DISCUSSION PAPER SERIES

DP15561

NATION-BUILDING, NATIONALISM, AND WARS

Alberto Alesina, Bryony Reich and Alessandro Riboni

PUBLIC ECONOMICS

ISSN 0265-8003

NATION-BUILDING, NATIONALISM, AND WARS

Alberto Alesina, Bryony Reich and Alessandro Riboni

Discussion Paper DP15561
Published 15 December 2020
Submitted 28 August 2020

Centre for Economic Policy Research
33 Great Sutton Street, London EC1V 0DX, UK
Tel: +44 (0)20 7183 8801
www.cepr.org

NATION-BUILDING, NATIONALISM, AND WARS

Abstract

This paper explores how wars make nations, above and beyond their need to raise the fiscal capacity to finance warfare. As army size increases, states change the conduct of war, switching from mercenaries to mass conscript armies. In order for the population to accept fighting and enduring wars, the government elites provide public goods, reduce rent-extraction, and adopt policies to build a "nation" -- i.e., homogenize the ``culture'' of the population. Governments can instill \textquotedblleft positive" national sentiment, in the sense of emphasizing the benefit of the nation, but they also can instil "negative'' sentiment, in terms of aggressive propaganda against the opponent. We analyze these two types of nation-building and study their implications

JEL Classification: H4

Keywords: N/A

Alberto Alesina - aalesina@harvard.edu
Harvard University and CEPR

Bryony Reich - bryony.reich@kellogg.northwestern.edu
Northwestern

Alessandro Riboni - alessandro.riboni@gmail.com
École Polytechnique and CEPR

Acknowledgements
Alberto passed away a few weeks after resubmitting this paper. We deeply miss his brilliance and joyful spirit. We thank Oriana Bandiera, Bruno Caprettini, Bertrand Crettez, Antoni De Moragas, Leonard Dudley, Raquel Fernandez, Hector Galindo-Silva, Kai Gehring, Paola Giuliano, Andrea Matranga, Mickael Melki, Stelios Michalopoulos, Jean-Baptiste Michau, Facundo Piguillem, Kenneth Shepsle, Romain Wacziarg, and seminar participants at several institutions for valuable feedback. We thank Elisabetta Campagna, Igor Cerasa, Xiaoyu Cheng, and Matteo Ferroni for excellent research assisantship. Riboni acknowledges the financial support of Investissements D'Avenir (ANR-11-IDEX-0003/Labex Ecodec/ANR-11-LABX-0047)

Nation-Building, Nationalism, and Wars*

Alberto Alesina
(Harvard University and Igier)

Bryony Reich
(Northwestern University)

Alessandro Riboni
(Ecole Polytechnique, Crest and CEPR)

August 2020

Abstract. This paper explores how wars make nations, above and beyond their need to raise the fiscal capacity to finance warfare. As army size increases, states change the conduct of war, switching from mercenaries to mass conscript armies. In order for the population to accept fighting and enduring wars, the government elites provide public goods, reduce rent-extraction, and adopt policies to build a "nation" – i.e., homogenize the "culture" of the population. Governments can instill "positive" national sentiment, in the sense of emphasizing the benefit of the nation, but they also can instill "negative" sentiment, in terms of aggressive propaganda against the opponent. We analyze these two types of nation-building and study their implications.

JEL Classification: D 72, D 74, H4.
Keywords: Nation-Building, Interstate Conflict, Public Good Provision, Political Rents.

We thank Oriana Bandiera, Bruno Caprettini, Bertrand Crettez, Antoni De Moragas, Leonard Dudley, Raquel Fernandez, Hector Galindo-Silva, Kai Gehring, Paola Giuliano, Andrea Matranga, Mickael Melki, Stelios Michalopoulos, Jean-Baptiste Michau, Facundo Piguillem, Kenneth Shepsle, Romain Wacziarg, and seminar participants at several institutions for valuable feedback. We thank Elisabetta Campagna, Igor Cerasa, Xiaoyu Cheng, and Matteo Ferroni for excellent research assisantship. Riboni acknowledges the financial support of Investissements D'Avenir (ANR-11-IDEX-0003/Labex Ecodec/ANR-11-LABX-0047)

1. Introduction

States developed fiscal capacity in order to finance military spending needed for wars. As Tilly (1975, p. 42) put it, "war made the state." However, guns alone are not enough to win wars; one also needs motivated soldiers. In modern times, with the advent of large armies, elites have had to make concessions to induce citizens to comply with war-related demands, and have promoted nationalism to motivate citizens and extract "ever-expanding means of war – money, men, material, and much more – from reluctant subject populations" (Tilly, 1994; see also Levi, 1997). This paper examines how states motivate soldiers.

The "anciens régimes" of Europe fought wars with relatively small armies of mercenaries, sometimes foreigners, paid from the spoils of war. Over time, countries changed the conduct of war, switching to mass armies, recruited or conscripted from the national population. Roberts (1956) explains how warfare underwent a "military revolution" starting between 1560 and 1660, and reaching completion with the "industrialization of war" (McNeill, 1982) that occurred in the 19th century.[1] This implied changes in tactics, weapons, communications and transport technologies allowing states to manage large armies in the field.[2] Scheve and Stasavage (2016, Table 7.1) show that the mobilization rate (army size relative to a country's total population) across 13 countries increased sharply after 1875 and reached a peak during WWII.[3] Armies increased in size, and as Clausewitz (1832) put it, "War became the business of the people."

A body of existing work has examined how wars induce states to raise their capacity to finance warfare.[4] We provide a framework to examine the complementary issue of how states motivate soldiers to exert effort in war. We consider how the tools used to motivate

[1]Roberts (1956), Tallett (1992), Rogers (1995), and Parker (1996) study innovations in warfare in the early modern period. For more recent innovations see McNeill (1982) and Knox and Murray (2001).

[2]The electromagnetic telegraph, developed in the 1840s, allowed the deployment and control of the army from a distance. Steamships and railroads moved weapons, men, and supplies on an entirely unprecedented scale (Onorato et al., 2014). In the middle of the 19th century, the adoption of semiautomatic machinery to manufacture rifled muskets made it possible and affordable to equip a large number of soldiers (McNeill, 1982, p. 253).

[3]According to Finer (1975), the number of French troops called up for campaigns was 65,000 in 1498, 155,000 in 1635, 440,000 in 1691, and 700,000 in 1812. In 1812 Prussia sent 300,000 soldiers (equivalent to about 10 percent of the population) to war (Finer, 1975, p. 101). These figures increased dramatically in the 20th century: during WWI, 8 million soldiers were recruited in France (Crepin, 2009, and Crepin and Boulanger, 2001) and military mobilization involved 15% of the total French population.

[4]Among others, see Brewer (1990), Tilly (1990), Besley and Persson (2009), and Dincecco and Prado (2012).

war effort have changed as army size increased over this period. To motivate war effort, states must be seen as a "desirable" entity by soldiers. To do this, in our model, states become providers of mass public (non-war-related and broadly defined) goods and services, and develop nation-building policies designed to increase national identity. Such nation-building policies "homogenize" a heterogeneous population, making citizens feel that they belong to a population which is united by a shared culture, values, and public policies for which it is worth fighting. We denote this form of nation-building as "positive" because it fosters the "value" of a nation state. However we also model a "negative" form of nationalism which takes the form of propaganda against the enemy and supremacy theories. In this case, national identity is defined negatively, based on stigmatization of the opponents, not on the (material or cultural) benefits of one's own nation.

We begin by taking fiscal capacity (and tax revenue) as exogenous and consider how an elite chooses the composition of public spending and homogenizing policies. We model a ruling elite that chooses how to incentivize soldiers to exert effort in war. One way is to pay them if they win. A less direct motivation is to provide public goods and policies. A defeat results in the loss of the national government, and a foreign government takes over the nation, or at least dictates or influences the policies of the defeated country. We show that if citizens and soldiers believe that defeat in war implies a loss of useful national public goods and services provided by their government, then they exert more effort toward a victory.

We model soldiers' incentives to exert effort in war by supposing that the citizens/soldiers are rule-utilitarian (Harsanyi, 1980) and thus choose effort according to the rule that is optimal for all citizens.[5] We show that if warfare requires only a relatively small army, then elites motivate soldiers by simply paying them (more) in victory. If the required army is larger, then the problem of dilution of monetary payoffs becomes severe: elites have to give up too much of the spoils to create good incentives for soldiers. As a result, governments will cease to rely on professional soldiers and instead motivate the war effort by investing in mass public goods that please the national population as a whole, such as infrastructure, health services, and pro-worker regulation. Our model implies that governments should aim to provide services and public goods that are not only valuable but also "non-generic," in the sense that the home country's public goods are differentiated from those provided by foreign

[5]We also show that the thrust of our results remains unchanged when we consider soldiers may free-ride in war effort.

governments. Because a homogeneous population agrees more about what public goods and services should be provided, the rulers of a homogenous country are more likely to motivate soldiers using public goods enjoyed by most citizens.

The historical evidence seems consistent with these implications of the model. Aidt et al. (2006) argue that total spending as a fraction of GDP did not increase much in the 19th century up until WWII. Instead, the composition of the budget changed: in the 19th century and early 20th century, spending on defense and policing shifted toward spending on public services (transport, communication, construction) and later on provision of public goods (education and health).[6] Over this time period, governments made extensive social promises during wars to secure mass loyalty and preparedness for self-sacrifice.[7] In 1917, for instance, British Prime Minister Lloyd George announced several social policy reforms for the post-war years, including a public housing program and public health reforms.[8] In 1942, the Beveridge Report provided instructions on how to restructure the British social security systems and most of the promises were put into effect after the war.[9] Titmuss (1958, p. 49) argues "[WWII] could not be won unless millions of ordinary people, in Britain and overseas, were convinced that we had something better to offer than had our enemies—not only during but after the war."In an effort to motivate the population, Nazi propaganda promised the "biggest welfare state in the world" in case of victory.[10] Public spending might have indeed worked to stimulate soldiers' effort: Caprettini et al. (2018) find that US areas that received higher welfare spending in the 1930s were more supportive of the war effort during WWII.

In the second half of the paper we model nation-building policies and consider when such

[6]As reported in Table 5 in Aidt et al. (2006), in Europe, defense, judiciary, and police accounted for on average 59.7 percent of total spending from 1850-1870, and 30.5 percent from 1920-1938.

[7]Tilly (1990, p. 120) argues that in Europe at the end of the 19th century "central administration, justice, economic intervention and, especially, social services all grew as an outcome of political bargaining over the state's protection of its citizens."

[8]This indeed materialized: Swenarton (2018) notes that after WWI, the British government launched the housing campaign as a way of persuading the troops and the people that their aspirations would be met. See Obinger and Petersen (2015), Obinger et al. (2018), Scheve and Stasavage (2012, 2016) and Dudley and Witt (2004) for detailed historical evidence on the relation between welfare and warfare.

[9]Similarly, in the 1941 State of the Union address, President Roosevelt enunciated four freedoms (freedom of speech, want, worship and fear) and a comprehensive list of social rights (e.g. medical care, education, housing) for which the war would be fought.

[10]See Reidegeld (1989, pp 512-513). Scheiedel (2017) shows that after entering the war, Japan's military grew more than twentyfold in size, and workers started to benefit from rent controls, government subsidies, the government launched health insurance schemes, public pension schemes, and the first ever public housing program.

policies will be implemented to motivate war effort and build national identity (nationalism).[11] In order to induce war effort from soldiers and the population as a whole, governments can indoctrinate citizens to convince them that they are part of a nation and to value their national government and its policies. Soldiers from regions without any national identity may not put much effort into fighting, or may even break away to join the enemy.[12] States can instil national identity through policies like teaching a common language and the importance of national culture and values. We explicitly model such policies.

Besides instilling "positive" national sentiment, in the sense of emphasizing the benefit of the nation, governments also can instill "negative" sentiment, in terms of aggressive propaganda against the opponent. Tilly (1994) stresses that national identity often benefits from the existence of a well-defined other: he writes, "Anti-German sentiment reinforced the desirability of becoming very French, as anti-French, anti-Polish, or anti-Russian feeling reinforced the desirability of becoming very German." Many leaders have resorted to such negative forms of indoctrination.[13] We capture this idea by assuming elites can invest in a policy which serves to increase dislike for the foreign government and public goods. We then model the choice by elites to invest in either positive or negative sentiment.

We find that when the required army size is small, elites do not engage in nation-building (either positive or negative). When soldiers are motivated exclusively by monetary payoffs, preference heterogeneity within the country has no impact on soldiers' effort, so elites have no incentive to forge a national identity. This result is consistent with the view that nationalism became a key force in politics only in the last two centuries once army size increased.[14] As army size increases and states switch to motivating war effort with mass public goods, soldiers now fight to keep their own sovereignty and public goods. Preference heterogeneity within the country, and the distance of preferences from the opponent country, now have an effect on war effort. Nation-building then becomes a powerful instrument for motivating the soldiers

[11]See the survey by Jaffrelot (2005). Colley (2005) and Greenfeld (1992) discuss how national identities in Britain, France, and Germany were fostered by conflicts.

[12]Weber (1976, p. 101) describes such episodes of hostility on the part of French border regions towards the national army during the 1870 war against Prussia.

[13]Kallis (2005, p. 65) argues that in the final years of WWII, when belief in National Socialism started to crumble, German propaganda switched from positive and self-congratulatory discourse to more negative content, stressing anti-Bolshevism, anti-Semitism, and anti-plutocratic themes. Voigtländer and Voth (2015) find that these forms of propaganda have long-lasting effects. Guiso et al. (2009) find that countries with a history of wars tend to trust each other less.

[14]See Anderson (1983), Gellner (1983) and Hobsbawm (1990).

and the population at large.

We show that public good provision and positive indoctrination are complements, while public good provision and negative indoctrination are substitutes. This suggests the possibility of two types of nation-building: nations that invest in mass public goods and positive nationalism, and nations that do not provide public goods and invest in anti-foreign nationalism. We believe that the distinction between these two forms of nationalism is still meaningful today. As Ahlerup and Hansson (2011) show, some countries feature high levels of national pride (as measured by surveys) and low governmental ability to provide public goods and implement good policies. In our model, this occurs when national identity is defined in purely "negative" terms.

Finally, we examine the role of fiscal capacity. We first show that states with low fiscal capacity, or states that face an opponent with a high level of public goods, cannot compete with mass public goods. These elites choose negative nationalism to motivate the population. This generates a novel channel through which low state capacity can be detrimental to development. By pursuing "negative" nationalism, low state-capacity governments can afford to keep high rents and will have no incentive to provide valuable public goods.[15] In the final section, we suppose that fiscal capacity can be augmented thanks to costly investment as in Besley and Persson (2011). We provide conditions under which the elites invest in fiscal capacity and show that when the tax revenue is endogenous, the results of the basic model with exogenous fiscal capacity are maintained, with additional insights.

Our paper is related to several others. Acemoglu and Robinson (2000) argue that elites gave concessions in response to internal threats of revolution. In this paper, we consider concessions that occur as a response to external threats. Our theory is also complementary to the work of Lizzeri and Persico (2004), who show that the expansion of voting rights, by increasing the electoral value of policies with diffuse benefits, determined a shift from pork-barrel politics to public good provision. Ticchi and Vindigni (2007) argue that starting after the French Revolution voting rights were extended in order to motivate conscripted citizens

[15]Wimmer (2019, 2013, p. 18) argues that whether nationalism develops in a more inclusive or exclusive direction is related to a country's state capacity: "Inclusive ruling coalitions—and a correspondingly encompassing nationalism—have tended to arise in countries with a long history of centralized, bureaucratic statehood [...] Where state elites were weaker vis-a-vis other elites and the population at large, they were not able to offer sufficient public goods and political participation to make the nation an attractive enough category to identify with."

to fight wars. These authors highlight the importance of the introduction of mass armies, but their focus is on the advent of democracy. We instead consider public good provision and nation-building, and we study how nationalism can either complement or substitute public good provision. Alesina et al. (2019) examine the incentive to "nation-build" as a response to democratization and threats of secessions, but they do not consider wars. Besley and Persson (2009, 2011) show how wars give rulers the incentive to build an effective state that can successfully tax its citizens in order to finance its military expenses. Gennaioli and Voth (2015) however, show that before the military revolution, the probability of winning a war was somewhat independent of fiscal resources. They argue that between 1650 and 1800, the odds of the fiscally stronger power winning a conflict increased dramatically, thus providing strong incentives for building fiscal capacity. However there is empirical evidence (Biddle, 2004, and Aghion et al., 2018) suggesting that in more recent times the correlation between military expenditures and military victory has weakened.[16]

Aghion et al. (2018) study which regime (democracy or autocracy) invests more in education and how this relates to external threats. They also show that education raises the probability of victory in future wars, but their empirical analysis does not directly test the channel. For a discussion of education policies as instruments of cultural homogenization, see also Weber (1976, ch. 18), Posen (1993), Darden and Mylonas (2016), Bandiera et al. (2017), and Alesina et al. (2019). In our paper we focus on government spending broadly defined (not only on education) and we model the mechanism through which spending can increase effort in conflict.[17]

Finally, this paper is also related to the literature on conflict. Esteban and Ray (2001, 2011) study conflicts over "public goods" (such as, political power and ideological supremacy) and private goods (e.g., spoils).[18] In their model, an exogenous parameter determines the importance of the public and private components in the conflict. In our model, soldiers fight to capture monetary payoffs and/or to defend the national public good. The importance of

[16]Gennaioli and Voth (2015) model the military revolution as an increase of the sensitivity of the war outcome to fiscal revenues. We model it in a complementary manner, as an increase of the size of the army.

[17]In Sambanis et al. (2015), governments resort to wars to boost nationalistic feeling. Winning a war raises the nation's status and so induces individuals to identify with the nation. In our model, the causality runs the other way: nation-building is undertaken in order to increase the chance of victory, rather than being the result of victorious wars.

[18]On this distinction, see also Spolaore and Wacziarg (2016).

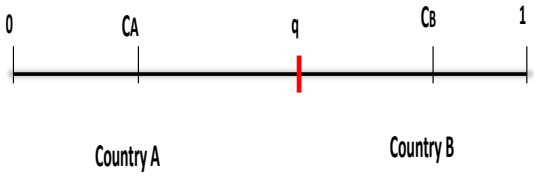
the two components and the degree of cross-group alienation are an endogenous choice of the elite. Ognedal (2019) studies a political contest in which participation is voluntary. In her model the number of participants affects the type of public policies (either public goods or targeted transfers) selected by the winning group. We assume instead that the number of soldiers is exogenous and study how the elite incentives soldiers' effort in war.

