democratic as

¹¹The important thing here is that the income loss following a military defeat is higher than the one after a victory. Moreover, we could also 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, 2003). None of our key results depend on these assumptions however.

only the rich can vote. In this case, the rich can decide either to extend the franchise to the poor, and therefore to transfer them all the political power, or not to democratize the political system and, eventually, grant some fiscal transfers to the poor while retaining all power for themselves. Clearly, the optimal unconstrained policy of the rich would be keep the political power and setting a tax rate $\tau = 0$. The decision to extend the franchise to the poor or to grant them 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 increase the probability of victory and avoid severe 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. Similarly to Acemoglu and Robinson (2000), in our model the transition to democracy takes place when the promises of future redistribution that meet the incentive compatibility constraint of the poor (and thus induce them to exert high effort in war times) are not time consistent. In this case, the extension of the franchise to the masses changes the future political power and therefore acts as a commitment to future redistribution.

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 the political institutions in order to convince it to fight properly. In other words, one of the factors that drives the democratization process 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 XIX and XX century.

As explained above, the only rationale for redistribution and regime transitions in this model is to induce the poor to put a high effort during war times. However, 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 2. $C > \tau_{\max} (\bar{y} - y^p) + \frac{(1-\varepsilon)y^p}{1+r} \equiv C_{\min}$.

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.¹² 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 the structure of the game, at each point in time t , events take place in the following sequence.

1. The realization of μ 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 rate τ . 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.¹³

¹²The latter must be discounted since, by assumption, a military defeat causes an income loss one period after the war is fought.

¹³This assumption is in line with the evidence provided by Bueno de Mesquita et al. (1992) regarding the political consequences of a military defeat. According to these authors, a negative performance in an international war increases significantly the probability of a subsequent (violent) change of political regime. This relation appears to hold very generally and regardless on factors such the identity of the war initiator.

2.1 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 (rich and poor) into a system of recursive equations satisfied by the respective Bellman values in the different possible states of the world.

Let I_t^ε be an indicator function equal to 1 if $\mu_{t-1} = \mu^p$, or if $\mu_{t-1} = \mu^w$ and $I_{t-1}^w = 0$, and equal to ε if $\mu_{t-1} = \mu^w$ and $I_{t-1}^w = 1$.¹⁴ $V^r(\mu^p, \tau_t, I_t^\varepsilon, S_t)$ denotes 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 takes the value I_t^ε , 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 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 post-tax

¹⁴In other words, this indicator function is equal to 1 at time t if the country was in peace at $t-1$ or if it was in war and won it. I_t^ε takes instead the value ε if the country lost a war in $t-1$. Notice also that the two situations correspond to case (i) and to case (ii) of Assumption 1 respectively.

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 $\{P, 1 - P\}$.¹⁵

Similarly, $V^p(\mu^p, \tau_t, I_t^\varepsilon, S_t)$ denotes the Bellman value of being poor (p) when the country is in peace, income is taxed at rate τ_t , the indicator function is I_t^ε , under the political system S_t . $V^p(\mu^w, \tau_t, I_t^\varepsilon, S_t | e^z)$ 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 simultaneously satisfied

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

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 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.¹⁶ The second equation shows that the value of being poor in war times is equal to the post-tax income, minus the cost of the optimally set war effort, plus the expected present discounted value of being poor next period, which is taken over the probability distribution of war victory.¹⁷

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

¹⁵We remind that I_{t+1}^ε is equal to 1 in case of military victory and to ε in case of defeat at time t .

¹⁶Notice that $I_{t+1}^\varepsilon = 1$ in either case since $\mu_t = \mu^p$.

¹⁷Again, I_{t+1}^ε is equal to 1 in case of military victory and ε in case of loss.

to induce the poor to put high effort in war times by conceding them some form of redistribution, while in the third case there will not be any kind of redistribution and the poor will put a low war effort. Let us proceed by examining each of this three cases.

2.1.1 Income Redistribution and no Democracy

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 $E_t^p(\cdot)$ denotes the expected value operator of the poor at time t on the tax rate chosen by the rich at time $t + s$. 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 exerted by the poor in future periods.

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 τ^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 τ^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, τ^H satisfies the following weak inequality

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

that can be rewritten as¹⁸

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

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 is¹⁹

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

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 τ_{\max} . Therefore, we concentrate the attention to the case where the parameters are such that $\bar{\tau} \leq \tau_{\max}$.

From Assumption 2, 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 ε 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.

¹⁸We are using the fact that $\tilde{y}^p(\tau) = y^p + \tau^H (\bar{y} - y^p)$ and $V^p(\mu^w, 0, 1, R | e^L) = y^p + \frac{V^p(\mu^p, 0, \varepsilon, R | e^L)}{1+r}$.

¹⁹Notice that $\bar{\tau}$ is the minimum level of τ^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 $\tau^H > \bar{\tau}$.