The paper is organized as follows. Section 2 presents the basic structure of the model and examines peacetime. Section 3 considers a war between two countries. Section 4 discusses the elite's trade-off between providing public goods and paying soldiers with monetary transfers. Section 5 studies various forms of nation building including indoctrination, nationalism, and negative propaganda against the enemy. Section 6 makes fiscal capacity, namely the ability to collect taxes, endogenous. Section 7 discusses various extensions and the final section concludes. All proofs are in the Appendix.

2. Peace

The world consists of two countries, A and B, which are for the moment at peace. Country A is represented by the linear segment $[0, q]$ and country B by the segment $(q, 1]$. We let $C_A \in [0, q]$ and $C_B \in (q, 1]$ denote the location of the "capitals" of the two countries as in Figure 1. In each country, there are two types of individuals: members of the elite and ordinary citizens. The total population of ordinary citizens is normalized to 1. Ordinary citizens have measure q in country A and $1 - q$ in country B. The elite has measure s_j in country $j = A, B$. Each individual has a specific "location." All members of the elite are located in the capital, where the public good is provided, while citizens are uniformly distributed over the country. Each country is run by its own elite and the elite is not threatened by internal revolutions. In peacetime the only role of the elite is to decide how to allocate tax revenue between rent-extraction, public good provision, and nation-building or homogenization (terms which we use interchangeably). We discuss this further below.

Figure 1: The two countries



In country j all individuals, including the elite, receive a fixed income y_j. Ordinary citizens (but not the elite) pay an exogenously given tax of t_j. This could easily be generalized to elites paying taxes and/or having higher income, but would yield no gain in insight and would simply require more notation. The level of taxes is determined by the fiscal capacity of the state, which we assume to be exogenous for the moment. We endogenize it later (see Section 6). When A and B are not in conflict, we can deal with them separately and analogously. Here we solve for country A.

The citizens and the elite derive utility from private consumption and from the public good. In country A the utility of an individual located at $i \in [0, q]$ is

$$U_{i,A} = \theta g_A(1 - a\,|i - C_A|) + c_{i,A}, \tag{1}$$

where $g_A \geq 0$ is a scalar that denotes the size of the public good provided in the capital of country A. Consumption of an ordinary citizen in country A is $c_{i,A} = y_A - t_A$, while consumption by a member of the elite is

$$c_{e,A} = y_A + \phi_A, \tag{2}$$

where ϕ_A are the rents.

As in Alesina and Spolaore (2003), we assign the public good a geographical and preference interpretation: it is located in the country's capital and individuals located close to the capital benefit more from it. That proximity can be interpreted as geographical or in terms of preferences, culture, or language. More broadly, the public good could be interpreted as a set of public policies which favor the "capital". The value $|i - C_A|$ is the distance of individual i from the location of the public good. The parameter $\theta > 0$ is the marginal benefit of public spending for an individual at zero distance from it, and $a > 0$ is the marginal cost of

distance from it. A low (respectively, high) value for the parameter a captures homogeneity (respectively, heterogeneity) of preferences within the country. We posit $a < 1$ so that everyone's utility is increasing in the public good.

The government has access to homogenizing technology which makes the public good more attractive to individuals who are far away from it. In other words, "homogenized" citizens feel like members of the nation, rather than of their specific village, region, ethnic, or religious groups. Over time, states have homogenized populations by creating state-controlled education systems, promoting national symbols and traditions, celebrating their cultural roots in national museums, using print-based media, teaching a common language (the one spoken by the elite in the capital), and so on. Homogenization can also be achieved in more physical terms, for example by building roads (or railroads, or airports) in order to reduce the costs of distance from the capital or spreading out the location of various public goods (say hospitals) away from the capital. [19]

The variable $\lambda_A \in [0, 1]$ denotes the homogenization policy while h is its linear cost. We model homogenization as a technology that changes individual preferences by shifting the ideal point of an individual "located" at i and bringing it closer to C_A:

$$(1 - \lambda_A)i + \lambda_A C_A. \tag{3}$$

Thus the higher λ_A is, the more citizens will benefit from the public good provided in the capital. We assume that citizens do not (or cannot) resist homogenization. We denote this form of nation building as "positive" because it emphasizes the benefits of the public goods and services provided by the government.

Sometimes public goods and nation-building policies are interconnected. Public elementary education can have a positive income effect on citizens, but it can also be used to inculcate a national language, values, and national sentiment. Public infrastructure, for example roads and rail, provide value by facilitating movement around the country, but they are also sometimes used to try to unify a diverse population. For tractability, we do not model these potential spill-overs. Note that minorities may not welcome some homogenization policies such as the imposition of a national language or repression of local cultures, but,

[19] An extreme form of homogenization is genocide and forced displacements (Esteban et al. 2015), which we do not consider since the size of the population is fixed.

when successful, these policies nevertheless build national sentiment.[20]

The share of $t_A q$ (tax revenue) that is appropriated by the elite as political rent is $(1-\pi_A) \in [0,1]$ and is chosen by the elite. If $\pi_A > 0$, then tax revenue is used to provide the public good (financing a positive g_A) and to homogenize (financing a positive λ_A). The government's budget constraint is given by

$$\pi_A t_A q = g_A + h\lambda_A. \tag{4}$$

The elite lives in the capital. Each member of the elite has the following utility which is maximized subject to the budget constraint above:

$$U_{e,A} = \theta g_A + y_A + \frac{(1-\pi_A)t_A q}{s_A}. \tag{5}$$

The last term of (5), which we denote by ϕ_A, is the political rents appropriated by each member of the elite (of measure s_A). The utility of the elite is not affected by λ_A, because the elite is located in the capital (i.e. elites have the public good that they like). Thus, the elite sets $\lambda_A = 0$ because homogenization is costly. Given the linearity of (5) it immediately follows that the elite either invests all tax revenue in the public good or diverts all tax revenue as rent.

Proposition 1: *For all parameters values, $\lambda_A = 0$. When*

$$1 - s_A\theta > 0, \tag{6}$$

the elite chooses zero public good provision and all tax revenue is appropriated as rents. When instead (6) does not hold, then the elite does not extract rents and chooses maximal spending on the public good.

Condition (6) implies that if the elite's measure s_A is relatively small, and if the benefits of the public good are not extraordinarily large (low θ), then the elite prefers to extract rents rather than to deliver public goods that benefit everyone, including the elite.[21] This captures

[20] Of course in some cases these policies may backfire. An issue we do not explore here.

[21] If utility were not linear in g_A, public good provision would not necessarily be zero (see Appendix A.3). Linearity is assumed to keep the analysis tractable.

the case of "anciens régimes": small elites extracting rents, with small (or non existent) public sectors. Throughout the rest of the paper we assume that (6) holds. Thus:

Assumption 1: $1 - s_A\theta > 0$.

3. War

3.1. The Determinants of Victory

We now study a conflict between country A and B without modelling why the conflict erupts; the probability of conflict is one.[22] In Appendix A.6 we support this assumption by showing that when the size of the elites in the two countries is sufficiently small (low s_A and s_B) countries do indeed wish to go to war. The elite does not fight and the proportion of ordinary citizens fighting in the war is $\chi \in [0, 1]$ in both countries. In reality, members of the elites have fought wars as highly ranked members of the army, with perhaps better conditions but also with many casualties. Generalizing this aspect of the model would yield no major insights and would clutter the notation. The motivation of the elite is to not lose sovereignty and its associated rents (and public goods, if there are any).

The size of the army in country A and B is χq and $\chi(1 - q)$ respectively. We assume that the army fully represents the heterogenous population in the country. That is, the elite cannot selectively send citizens to the front on the basis of their location, and citizens cannot resist the call to serve. We discuss this assumption and potential extensions below. The parameter χ plays a key role in our analysis: an increase in χ captures the evolution of military technologies that lead to large armies.

Losing the war entails a total loss of sovereignty. The defeated country forgoes its entire tax revenue to the winner; its capital becomes the capital of the winning country. We discuss a partial loss of sovereignty in detail in Section 7. If country A wins, then the tax revenue raised in country B is shared between A's elite and A's soldiers according to the proportions $1-\gamma_A$ and γ_A, respectively, where γ_A is chosen by the elite. The reverse holds true if B wins.

Each soldier in A exerts effort e_A, which is derived in Section 3.3. Total effort in country A is therefore $\chi q e_A$. The probability of country A winning is given by:

$$P_A(e_A, e_B) = \frac{\chi q e_A}{\chi q e_A + \chi(1 - q)e_B} \tag{7}$$

[22] On this, see Jackson and Morelli (2011).

with the probability that B wins $P_B = 1 - P_A$. Effort in country B, e_B, is taken as exogenous, and total effort is therefore equal to $\chi(1-q)e_B > 0$. In Appendix A.5, we solve a simplified model in which A and B simultaneously choose war effort. We show there that the assumption that B's effort is exogenous is not essential (see Proposition A3 in Appendix A.5). On the other hand, endogenizing public policies (rents, public spending, etc.) in country B and solving the full game between A and B would be analytically quite involved. We briefly discuss this issue in the Conclusion. Thus throughout, we hold fixed both war effort and policies in country B. Solving for A's best-response allows us to study the elites' main trade-off in a transparent way.

The probability of winning depends on soldiers' effort. In reality it also depends on the quality and quantity of guns, but remember that we assume constant tax revenue. More generally, we could have assumed that the military strength of a country is the product of two inputs, soldiers' effort and guns, and that the cost of effort is reduced by having more efficient guns. In that case, soldiers' efforts would increase with the quantity and quality of military equipment, so effort also may be taken more generally as a catchall term for having a more efficient army. We will introduce military equipment in Section 6, where we endogeneize fiscal capacity.

The relevant timeline is as follows. First, the elite of country A chooses how to allocate taxes among rents, public good provision, and homogenization, as well as how to divide the spoils of war between itself and the soldiers. Thus, the elite chooses policy vector $(g_A, \lambda_A, \gamma_A)$ subject to (4) and given $e_B, t_B, g_B > 0$. To make the problem interesting, g_B should not be too large, otherwise individuals in A would want to lose the war.[23] Similarly, e_B cannot be too high so that soldiers in A will have an incentive to exert positive effort. We discuss these bounds in the Appendix. The elite's rents are determined residually using (4). Next, a conflict arises and war effort e_A is chosen. Finally, the winner of the conflict is determined, and individuals' payoffs are computed.

We will solve the game backward, first computing the war effort in A (Section 3.3) and then solving the elite's problem. We abstract from commitment problems on the part of the elite: the initially chosen policies determine the soldiers' payoffs when the war ends.

[23] In reality, it is possible that the masses living in peripheral regions may prefer to lose a war and be annexed by an adjacent country, especially if domestic elites are disliked.

3.2. Payoffs

Consider an ordinary citizen $i \in [0, q]$ who is a soldier in country A. His utility in the case of victory and defeat (net of the effort cost) is denoted, respectively, by $U^+_{i,A}$ and $U^-_{i,A}$. Using (1) and (3):

$$U^+_{i,A} = \theta g_A - \theta g_A a \left|(1-\lambda_A)i + \lambda_A C_A - C_A\right| + y_A - t_A + \gamma_A \frac{t_B(1-q)}{\chi q}. \tag{8}$$

All but the final term in (8) are the same as in peacetime. The final term is the "pay" that each soldier receives from the spoils of war: in victory, proportion γ_A of the tax revenue of B is distributed among A's private soldiers, whose measure is χq. If country A is defeated, then the capital of country A moves to C_B. Citizens continue to pay taxes, but the tax revenue goes to country B. Thus, citizen i's utility is

$$U^-_{i,A} = \theta g_B - \theta g_B a[C_B - (1-\lambda_A)i - \lambda_A C_A] + y_A - t_A. \tag{9}$$

Citizens in A evaluate the new capital according to their preferences after homogenization, i.e., for given λ_A. In (9) we also assumed that the elite in the winning country do not homogenize the losers.[24]

The utility of each elite member in country A in the case of a success and a defeat is denoted, respectively, by $U^+_{e,A}$ and $U^-_{e,A}$, where

$$U^+_{e,A} = \theta g_A + y_A + (1-\pi_A)\frac{t_A q}{s_A} + (1-\gamma_A)\frac{t_B(1-q)}{s_A}. \tag{10}$$

The last two terms in the above expression are, respectively, the political rents and the share of spoils appropriated by the elite. The elite's utility from defeat is

$$U^-_{e,A} = \theta g_B - \theta g_B a(C_B - C_A) + y_A. \tag{11}$$

Payoff (11) assumes that the elite continues not to pay taxes in the case of defeat, but does lose their political rents.

[24]This assumption is not essential given that we do not model the periods that follow the war; if we did, homogenization could be useful even in peacetime and for a winning foreign country to prevent insurrections. See for instance Dehdari and Gehring (2017). Alesina et al. (2019) study a model of homogenization with insurrections modelled as independentist movements.

Assuming that the elite does pay taxes in the case of defeat would only reinforce our results, because it gives the elite an even stronger incentive to win the war. Assuming that taxes increase after a defeat, or that the foreign public goods are only partially provided, is also not essential, provided that these additional costs also are incurred by the elites. What is important is that the elites have a higher stake in the conflict than does the population. This gives the elites an incentive to boost citizens' war effort.

3.3. Effort

In the body of the paper we abstract from the free-riding problem that may arise when individuals choose effort levels in war. In Appendix A.5, we show that the thrust of our results remains unchanged in a simplified setting with free-riding and allowing for the possibility that soldiers with higher stake in the conflict exert higher war effort. In principle, there would be extreme free riding in a model with a continuum of soldiers, given that each soldier would see his contribution to the winning probability as negligible, thus leading to no effort in equilibrium. Yet, we observe that soldiers exert a significant amount of effort in many wars. Threat of harsh punishment for cowardice is certainly one reason, but it is not the only one.[25] For now, we bypass free-riding problems by assuming that: (1) all soldiers in A exert the same effort level e_A; and (2) this common effort level maximizes the average expected payoff of ordinary citizens. Analogous to the concept of rule-utilitarianism by Harsanyi (1980), the idea is that soldiers, regardless of their differences, want to "do their part" by abiding by an effort rule that, when followed by all soldiers, would maximize average utility.[26] This assumption requires that a minimal nation-building has already taken place, in the sense that individuals in a certain country already feel "different" from individuals in another country.

Given the policy vector $(g_A, \lambda_A, \gamma_A)$, the effort in war, e_A, maximizes the average expected payoff of all citizens:

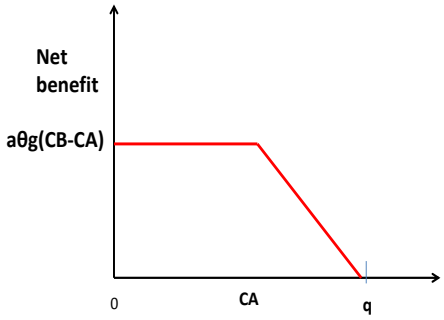
$$\max_{e_A} \quad \frac{1}{q}\left(\int_0^q U_{i,A}^- di + P_A(e_A, e_B)\int_0^q (U_{i,A}^+ - U_{i,A}^-)di\right) - e_A. \tag{12}$$

[25] According to Linderman (1987, p. 35-36), group loyalty was key in sustaining war effort during the U.S. Civil War in spite of scant military training and a weak system of military justice.

[26] A similar behavioral assumption is made, for instance, in Aghion et al., (2018), Feddersen and Sandroni (2006), and Coate and Conlin (2004). Levine and Mattozzi (2017) study a model of turnout and obtain similar results when motivation is driven by peer pressure (Coleman, 1988).

The last term here is the cost of effort, which we assume is linear in e_A. Depending on their location, individuals will have different stakes in the conflict. Individuals close to the border have (relatively) low stakes, because moving the capital to C_B in case of a defeat would be less costly for them. People closer to C_A have higher stakes. Figure 2 illustrates the net benefit of winning for a citizen in country A and how this benefit depends on their location. This is illustrated for a given set of policies (we select $\gamma_A = 0$, $g_A = g_B$) and we assume that citizen q at the border of country A and B is equally distant from the two capitals. How would an increase in the size of the public good provided by country A, g_A, change the net benefit of winning for different citizens? An increase in g_A increases the net benefit of winning more for those individuals closer to the capital. In contrast, an increase in the spoils of war received by soldiers, γ_A, would change the the net benefit of winning by the same amount for all citizens.

Figure 2: Net benefit of winning



The average net benefit of winning is the soldiers' average utility received in the case of victory relative to the soldiers' utility in the case of defeat. We let NB_A denote the average net benefit of winning in country A

$$NB_A \equiv \int_0^q \frac{U_{i,A}^+ - U_{i,A}^-}{q} di \tag{13}$$

and define the positive parameter $\Delta \equiv \frac{C_A^2}{q} + \frac{q}{2} - C_A$. Because optimal effort increases in NB_A, policies chosen by the elite raise war effort, e_A, if they increase the soldiers' average net benefit of winning.

Lemma 1: *War effort in A is increasing in the size of government provided in A and in the*

spoils of war, but is decreasing in the size of government provided in B:

$$\frac{\partial NB_A}{\partial g_A} = \theta - a\theta(1-\lambda_A)\Delta \geq 0 \qquad \frac{\partial NB_A}{\partial \gamma_A} = \frac{t_B(1-q)}{\chi q} \geq 0$$
$$\frac{\partial NB_A}{\partial g_B} = -\theta + a\theta\left(\, C_B - \lambda_A C_A - (1-\lambda_A)\tfrac{q}{2}\right) \leq 0 \tag{14}$$

War effort in A does not depend on taxation in country A, is increasing in taxation in country B, and is increasing in homogenization in A if and only if

$$\frac{\partial NB_{\ A}}{\partial \lambda_A} = \theta g_A\ a\Delta + \theta g_B\ a(\frac{q}{2} - C_A\ ) \geq 0. \tag{15}$$

Lemma 1 shows that an increase in public good provision by country A has a positive effect on effort. When the country is relatively homogenous (small a), a given increase in public goods has a stronger effect on citizens' welfare and, consequently, a larger effect on war effort. The promise of a higher share of the spoils of war raises soldiers' effort by a larger amount when χ is small. When country B provides more public goods, effort in A decreases because citizens are less worried by the perspective of being governed by country B. When the capital of country B is more distant (in terms of geography and culture) from the average citizen of country A, the disincentive effect of higher foreign public goods is smaller. Because taxes t_A are paid regardless of the war outcome, the net benefit of winning (hence, war effort) does not depend on t_A. Conversely, an opponent with higher fiscal capacity t_B provides larger spoils of war and raises war effort of soldiers of country A.