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.

The maximum constant tax rate τ_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 τ_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, τ_w^r is implicitly defined by the following equation

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

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 τ_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 τ_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, τ_p^r is defined by the following expression

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

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. τ_p^r is always lower than τ_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 .²⁰ 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;

²⁰Indeed, 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.

(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.

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. μ switches from μ^w to μ^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.²¹ Finally, as the war effort of the poor is not needed before 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 μ switches from μ^w to μ^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.²²

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. Also, the threshold q^* is always strictly

²¹Inequality (8) and Assumption 2 imply that the cost of high war effort C is bounded from above and from below, 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: $(1 - \varepsilon)y^r > (1 + r)^3(y^r - \bar{y})\tau_{\max}$.

²²The 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).

increasing in ε and in r . These results are quite intuitive: as the output loss caused by a military defeat falls (higher ε), 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.²³

2.1.2 The Extension of Franchise

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

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

which can be rewritten as²⁴

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

Given that $V^p(\mu^w, \tau_{\max}, 1, D | e^H) = V^p(\mu^w, \tau_{\max}, 1, R | e^H)$, 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 .²⁵

We now determine the region where the rich find convenient to give democracy to the poor.

This is the case if

²³Recall that in our model a military defeat generates an output loss in the future.

²⁴We are using the definition of $\tilde{y}^p(\tau_{\max})$ and the fact that $V^p(\mu^w, 0, 1, R | e^L) = y^p + \frac{V^p(\mu^p, 0, \varepsilon, R | e^L)}{1+r}$.

²⁵If 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.

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

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:

- (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

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

and that $V^r(\mu^w, \cdot, 1, R | e^H)$ is a strictly decreasing function of τ_w^r and depends on q only through τ_w^r . At $q = q^{**}$, $\tau_{\max} = \tau_w^r(q)$; since $\tau_w^r(q)$ is strictly increasing in q , it follows that $V^r(\mu^w, \tau_{\max}, 1, D | e^H) > V^r(\mu^w, \tau_w^r, 1, R | e^H)$ when $q > q^{**}$. Given that from (4) we know that $V^r(\mu^w, \tau_w^r, 1, R | e^H) = V^r(\mu^w, 0, 1, R | e^L)$, 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).²⁶ ■

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 attacked²⁷ 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 ε and τ_{\max} . A decrease in ε , 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 τ_{\max} also lowers q^{**} because the income loss of the rich generated by the democratic taxation goes down.

²⁶By 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 $C \in (C^{**}, C^*)$.

²⁷It 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 $P(e^L) > 0$.

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 σ_t^r indicates the strategy of the rich and σ_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

$$\begin{aligned} & \{\sigma_t^r = (S_t = R, \tau_t = 0)\}_{t=0}^{T-1}, \\ & \{\sigma_t^r = (S_t = R, \tau_t = \bar{\tau}); \sigma_t^p = (e_t = e^H), \text{ if } \mu_t = \mu^w\}_{t=T}^{\infty}. \end{aligned}$$

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

$$\begin{aligned} & \{\sigma_t^r = (S_t = R, \tau_t = 0)\}_{t=0}^{T-1}, \{\sigma_T^r = (S_T = D)\}, \{\sigma_T^p = (e_T = e^H)\} \\ & \left. \begin{aligned} & \left. \begin{aligned} & \sigma_t^p = (e_t = e^H, \tau_t = \tau_{\max}), \text{ if } \mu_t = \mu^w; \\ & \sigma_t^p = (e_t = e^H, \tau_t = \tau_{\max}), \text{ if } \mu_t = \mu^p \end{aligned} \right\}_{t=T}^{\infty} \end{aligned} \right\}. \end{aligned}$$

(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 θ 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 θ 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 θ if $C > \frac{(1-\varepsilon)\bar{y}}{(1+r)}$, and vice versa. The intuition is clear: as θ 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 θ . As θ 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 θ 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 θ . This means that an increase in income inequality (lower θ) 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 τ_w^r with respect to θ , 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 θ) 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 θ) increases both q^* and q^{**} . Therefore, higher inequality reduces the (measure of the) parametric 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).²⁸ And it does so also indirectly, by making redistribution and/or transition to a democratic political regime more likely to happen.²⁹

²⁸The 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.

²⁹This is equivalent to say that the “inaction range”, i.e. the region where democracy or income redistribution are

4 Historical Evidence

Mass-armies first appeared in Europe at the end of the XVIII century with the French *levée en masse* of 1793 and were quickly adopted by most countries during the Napoleonic Wars. Yet, mass-warfare came virtually to an end with the defeat of Napoleon, as Europe experienced a period of one hundred years of relative peace, going from the end of the Congress of Vienna (1815) to the outbreak of World War I (1914).