The sign of the effect of λ_A on war effort is ambiguous because the first term in (15) is positive but the second term may be negative. In fact, homogenization has the biggest effect on the desired effort of citizens between C_A and the border with country B. Homogenization increases their utility in the case of victory and reduces their utility in the case of defeat. Homogenization results in higher utility from the public goods provided in country A. It makes defeat more costly because these citizens find themselves with preferences further away from C_B and thus receive lower utility from the public goods provided in country B. For citizens who are to the left of C_A, homogenization reduces their "distance" to C_A but also to C_B, increasing the utility of both victory and defeat. Think, for instance, of roads linking Brittany to Paris that reduce the cost to reach Paris but also Berlin. More generally,

eliminating (more or less peacefully) local culture by making people more "cosmopolitan" may make them closer to both "capitals." Obviously, this effect would be eliminated if there were a fixed cost of losing sovereignty. In Appendix A.4 we also consider an alternative form of homogenization which raises the value of the home public good and leaves the value of the foreign public good unchanged. One example would be teaching a national language. Thus, "cosmopolitanization" of some of the citizens is not crucial for any of our results, but we think that it is interesting and possibly realistic.

4. Public Good Provision versus Spoils

Mass warfare induces the elites to allocate a larger share of tax revenue to the provision of public goods. To demonstrate this, we begin by solving a simplified version of the model without homogenization ($\lambda_A = 0$). The policy vector reduces to (g_A, γ_A): the elite chooses public good provision (which directly determines rent extraction π_A) and how much of the spoils of war go to soldiers. To simplify the notation we assume that the public good is completely non-rival. Qualitatively our results would apply to a model in which public goods are only partly non-rival. Also, we have assumed away the effect of certain public goods (e.g., roads) on the technology of war.

The optimal policy vector that maximizes the elite's expected payoff is given by:

$$(\gamma_A^*, g_A^*) = \arg\max_{g_A, \gamma_A} (U_{e,A}^+ - U_{e,A}^-)(\frac{\chi q e_A}{\chi q e_A + \chi(1-q)e_B}) + U_{e,A}^- - e_A. \tag{16}$$

The last term of (16) is the linear cost of effort; the underlying assumption is that the elite internalizes the effort cost exerted by ordinary citizens in the war. This assumption is completely non-essential. Note that policies have both a direct effect on the elite's payoff and an indirect effect via soldiers' effort. When country A faces an external threat, the elite must make some concession. If both g_A and γ_A were equal to zero, the net benefit of winning of the soldiers would be negative and there would be no war effort, leading to a sure defeat. In choosing the size of the public good, g_A, and the spoils of war accrued by soldiers, γ_A, the elite compares the costs (in terms of its utility) with the benefits (in terms of providing incentives) of both instruments. When equilibrium policies do not hit their upper constraint (i.e., $\gamma_A^* < 1$ and $g_A^* < t_A q$), only the most efficient instrument is used. In Appendix A.2 we address the case in which the policies also can hit their upper constraint and show that the

thrust of our results does not change. From this point onwards, our results present the case where equilibrium policies do not hit their upper constraints.

Proposition 2: *When army size is small so that* $\chi < \overline{\chi}$*, where*

$$\overline{\chi} \equiv \frac{1 - \theta s_A}{q\theta(1 - a\Delta)}, \tag{17}$$

we have $\gamma_A^* > 0$ *and* $g_A^* = 0$*. When instead* $\chi \geq \overline{\chi}$*, we have* $g_A^* > 0$ *and* $\gamma_A^* = 0$*.*

There is a cutoff in army size below which the elite provides incentives to fight by paying its soldiers with the spoils of war but without delivering public goods. For larger armies, the elite gives citizens incentives to fight by providing public goods but no spoils of war. Historically, when armies were small the elite motivated professional soldiers (mercenaries) by paying them with spoils of war. With the advent of mass armies, the problem of dilution of those spoils became severe: they were not sufficient or, put differently, the elites had to give up too much of them, to create strong incentives for the soldiers. The provision of public goods, which are (at least partially) non-rival, is a better "technology"than providing private goods for motivating a large army. So elites began to provide public goods. Soldiers, who were recruited mainly by conscription, fought in order to keep their own sovereignty and public goods.

Our analysis yields two implications. First, it suggests that the incentives for providing public goods increased with the advent of "total wars", i.e., wars among nation-states with competing ideologies that were fought for the ultimate existence of nations. If national public goods are not at stake in war, then citizens will not fight for them, so elites will not have an incentive to provide them in the first place. Second, elites should prefer the provision of "non-generic" public goods that are differentiated from the public goods provided by foreign states. When national public goods are less substitutable with public goods provided by the other country, citizens will be more afraid of losing them. One example of such a public good is public education in the national language, teaching national values and culture.

Figures 3 and 4 show the equilibrium levels of γ_A and g_A as a function of χ. As army size increases, elites must concede a growing share of the spoils of war to soldiers. This is why in Figure 3, γ_A is initially increasing in χ. When army size reaches the threshold $\overline{\chi}$, spending jumps and soldiers are not paid any more. Note that this discontinuity arises

because we assume linear utility. In Appendix A.3, we solve a model with quasi-linear utility in consumption; we show that results are qualitatively the same (public spending increases continuously in army size, and spoils are not distributed for large values of χ).

Figure 3

Spoils promised to soldiers

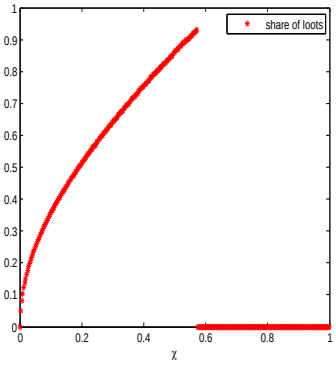
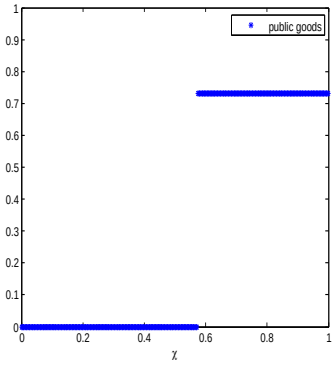


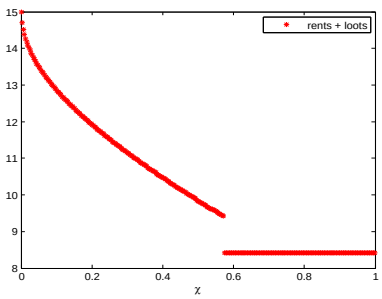
Figure 4

Public goods



From (17), note that the cutoff $\overline{\chi}$ is decreasing in the marginal benefit of public goods. A higher value of public goods relative to the value of the spoils of war will tip the elite to create incentives for soldiers with public goods at an earlier point. Similarly, a more homogeneous country switches "earlier" to providing public goods (i.e., has a lower threshold on army size) because public goods are more valued on average in a more homogeneous country. In contrast, more heterogeneous societies disagree to a greater extent about what public goods should be provided; therefore, direct payments to soldiers can be more effective. In fact, Levi (1997, p. 124) argues that, in the past, countries with class, social, ethnic, and religious cleavages mainly relied on professional soldiers and were least able to mobilize their population to support conscription.

Figure 5: Resources captured by the elite



While public spending jumps up at $\overline{\chi}$, the resources captured by the elite (namely, the sum of rents and spoils of war) drop at the cutoff (see Figure 5). At $\overline{\chi}$ the elite is indifferent between distributing spoils and providing spending. Because public goods also are valued by the elite, indifference is only possible if monetary transfers to the elite decline. Figure 5 shows that increases in army size make the elite worse off because they require an expansion of concessions to the population.

To determine the elite's choice of the level of public good provision, g_A, and the proportion of spoils that go to soldiers, γ_A, we solve the first-order conditions. To be concise, we present the first order condition only for g_A. Let $NB_{e,A} \equiv U^+_{e,A} - U^-_{e,A}$, obtained from (10) and (11), denote the elite's net benefit from winning. If the solution for g_A falls within the interval $[0, t_A q]$, the first-order condition is

$$\underbrace{\frac{\frac{\partial P(e_A,e_B)}{\partial g_A}}{P(e_A,e_B)}}_{effort\ effect} \underbrace{(NB_{e,A} - NB_A)}_{disagreement} = \underbrace{\frac{1-\theta s_A}{s_A}}_{elite's\ mc}. \tag{18}$$

The right side of (18) is the elite's marginal cost of providing more public goods. The left side is the marginal benefit. The first term on the left is larger when the probability of winning is more sensitive to increasing public good provision; that is, when soldier effort is more sensitive to public good provision. The second (positive) term measures the difference between the elite's net benefit of winning and citizens' average net benefit of winning. This term captures the extent of disagreement between the two groups regarding the right amount of effort that should be exerted in war. The higher this term, the higher the elite's incentives to "strategically manipulate" citizens' effort. When effort responds strongly to public good provision, and when the elite has a much bigger stake in the conflict relative to the citizens, then the elite's incentives to deliver more public goods will increase.

If the other country has higher public spending, the elite increases its public spending in A towards that foreign level. That is, there will be a "spending contagion" from B to A. Foreign public spending makes losing the war less costly for domestic citizens and so the elite has to respond by increasing domestic public spending in order to motivate citizens to fight.

Proposition 3: *Suppose $C_A \leq \frac{q}{2}$. When $\chi \geq \overline{\chi}$, the size of government in country A, g_A, is*

increasing in the size of government in country B, g_B.

5. Nationalism

Next, we consider the case where the elite also can choose "positive" nation-building, i.e., the elite chooses $(g_A, \gamma_A, \lambda_A)$. Unlike public good spending, which is also enjoyed by the elite, "positive" nation-building (or homogenization, terms which we use interchangeably) does not directly affect the elite's payoff. The elite pursues homogenization only if it is effective in increasing the soldiers' benefit of winning, thus raising war effort. Some homogenization policies (e.g., teaching a common language to the soldiers) also may directly affect the efficiency of the army by facilitating communication, but we do not explicitly model this.

We derive the results in this section assuming that the capital of A is in the middle of the country. Generalizing this is perfectly feasible but it would lead to many possible cases being analyzed in turn and to a lengthy exploration of cases without much benefit. Thus we assume:

Assumption 2: $C_A = q/2$.

The first result is that "positive" nation-building will always occur along with the provision of public goods.

Lemma 2: *In equilibrium, homogenization, λ_A^*, and public spending, g_A^*, are positively related. More specifically, equilibrium homogenization is given by*

$$\lambda_A^* = \max\{0, \frac{1-\theta s_A}{h} g_A^* - \frac{1-a\Delta}{a\Delta}\}. \tag{19}$$

To understand this result, notice from (15), that the cross-partial derivative of the average net benefit of winning, NB_A, with respect to spending and homogenization is $\theta a\Delta > 0$. That implies a complementarity: a larger government in A makes homogenization policy more effective at raising war effort. If country A does not provide any public goods (or if g_A is sufficiently small), then reducing citizens' distance to the capital is useless. When soldiers are exclusively motivated by monetary payoffs, preference heterogeneity within the country and the distance of preferences from the opponent country has no impact on soldiers' effort.

The second result is similar to Proposition 2. There exists a cutoff in army size below which the elites pay its soldiers with the spoils of war. For larger armies, the elite gives citizens incentives to fight by providing public goods and engaging in "positive" nation-building. We denote this new cutoff by $\widehat{\chi}$, where

$$\widehat{\chi} \equiv \frac{1 - \theta s_A}{q\theta(1 - (1 - \lambda_A^*)a\Delta)}, \tag{20}$$

and λ_A^* is the equilibrium level of nation-building. It is immediate to see that the above cut-off is weakly smaller than $\bar{\chi}$, the cutoff in Proposition 2.[27] In other words, when homogenization is possible, the threshold size of the army above which public goods are provided is weakly lower than when homogenization is not possible. This is because homogenization increases the value of national public goods relative to foreign ones, thus making the public good a more effective instrument for boosting war effort.[28] We summarize these results in the next proposition.

Proposition 4: *Suppose that the elites can choose "positive" nation-building. When $\chi < \widehat{\chi}$, where $\widehat{\chi}$ is given by (20), elites will pay soldiers with monetary transfers, not by providing public goods or investing in "positive" nation-building.*

When $\chi \geq \widehat{\chi}$ the equilibrium level of public goods g_A^* is strictly positive, while homogenization is given by (19).

As opposed to the case where homogenization is restricted to zero, if positive homogenization is feasible, then the threshold size of the army above which public goods are provided will weakly decrease: $\widehat{\chi} \leq \overline{\chi}$.

In the remainder of this section, we compare this "benchmark" (or "positive") homogenization with an alternative form of nation-building, labeled "negative" (or anti-foreign) nationalism. Anti-foreign nationalism does not increase the value of the home public good, but instead increases citizen dislike for the public good provided by the opponent. Its goal is

[27] The two cutoffs are identical when $\lambda_A^* = 0$.

[28] Even if nation-building makes countries switch "earlier" to public goods provision, it is ambiguous on two grounds whether, conditional on being above the cutoff, it leads to higher public good spending. First, nation-building reduces the resources available for public goods. Second, a more homogeneous population raises the first term on the left side of (18), but lowers the second term in the same equation (because the elite and most citizens equally enjoy the national public good).

to bolster war effort by convincing the population that resistance is a lesser evil than losing the war.[29] Thus the comparison we make is between a positive and negative form of indoctrination, where the positive form increases the value of the home nation while the negative form decreases the value of the foreign nation. To facilitate this comparison, we assume that any form of homogenization has a unitary cost h. This assumption can easily be dropped without much gain in intuition, beyond the obvious.

Anti-foreign nationalism is modeled as follows. If country A is defeated and the capital moves to C_B, we assume that citizen i's utility is

$$\widehat{U}^{-}_{i,A} = (1-\lambda_2)\theta g_B \left[1 - a\left|i - C_B\right|\right] + y_A - t_A, \tag{21}$$

where $\lambda_2 \in [0,1]$. A higher λ_2 lowers the value of the foreign public good. Conversely, if country A wins, preferences towards the public good in A are unchanged:

$$\widehat{U}^{+}_{i,A} = \theta g_A \left[1 - a\left|i - C_A\right|\right] + y_A - t_A + \gamma_A \frac{t_B(1-q)}{\chi q}. \tag{22}$$

In considering this form of nation-building, we assume that the elite itself is not affected by its own propaganda: propaganda against the enemy only affects ordinary citizens' utility. This form of indoctrination is totally inefficient from a welfare point of view, because it worsens agents' utility in case of defeat and does not improve their utility in case of victory.

To be effective, negative indoctrination does not require the provision of public goods in the home country. However, g_B has to be positive to make it worthwhile to engage in negative propaganda. Before stating the next proposition, we define the following cutoff

$$\widetilde{\chi} \equiv \frac{h}{q\theta g_B(1 - a(C_B - \frac{q}{2}))} \tag{23}$$

and the parameter

$$\varphi \equiv \frac{1 - a\Delta}{1 - \theta s_A} - \frac{g_B(1 - a(C_B - \frac{q}{2}))}{h}. \tag{24}$$

We continue to assume that equilibrium levels of λ_2, γ_A, and g_A are bounded away from their maximal levels, $\lambda_2^* < 1$, $\gamma_A^* < 1$, and $g_A^* + h\lambda_2^* < t_A q$. Proposition 5 states the policy choices

[29] Similarly, Padro-i-Miquel (2007) suggests citizens support kleptocratic rulers because they fear falling under an equally venal ruler who would favor other groups.

of the elite when it has access to anti-foreign propaganda as the only form of indoctrination. As in Propositions 2 and 4, there exists a cutoff in army size below which the elite pays its soldiers. For larger armies, the elite either provides public goods or engages in "negative" nation-building.

Proposition 5: *When the army is small, $\chi < \min\{\overline{\chi}, \widetilde{\chi}\}$, the elite gives monetary transfers to its soldiers without providing public goods and without undertaking anti-foreign propaganda.*

When the army is large, $\chi \geq \min\{\overline{\chi}, \widetilde{\chi}\}$, the elite stops paying its soldiers and provides either public goods (when $\varphi \geq 0$) or anti-foreign propaganda (when $\varphi < 0$), but not both.

Notice that public good provision and anti-foreign propaganda are substitutes and no longer complements. Therefore, we could observe anti-foreign propaganda (hence, strong nationalistic feelings) without any provision of national public goods. This result is consistent with the evidence from several countries with high levels of nationalism and national pride but a limited ability to provide public goods and to implement good policies, as discussed in Ahlerup and Hansson (2011). When indoctrination instead takes the positive form, it accompanies public-good provision.

Now, assume that the elite can pursue either of these forms of indoctrination. For simplicity, assume that it cannot pursue both forms together. Given that all types of indoctrination analyzed so far have no direct effect on the elite's utility, the elite will choose the type of indoctrination that is most effective in increasing citizens' effort. The following proposition provides a sufficient condition to guarantee that anti-foreign propaganda will dominate other forms of indoctrination.

Proposition 6: *When fiscal capacity is sufficiently low so that*

$$t_A < \frac{g_B(\frac{1}{a} - (C_B - \frac{q}{2}))}{\Delta q}, \tag{25}$$

the elite's preferred form of indoctrination is anti-foreign propaganda.

Countries that either have low fiscal capacity or face an enemy with high levels of public goods will prefer to pursue negative propaganda. This result is intuitive: countries that

cannot match the level of public goods in the foreign country are discouraged from providing public goods. These countries prefer negative propaganda over other (more positive) forms of indoctrination because it does not require effective public good provision in the home country.[30] Proposition 6 provides a novel channel through which low state capacity leads to inefficient policy decisions.[31]

6. Endogenous Fiscal Capacity

Fiscal capacity constrains the elite's ability to tax its citizens. In the previous analysis, we took fiscal capacity as exogenous. In this section, we make it endogenous. Following the literature (see Besley and Persson, 2011) we treat fiscal capacity as capital stock. Fiscal capacity is initially given, but it can be augmented thanks to costly investment. Such investment can be thought of as building the administrative institutions which are needed to collect the tax revenue.

We extend the main model along two main dimensions. First, we add dynamics. Time is indexed by j, with $j = 1, 2, 3$. In the first period, we suppose that the two countries are at peace. In period 2, a conflict arises. In period 3, the winner of the conflict is determined, and individuals' payoffs are computed. Second, we allow the government to spend on military equipment (tanks, guns, etc). We assume that larger (or more effective) military equipment (denoted by m) decreases the effort cost incurred by each soldier. In equation (12), the effort cost becomes $c(m)e_A$ where $c'(m) \leq 0$. We will assume that the cost of each unit of effort is $c(m) = 1 + m^{-\xi}$, where $\xi \geq 0$ is a scalar that measures the sensitivity of the cost of effort to military equipment. To keep the analysis tractable, we maintain equation (7): the winning probability of country A depends only on soldiers' effort. Military equipment affects the winning probabilities indirectly, through the cost of effort.

We let τ_j denote the level of fiscal capacity in country A in period j (τ_1 is initially given). To lighten the notation, in this section we drop the index A from all variables. The income

[30] If we assumed that both forms of indoctrination can be pursued at the same time, high state capacity countries might complement positive indoctrination with negative propaganda, especially when the opponent has high levels of public spending. This would be consistent with vicious forms of negative propaganda in the past (e.g., France and Germany in the 19th and early 20th century).

[31] For a complementary explanation, see Acemoglu et al (2011). They show that an inefficient state structure may be put in place by a coalition between the rich and bureaucrats. The rich allow bureaucrats to receive high rents; in exchange, they are able to maintain low taxes and public good provision.

tax is constrained by fiscal capacity: $t_j \leq \tau_j$. Throughout, we will assume $t_j = \tau_j$: the elites select the maximum possible tax. As shown in the Appendix (Proof of Proposition 7), this is optimal from the elites' point of view. We denote by $i \geq 0$ the investment in fiscal capacity chosen by the elites at $t = 1$. We assume $\tau_2 = i + \tau_1$. Since in period 2 (war-time) there is no investment in fiscal capacity, we have $\tau_2 = \tau_3$.[32] Finally, we posit a convex cost for investing in fiscal capacity: total cost is $\frac{i^2}{2} + ai$ where $a > 0$.

Assuming no government debt, the budget constraints of the government in periods 1, 2 and 3 are given, respectively, by

$$\pi_1 \tau_1 q = g_1 + h\lambda_1 + \frac{i^2}{2} + ai \tag{26}$$

$$\tau_2 = m. \tag{27}$$

$$\pi_3 \tau_3 q = g_3 + h\lambda_3. \tag{28}$$

Equation (26) states that in the first period, the tax revenue that is not appropriated by the elites as rents can be used to invest in fiscal capacity and, as in the main model, for "positive" nation-building and for public spending. Equation (27) states that during war time (period 2) all tax revenue is allocated to buy military equipment. This is a simplifying, but quite realistic, assumption as war activities make it very difficult to provide public goods. In addition, the elites have incentives to reduce their rents given that their survival is at stake. Finally, equation (28) is the budget constraint in the final period if country A wins the conflict; obviously, in the last period there is no investment in fiscal capacity. If country A is defeated, taxes and spending will be decided by country B. As in the previous model, policies in the foreign country are taken as exogenous.

Summing up, the policies chosen by the elites are: investment in fiscal capacity i, the soldiers' pay γ, rents (π_1, π_3), public spending (g_1, g_3) and nation-building (λ_1, λ_3). We abstract from commitment problems and assume that the elites chooses all policies in the first period.[33] For simplicity, assume that time is not discounted.

[32]For simplicity we assume that fiscal capacity does not depreciate over time. Assuming that the war reduces fiscal capacity would not change qualitatively the results.

[33]Removing the commitment assumption would not dramatically change the results of this section. We discuss this in the proof of Proposition 7.

Investment in fiscal capacity is driven by three main considerations. First, investment in fiscal capacity reduces the resources available for the elites in the first period. Second, higher fiscal capacity raises the chances of winning the war by making war effort less costly.[34] Third, higher fiscal capacity increases country A's tax revenue in the final period, which will be appropriated by the elites of the winning country. When fiscal capacity is not effective in raising war effort (ξ is zero), the second effect is muted and investment in fiscal capacity is positive only if the elites expect to win the war with sufficiently high probability. If the elites of country A expect to lose, they will not find it profitable to make a costly investment in fiscal capacity that will benefit the foreign elites. When instead fiscal capacity is effective in raising war effort ($\xi > 0$), there is an additional motive to raise fiscal capacity, especially when initial capacity is low. This is when the marginal investment in military equipment is particularly effective. Finally, we find that, as in the basic model, public goods are provided only if army size is sufficiently large.[35] This is because investment in military equipment does not change the "relative effectiveness" of the two instruments (monetary payoffs and public goods) used by the elite to boost war effort.

Proposition 7: *When $\xi = 0$, investment in fiscal capacity is positive only if the probability of winning of country A is sufficiently high. When $\xi > 0$ investment in fiscal capacity is always positive, provided that the initial fiscal capacity τ_1 is sufficiently low.*

When fiscal capacity is endogenous, there still exists a cutoff in army size such that when army size is above this cutoff, the elites promise public goods and possibly engage in nation-building. When army size is smaller than this cutoff, the elites pay professional soldiers without providing any public good.

To summarize, we have shown that studying the size of government (fiscal capacity) and studying the spending composition are two quite separate questions. This explains why when we endogeneize fiscal capacity the thrust of the results of the main model are maintained.

[34] Apart from its effect on the cost of effort, higher fiscal capacity does not affect the *net* benefit of winning the war because taxes are paid regardless of the winner. See Lemma 1, which still holds in the current context.

[35] The cutoff is stated in the Appendix, Proof of Proposition 7.

7. Discussion and Extensions

7.1. Armies and nation building: other channels

There are other ways in which large armies and military conscription may interact with nation building. In a country formed of many different ethnic and linguistic groups, military conscription can transmit national values ("ecole de la nation") and represent a symbol of national unity. Mixing soldiers in the same military unit can increase national solidarity (Onorato et al., 2014). On the other hand, increasing unit heterogeneity may decrease efficiency in terms of communication, altruism, and cooperation amongst soldiers.

These considerations suggest a trade-off in the choice of composition of army units which further research may investigate. The literature on team formation, and more generally on heterogeneity and productivity, shows that the relationship between productivity and diversity is an inverted U-curve with a maximum somewhere between full homogeneity and complete diversity. The argument is that some diversity may lead to innovative thinking, but excessive diversity may impede communication and cooperation.[36] In the case of armies, group loyalty, communication, and coordination may be especially important and therefore company homogeneity may be particularly valuable. Costa and Khan (2003) study civic engagement (proxied by rates of desertion and unauthorized absence) by Union Army soldiers during the US Civil war and find that engagement was higher in homogeneous military companies. In peace time, however, forming heterogenous units is less costly, since the loss of efficiency is not as critical. During periods of prolonged peace, using conscription and national service to mix different groups of the population is common. For example, after WW1, when France regained control of Alsace-Lorraine, German speaking conscripts from that region were carefully mixed in units with soldiers from other parts of France (see Crepin, 2009, p. 356).

Some public goods and nation-building efforts may have effects on army effectiveness beyond those we study. Certain infrastructure (for example, roads, railways, better phone communications, and the telegraph) may unify the nation and create a sense of belonging, but may also be relevant for the war effort. Public health policies improve the standard of fitness of men of military age. Free public elementary education is a nation building tool (recently studied in Alesina et al, 2019), but may also make soldiers more productive if they

[36] See Alesina and La Ferrara (2005) for a survey, and Ashraf et. al (2015) for some recent results.

are more able to communicate and implement complex tasks. It is interesting to note that military institutions sometimes performed a rudimentary form of education during military service. For example, before primary education became compulsory, 19th century French conscripts were taught to read and write in regimental schools (see Crepin, 2009, p. 320). If, besides raising citizens' utility, public goods decrease the soldiers' cost of effort (for example, by making them more fit and/or more capable to perform difficult tasks), this would increase the effectiveness of public goods in incentivizing war effort. The analysis would be less tractable, but this would likely lead to an earlier cut-off at which the elite create incentives for soldiers using public goods.

7.2. Legitimacy of conscription

Our model examines the determinants of war effort by soldiers. Similar considerations may apply to the legitimacy of military conscription and willingness to be enrolled in the army (or, conversely, the effort to avoid conscription). In heterogenous societies, national sentiment may be weaker and conscription less acceptable. According to Levi (1997) this explains why countries with ethnic and religious cleavages mainly relied on professional soldiers. For instance, universal male conscription in Canada and Britain was strongly opposed by the Francophone and Irish populations respectively. Aron et al. (1972) find that the incidence of draft evasion and self-mutilation to avoid military service in France during the period 1819-26 was higher in Occitan France than in the northeast, reflecting a "lack of national integration of the Midi at this time" (see also Weber, 1976, p. 107). Nationalism and public good provision may also have an effect on war effort by reducing opposition to conscription. This could be modelled in our framework by endogenizing the share of the population which is part of the army. We expect results along this dimension would be similar to our results on war effort. Future work might also examine how effective nationalism is in reducing resistance to conscription relative to, for instance, a punishment for desertion.

A second dimension of conscription involves selecting who to conscript. The choice of which part of the population to conscript gives an extra tool to elites to increase war effort. Elites might implement conscription in some regions but not in others (for example, not among minorities where effort would be low or resistance high). At the same time, for the reasons discussed above, mixing different ethnic groups in the army may "homogenize" a heterogeneous population and strengthen national values.

7.3. Partial loss of sovereignty

We assume that when a country is defeated it loses its sovereignty. There are two alternative assumptions we could make. First, the defeated country could partially lose its sovereignty. We could model this by assuming that the defeated country loses some domestic public goods (and tax revenue) and adopts some of the public goods provided by the winning country. This would be easy to model by adding a "fraction" to the loss as we model it. This is likely to deliver the same insights as our current assumption.

A second way to model defeat is that the defeated country loses part of its territory to the winning country. Typically this occurs for territories at the border between the two opposing countries (e.g., Alsace and Lorraine were exchanged between France and Germany, South Tyrol between Italy and Austria, and Poland between Germany and Russia). When border regions are populated by ethnic minorities, this interacts with our previous discussion about nation building and army composition. This extension would be less tractable, but it would also be more likely to generate additional results. Nation building in these border regions may be especially important and soldiers may resist conscription or be more supportive of the enemy. We leave this extension to future research.

7.4. Redistribution

We emphasize public goods in our model but similar considerations apply to promises of other types of redistributive policies. Scheve and Stasavage (2010) argue that mass mobilization warfare increased the need for progressive taxation "as means of ensuring greater equality of sacrifice in the war effort." In other words, financing a war requires not only higher tax revenues to pay for the war but also more progressive tax systems to make citizens and soldiers feel that income is more fairly distributed. They find that top tax rates during WWI significantly increase in those countries that participated and mobilized for the war. They also analyze political rhetoric and survey data for the two world conflicts and find that they are consistent with their claim that a higher progressivity during the war years is due to increased social pressure for an equalized war-time sacrifice. Scheve and Stasavage (2012) study bequest taxes in 19 countries between 1816 and 2000. They argue that the increase in inheritance taxation was due not only, and perhaps not predominantly, to the extension of the franchise, but was rather a result of the need for mass mobilization for war.

An especially interesting case is Japan. Scheidel (2017) notes that Japan moved from one of the most unequal countries on earth (in 1938, the country's top 1% received 19.9% of the country's pre-tax and pre-transfers income), to reach, in 1945, an income distribution in which the richest 1% retained an income share of just 6.4%. This was a result of regulation, inflation, and physical destruction, with government regulation playing the most important role. After entering the war, Japan's military grew more than twentyfold in size, and workers started to benefit from rent controls, government subsidies, increased government intervention, and "an expansion of welfare provisions that were created out of concern for the physical condition of recruits and workers and for the express purpose of reducing anxiety among the citizenry." The government launched health insurance schemes, public pension schemes, and the first ever public housing program. Klausen (1998) argues that there is a continuity between warfare and welfare, namely that various policies needed for wartime, turned, with the appropriate changes, into welfare policies.

Scheidel (2017) makes the claim that even the Cold War might have affected the development of the welfare state. He argues that "the development of income inequality in eighteen Western countries from 1960 to 2010 was constrained by the cold War: controlling for other factors such as top marginal tax rates, union density, and globalization, the Soviet Union's relative military power was negatively and very significantly correlated with national top income shares. It appears that the Soviet threat served as a disciplining device to inequality that helped foster social cohesion. This constraint promptly disappeared after the collapse of the Soviet Union in 1991. Almost half a century after the end of the last one, world war was finally no longer a realistic prospect."

7.5. Welfare for women

Our paper examines war effort by soldiers. Soldiers (until recently) were only men. When army size became large and many men went off to war, women had to step into the labor force, in particular in war-related factories.[37] Thus men and women were both asked to contribute to war effort but, in general, it was along these two different dimensions. Consistent with the argument of our paper, governments also implemented welfare provision with the aim of motivating female labor force participation in war-related occupations. Naokes (2006) notes

[37]On the effects of wars on women and the labor market see Goldin and Olivetti (2003), Fernandez, Fogli and Olivetti (2004), Autor et al. (2004) and Noakes (2006).

that in Britain during WWII, several welfare measures were introduced to reward women: "ways to improve women's lives in the immediate postwar period included rest homes for tired housewives, the provision of official baby-sitters, after-school play centres and free holidays for poorer families. Houses on the new council estates and in the new towns being built to replace the slum areas of cities which had often been decimated by bombing were designed [in order to] to make housewives' work easier."

Similar developments in female labor-force participation and welfare provision for women occurred in the US during WWII. Scheiwtzer (1980) reports that in the US in 1940 "Twenty-seven percent of all women over fourteen were in the labor force; of these about one-fifth were unemployed. [...] Four years later 37 percent of all women over fourteen held paying jobs; the female labor force had grown by almost half, to a total of 20 million women." The same author notes that "by the summer of 1943 over 4400 communities sponsored child care and welfare committees. Connecticut funded and operated well-run day care centers from the beginning of the war. In New Jersey 63 war production communities opened their own centers when federal aid failed to arrive. [...] The Los Angeles Board of Education opened enough centers to care for 10,000 children in 1944. [...] In Colorado and New York the Civil Defense Volunteer Organization and the Red Cross trained middle-aged housewives to "troubleshoot"- come into working mothers' homes and take care of a sick child, for example."

7.6. The Shrinking of modern armies

Our model refers to the years of "nation building" from the mid-nineteenth century to the mid-twentieth century. During this period, army size increased substantially (Scheve and Stasavage, 2016). At this time, national conscription was viewed as the most efficient way to field large armies.[38] In recent years, however, technological progress may have had the opposite effect on army size. With the advent of precision weapons, mass armies became less useful, leading to a reversal from conscripts to professional armies (Mulligan and Shleifer, 2005). As a result of more recent technological progress, today's armies (especially in rich

[38]In 1814, Prussia adopted a system of conscription by which all eligible men had to spend three years in service and two in the reserve. This model was emulated by Austria (in 1868), France (which reintroduced universal conscription in 1872), Italy (in 1873), Russia (in 1874), and Japan (1883). The US introduced national conscription during four conflicts: the American Civil war, WWI, WWII, and the Cold war. Britain passed conscription during WWI and from 1939 to 1960. For a general discussion, see Mjöset and Van Holde (2002) and Avant (2000)

countries) are becoming smaller and military activities more capital-intensive. Onorato et al. (2014) note that "it was the Soviet military planners who first highlighted this possibility. Starting in the late 1970s Soviet planners grew fearful that the principal Soviet war plan which involved quickly pushing a mass army westwards across the European continent had become worthless because of U.S. advances in precision weapons." From the 1970s to today, technological progress vastly increased precision features of military technologies. In the most developed countries, universal conscription has thus been in a steady decline.

Nevertheless, conscription remains dominant in Asia and Africa. Degradation of international relations has also resulted in the introduction (or re-introduction) of conscription in east and northern Europe (e.g., Sweden, Lithuania, and Ukraine) and in some Gulf states. Finally, proposals of some form of obligatory military service have reappeared in political agendas, especially from right-wing parties, as a solution for the supposedly lack of discipline and national sentiment in younger generations. While precision technologies push towards smaller armies, it is possible that another force pushes in the opposite direction. Above, we described the role of conscription in nation-building itself. Technology and cementing nation building may create a trade-off regarding the need for conscription and it may be that different countries are at different points on this trade-off.

8. Conclusion

In this paper, we explored several issues related to the question of how wars make states. The recent economic literature on this point has focused almost exclusively on how wars induce states to raise their fiscal capacity to buy military equipment. Our study focuses instead on complementary issues, namely how to motivate the population (soldiers in particular) to endure war. We show that motivating soldiers for war induces the building of nations. In addition to promising monetary payoffs, elites have two means to increase war effort. First, they can provide public goods and services in the home country that will directly benefit citizens, so that soldiers will lose a lot if the war is lost. One key conclusion of our analysis is that as warfare technologies lead to larger armies, the elites change the way they motivate soldiers: they move away from motivating small armies of mercenaries with spoils of war toward mass public good provision so as to motivate large conscripted armies. Homogeneous nations can provide mass public goods more effectively and so are more likely to use this tool to motivate soldiers.

Second, as a means to increase war effort, the elites may homogenize or indoctrinate citizens to value domestic public goods and to dislike living under foreign occupation. The former – indoctrinating citizens to value domestic public goods (positive indoctrination) – is a complement to public good provision. The latter – anti-foreign propaganda (negative indoctrination) – is a substitute. Thus, mass public good provision and positive nationalism likely emerge hand in hand. In contrast, countries with low fiscal capacity will engage in anti-foreign propaganda, without public good provision.

The literature on state capacity (Besley and Persson, 2009, 2011) has stressed that, in weak states, economic development is hindered by the inability to raise revenue, enforce property rights and govern effectively. As a complement to this literature, our model emphasizes that fiscal capacity also will affect the "quality" of the state and its spending composition. By pursuing "negative" nationalism, the elites of low state-capacity states can afford to keep high rents and have no incentive to provide valuable public goods.

An interesting avenue for future research would be to investigate how the prospects of future insurrections within conquered territories might influence the decision to go to war and the subsequent choice of whether to homogenize after victory. Finally, it would be interesting (but challenging) to study a model in which effort and public policies are endogenous in both countries. In such a model, the elites of the two countries would essentially play a Hawk-Dove game. One of the two countries may boost war effort (by providing public goods and pursuing nation-building), while the other country would have the incentive to pursue a dovish strategy.