While the initial experiment of the adoption of mass-armies had important consequences for the European societies already during the XIX century, triggering in several countries significant social and economic reforms (discussed in detail below), the process of democratization of Europe was very far from being completed at the end of this century. As a matter of fact, the fraction of the population enfranchised in most European countries before World War I was generally smaller than one fourth.³⁰ Even more importantly, the sheer data expressing the percentage of adult citizens entitled to vote largely overestimates the extent of the actual democratization of Western Europe at the beginning of 1900. In this respect, Halperin (2004 p. 131) clarifies that “Where the suffrage included members of the poorer classes, three-class and other weighted and plural voting systems, as well as open balloting and restrictions on and biases against working-class organizations and parties, made it futile for poor people to vote.”³¹ Other electoral techniques used to limit the power of the masses were the practice of declaring arbitrarily void an election whose results went against the incumbent government, and the requirement to pay a minimum direct tax in order to vote.³² As a result, Halperin concludes that “In nearly all states in Europe, the franchise remained

not granted, is always smaller in a more equal society.

³⁰For example, the percentage of the population enfranchised in 1910 was 22 in Germany, Belgium, Switzerland, 21 in Austria, 19 in Sweden, 18 in the U.K., 17 in Denmark, 14 in the Netherlands and 8 in Italy. Few countries had important share of population enfranchised (45 in Finland, 33 in Norway and 29 in France).

³¹Open balloting consists in voting “openly”, i.e. declaring the vote in public. This procedure allowed the local elite to easily threaten of punishment whoever voted “badly”. Weighted voting systems attached more importance to the vote of the wealthy and/or educated people.

³²Goldstein (1951 ch. 1) presents an extensive discussion of how voting procedures and electoral law substantially

highly restricted until after World War II. On the eve of World War I, Norway was the only country in Europe with universal and equal suffrage. It was only after World War II that universal, equal, direct, and secret suffrage became the norm throughout Western Europe.”

The waging of the total wars typical of the XX century required the mobilization of both soldiers and civilians to an extent hardly ever observed before in the course of history. For instance, between 1914 and 1918 the U.K. 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 II are even more impressive. Our theory suggests that the mass warfare peculiar of the first part of XX century has been instrumental in driving the bulk of the process of democratization of the West. Indeed, the political voice of the masses and the making of social reforms increased sharply during and in the aftermath of the two World Wars, and particularly the second one. Mann (1988 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.” Along the same line, Porter (1994 p. 150) write 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.” He also argue that the modern state born from the two World Wars had a structure articulated in a *mass state*, in which the political voice of the people was finally separated from their socioeconomic status as well as a welfare state, taking care of the well-being of its citizens. And everywhere in Europe the working class movement requested political participation in exchange of war participation.³³

violated the one-man-one-vote principle in XIX century Europe.

³³In this regard, Porter (1994 p. 19) also 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.”

The political and economic gains for the working class and for women generated by the waging of total wars fought with conscripted soldiers are discussed extensively also by Andreski (1968) and Marwick (1974). Hobsbawm (1990) remarks that it was widely accepted by the national elites that the First World War could not have been won without the support of the masses and that all governments tried to present the conflict primarily as a threat to the interests of the latter as well as the occasion for a social transformation of the country in their favor. Dollman (2004, p. 27) presents quantitative evidence relative to Western countries over the period 1860-1992, suggesting that a sizable extension of franchise follows each significant rise of incorporation of civilians into military service.

We now discuss in detail the most significant national cases of political development among the Western states in connection with our theory.

4.1 The Case of France

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 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.” 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. The *levée en masse* was accompanied by important civil and military reforms, including the creation of an officer corps with a high standard of professionalism and competence.³⁴ However, the French reforms were short-lived and conscription was abolished after the defeat of Napoleon. 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, by an

³⁴In the same year (1793), it was also proclaimed a new constitution prescribing the principle of universal suffrage, as opposed to the limited franchised contemplated by the constitution of 1791. This constitution never became effective however.

enemy army that instead was based on conscription.

The return to the model of mass-army took place in concomitance with final transition of France to democracy, occurred with the proclamation of the constitution of the Third Republic in 1875, which prescribed the election of a bicameral parliament, in part with universal (male) suffrage (the house of representative) and in part with restricted suffrage (the senate). The political development of France since that moment, and up to the end of the Second World War, appears quite consistent with our model, which predicts that democracy should be granted when the external threat faced by a country is neither too large nor too small and that democracy should be expected to lead to substantial provisions of income redistribution to the advantage of the lower classes.

Indeed, since the only serious military threat to France in the second half of the XIX and in the first half of the XX century came from Germany,³⁵ presumably its probability of involvement in an international conflict during this period was located somewhere in the region between the two thresholds q^{**} and q^* , where our model predicts the transition to democracy. Moreover, between the last decades of the XIX and the beginning of the XX century, the French democratic government introduced a sequence of reforms inspired to the new Prussian social legislation, which brought important economic advantages to the lower classes. These included assistance for children (in the 1880's), followed by the provision of health care assistance (1893), miners' pensions (1894), assistance for the aged and disabled (1905) and old age pensions (1910). Similar developments in the social legislation, going in the direction of establishing substantial provisions of income redistribution, were also observed in France during and after the World Wars. 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

³⁵More specifically, it can be argued that the annexation of Alsace-Lorraine by Germany created a wound preventing a normalization of the relations between the two countries. No French government ever accepted publicly the loss of that territory. Thus, the outbreak of a new war with Germany remained constantly a concrete possibility, until its occurrence in the August of 1914.

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.³⁶

On top of the that, France finally completed its process of democratization with the adoption of universal adult suffrage toward the end of World War Two. Indeed, whereas the First World War had already greatly reinforced the popular willingness to extend franchise to women as well, this was not to be the case until 1944.³⁷ Yet, 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.

4.2 The Case of Prussia/Germany

A sequence of major social and institutional reforms was undertaken by the Prussian government, in the aftermath of the military defeat inflicted by Napoleon to the Prussian army at the battle of Jena (1806), which was arguably instrumental in creating both the awareness of the need, and a wide political support for a substantial transformation of the *status quo*. One of the first major socioeconomic reforms undertaken by the Prussian leaders was the abolition of serfdom (1807), aimed at the creation of a class of small land owners. Another important administrative reform involved the creation of a representative organ at the municipal level, based on a relatively large suffrage. At the same time, a number of military reforms radically transformed the Prussian army into an organization based on conscription similar to the *Grand Armée*. The law of September

³⁶All of these social reforms can be seen as a “natural” consequence of democracy but also, more subtly, as provisions serving the basic need of motivating the mass to fight hard. Indeed, whereas in our model democracy is simply equivalent to the rule of the majority, the mass, in reality the elite is likely to retain some not negligible political voice. Thus, the concession of welfare programs by a democratic government can also be interpreted as the making of a social policy effectively more aligned with the interests of the majority. This, as our model suggest, serves the interests of the elite also as it induces the mass to fight appropriately when conscripted for war.

³⁷In this respect, Italy was in a similar position to that of France. In Italy, the right to vote had been given at the end of the first world conflict, to all male citizens of more than 21 years of age, and to all the citizens that, regardless of age, had served in the army during the war time. Suffrage, however, was not given to women until the end of WWII.

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*.

Andreski (p. 69, 1968) explicitly links with the advent of mass-armies and the age of the reform in Prussia, writing that “[...] The advent of mass armies produced a new situation. The loyalty of the lower classes had to be strengthened by extending to them various rights. In Prussia, and later in Germany, this policy was perhaps most deliberate. Serfdom was abolished concurrently with the military reforms of Stein, and peasants were granted the free ownership of the land they cultivated.” Skocpol (1979 p. 108) also emphasizes the military rationale behind the abolition of serfdom, as she 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.”³⁸

Indeed, 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 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.” Indeed, precisely the exceptionally

³⁸Interestingly, the major defeat suffered in the Crimean War (1853-56), triggered a somewhat similar path of social and military reforms also in Russia. In particular, in 1861 Alexander II issued his Emancipation Manifesto that proposed 17 legislative acts that would free tens of millions of serfs. The czar announced that personal serfdom would be abolished and all peasants would be able to buy land from their landlords. At the same time, the military was transformed from a professional force into an army recruited with mass conscription.

serious external threat (corresponding to a probability of involvement in an international conflict greater than q^*) faced Prussia, and later by Germany as well, explain in our view why its government could mobilize the masses by granting them social reforms only, rather than by conceding democracy, introduced as late as 1919. Indeed social, but not political, 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 century, Germany had established the most comprehensive system of social insurance and of work protection in the world.

Despite this impressively advanced social legislation, the Second Reich never evolved in a true constitutional monarchy based on the principle of democratic representation. In Germany, universal suffrage had indeed been formally introduced as early as in 1871 (the year of birth of the new nation). 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 concession of truly equal suffrage at the end of the war, through the abolition of the three-tiered electoral system as well as a reform of the upper chamber of the Parliament, in the January of 1916 and later in his Easter Degree of 1917 (Porter, 1994 p. 173, Dolman, 2004, p. 148).³⁹ Moreover, a special committee was immediately created to examine the question of a post-war constitutional reform.