References

- Acemoglu, Daron, and James Robinson. (2000). Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective. The *Quarterly Journal of Economics*, 115 (4), 1167-1199.

- Acemoglu, Daron, David H. Autor and David Lyle, (2004). Women, War, and Wages: The Effect of Female Labor Supply on the Wage Structure at Midcentury. *Journal of Political Economy*, 112(3), 497-551.

- Acemoglu, Daron, Davide Ticchi and Andrea Vendigni (2011). Emergence and Persistence of Inefficient States. *Journal of the European Economic Association*, 115 (4), 177-208.

- Aghion, Philippe, Xavier Jaravel, Torsten Persson, and Dorothee Rouzet. (2018). Education and Military Rivalry. *Journal of the European Economic Association* Forthcoming

- Ahlerup, Pelle and Gustav Hansson. (2011). Nationalism and government effectiveness. *Journal of Comparative Economics*, 39: 431-451.

- Aidt, Toke, Jayasri Dutta, and Elena Loukoianova. (2006). Democracy Comes to Europe: Franchise Extension and Fiscal Outcomes 1830–1938. *European Economic Review*, 50(2), 249-283.

- Alesina, Alberto, and Enrico Spolaore. (1997). On the Number and Size of Nations. *Quarterly Journal of Economics*, 90(5), 1276-1296.

- Alesina, Alberto, and Enrico Spolaore. (2003). *The Size of Nations.* Cambridge,MA: MIT Press.

- Alesina, Alberto, and Enrico Spolaore. (2005). War, Peace, and the Size of Countries. *Journal of Public Economics*, 89(7), 1333-1354.

- Alesina, Alberto, and Eliana La Ferrara. (2005). Ethnic diversity and economic performance. *Journal of Economic Literature* 43(3), 762-800.

- Alesina, Alberto, Paola Giuliano, and Bryony Reich. (2019). Nation-Building and Education: Theory and Evidence. mimeo, Harvard University

- Anderson, Benedict. (1983) *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, London: Verso.

- Aron Jean-Paul, Paul Dumont, and Emmanuel Le Roy Ladurie (1972) *Anthropologie du conscrit francais (1819-1826).* Edition EHESS

- Ashraf Quamrul, Oded Galor and Marc Klemp, (2005). Heterogeneity and Productivity. mimeo, Brown University

- Avant, Deborah (2000). From Mercenary to Citizen Armies: Explaining Change in the Practice of War. *International Organization* 54, 41-72.

- Bandiera, Oriana, Myra Mohnen, Imran Rasul, and Martina Viarengo. (2017). Nation-Building Through Compulsory Schooling During the Age of Mass Migration. mimeo, London School of Economics.

- Besley, Timothy, and Torsten Persson. (2009). The Origins of State Capacity: Property Rights, Taxation, and Politics. *The American Economic Review*, 99(4), 1218-1244.
- Besley, Timothy, and Torsten Persson. (2011). *Pillars of Prosperity: The Political Economics of Development Clusters.* Princeton, NJ: Princeton University Press.
- Biddle, Stephen. (2004). *Military Power, Explaining Victory and Defeat in Modern Battle*, Princeton, NJ: Princeton University Press
- Brewer, John. (1990). *The Sinews of Power: War, Money, and the English State, 1688-1783.* Cambridge, MA: Harvard University Press.
- Caprettini, Bruno, Fabio Schmidt-Fischbach, and Hans-Joachim Voth. (2018) From Welfare to Warfare: New Deal Spending and Patriotism During World War II. CEPR Discussion Papers 12807.
- Clausewitz, Carl. (1832). *Vom Kriege*, Berlin.
- Coate, Stephen, and Michael Conlin. (2004). A Group Rule–Utilitarian Approach to Voter Turnout: Theory and Evidence. *The American Economic Review*, 94(5), 1476-1504.
- Coleman, James S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology,* 94: 95-120.
- Colley, Linda (2009) *Britons: Forging the Nation, 1707-1837* Yale University Press.
- Costa, Dora L. and Matthew E. Kahn (2003). Cowards and Heroes: Group Loyalty in the American Civil War. *Quarterly Journal of Economics,* 118(2), 519-548.
- Crépin, Annie. (2009). *Histoire de la Conscription.* Paris, France: Gallimard.
- Crépin, Annie, and Philippe Boulanger (2001). Le Soldat-Citoyen: Une Histoire de la Conscription: le Dossier. *La documentation française,* 328(1), 258-259, Paris.
- Darden, Keith, and Harris Mylonas. (2015). Threats to Territorial Integrity, National Mass Schooling, and Linguistic Commonality. *Comparative Political Studies*, 1-34.
- Dehdari, Sirus, and Kai Gehring. (2017). The Origins of Common identity: Division, Homogenization Policies and Identity Formation in Alsace-Lorraine. CesIFO Working Paper No. 6556

- Dincecco, Mark, and Mauricio Prado. (2012). Warfare, Fiscal Capacity and Performance. *Journal of Economic Growth*, 21: 171-203.
- Dudley Leonard and Ulrich Witt (2004). Arms and the Man: World War I and the Rise of the Welfare State. *Kyklos,* 57(4), 475-504
- Esteban, Joan, and Debraj Ray. (2001). Collective Action and the Group Size Paradox. *American Political Science Review*, 95(3), 663-672.
- Esteban, Joan, and Debraj Ray. (2011). Linking Conflict to Inequality and Polarization. *The American Economic Review*, 101(4), 1345-1374.
- Esteban, Joan, Massimo Morelli, and Dominic Rohner. (2015). Strategic Mass Killings. *Journal of Political Economy*, 123(5), 1087-1132.
- Feddersen, Tim, and Alvaro Sandroni. (2006). A Theory of Participation in Elections. *The American Economic Review*, 96(4), 1271-1282.
- Fernandez Raquel, Alessandra Fogli, Claudia Olivetti (2004). Mothers and Sons: Preference Formation and Female Labor Force Dynamics. *The Quarterly Journal of Economics,* 119(4), 1249-1299.
- Finer, Samuel Edward. (1975). "State and Nation-Building in Europe: the Role of the Military." *The Formation of National States in Western Europe*, Ed. Charles Tilly, Princeton University Press, p. 84-163.
- Gellner, Ernest. (1983). *Nations and Nationalism. New Perspectives on the Past.* Ithaca: Cornell University Press.
- Gennaioli, Nicola, and Hans-Joachim Voth. (2015). State Capacity and Military Conflict. *The Review of Economic Studies*, 82(4), 1409-1448.
- Goldin Claudia and Claudia Olivetti. (2013). Shocking Labor Supply: A Reassessment of the Role of World War II on Women's Labor Supply. *American Economic Review* 103 (3), 257-262.
- Greenfeld, Liah, (1992) *Nationalism: Five Roads to Modernity,* Harvard University Press
- Guiso, Luigi, Paola Sapienza, and Luigi Zingales. (2009). Cultural Biases in Economic Exchange? *Quarterly Journal of Econmics*, 124(3), 1095-1131.

- Harsanyi, John C. (1980). Rule Utilitarianism, Rights, Obligations and the Theory of Rational Behavior. *Theory and Decision*, 12(2), 115-133.

- Hobsbawm, Eric, J. (1990). *Nations and Nationalism since 1780: Programme, Myth, Reality.* The Wiles Lectures. New York: Cambridge University Press

- Kallis, Aristotle A. (2005). *Nazi Propaganda and the Second World War.* Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.

- Klausen, Jytte (1998), *War and welfare: Europe and the US, 1945 to the present*, New York: St. Martin's Press.

- Knox, MacGregor, and Williamson Murray. (2001). *The Dynamics of Military Revolution, 1300-2050.* New York: Cambridge University Press

- Jaffrelot, Christophe (2005) "For a Theory of Nationalism", Dieckhoff and Jaffrelot (Eds) *Revisiting Nationalism: Theories and Processes*, pp. 10-61 (London: Hurst & Cie).

- Jackson, Matthew, and Massimo Morelli. (2011) "The Reasons for Wars: An Updated Survey," Chapters, in: The Handbook on the Political Economy of War, chapter 3 Edward Elgar Publishing.

- Levi, Margaret. (1997). *Consent, Dissent, and Patriotism.* New York: Cambridge University Press.

- Levine David K and Andrea Mattozzi (2017) Voter Turnout with Peer Punishment, mimeo EUI.

- Linderman Gerald F. (1987) *Embattled Courage: The Experience of Combat in the American Civil War* New York: Free Press

- Lizzeri, Alessandro, and Nicola Persico. (2004). Why Did the Elite Extend the Suffrage? Democracy and the Scope of Government, with an Application to Britain's Age of Reforms. *The Quarterly Journal of Economics*, 119, 707-765.

- McNeil, William H. (1982). *The Pursuit of Power: Technology, Armed Force, and Society since AD 1000.* Chicago, IL: University of Chicago Press.

- Mjøset, L., and S. Van Holde, Eds.(2002). *The Comparative Study of Conscription in the Armed Forces.* Bingley, UK: Emerald Group Publishing Limited.

- Mulligan, Casey, and Andrei Shleifer. (2005). Conscription as Regulation. *American Law and Economics Review* 7 (1): 85-111.
- Noakes, Lucy H. (2006). *Women in the British Army: War and the Gentle Sex, 1907-1948.* Routledge.
- Nti, O. Kofi. (1999). Rent-Seeking with Asymmetric Valuations. *Public Choice* Vol. 98, No. 3-4, 415-430.
- Obinger, Herbert, Klaus Petersen, and Peter Starke. (2018) "Warfare and Welfare: Military Conflict and Welfare State Development in Western Countries" Oxford University Press.
- Obinger, Herbert and Klaus Petersen (2015) "Mass Warfare and the Welfare State: Causal Mechanisms and Effects" *British Journal of Political Science*, 47, 203–227
- Ognedal, Tone (2019). Participation, Public spending and Polarization, mimeo, University of Oslo.
- Onorato, Massimiliano, Kenneth Scheve, and David Stasavage. (2014). Technology and the Era of the Mass Army. *The Journal of Economic History*, 74(02), 449-481.
- Padró i Miquel, Gerard. (2007). The Control of Politicians in Divided Societies: the Politics of Fear. *The Review of Economic Studies*, 74(4), 1259-1274.
- Parker, Geoffrey. (1996). *The Military Revolution: Military Innovation and the Rise of the West, 1500-1800.* New York: Cambridge University Press.
- Posen, Barry R. (1993). Nationalism, the Mass Army, and Military Power. *International Security*, 18(2): 80-124.
- Reidegeld, Eckart. (1989) "Krieg und staatliche Sozialpolitik." *Leviathan* 17:479-526.
- Roberts, Michael. (1956). *The Military Revolution, 1560-1660: An Inaugural Lecture Delivered Before the Queen's University of Belfast.* Belfast: M. Boyd.
- Rogers Clifford J., Ed. (1995). *The Military Revolution Debate. Readings on the Military Transformation of Early Modern Europe.* Boulder CO: Westview Press.
- Sambanis, Nicholas, Skaperdas, Stergios and Wohlforth, William C. (2015). Nation-Building through War. *American Political Science Review*, pp 279-296, May.

- Scheve, Kenneth, and David Stasavage. (2010). The Conscription of Wealth: Mass Warfare and the Demand for Progressive Taxation. *International Organization* 64, Fall 2010, 529-61

- Scheve, Kenneth, and David Stasavage. (2012) "Democracy, War, and Wealth: Lessons from Two Centuries of Inheritance Taxation." *American Political Science Review* 106, no. 1 (2012): 81-102.

- Scheve, Kenneth, and David Stasavage. (2016). *Taxing the Rich: a History of Fiscal Fairness in the United States and Europe*, Princeton, NJ: Princeton University Press.

- Scheidel, Walter (2017). *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century.* Princeton; Oxford: Princeton University Press.

- Schweitzer, Mary M. (1980). World War II and Female Labor Force Participation Rates. *The Journal of Economic History,* 40(1), 89-95

- Spolaore Enrico, and Romain Wacziarg. (2016). The Political Economy of Heterogeneity and Conflict. CESifo Working Paper Series, 6258.

- Swenarton Mark (2018) *Homes Fit For Heroes: The Politics and Architecture of Early State Housing in Britain.* Routledge.

- Tallett, Frank. (1992). *War and Society in Early Modern Europe: 1495-1715.* Abingdon, UK: Routledge.

- Tilly, Charles. (1975). "Reflections on the History of European State-Making. In Formation of National States in Western Europe", in C. Tilly (Eds). The Formation of National States in Western Europe (Studies in Political Development, 8.) Princeton: Princeton University Press.

- Tilly, Charles. (1994). States and Nationalism in Europe 1492–1992. *Theory and Society*, 23(1), 131-146.

- Tilly, Charles (1990). *Coercion, capital, and European states, AD 990-1992.* Oxford: Blackwell.

- Titmuss, Richard M. (1958). *Essays on the welfare state.* London: George Allen and Unwin LTD.

- Tullock, Gordon (1980). "Efficient rent seeking." In J. Buchanan, R. Tollison, and G. Tullock (Eds.), Toward a theory of the rent-seeking society. College Station: Texas A&M University Press, 97-112.

- Ticchi Davide and Andrea Vindigni (2007) War and Endogenous Democracy. Working Papers 0715, University of Urbino.

- Voigtländer, Nico, and Hans-Joachim Voth. (2015). Nazi Indoctrination and Anti-Semitic Beliefs in Germany. *Proceedings of the National Academy of Sciences*, 112(26): 7931-7936.

- Weber, Eugen. (1976). *Peasants into Frenchmen: The Modernization of Rural France, 1870-1914*. Palo Alto, CA: Stanford University Press.

- Wimmer Andreas (2013). *Waves of War: Nationalism, State Formation, and Ethnic Exclusion in the Modern World*. New York, Cambridge University Press.

- Wimmer Andreas (2019). *Why Nationalism Works* Foreign Affairs. March-April 2019 Issue

Appendix

A.1. Proofs

Proof of Proposition 1: The elite chooses $\lambda_A = 0$ because the elite does not gain from costly homogenization. Plugging $\lambda_A = 0$ into (4), the government budget constraint becomes $\pi_A t_A q = g_A$. This allows us to write the elite's problem as

$$\max_{\pi_A} \theta \pi_A t_A q + y_A + (1 - \pi_A)\frac{t_A q}{s_A} \tag{A.1}$$

This expression is linear in π_A and is increasing when $\theta > \frac{1}{s_A}$. Then, public good provision is maximal when $1 - s_A\theta \leq 0$ and zero otherwise. □

Proof of Lemma 1: We proceed by steps.

Step 1. We show that effort is increasing in NB_A.

Optimal effort solves the following problem:

$$\max_{e_A \geq 0} \frac{1}{q}\left(\int_0^q U_{i,A}^- di + P_A(e_A, e_B)\int_0^q (U_{i,A}^+ - U_{i,A}^-)di\right) - e_A \tag{A.2}$$

Using (7) and (13) we obtain

$$\max_{e_A}\left(\int_0^q \frac{U_{i,A}^-}{q} di + \frac{qe_A}{qe_A + (1-q)e_B} NB_A\right) - e_A \tag{A.3}$$

If the solution is interior, the first order condition is:

$$NB_A \frac{q[qe_A + (1-q)e_B] - q^2 e_A}{[qe_A + (1-q)e_B]^2} = 1 \tag{A.4}$$

After taking the square root

$$[q(1-q)e_B NB_A]^{1/2} = [qe_A + (1-q)e_B] \tag{A.5}$$

This leads to the optimal effort in country A:

$$e_A^* = max\left\{ \frac{[q(1-q)e_B NB_A]^{1/2}}{q} - \frac{(1-q)e_B}{q},\ 0 \right\} \tag{A.6}$$

From (A.6) it is immediate that optimal effort is increasing in NB_A. Note that for an interior solution one needs that

$$e_B < \frac{q}{(1-q)} NB_A. \tag{A.7}$$

Step 2. We compute NB_A

First, from (8) we have:

$$\begin{aligned}
&\frac{1}{q}\int_0^q U_{i,A}^+ di \\
= \ & -\frac{1}{q}\theta g_A a(1-\lambda_A)[\int_0^{C_A}(C_A - i)di + \int_{C_A}^q (i - C_A)di] + \theta g_A + y_A - t_A + \gamma_A \frac{t_B(1-q)}{\chi q} \\
= \ & -\frac{1}{q}\theta g_A a(1-\lambda_A)(C_A^2 - \frac{C_A^2}{2} + \frac{q^2}{2} - C_A q - \frac{C_A^2}{2} + C_A^2) + \theta g_A + y_A - t_A + \gamma_A \frac{t_B(1-q)}{\chi q} \\
= \ & -\theta g_A a(1-\lambda_A)(\frac{C_A^2}{q} + \frac{q}{2} - C_A) + \theta g_A + y_A - t_A + \gamma_A \frac{t_B(1-q)}{\chi q}
\end{aligned}$$

Similarly, from (9)

$$\begin{aligned}
\frac{1}{q}\int_0^q U_{i,A}^- di &= -\frac{1}{q}\theta g_B a \int_0^q [(C_B - \lambda_A C_A) - (1-\lambda_A)i]di + \frac{1}{q}\left[\theta g_B - t_A + y_A\right] q \\
&= -\frac{1}{q}\theta g_B a[(C_B - \lambda_A C_A)q - (1-\lambda_A)\frac{q^2}{2}] + \theta g_B - t_A + y_A \\
&= -\theta g_B a[C_B - \lambda_A C_A - (1-\lambda_A)\frac{q}{2}] + \theta g_B - t_A + y_A
\end{aligned}$$

Then

$$\begin{aligned}
NB_A &= \frac{1}{q}\int_0^q (U_{i,A}^+ - U_{i,A}^-)di \\
&= -\theta g_A a(1-\lambda_A)(\frac{C_A^2}{q} + \frac{q}{2} - C_A) + \theta g_A + y_A - t_A + \gamma_A \frac{t_B(1-q)}{\chi q} \\
&\quad + \theta g_B a[C_B - \lambda_A C_A - (1-\lambda_A)\frac{q}{2}] - \theta g_B + t_A - y_A
\end{aligned}$$

$$
\begin{aligned}
&= \theta[g_A - g_B - g_A a(1-\lambda_A)(\frac{C_A^2}{q} + \frac{q}{2} - C_A)] \\
&\quad +\theta g_B a[C_B - \lambda C_A - (1-\lambda_A)\frac{q}{2}] + \gamma_A \frac{t_B(1-q)}{\chi q} \qquad \text{(A.8)}
\end{aligned}
$$

The derivatives in Lemma 1 can be computed from the above expression. Throughout we will focus our analysis on parameters for which there exist values of g_A and γ_A, where $g_A \geq 0$, $\gamma_A \geq 0$, $g_A \leq t_A q$, and $\gamma_A \leq 1$, and such that (A.7) holds. In words: there exists some feasible policy (g_A, γ_A) such that the elite can motivate positive war effort on the part of citizens.