Democracy was indeed finally introduced in Germany in 1919, following its defeat in the Great War. It is undeniable that a serious revolution threat existed in Germany at that time, greatly

³⁹ "In order to maintain the war spirit of the nation, the Kaiser's military government issued public promises that if the army could prevail, future military and political reforms would be forthcoming, but the crisis was not the time for change." (Dolman, 2004, p. 148).

fuelled by the crushing military defeat suffered by the country, and that this threat is likely to have played an important role into a parliamentary democracy, as opposed to the wartime promises of the Kaiser, who was forced to abdicate at the end of the hostilities (see on this Acemoglu and Robinson, 2000, and Therborn, 1977). However, this fact is not inconsistent with the counterfactual claim suggested by our theory that, had Germany won the war, democracy would have been introduced there as the fulfillment of the promises of a substantial political change, made in exchange of the toleration of the exceptional hardships posed on the population by the endurance of the conflict.⁴⁰

4.3 The Case of Britain

Britain was at the lead of the process of democratization of the West during the XIX century, as franchise was extended there for three times (1832, 1867 and 1884). While factors such as the threat of a revolution or intra-elite conflict are likely to have played a paramount role in this process, some historians argue that warfare also represented a stimulus for the extension of franchise since the end of the Napoleonic Wars. Demands for parliamentary and suffrage reforms mounted indeed after the victory over Napoleon at the battle of Waterloo in 1815, and culminated eventually in the Reform Act of 1832. As Porter (1994 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.” This fact is consistent with the basic proposition of our theory, as the extension of franchise after a military

⁴⁰Moreover, it can be argued that the Kaiser promised democracy only at some point of the conflict, since the cost of high military effort C turned out to be much higher than expected. Indeed, in Germany, the expectation of a rapid military victory resulting from crushing France was widespread in 1914. However, the endurance of the conflict revealed that waging a war that had appeared initially “sustainable” with the Welfare State only, required instead democracy. Recall that the threshold q^* is increasing in C and the Welfare State is conceded when $q \in [q^*, 1]$. Thus, for a given probability of involvement in a conflict, the equilibrium with redistribution only is less likely to be sustainable when the cost of war effort for the masses increases, and democracy more likely to be necessary to wage war.

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.

Britain implemented a number of social reforms at the beginning of the XX century. These reforms were deeply inspired by the success of the Prussian-German model, manifest to all after the Franco-Prussian war, and by the desire to imitate it. The Asquith government eventually did so with the introduction of a system of pensions for the elderly (1908) and of the National Insurance Bill (1911). Indeed, whereas Britain was not involved in any major international conflict from 1853 (the year of the end of the Crimean War) to 1914, it can be argued that the growing rivalry among the European great powers since the end of the XIX century, made the outbreak of a world war appear a concretely possible event, requiring the military and sociopolitical reforms allowing to field a motivated and effective army.⁴¹

World War One transformed dramatically the British society and its government. Near the end of it, 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. Along with the extension of voting rights, the First (and later the Second) World War also stimulated a boom in welfare expenditures, in Britain as in each other 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' 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.

The greatest stimulus to social reforms came however from World War Two. In June 1941, the British government appointed an Interdepartmental Committee chaired by Sir Beveridge, to make

⁴¹Even if Britain introduced mandatory conscription only in 1916, the dismal performance of its army in the Boer War raised a concern for the health and well-being of the lower classes, from whom most soldiers were coming from.

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, as suggested by the quotation at the beginning of this paper which clearly corroborates the causal mechanism hypothesized by our theory. 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.

4.4 The Case of the U.S.

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..." Keyssar (p. 36) also identifies the reason behind the willingness of the middle-upper classes to extend franchise as he writes: "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 such 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 p. 15).

Some of the most important steps of the process of democratization of the U.S. that highlight the connection between participation to the war effort and the extension of political right suggested by our theory, include the introduction of universal male suffrage, essentially to the benefit of ethnic minorities such as African American (1869), the extension of the right to vote to women (1920) and the decision of the Supreme Court to declare the white primary unconstitutional (1944).

The Fifteenth Amendment extended the voting right to African American males in 1869. The Republicans, who controlled most state legislatures, argued that black men had earned the right to vote because of the heroism they demonstrated as soldiers in the Civil War. Indeed, African American supported with loyalty the cause of the Union, fought with dedication and died to preserve it.⁴²

Suffrage was extended to women by the Nineteenth Amendment in 1920. The amendment was also actively supported “as a war measure” by President Wilson in an extraordinary address in January 1918. In another address to the Senate in September 1918, Wilson returned again on the link between franchise and the war effort of women, arguing that this was essential for the prosecution of the conflict.⁴³ The Suffragists themselves stressed the importance of wartime role of

⁴²The importance of the war effort of the African American, as well as its political significance, were explicitly recognized also by military leaders. For instance, General William Sherman (quoted in Keyssar, 2000 p. 88) declared that: “when the fight is over, the hand that drops the musket cannot be denied the ballot.”

⁴³Wilson (quoted in Keyssar, 2000 p. 216) declared that women’s suffrage was “essential to the successful prosecution of the great war of humanity in which are engaged... We have made partners of the women in this war. Shall we admit them only to a partnership of sacrifice and suffering and toll and not to a partnership of privilege and of

women, and even threaten to diminish their effort if suffrage were not forthcoming.

In 1944, the Supreme Court declared in *Smith v. Allwright*, that the white primary, one of the most effective methods to actually deny the vote to African American, was unconstitutional. While this was a judicial, rather than a political, decision, the judges themselves were arguably not at all indifferent to the exigencies of war. Indeed, an important commentator of the *New York Times*, the Supreme Court reporter Arthur Krock, argued that the Court's decision in the *Smith v. Allwright* case was strongly related to exceptional circumstances of the war.⁴⁴

Summarizing, the Civil War and the two World Wars are the events that have triggered the concession of the right to vote to African American (and other minorities), as well as to women in the U.S., precisely because both of them were of crucial importance for sustaining the participation of the nation to all such major conflicts. On top of the extension of the right to vote, the birth and development of the Welfare State in the U.S. represents another very important historical example of the effects of mass conflicts on income redistribution, as clarified by Skocpol (1992, 1995). Whereas the U.S. 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 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 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.

right? This war could not have been fought... if it had not been for the services of women."

⁴⁴Krock (quoted in Keyssar, 2000 p. 248) wrote that the "real reason for the" decision was "that the common sacrifices of wartime have turned public opinion and the court against previously sustained devices to exclude minorities from any privilege of citizenship."

4.5 Sweden and Switzerland

It is noteworthy that the two world wars, and particularly the Second one, have had a profound impact even on the political development of neutral countries as Sweden and Switzerland which, despite their neutrality, were far from being insulated from the two world conflicts.

In Sweden, the right to vote was extended to all male in 1907, but the vote was proportional to property ownership. This proportionality was removed in 1917, and the right to vote was extended to women in the aftermath of the conflict, in 1921. This pattern of franchise extension is clearly consistent with our theory, as the country was exposed to an outside threat neither too high (being neutral), nor too low (being an important part of the European states-system).

Sweden (and Switzerland) were also seriously threatened by Germany during the Second World War and this impelled a high degree of social mobilization and cooperation in both countries, which led to significant reforms of the social legislation analogous to those implemented in belligerent democracies. Indeed, in Sweden a coalition government of national unity formed during the war, drastically increased taxation to finance a much higher military expenditure, and promoted the creation of a controlled economy based on full employment. Gustav Möller, the Minister of Social affairs, put forward proposals for the construction of a post-war welfare state very similar to those suggested by the Beveridge Report. At the end of the conflict, the Swedish government led 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. Switzerland mobilized the entire society just after the German invasion of Poland, and continued to remain in a high state of military readiness all through World War Two. The perception of an imminent threat was instrumental in creating the political consensus for important reforms, including a constitutional amendment to increase the role of the government into economic affairs, and an income-compensation plan for all men liable for military service.

In sum, as Porter (1994 p. 191) writes, “The Swedish and Swiss cases demonstrate that the maelstrom of total war affected even the neutral islands of Europe during the world wars and

helped shape their political form. Mobilization for war, especially when it is prolonged, may have organizing and formative effects similar to actual war, though perhaps less intense.”

4.6 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.⁴⁵ 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.⁴⁶ 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.⁴⁷ Therborn (1977) also suggests the possible existence of a causal

⁴⁵We thank James Robinson for bringing these books to our attention.

⁴⁶As Herbst (2000 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.”

⁴⁷Centeno (2002 pp. 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.”

relation between the fact that Latin America was never drawn into the mass slaughter of the two world conflicts and the relative fragility of its democratic institutions. 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.

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. Interestingly, the upper bound q^{**} of the inaction range increases with the degree of income inequality (i.e. as θ falls), and Latin American and African countries have been historically characterized by very high levels of income inequality, which makes indeed them more likely to fall within this region.

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 Revolution 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 ε : a total war can be associated with a low value of ε and a limited war with a high one. Indeed, we know that the upper bound q^{**} of the inaction range is strictly increasing in ε . Hence, the inaction range is to be expected to be larger in Latin America and Africa according to our theory, also due to very nature of warfare in these continents.

4.7 Military Duties and Sociopolitical Rights in Other Ages and Civilizations

While our paper is specifically focused on the birth of modern democracy (and welfare state) in Western world, the proposition standing at the core of our theory of political development, namely that the extension of political (and social) rights from the elites to the masses reflects the

extension of military duties to the latter, has a much more general scope. Indeed, the theory appears consistent with a wide range of cases of political and social change observed in diverse civilizations as well as historical eras, where the elites were forced to make significant social and political concessions (if not of course the concession of modern representative democratic institutions) to the masses, precisely to sustain the military effectiveness of conscription.