Proof of Proposition 2: Assume $\lambda_A = 0$. Define

$$
EU_e = NB_{e,A}(\frac{\chi q e_A}{\chi q e_A + \chi(1-q)e_B}) + U_{e,A}^- - e_A \qquad \text{(A.9)}
$$

The elite chooses $g_A \in [0, t_A q]$ and $\gamma_A \in [0,1]$ to maximize EU_e. We denote by $\gamma_A^\star$ and $g_A^\star$ the optimal solutions. Using (10) and (11) we compute the net benefit of winning for the elite

$$
NB_{e,A} = \theta g_A + (1 - \frac{g_A}{t_A q})\frac{t_A q}{s_A} + \frac{(1-\gamma_A)t_B(1-q)}{s_A} - \theta g_B(1 - a(C_B - C_A)) \qquad \text{(A.10)}
$$

Step 1. We show that it is not optimal to set $\gamma_A^\star = g_A^\star = 0$.

From above, we restrict our analysis to parameters for which there exists a value of g_A and γ_A, where $g_A \geq 0$, $\gamma_A \geq 0$, $g_A \leq t_A q$, and $\gamma_A \leq 1$, and such that (A.7) holds. We also assume $NB_{e,A} > NB_A$. Effort is strictly positive only if $g_A > 0$ or $\gamma_A > 0$ or both. It remains to observe that a policy that induces positive effort is strictly preferred by the elite to a policy $\gamma_A = g_A = 0$. If a policy (g_A, γ_A) results in citizens choosing $e_A > 0$ then, from (A.3), it must be that $\frac{q e_A}{q e_A + (1-q)e_B} NB_A - e_A > 0$, but since $NB_{e,A} > NB_A$ we know from (A.9) that the elite must strictly prefer this policy to one that induces zero effort.

Step 2. We prove that it cannot be that the solution is interior for both public good and transfers. That is, it cannot be $g_A^\star \in (0, t_A q)$ and $\gamma_A^\star \in (0,1)$.

We show that if $\chi < \frac{1-\theta s_A}{q\theta(1-a\Delta)}$, then either $\gamma_A^\star \in (0,1)$ and $g_A^\star = 0$, or $g_A^\star > 0$ and $\gamma_A^\star = 1$. If $\chi \geq \frac{1-\theta s_A}{q\theta(1-a\Delta)}$, then either $g_A^\star \in (0, t_A q)$ and $\gamma_A^\star = 0$, or $\gamma_A^\star > 0$ and $g_A^\star = t_A q$.

The Lagrangian of the problem is

$$
\begin{aligned}
L(g_A, \gamma_A; \psi, \omega) &= (U_{e,A}^+ - U_{e,A}^-)(\frac{\chi q e_A}{\chi q e_A + \chi(1-q)e_B}) + U_{e,A}^- - e_A \qquad \text{(A.11)} \\
&\quad +\psi g_A + \omega \gamma_A + \widehat{\psi}(t_A q - g_A) + \widehat{\omega}(1 - \gamma_A)
\end{aligned}
$$

where ψ, ω, $\widehat{\psi}$, and $\widehat{\omega}$ are the multipliers of the constraints $g_A \geq 0$, $\gamma_A \geq 0$, $g_A \leq t_A q$, and $\gamma_A \leq 1$.

Taking the first-order conditions with respect to γ_A and g_A :

$$\frac{\partial L(g_A, \gamma_A; \psi, \omega)}{\partial \gamma_A} = \frac{\partial NB_{e,A}}{\partial \gamma_A} P(e_A, e_B) + NB_{e,A} \frac{\partial P(e_A, e_B)}{\partial e_A} \frac{\partial e_A}{\partial NB_A} \frac{\partial NB_A}{\partial \gamma_A} - \frac{\partial e_A}{\partial NB_A} \frac{\partial NB_A}{\partial \gamma_A} + \omega - \hat{\omega} = 0 \quad \text{(A.12)}$$

$$\frac{\partial L(g_A, \gamma_A; \psi, \omega)}{\partial g_A} = \frac{\partial NB_{e,A}}{\partial g_A} P(e_A, e_B) + NB_{e,A} \frac{\partial P(e_A, e_B)}{\partial e_A} \frac{\partial e_A}{\partial NB_A} \frac{\partial NB_A}{\partial g_A} - \frac{\partial e_A}{\partial NB_A} \frac{\partial NB_A}{\partial g_A} + \psi - \hat{\psi} = 0 \quad \text{(A.13)}$$

Using the interior condition on effort e_A,

$$\frac{\partial P(e_A, e_B)}{\partial e_A} NB_A = 1, \quad \text{(A.14)}$$

rearranging terms, we can write:

$$\frac{\partial P(e_A, e_B)}{\partial e_A} \frac{NB_{e,A} - NB_A}{P(e_A, e_B)} \frac{\partial e_A}{\partial NB_A} = \frac{\frac{t_B(1-q)}{s_A}}{\frac{t_B(1-q)}{\chi q}} - \omega' + \widehat{\omega}' \quad \text{(A.15)}$$

where $\omega' = \frac{\omega}{P(e_A, e_B)}$ and $\widehat{\omega}' = \frac{\widehat{\omega}}{P(e_A, e_B)}$, and

$$\frac{\partial P(e_A, e_B)}{\partial e_A} \frac{NB_{e,A} - NB_A}{P(e_A, e_B)} \frac{\partial e_A}{\partial NB_A} = \frac{(\frac{1}{s_A} - \theta)}{\theta(1 - a\Delta)} - \psi' + \widehat{\psi}' \quad \text{(A.16)}$$

where $\psi' = \frac{\psi}{P(e_A, e_B)}$ and $\widehat{\psi}' = \frac{\widehat{\psi}}{P(e_A, e_B)}$.

Suppose $g_A^\star \in (0, t_A q)$. Then, $\psi' = \widehat{\psi}' = 0$ and we have

$$\frac{\partial P(e_A, e_B)}{\partial e_A} \frac{NB_{e,A} - NB_A}{P(e_A, e_B)} \frac{\partial e_A}{\partial NB_A} = \frac{(\frac{1}{s_A} - \theta)}{\theta(1 - a\Delta)} \quad \text{(A.17)}$$

If

$$\frac{\frac{t_B(1-q)}{s_A}}{\frac{t_B(1-q)}{\chi q}} > \frac{(\frac{1}{s_A} - \theta)}{\theta(1 - a\Delta)} \quad \text{(A.18)}$$

(equivalently $\chi > \overline{\chi}$), then from (A.15) it must be that $\omega' > 0$ and so $\gamma_A^* = 0$. If instead $\chi < \overline{\chi}$, then from (A.15) it must be that $\hat{\omega}' > 0$ and so $\gamma_A^\star = 1$. At the non-generic value $\chi = \overline{\chi}$, then we can also have an interior solution for γ_A^*. Suppose instead $\gamma_A^\star \in (0, 1)$. Following a symmetric argument, we can show that if (A.18) holds then $g_A^\star = t_A q$ and if instead $\chi < \overline{\chi}$ then $g_A^\star = 0$. At the non-generic value $\chi = \overline{\chi}$, then we can also have an interior solution for g_A^*. Finally, observe that if neither g_A^* nor γ_A^* are interior then from step 1 we have either $(g_A^\star = t_A q, \gamma_A^* = 1)$, or $(g_A^\star = t_A q, \gamma_A^* = 0)$, or $(g_A^* = 0, \gamma_A^* = 1)$. When $(g_A^\star = t_A q, \gamma_A^* = 0)$,

then $\hat{\psi}' > 0$, $\psi' = 0$, $\hat{\omega}' = 0$, and $\omega' > 0$. Then it must be that $\chi > \overline{\chi}$. Symmetrically if $(g_A^* = 0, \gamma_A^* = 1)$ then it must be that $\chi < \overline{\chi}$.

To avoid unfruitful complications in the analysis from now on we will assume that at $\chi = \overline{\chi}$, when the elite is indifferent between investing in g_A or in γ_A, the elite invests first in g_A and then invests in γ_A only if g_A reaches its upper limit. In the paper we consider only the case where γ_A^* and g_A^* do not reach their upper limit.

We next show uniqueness of the equilibria to be used in the proceeding results. We show that the LHS of (A.16) is strictly decreasing in g_A when $\gamma_A = 0$ and that the LHS of (A.15) is decreasing in γ_A when $g_A = 0$. If the first order conditions give us a unique critical point, this guarantees that it solves the optimization problem. Assuming an interior solution, we rewrite the first-order conditions with respect to g_A and γ_A:

$$\frac{q(1-q)e_B\left(NB_{e,A} - NB_A\right)}{qe_A(qe_A + (1-q)e_B)}\theta(1-a\Delta)\frac{\sqrt{(1-q)qe_B}}{2q\sqrt{NB_A}} = (\frac{1}{s_A} - \theta) \tag{A.19}$$

$$\frac{q(1-q)e_B\left(NB_{e,A} - NB_A\right)}{qe_A(qe_A + (1-q)e_B)}\frac{t_B(1-q)}{\chi q}\frac{\sqrt{(1-q)qe_B}}{2q\sqrt{NB_A}} = \frac{t_B(1-q)}{s_A} \tag{A.20}$$

where

$$\begin{aligned} NB_{e,A} - NB_A \;=\; & \theta g_A + (1 - \frac{g_A}{t_A q})\frac{t_A q}{s_A} + \frac{(1-\gamma_A)t_B(1-q)}{s_A} \\ & -\theta g_B(1 - a(C_B - C_A)) \\ & -\theta g_A(1-a\Delta) + \theta g_B(1 - a(C_B - \frac{q}{2})) - \gamma_A\frac{t_B(1-q)}{\chi q}. \end{aligned} \tag{A.21}$$

It can be shown that the LHS of (A.19) is decreasing in g_A because e_A and NB_A are increasing in g_A and $NB_{e,A} - NB_A$ is decreasing in g_A (given Assumption 1). Similarly, the LHS of (A.19) is decreasing in γ_A because e_A and NB_A are increasing in γ_A and $NB_{e,A} - NB_A$ is decreasing in γ_A.

□

Proof of Proposition 3: Expression (18) is the first order condition with respect to g_A, which can be written as

$$\frac{q(1-q)e_B\left(NB_{e,A} - NB_A\right)}{qe_A(qe_A + (1-q)e_B)}\theta(1-a\Delta)\frac{\sqrt{(1-q)qe_B}}{2q\sqrt{NB_A}} = (\frac{1}{s_A} - \theta) \tag{A.22}$$

We can rewrite (A.21) as

$$NB_{e,A} - NB_A = \theta g_B a(C_B - C_A) - a\theta g_B(C_B - \frac{q}{2}) + \Omega \tag{A.23}$$

where Ω is a term that does not depend on g_B. When $C_A \leq \frac{q}{2}$ we have that $NB_{e,A} - NB_A$ increases in g_B. By Lemma 1, NB_A and e_A decrease in g_B. Then, we have that the LHS of (A.22) increases in g_B. Finally,

since the LHS of (A.22) decreases in g_A, this proves Proposition 3. Note that $C_A \leq \frac{q}{2}$ is a sufficient condition (not a necessary one). $\square$

Proof of Lemma 2: The Lagrangian of the problem with λ_A is

$$\begin{aligned} L(g_A, \gamma_A, \lambda_A; \psi, \omega) &= (U^+_{e,A} - U^-_{e,A})(\frac{\chi q e_A}{\chi q e_A + \chi(1-q)e_B}) + U^-_{e,A} - e_A \\ &\quad + \psi g_A + \omega \gamma_A + \nu \lambda_A + \widehat{\psi}(t_A q - g_A - h\lambda) + \widehat{\omega}(1-\gamma_A) + \widehat{\nu}(1-\lambda_A) \end{aligned} \tag{A.24}$$

where ψ, ω, ν, $\widehat{\psi}$, $\widehat{\omega}$ and $\widehat{\nu}$ are the multipliers of the constraints $g_A \geq 0$, $\gamma_A \geq 0$, $\lambda_A \geq 0$, $g_A + h\lambda_A \leq t_A q$, $\gamma_A \leq 1$, and $\lambda_A \leq 1$.

Our results present the case where equilibrium policies do not hit their upper constraints. For homogenization this implies $\lambda^*_A < 1$.

When $g^*_A = 0$ it is immediate that homogenization is of no value to the elite and so $\lambda^*_A = 0$. When g^*_A is interior, $g^*_A \in (0, t_A q - h\lambda^*_A)$, then the first order condition with respect to g_A is

$$\frac{\partial P(e_A, e_B)}{\partial e_A} \frac{NB_{e,A} - NB_A}{P(e_A, e_B)} \frac{\partial e_A}{\partial NB_A} = \frac{(\frac{1}{s_A} - \theta)}{\theta(1 - a(1-\lambda_A)\Delta)}. \tag{A.25}$$

Then either $\lambda^*_A = 0$ or $\lambda^*_A > 0$. If $\lambda^*_A > 0$ then the first order condition with respect to λ is

$$\frac{\partial P(e_A, e_B)}{\partial e_A} \frac{NB_{e,A} - NB_A}{P(e_A, e_B)} \frac{\partial e_A}{\partial NB_A} = \frac{\frac{h}{s_A}}{\theta g_A a \Delta}. \tag{A.26}$$

Since the left hand sides of (A.25) and (A.26) are identical, then λ^*_A satisfies

$$\frac{\theta(1 - (1-\lambda^*_A)a\Delta)}{\frac{1}{s_A} - \theta} = \frac{\theta(g^*_A a\Delta - g_B a(C_A - \frac{q}{2}))}{\frac{h}{s_A}} \tag{A.27}$$

where $C_A = \frac{q}{2}$. It follows that if $\lambda^*_A > 0$ then it is an increasing function of g^*_A :

$$\lambda^*_A = \frac{1 - \theta s_A}{h} g^*_A - \frac{1 - a\Delta}{a\Delta}. \tag{A.28}$$

$\square$

Proof of Proposition 4: We continue to consider the case when policy parameters do not hit their upper constraints. Suppose $g^\star_A \in (0, t_A q - h\lambda)$. Then (A.25) holds. From Lemma 2, the optimal level of homogenization is either $\lambda^*_A = 0$ or $\lambda^*_A = \frac{1-\theta s_A}{h} g_A - \frac{1-a\Delta}{a\Delta}$. Following a symmetric argument to Proposition

2, suppose $g_A^* \in (0, t_A q - h\lambda_A)$ then if

$$\frac{\frac{t_B(1-q)}{s_A}}{\frac{t_B(1-q)}{\chi q}} > \frac{(\frac{1}{s_A} - \theta)}{\theta(1 - a(1-\lambda_A^\star)\Delta)} \tag{A.29}$$

it must be that $\gamma_A^* = 0$. If the reverse inequality holds then it must be that $\gamma_A^* = 1$ (a case we do not consider). Suppose $\gamma_A^* \in (0,1)$. Then by the same argument, if the inequality in (A.29) is reversed then $g_A^* = 0$ and it follows that $\lambda_A^* = 0$. Compared to the threshold when nation-building is not feasible, we note that the right-hand side of (A.29) is weakly lower, thus weakly increasing the set of parameters for which public good is provided. □

Proof of Proposition 5: First note that e_A^* continues to be given by the expression in (A.6), but the term NB_A in e_A^* becomes

$$NB_A = \theta g_A \left[1 - a(\frac{C_A^2}{q} + \frac{q}{2} + C_A)\right] - (1-\lambda_2)\theta g_B \left[1 - a(C_B - \frac{q}{2})\right]. \tag{A.30}$$

The expected utility of the elite continues to be given by

$$EU_e = NB_{e,A}(\frac{\chi q e_A}{\chi q e_A + \chi(1-q)e_B}) + U_{e,A}^- - e_A \tag{A.31}$$

where, as with benchmark homogenization,

$$NB_{e,A} = \theta g_A + (1 - \frac{g_A + h\lambda_2}{t_A q})\frac{t_A q}{s_A} + \frac{(1-\gamma_A)t_B(1-q)}{s_A} - \theta g_B(1 - a(C_B - C_A)). \tag{A.32}$$

It continues to hold that the elite always chooses at least one of $\gamma_A^*, g_A^*, \lambda_2^*$ to be strictly positive. The Lagrangian of the problem with λ_2 is

$$\begin{aligned} L(g_A, \gamma_A, \lambda_2; \psi, \omega) &= (U_{e,A}^+ - U_{e,A}^-)(\frac{\chi q e_A}{\chi q e_A + \chi(1-q)e_B}) + U_{e,A}^- - e_A & \text{(A.33)} \\ &\quad + \psi g_A + \omega\gamma_A + \nu\lambda_2 + \widehat{\psi}(t_A q - g_A - h\lambda_2) + \widehat{\omega}(1-\gamma_A) + \widehat{\nu}(1-\lambda_2) & \text{(A.34)} \end{aligned}$$

where ψ, ω, ν, $\widehat{\psi}$, $\widehat{\omega}$ and $\widehat{\nu}$ are the multipliers of the constraints $g_A \geq 0$, $\gamma_A \geq 0$, $\lambda_2 \geq 0$, $g_A + h\lambda_2 \leq t_A q$, $\gamma_A \leq 1$, and $\lambda_2 \leq 1$. We continue to consider the case where policy choices do not hit their upper constraints. Then the first order conditions with respect to γ_A, g_A, and λ_2 are respectively

$$\frac{\partial P(e_A, e_B)}{\partial e_A}\frac{NB_{e,A} - NB_A}{P(e_A, e_B)}\frac{\partial e_A}{\partial NB_A} = \frac{\frac{t_B(1-q)}{s_A}}{\frac{t_B(1-q)}{\chi q}} - \omega' \tag{A.35}$$

$$\frac{\partial P(e_A, e_B)}{\partial e_A}\frac{NB_{e,A} - NB_A}{P(e_A, e_B)}\frac{\partial e_A}{\partial NB_A} = \frac{(\frac{1}{s_A} - \theta)}{\theta(1 - a\Delta)} - \psi' \tag{A.36}$$

$$\frac{\partial P(e_A,e_B)}{\partial e_A}\frac{NB_{e,A}-NB_A}{P(e_A,e_B)}\frac{\partial e_A}{\partial NB_A}=\frac{\frac{h}{s_A}}{\theta g_B(1-a(C_B-\frac{q}{2}))}-\nu' \tag{A.37}$$

where ω', ψ', and ν' are the values of ω, ψ, and ν scaled by positive constants. Note that Δ in A.36 is not a function of λ_2.