A notable example, discussed at some length in Andreski (1968, ch. 2) corresponds to the case of China during the Chou era (1050-256 BC). Whereas during this period China resembled in some ways the feudal society of medieval Europe, the Chinese aristocracy never acquired the preeminence of its medieval European counterpart, and political power was much more evenly distributed within the society as a whole. Andreski (1968, p. 48) explains this fact in terms of the military technology adopted, based on the deployment of both armored chariots, manned by the nobles, and of large numbers of foot soldiers, recruited from the lower classes, and fighting with javelins, short swords and bow. Because the masses were as well essential to the war effort of the country, they had to be kept contented enough not to desert the ruler in front of the enemy. Indeed, the war effort of lower classes became even more important during the “warring kingdoms” period (480 to 221 BC), which saw a large diffusion of mass conscript armies in China. As a result China did not, of course, become democratic, but nevertheless social inequalities perceptibly diminished and the aristocracy lost many privileges, just as our model would lead us to expect. For example, the serfs became land owners themselves, owing dues only to the state and not to their landlords anymore. Moreover, members of the ruling bureaucracy were recruited also from the lower strata, a fact suggesting that the decision-making power of the masses also increased along with their material well-being.

Two other remarkable examples, in the European ancient history, of major social and political reforms triggered by the conscription of large portions of the adult male population are those of Athens and of the early Roman Republic.

Indeed the view of citizenship dominating in the classic epoch is all based on the identification of the citizen with the warrior.⁴⁸ Citizen, and therefore entitled to participate to collective decision

⁴⁸Interestingly, as already notice by Isocrates, this was a common distinctive feature of polities as different as

making process taking place in the assembly, is he the one who bears the burden of the defence of the country. Following the evolution of the military technology since the VI century BC, which lead to a gradual reduction of the cost of individual armament, and to the diffusion of formations of heavily armored infantrymen (the so-called *hoplites*), but especially the massive growth of the Athenian fleet, requiring the mobilization of large numbers of sailors, and occurred somewhat later in concomitance with the beginning of the seaward expansion of Athens, citizenship rights were extended to the greater and greater portions of the population mobilized for military service.⁴⁹ Parallely, the middle and lower strata of the population, progressively gained important political and social rights.

Under the leadership of Solon, who became Athens' chief magistrate in 594 BC, the highly unpopular legislation regulating debts, according to which failure to repay a debt could lead to enslavement, was radically reformed. Such legislation was a matter of great concern for the middle class of farmers, which used to run into debts themselves with the aristocracy at terms deemed greatly inequitable. The war effort of the middle class farmers had however become particularly valuable as this class largely formed the new *hoplites* formations. Indeed, Solon not only reformed the existing legislation on debts, making its terms much more favorable to debtors, but ordered as well the liquidation of all private and public debts at the end of his first year of tenure in office. Important political reforms were also introduced by Solon, including the concession to all males of Athenian birth of a single vote in assemblies. While the right to have access to public administrative offices was reserved to the middle-upper classes only, the lowest class, or *thetes*, which was eventually co-opted to serve in the navy, was given the important right to sit on juries. In practice, this right had an important political significance, since the Athenian court system had the power of vetoing any political decision of the magistrates.

Athens and Sparta, and more generally of the entire ancient world until the political form of the city-state eventually declined.

⁴⁹ "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 other words, the Athenian society and polity was reorganized to cope with its new military organization: as the middle and lower classes had become essential for the military effort of the city they needed, as our model suggests, to be made contented enough with the politico-economic *status quo* to be willing to serve for the common good. As Dolman (2004, p. 62) writes, “All of Solon’s democratizing reforms can be seen to have basis in, or been a response to, prevailing military needs and practices.”

In the Roman Republic, soldiers were drawn from most of the body of free-born Roman citizens capable of bearing arms, in the age from seventeen to sixty. The importance of the army, and thus that of the plebeian element constituting its backbone, grew steadily between the fifth and the sixth century as Rome gradually conquered the Italian peninsula. During the same period of time the plebeians gained indeed a number of important political and social rights, including the admission to magistracies, the abolition of debts, the cessation of enslavement of debtors, a share in the conquered lands as well as the codification of laws, protecting them against arbitrary interpretations. Interestingly, in the Roman Republic only the very lowest strata of the population were exempted from military duties, because their own low income made doubtful their willingness to serve for the common good.⁵⁰ This is precisely in agreement with the key result of our model according to which patriotism, as reflected in the willingness to put effort in fighting for one’s own country, is (at least to some extent) the counterpart of some level of material well-being.

Several cases drawn from both the Western and of non-Western history provide moreover counterfactual evidence for our theory, suggesting that the absence of some relatively serious external threat and/or the adoption of a military technology non based on mass-conscription tend to be conducive to oligarchic governments and relatively stratified societies. For instance, unlike China, Japan never faced any serious external threat due to geographic reasons until the Meiji restoration period in the middle of the XIX century. Indeed, Japan did not adopt conscription until the Meiji

⁵⁰In the Roman Republic, “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).

reforms, the right of bearing arms being reserved to the nobles all though Japanese history up to that moment. Consistently with our theory, the Japanese society was indeed characterized until the Meiji restoration, when mass conscription was finally introduced to cope up with the incumbent external threat posed by Western countries, the by very sharp social stratifications, of which significant expression were the diffusion of serfdom, the lack of freedom of movement and discriminant taxation.

In medieval Europe, the evolution of the military technique, and in particular the introduction of the stirrup (e.g. White, 1962) determined an increases predominance of heavily armed horsemen, recruited from the aristocracy only. Peasant masses became instead increasingly useless and, indeed, peasants possessed virtually no political rights anywhere in medieval Europe, with the only possible exception of Scandinavia.⁵¹

4.8 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 mass-armies should be more effective in wars than non democratic ones as the soldiers of the former are more motivated to fight, putting wars their interests at greater stakes.

The argument of the military superiority of democracies is not an incontrovertible one. A respectable tradition of thought, which includes the classic contribution of Toqueville (1969), has argued that democracies are inferior to autocracies in the making of war. However, according to a recent study of Reiter and Stam (2002) based on a large body of empirical evidence relative to

⁵¹Scandinavia, and in particular Sweden and Norway, stands alone as an interesting exception to the general trend of regression of the condition of the lower classes generally observed in feudal Europe. Indeed, geographic factors (the densely wooded nature of the country) as well as a relative lack of horses, reduced quite the importance of cavalry in Scandinavian countries. Indeed the social and political history of Scandinavia differed markedly from that of the result of Europe. Feudalism hardly appeared in Scandinavia, where most of the inhabitants remained peasant-proprietors. Moreover, the lower classes enjoyed significant political rights such as that of sending representative to the parliament, and of being judged by tribunals composed primarily by their peers (Andreski, 1968, pp. 60-61).

572 battles fought between 1815 and 1992, democracies clearly display greater martial virtues than non-democracies. For instance, during this period, 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 the question of which particular features of democratic states are responsible of their remarkable military performance. Reiter and Stam (see pp. 78-83) find that democratic soldiers are significantly superior in military effectiveness, as represented by leadership and initiative on the battlefield, even after controlling for factors such as the level of economic development. The authors interpret these empirical findings as evidence that democratic soldiers are indeed more motivated to fight and do so better. For instance, they write (p. 61) 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 be removed from office if it fails to hold up its end of the social contract.”

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 the 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 income redistribution are concessions that the national elites may be forced to grant to the masses in order to increase their nationalism, and therefore their war effort, when two basic conditions are met. The first one is the presence of a significant outside threat represented by a military conflict or by 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. Under these conditions, our model stipulates that warfare “causes” democracy.⁵² 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.

To some extent our theory is complementary to other recent formal theories of regime transitions, and in particular with those emphasizing the revolution-threat posed by the masses as main cause of institutional change. For instance, it can be argued that the advent of mass-armies required to keep the lower classes contented enough not only to motivate the conscripts to fight well, but also to prevent popular revolts, which are evidently more difficult to repress when the soldiers (including many officers) are from the same social strata of the rebels. Moreover, such threat is likely to be particularly serious precisely in the aftermath of a major military setback, when the repressive power of an incumbent oligarchic government is likely to be severely curtailed and, as a result, democracy may obtain “by defeat” (Therborn, 1977).

Yet, our model has the ability of shedding light on important episodes of the democratization of the West that appear otherwise difficult to explain for other existing theories of political transitions. A notable case is that one of the process of democratization of the U.S., which cannot be accounted for neither as the product of the threat of a revolution, nor of an intra-elite conflict. Our theory, instead, explains this process in relation to the significant involvement of this country in mass warfare during both the XIX and the XX century.

⁵²Thus, our theory implies that a technological shock leading to a change in the type of army should have important socio-political consequences. This result is in agreement with the famous argument of White (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. Many other instances of social and political transformations triggered by shocks to the military technology are discussed in Andreski (1968).

6 Appendix

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

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

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

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 solution⁵³

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

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 equations⁵⁴

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

and

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

⁵³In this case as well as in the next ones, we omit the solution of the value functions, like $V^p(\mu^p, \tau, 1, R | e^H)$, that we do not use in the following steps. However, these expressions are straightforward to derive and can be obtained by the authors upon request.

⁵⁴We remind the reader that the first expression generates two equations because the indicator function I_t^ε can be equal to ε 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.

The solution implies that

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

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).

PROOFS OF CLAIM 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 τ and the poor always put high effort in war periods, satisfy the following system of functional equations

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

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

The solution implies that

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

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

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

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

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

The solution of this system of equations is

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

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

Claim 2, i.e. the tax rate τ_w^r in (5), is derived from the substitution of equations (17) and (19) into (4). Claim 3, i.e. the tax rate τ_p^r in (7), is obtained substituting equations (17) and (18) into (6).

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