We follow the same strategy as previous proofs. Suppose $\gamma_A^\star \in (0,1)$. When

$$\frac{\frac{t_B(1-q)}{s_A}}{\frac{t_B(1-q)}{\chi q}} < \min\left\{\frac{(\frac{1}{s_A}-\theta)}{\theta(1-a\Delta)}, \frac{\frac{h}{s_A}}{\theta g_B(1-a(C_B-\frac{q}{2}))}\right\} \tag{A.38}$$

then it must be that $\psi'>0$ and $\nu'>0$ and hence $g_A=0$ and $\lambda_2=0$. When the inequality in (A.38) is reversed, the only way the first order conditions can be satisfied is if $\omega'>0$. This implies $\gamma_A^*=0$.

Condition (A.38) is equivalent to $\chi < \min\{\overline{\chi},\widetilde{\chi}\}$. Thus when $\chi > \min\{\overline{\chi},\widetilde{\chi}\}$, then $\gamma_A^*=0$. The choice between using g_A or λ_2 is driven by the inequality

$$\frac{(\frac{1}{s_A}-\theta)}{\theta(1-a\Delta)} > \frac{\frac{h}{s_A}}{\theta g_B(1-a(C_B-\frac{q}{2}))}. \tag{A.39}$$

If (A.39) holds, since we cannot have both $\psi'>0$ and $\nu'>0$ (otherwise all policy choices would be zero). Then it must be that $\psi'>0$ and so $g_A^*=0$ and $\lambda_2^*\in(0,1)$. A symmetric argument holds to show that when the inequality in (A.39) is reversed then $g_A^*\in(0,qt_A)$ and $\lambda_2^*=0$. The inequality in (A.39) gives us the sign of φ. When $\chi=\min\{\overline{\chi},\widetilde{\chi}\}$, then the elite is indifferent between using either γ_A or one of the other instruments. For simplicity of statement, we assume they invest in one of the other instruments. When $\varphi=0$ then the elite is similarly indifferent between using g_A or λ_2. For simplicity of statement, we assume they invest in λ_2. □

Proof of Proposition 6: The elite choose between two forms of nation-building: negative (denoted λ_2) and positive (denoted λ_A). First, note that when $\lambda_A=\lambda_2=0$ the net benefit of winning is the same for both types of nation-building. The net benefit in case of negative indoctrination can be written as

$$\widehat{NB}_A=\theta(g_A-g_Aa(\frac{C_A^2}{q}+\frac{q}{2}-C_A))-\theta(1-\lambda_2)g_B(1-a(C_B-\frac{q}{2})) \tag{A.40}$$

The derivative of the average net benefit with respect to λ_2 is

$$\frac{\partial\widehat{NB}_A}{\partial\lambda_2}=\theta g_B(1-a(C_B-\frac{q}{2})) \tag{A.41}$$

From (A.8) the derivative of the net benefit with respect to λ_A is

$$\frac{\partial NB_A}{\partial\lambda_A}=\theta g_Aa\Delta \tag{A.42}$$

For the equilibrium value of g_A^*, if the following holds

$$\theta g_A a\Delta < \theta g_B(1 - a(C_B - \frac{q}{2})), \tag{A.43}$$

then $\widehat{NB}_A \geq NB_A$. This implies positive homogenization is not used since the elite value homogenization only through its impact on the net benefit of winning the war. Using the fact that fiscal capacity puts an upper bound on spending, that is $g_A < qt_A + \lambda h \leq qt_A$, if

$$t_A < \frac{\theta g_B(1 - a(C_B - \frac{q}{2}))}{q\theta a\Delta} \tag{A.44}$$

then homogenization, if used, will be negative. □

Proof of Proposition 7: To compute war effort, we write down the utility of an ordinary citizen $i \in [0, q]$ of country A in the last period in case of victory and defeat. The two utilities are respectively given by:

$$U_{i,A}^+ = \theta g_3 - \theta g_3 a\left|(1 - \lambda_1)i + \lambda_1 C_A - C_A\right| + y - \tau_3 + \gamma\frac{t_B(1 - q)}{\chi q}. \tag{A.45}$$

$$U_{i,A}^- = \theta g_B - \theta g_B a[C_B - (1 - \lambda_1)i - \lambda_1 C_A] + y - \tau_3. \tag{A.46}$$

Some comments are in order. First, payoff (A.45) depends on g_3, public spending in the post-war period. When the elites commit to provide high g_3, soldiers exert more effort. Second, these payoffs are evaluated using the utility at war time, when effort is chosen. This is why λ_1 (not λ_3) enters $U_{i,A}^-$ and $U_{i,A}^+$. Finally, we assume $\tau_3 = t_3$: the income tax is the maximum possible tax that is feasible at time 3. Note, in fact, from Lemma 1 that the income tax does not affect war effort. It is then immediate that the elites will select the highest possible income tax.

The difference between (A.45) and (A.46) is the net-benefit of winning of soldier i. Then, using (13), we can compute the average net benefit of winning in country A is NB_A. We now write down the elites' payoffs in case of victory and defeat:

$$U_{e,A}^+ = \theta g_3 + y + (1 - \pi_3)\frac{\tau_3 q}{s_A} + (1 - \gamma_A)\frac{t_B(1 - q)}{s_A}. \tag{A.47}$$

$$U_{e,A}^- = \theta g_B - \theta g_B a(C_B - C_A) + y. \tag{A.48}$$

The difference between (A.47) and (A.48) gives $NB_{e,A}$, the net benefit of winning for the elites. We now write down how effort is computed. Given public policies, war effort maximizes the average expected payoff of all citizens:

$$\max_{e_A} \ \frac{1}{q}\left(\int_0^q U_{i,A}^- di + P_A(e_A, e_B)\int_0^q (U_{i,A}^+ - U_{i,A}^-)di\right) - c(m)e_A. \tag{A.49}$$

Following similar steps as in the proof of Lemma 1, we obtain:

$$e_A^* = max\left\{ \frac{[q(1-q)e_B N B_A]^{1/2}}{qc(m)} - \frac{(1-q)e_B}{q},\ 0 \right\} \tag{A.50}$$

Lemma 1 holds under this new specification. In addition, war effort is increasing in military equipment, which reduces the cost of effort.

We now study the elite's problem. Recall that the policies chosen by the elites are: investment in fiscal capacity i, the soldiers' pay γ, rents π_1, π_3, public spending g_1, g_3 and "positive" nation-building λ_1, λ_3. We abstract from commitment problems and assume that in the first period the elites chooses all policies. The elites' problem can be simplified by noting that $g_1 = 0$ and $\lambda_3 = 0$. The fact that there is no public good provision in the first period follows from two considerations. First, only public goods in the final period affect war effort, not g_1.[39] Second, abstracting from war effort considerations, the elites prefer rents to public goods (Assumption 1). Finally, it is immediate to see that (as discussed above) in all periods taxes will be at the upper bound, established by fiscal capacity. To see this recall taxes do not discourage war effort (Lemma 1) and benefit the elites.

The elite selects the vector of policies to maximize its inter-temporal utility from period 1 to period 3 (time is not discounted):

$$\max_{\{i,\gamma,g_3,\pi_1,\pi_3,\lambda_1\}} \left[y + \frac{\tau_1 q - h\lambda_1 - 0.5i^2 - ai - g_1}{s_A} \right] + [y - c(m)e_A] + \left[(U_{e,A}^+ - U_{e,A}^-)(\frac{\chi q e_A}{\chi q e_A + \chi(1-q)e_B}) + U_{e,A}^- \right]. \tag{A.51}$$

subject to the government budget constraints (26), (27), and (28). Using (26) the first term in square brackets is the elites' payoff in the first period: income plus political rents. The second term is the payoff during war. To understand this term, recall that the elites internalize the effort exerted by the average soldier, that in the second period rents are not distributed, and that taxes are entirely used to buy equipment. The final terms are the expected utility in the last period, which can be computed from (A.47) and (A.48), using the winning probability (7).

In what follows, we assume that equilibrium policies $(i, \gamma, g_3, \lambda_1)$ do not hit the upper constraint; this implies that rents in periods 1 and 3 are strictly positive. We now take the first-order condition with respect to fiscal capacity investment. Fiscal capacity investment enters the first-period utility directly. Moreover, it raises military equipment $m = t_1 + i$, which reduces the cost of effort and increases war effort. Finally, it affects tax revenue in the last period. Recall from the last period's budget constraint that $\pi_3 t_3 q = g_3$. Hence rents in the final period are $t_3 q - g_3$. Since g_3 does not depend on fiscal capacity, an increase of fiscal capacity (hence higher t_3) increases by q the elites' rents in case of victory. War effort e_A is a function of c and, indirectly, of i. We have $\frac{\partial e_A}{\partial c} \leq 0$ and $\frac{\partial c}{\partial i} \leq 0$. Assuming an interior solution, and using the optimal

[39] In the absence of commitment, the elites may want to build public good infrastructure *before* the war to make it credible the promise of public good spending in case of victory.

condition for effort, the first-order condition with respect to i is given by

$$-\frac{i+a}{s_A}-\frac{\partial c}{\partial i}e_A+P_A(e_A,e_B)\frac{\partial U^+_{e,A}}{\partial i}+\frac{\partial e_A}{\partial c}\frac{\partial c}{\partial i}\left[\left(\frac{NB_{e,A}}{NB_A}-1\right)c\right]=0 \tag{A.52}$$

Note that $NB_{e,A} > NB_A$ as the elites have more to lose from a defeat. When $\xi = 0$ we have $\frac{\partial c}{\partial i} = 0$ and that war effort does not depend on i. Then, given that $\frac{\partial U^+_{e,A}}{\partial i} > 0$, we have that optimal investment i when $P_A(e_A, e_B)$ is close to zero. This prove the first part of the statement: when $\xi = 0$, we need that the probability of victory must be sufficiently large in order to have a strictly positive investment in fiscal capacity. When $\xi > 0$, note that as τ_1 gets smaller, the derivative $\frac{\partial c}{\partial i}$ goes to $-\infty$ when evaluated at $m = t_1 + i = 0$. This implies that for sufficiently low level of τ_1, investment in fiscal capacity will be strictly positive.

Finally, assuming that equilibrium policies do not hit the upper constraint, the elites maximization is identical to the problem with exogenous fiscal capacity. To see this, notice that the first term in the elites' objective cancels out when taking derivatives with respect to g_3 and γ. This is because military equipment does not affect the relative effectiveness of public good and monetary payoffs in affecting war effort. Exactly as in Section 5, monetary payoffs are distributed to the soldiers when army size is smaller than

$$\frac{1-\theta s_A}{q\theta(1-(1-\lambda^*_A)a\Delta)}, \tag{A.53}$$

where λ^*_A is the equilibrium level of homogenization. □

A.2. Binding Fiscal-capacity and Spoils of War

Assume $\lambda = 0$. Suppose that equilibrium policies are not bounded away from their maximal levels –i.e., either $\gamma^\star_A = 1$ or $g^\star_A = t_A q$. Simulations show that public spending might be provided before the cutoff $\overline{\chi}$. This occurs when $\gamma^\star_A$ hits the upper constraint and the elite are left only with the less efficient instrument (public good) to further boost effort. In fact, note from Figures A.1 and A.2 that when $\chi \leq \overline{\chi}$, spending is strictly positive precisely when $\gamma^\star_A = 1$. Similarly, from Figure A.2 we observe that soldiers' pay is positive when $\chi > \overline{\chi}$. This occurs because the elite is already using public spending, the most efficient instrument, at full capacity. The graphs below show that qualitatively results are similar to those stated in Proposition 2. It

bears stressing that the cutoff is the same one derived in Proposition 2.

Figure A.1
public goods

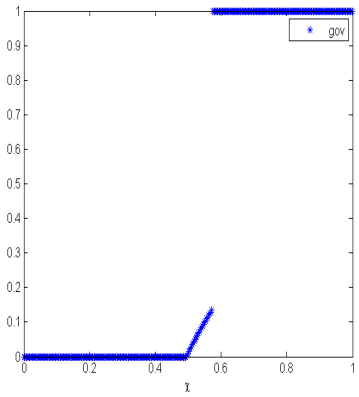


Figure A.2
soldiers' pay

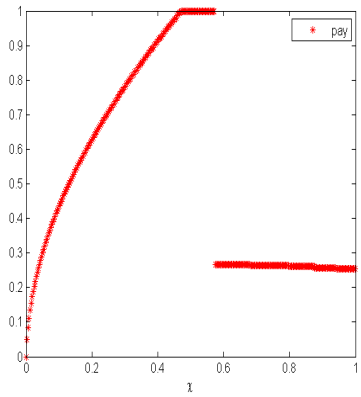
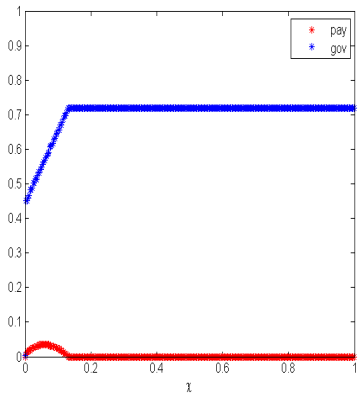


Figure A.3
quasi linear utility



A.3. Quasi-Linear Utility

Assume the following quasi-linear utility function for all $i \in [0, q]$

$$U_{i,A} = \ln(g_A)\theta(1 - a\,|i - C_A|) + c_{i,A} \tag{A.54}$$

Under peace, the elite maximizes

$$U_{e,A} = \theta \ln(g_A) + y_A + \frac{(1 - \pi_A)t_A q}{s_A}. \tag{A.55}$$

subject to the government's budget constraint. It is immediate to compute that under peace, if the solution is interior (i.e., fiscal capacity is not too low), optimal spending is

$$g_A^\star = \theta s_A \tag{A.56}$$

Compared to Proposition 1, there is public good provision under peace as well and public spending increases in θ and s_A. Under war (assume $\lambda = 0$), if the solutions for $g_A^\star$ and $\gamma_A^\star$ are both interior, we have

$$g_A^\star = \theta s_A + \chi q \theta (1 - a\Delta), \tag{A.57}$$

This implies that an increase in army size raises spending, as in the model in the main text, but in a continuous way. We can simulate a path for spending and soldiers' pay as a function of army size. When army size is small, the solution is interior and public spending increases in χ according to (A.57). As army size gets sufficiently large, soldiers are not paid anymore and public spending is constant thereafter.

A.4. Enemy Neutral Indoctrination

Assume $C_A = q/2$ and any form of indoctrination has a unitary cost h. We consider a form of indoctrination called "enemy-neutral" which does not affect citizens' utility in case country B wins the war; it only raises the value of the public good provided in A. The utility if A wins is

$$\widetilde{U}_{i,A}^{+} = \theta g_A \left[1 - a(1-\lambda_1)\left|i - C_A\right|\right] + y_A - t_A + \gamma_A \frac{t_B(1-q)}{\chi q} \tag{A.58}$$

where $\lambda_1 \in [0,1]$. In case of defeat, the utility of A's citizens is unchanged and equal to

$$\widetilde{U}_{i,A}^{-} = \theta g_B \left[1 - a\left|i - C_B\right|\right] + y_A - t_A. \tag{A.59}$$

Language policies might be considered in this type of homogenization. It is reasonable to suppose that making, say, Bretons learn French improves their ability to feel "French" and enjoy the public goods provided in Paris, but should have little or no consequence on the way they would enjoy the German public good in case of a defeat in a Franco-German war. There are two ways of considering the effect of this alternative form of homogenization on war effort. On one hand, relative to the benchmark form of homogenization in the paper, citizens located to the left of C_A, far from the border with country B, have stronger incentives to fight. On the other hand, there is a negative effect on the desired war effort of citizens located to the right of C_A, because it is not the case anymore that homogenization worsens the utility of these citizens in defeat. It can be shown that when Assumption 2 holds, the two effects exactly balance out (Lemma 3 below). Choices made by the elite and choice of effort by soldiers are the same under either form of indoctrination. This equivalence result hinges crucially on the assumption that the capital is in the middle. If the capital of country A were close to "zero," the benchmark form of homogenization would be more effective, because bringing the population closer to the capital of A would also bring most of the citizens further away from B's capital. Conversely, if the capital were close to the border with country B, enemy-neutral indoctrination would be more effective.

Lemma 3: *Equilibrium war effort, elite's payoffs and public policies under enemy-neutral homogenization coincide with the ones obtained under the "benchmark" form of homogenization.*

Proof of Lemma 3: Under the benchmark utility, the average net benefit of winning in the country is

$$\begin{aligned} NB_A &= \theta(g_A - g_B - g_A a(1-\lambda)(\frac{C_A^2}{q} + \frac{q}{2} - C_A)) \\ &\quad + \theta g_B a(C_B - \lambda C_A - (1-\lambda)\frac{q}{2}) + \gamma_A \frac{t_B(1-q)}{\chi q} \end{aligned} \tag{A.60}$$

Under "enemy neutral" nation-building the average net benefit of winning in the country is

$$\begin{aligned} \widetilde{NB}_A &= \theta(g_A - g_B - g_A a(1-\lambda_1)(\frac{C_A^2}{q} + \frac{q}{2} - C_A)) \\ &\quad + \theta g_B a(C_B - \frac{q}{2}) + \gamma_A \frac{t_B(1-q)}{\chi q} \end{aligned} \tag{A.61}$$

Both net benefits are identical when $C_A = \frac{q}{2}$. It also follows that if $C_A > q/2$, "enemy neutral" would be preferable for the elite to the "benchmark" one, and vice versa when $C_A < q/2$. When $C_A = \frac{q}{2}$, since the two forms of nation-building affect the elite utility only through the probability of winning, and since the elite's payoffs do not depend on nation-building, we have that economic outcomes under the two forms of nation-building are identical. □

A.5. Simplified Model: Free-riding and Heterogenous Effort

We simplify the main model by assuming a discrete number of soldiers. This will allow us to study free-riding in war effort. We will assume that each soldier in country A chooses his effort by taking others' effort as given (including the effort of his fellow citizens).

To make the analysis tractable, we reduce preference heterogeneity in the home country. Country A is composed of only two groups: group 1 and group 2 with population size P_1 and P_2, respectively. The elite of country A is given by one individual. Suppose that the number of soldiers in the two groups are, respectively, $N_1 < P_1$ and $N_2 < P_2$. Country B has population P_B. The number of soldiers in B is N_B.

After defining $T_A \equiv t_A P_1$ and $T_B \equiv t_B P_B$ we write contraint (4) as:

$$\pi_A T_A = g_A + h\lambda \tag{A.62}$$

As in the main model, citizens receive utility from consumption (equal to disposable income), public goods and from the spoils of war. The elite also receives rents from office. In the case of victory soldiers receive a share γ_A of the spoils of war, while the elite keeps the remaining part. The victory payoffs of the citizens of groups 1 and 2 and of the elites are:

$$U^+_{1,A} = \theta_1 g_A + \frac{\gamma_A T_B}{N_1 + N_2} + y_A - t_A \tag{A.63}$$

$$U^+_{2,A} = \theta_2 g_A + \frac{\gamma_A T_B}{N_1 + N_2} + y_A - t_A \tag{A.64}$$

$$U^+_{e,A} = \theta_e g_A + (1 - \pi_A) T_A + (1 - \gamma_A) T_B \tag{A.65}$$

Similarly to Assumption 1 in the main text, we assume $\theta_e < 1$ so that the elite would not provide public goods in peacetime. Because the elite and group 1 live in the same location, $\theta_e = \theta_1$. In addition, assume $\theta_e = \theta_1 > \theta_2$, meaning that members of group 2 enjoy less the public goods than members of group 1. For example, assume that group 1 lives in the capital C_A while group 2 lives closer to country B. Note that individuals obtain a share of the spoils of war regardless of effort. This is precisely what drives free-riding.

In case of defeat, the elite of country A loses power and foreign public goods are provided. The payoffs in the case of defeat are given by

$$U^-_{e,A} = (1-\theta_e)g_B + y_A \tag{A.66}$$

$$U^-_{1,A} = \varphi_A(1-\theta_1)g_B + y_A - t_A \tag{A.67}$$

$$U^-_{2,A} = \varphi_A(1-\theta_2)g_B + y_A - t_A \tag{A.68}$$

where $1 \geq \varphi_A \geq 0$, where $\varphi_A \in [0,1]$. We model homogenization as in the main model. More specifically, positive homogenization changes how much group 2 values the national public goods. The new θ_2 after homogenization is $\theta_2' = \theta_1\lambda + (1-\lambda)\theta_2$. The utilities of citizens/ soldiers of country B can be written in a symmetric way. When $\varphi_A = 0$, citizens in A do not value the foreign public good. This would correspond to negative indoctrination by A's elite.

We compute the Nash-equilibrium. We look at symmetric equilibria in which all individuals in the same group exert the same effort. We suppose that the cost of effort is linear, which simplifies the analysis. Let $e_1 \geq 0$ and $e_2 \geq 0$ be the chosen effort by the two groups in country A. Total effort in A is then $E_A = e_1N_1 + e_2N_2$. Effort by country B is taken as given and equal to E_B (We will explore an extension with endogenous effort in the foreign country at the end of this section). The probability that country A wins is

$$P_A(E_A, E_B) = \frac{N_1e_1 + e_2N_2}{E_B + N_1e_1 + e_2N_2} \tag{A.69}$$

We write down the net benefit of winning for the two groups:

$$NB_{1,A} \equiv U^+_{1,A} - U^-_{1,A} = (\theta_1(g_A + \varphi_A g_B) - \varphi_A g_B + \frac{\gamma_A T_B}{N_1 + N_2}) \tag{A.70}$$

$$NB_{2,A} \equiv U^+_{2,A} - U^-_{2,A} = (\theta_1(g_A + \varphi_A g_B) - \varphi_A g_B + \frac{\gamma_A T_B}{N_1 + N_2}) \tag{A.71}$$

If effort is strictly positive, optimal effort by each soldier solves the first-order conditions:

$$\frac{E_B}{(N_1e_1 + N_2e_2 + E_B)^2} NB_{1,A} = 1 \tag{A.72}$$

$$\frac{E_B}{(N_1e_1 + N_2e_2 + E_B)^2} NB_{2,A} = 1 \tag{A.73}$$

When homogenization is not total (i.e., $\lambda < 1$) we have $NB_{1,A} > NB_{2,A}$. Thus, we cannot have that both first-order equations are satisfied with equality. As a result, for group 2 the solution is at the corner: optimal effort is minimum, $e_2 = 0$ and we have complete free riding of group 2. If the cost of effort is not linear, we have that free-riding is less extreme. When $\lambda \in [0,1)$ effort e_1 is implicitly given by

$$\frac{E_B}{(N_1 e_1 + E_B)^2} NB_{1,A} = 1 \tag{A.74}$$

Thus, we compute the optimal effort chosen by members of group 1 when there is no (complete) homogenization, denoted e^{NH}:

$$e^{NH} = \frac{\sqrt{NB_{1,A}E_B} - E_B}{N_1}, \tag{A.75}$$

which is positive provided that E_B is small enough. When $\lambda = 1$ (perfect homogenization and the two groups have the same preferences) total effort is the same in both groups. Thus we obtain that after full homogenization, both groups exert the same effort, denoted e^H:

$$e^H = \frac{\sqrt{NB_{1,A}E_B} - E_B}{N_1 + N_2} \tag{A.76}$$

Total effort is unchanged in country A for all λ If the cost of effort is not linear, increasing λ reduces free-riding (in a more continuous way) but also increases total effort. That is, $N_1 e^{NH} = (N_1 + N_2)e^H = E_A$.

Lemma A1: *Total effort in country A, E_A, is strictly increasing in g_A and increasing in γ_A, and decreasing in g_B. Total effort E_A does not depend on homogenization λ. Homogenization affects, however, how total effort is shared. When $\lambda \in [0, 1)$ soldiers of group 2 completely free-ride and exert zero effort, while members of group 1 exert a positive effort equal to (A.75). When $\lambda = 1$ (perfect homogenization), in a symmetric equilibrium individual effort is the same in both groups and equal to (A.76).*

Proof: Note from (A.75) and (A.76) that effort is increasing in $NB_{1,A}$, which is increasing in g_A and γ_A and decreasing in g_B (given that $\theta_1 < 1$ and $\varphi_A \leq 1$). The fact that homogenization does not change total effort by A follows from the above discussion and a comparison of (A.75) and (A.76). □

We now discuss how the elite choose policies (public goods and/or monetary payoffs) to motivate the population. We assume that the elite internalize the average war effort of group 1. This assumption can be justified by the fact that both the elite and members of group 1 live in the same location, the capital. The problem of the elite is:

$$\max_{g_A, \gamma_A} P_A(E_A, E_B)\Big[\theta_e(g_A + g_B) - g_B + (1 - \gamma_A)T_B + (1 - \pi_A)T_A)\Big] - U^-_{e,A} - e_1 \tag{A.77}$$

subject to the budget constraint (A.62). In Proposition A1, we assume that $\lambda = 0$ and abstract from homogenization. In Proposition A2, we will treat λ as a choice variable and discuss the incentives of the elite to homogenize.

Proposition A1: *Let $\lambda = 0$. When army size is small so that $N_1 + N_2 < \tilde{\chi}$, where*

$$\tilde{\chi} \equiv \frac{1-\theta_1}{\theta_1} \tag{A.78}$$

we have $\gamma_A^\star > 0$ and $g_A^\star = 0$. When instead $N_1 + N_2 \geq \tilde{\chi}$, we have $g_A^\star > 0$ and $\gamma_A^\star = 0$.

Proof: The proof is virtually identical to the one of Proposition 2. We refer to that proof for more details. Recall that N_1 is the number of active soldiers in country A when $\lambda = 0$. Taking the first-order conditions with respect to γ_A and g_A :

$$\frac{\partial NB_{e,A}}{\partial \gamma_A} P(E_A, E_B) + NB_{e,A} \frac{\partial P(E_A, E_B)}{\partial E_A} \frac{\partial E_A}{\partial NB_{1,A}} \frac{\partial NB_{1,A}}{\partial \gamma_A} - \frac{\partial e_A}{\partial NB_{1,A}} \frac{\partial NB_{1,A}}{\partial \gamma_A} + \omega - \hat{\omega} = 0 \tag{A.79}$$

$$\frac{\partial NB_{e,A}}{\partial g_A} P(E_A, E_B) + NB_{e,A} \frac{\partial P(E_A, E_B)}{\partial E_A} \frac{\partial E_A}{\partial NB_{1,A}} \frac{\partial NB_{1,A}}{\partial g_A} - \frac{\partial e_A}{\partial NB_{1,A}} \frac{\partial NB_{1,A}}{\partial g_A} + \psi - \hat{\psi} = 0 \tag{A.80}$$

where $\omega, \hat{\omega}, \psi$ and $\hat{\psi}$ are the Lagrange multipliers (see proof of Proposition 2). Recall the interior condition on individual effort e_A :

$$\frac{\partial P(E_A, E_B)}{\partial E_A} NB_A = 1. \tag{A.81}$$

Note that the elite internalizes that public policies will change the effort of all active soldiers, while each individual internalizes how his individual effort will affect the winning probability. Recalling $E_A = N_1 e_A$, we can write the two equalities above as:

$$\frac{\partial P(E_A, E_B)}{\partial e_A} \frac{N_1 NB_{e,A} - NB_A}{P(E_A, E_B)} \frac{\partial e_A}{\partial NB_A} = \frac{T_B}{\frac{T_B}{N_1+N_2}} - \omega' + \widehat{\omega}' \tag{A.82}$$

$$\frac{\partial P(E_A, E_B)}{\partial e_A} \frac{N_1 NB_{e,A} - NB_A}{P(E_A, E_B)} \frac{\partial e_A}{\partial NB_A} = \frac{1-\theta_1}{\theta_1} - \psi' + \widehat{\psi}' \tag{A.83}$$

Suppose $g_A^\star \in (0, T_A)$. Then, $\psi' = \widehat{\psi}' = 0$ and we have

$$\frac{\partial P(E_A, E_B)}{\partial e_A} \frac{N_1 NB_{e,A} - NB_A}{P(E_A, E_B)} \frac{\partial e_A}{\partial NB_A} = \frac{1-\theta_1}{\theta_1} \tag{A.84}$$

If

$$\frac{T_B}{\frac{T_B}{N_1+N_2}} > \frac{1-\theta_1}{\theta_1} \tag{A.85}$$

(equivalently $N_1 + N_2 > \tilde{\chi}$), then from (A.82) it must be that $\omega' > 0$ and so $\gamma_A^* = 0$. If instead $N_1 + N_2 < \tilde{\chi}$, then from (A.82) it must be that $\hat{\omega}' > 0$ and so $\gamma_A^\star = 1$. Similarly, and following the proof of Proposition 2, one can show that when $N_1 + N_2 < \tilde{\chi}$, public spending is zero, unless $\gamma_A^* = 1$. □

Proposition A1 is in line with the main findings of Proposition 2 in the main text. When army size is small, the elite has no incentive to provide public goods.

We now treat λ as an endogenous parameter and discuss the incentives of the elite to choose λ. The problem of the elite is

$$\max_{\lambda, g_A, \gamma_A} P_A(E_A, E_B)\Big[\theta_e(g_A + g_B) - g_B + (1-\gamma_A)T_B + (1-\pi_A)T_A)\Big] - U_{e,A}^{-} - e_1 \tag{A.86}$$

subject to the budget constraint (A.62). From Lemma A1, note that nation-building does not change aggregate effort and the probability of winning. The fact that λ affects only the last term of the above expression greatly simplifies the analysis. Recall that the benefit of nation-building is to decrease effort by group 1. This is valuable for the elite because the elite internalizes the effort cost of the group that lives in the capital. Comparing (A.75) and (A.76), note that when λ goes to 1, effort by group 1 will decline more when N_2 is larger. Intuitively, the larger N_2, the stronger the incentives to reduce free-riding of group 2. Further, it is also intuitive that homogenization is more likely to be chosen when its cost is small. Finally, it is immediate from the previous discussion that partial homogenization ($\lambda < 1$) is not effective to reduce free-riding. Hence, it is never chosen. We state without proof the following Proposition.

Proposition A2: *(**nation-building**) Full homogenization is chosen only if N_2 is large enough and when its cost h is small enough.*

Next we show that, by making an additional assumption (namely, $\varphi_B = 0$), the result of Proposition A2 does not depend on the assumption that B's effort is exogenous.

Proposition A3: (**endogenous B's effort**) *Let $\lambda = 0$. Suppose effort by B is endogenous. Under the assumption that citizens of country B do not enjoy A's public goods ($\varphi_B = 0$) we have that the threshold at which public goods are provided is given by $\tilde{\chi}$, as defined in Proposition A2.*

Proof: When both armies choose effort simultanously, the following first order conditions need to be satisfied:

$$\frac{E_B}{(E_A + E_B)^2} NB_{1,A} = 1 \tag{A.87}$$

$$\frac{E_A}{(E_A + E_B)^2} NB_{1,B} = 1 \tag{A.88}$$

where $NB_{1,B}$ is the net benefit of the representative soldier in B. Note that when $\varphi_B = 0$, we have that $NB_{1,B}$ is not affected by public goods in A. This assumption simplifies the analysis. The two equations above lead to

$$\frac{NB_{1,B}}{E_B} = \frac{NB_{1,A}}{E_A} \tag{A.89}$$

Solve for E_B and plugging the solution into (A.87), we obtain

$$E_A = \frac{NB_{1,B}(NB_{1,A})^2}{(NB_{1,B} + NB_{1,A})^2}. \tag{A.90}$$

Similarly, we obtain:

$$E_B = \frac{NB_{1,A}(NB_{1,B})^2}{(NB_{1,B} + NB_{1,A})^2}. \tag{A.91}$$

Then, the probability of victory of A is

$$P_A(E_A, E_B) = \frac{NB_{1,A}}{(NB_{1,B} + NB_{1,A})} \tag{A.92}$$

On this, see also Nti (1999). We can put this expression into (A.77). Since the proof of Proposition A2 does not depend on the functional form of $P_A(E_A, E_B)$, we can proceed as we did there and show that Proposition A2 also holds when B's effort is endogenous. Notice the role of the assumption that $\varphi_B = 0$. If $\varphi_B > 0$ public spending would affect both E_A and E_B, while changing γ_A would only affect E_A. Therefore, when $\varphi_B > 0$ we cannot proceed as in Proposition A2. □

To sum up, when we allow for free-riding and endogenous effort in B, the thrust of our results remains unchanged. The additional insight that we obtain when free-riding is modelled is the following. When the cost of effort is linear, the purpose of homogenization is not to increase total effort, but to decrease free-riding and share the burden of war. If the cost of effort were not linear, homogenization would also increase total effort, giving the elites an additional incentive to homogenize.

A.6. Incentives to Initiate a War

The timeline is as follows. First, public policies $(g_A, \lambda_A, \gamma_A)$ are determined in country A. We maintain the assumption that public policies in country B are exogenously given. Next, a war between A and B occurs with probability ϕ. We suppose that ϕ is an endogenous parameter. For tractability, we assume that the probability that a war occurs is increasing in the number of countries that wish to go to war. Finally, if a war occurs, given e_B, soldiers in A choose war effort.

In this section, we will not provide a full-fledged analysis and solve for all endogenous variables. The goal of this section is more limited: to investigate whether the elites of a given country wish to initiate a war. We will obtain two main results. First, we show that there exists a range of parameters for which one (or even two) countries wish to go to war. This result provides a rationale for the assumption made in the body of the

paper that a war occurs for sure. Second, we show when public goods are provided, the elites have stronger incentives to initiate a war.

In the absence of transfers, the elites of country $i = A, B$ wish to go to war if and only if the expected value of a war is greater than the expected value of not going to war (Jackson and Morelli, 2011). To make our point, we will consider two extreme cases. First, we will suppose that the elite do not provide public goods: domestic taxes are entirely appropriated as rents (i.e., we are in the 'ancien-regime" equilibrium). Second, we will suppose that domestic taxes are entirely spent for public goods. In this second case, the only rents captured by the elites are the spoils of war, which they will obtain in case of victory.

Consider the first case (no public goods in both countries). Given public policies, one can compute the probability of winning by both countries. These probabilities are needed to determine the incentives to initiate a war.

The elite of country A initiates a war if

$$P_A\left(y_A + \frac{t_A q}{s_A} + (1-\gamma_A)\frac{t_B(1-q)}{s_A}\right) + (1-P_A)y_A - \rho e_A > y_A + \frac{t_A q}{s_A} \tag{A.93}$$

The LHS is the expected value of a war, which is won by A with probability P_A. The RHS is the payoff of not going to war and keeping the political rents for sure. The parameter ρ is the extent to which the elites internalize average war effort exerted in the country. In the main body of the paper, we assumed $\rho = 1$.

Similarly, the elite of country B initiates a war if

$$(1-P_A)\left(y_B + \frac{t_B(1-q)}{s_B} + (1-\gamma_B)\frac{t_A q}{s_B}\right) + P_A y_B - \rho e_B > y_B + \frac{t_B(1-q)}{s_B} \tag{A.94}$$

After some algebra, recalling that $P_A = (qe_A)/E$ where $E \equiv qe_A + (1-q)e_B$, we can write the above expressions as

$$\frac{1}{s_A}\left[(1-\gamma_A)(1-q)t_B - \frac{1-P_A}{P_A}t_A q\right] > \rho\frac{E}{q} \tag{A.95}$$

and

$$\frac{1}{s_B}\left[(1-\gamma_B)qt_A - \frac{P_A}{1-P_A}t_B(1-q)\right] > \rho\frac{E}{1-q} \tag{A.96}$$

We now show that it is not possible that *both* countries wish to go to war. A necessary condition for this would be that the expressions in the bracket parenthesis in (A.95) and (A.96) are both strictly positive. That is,

$$(1-\gamma_A)(1-q)t_B > \frac{1-P_A}{P_A}t_A q \tag{A.97}$$

$$(1-\gamma_B)qt_A - \frac{P_A}{1-P_A}t_B(1-q) \tag{A.98}$$

After some algebra, this would require:

$$(1-\gamma_A)(1-q)t_B > \frac{t_B(1-q)}{1-\gamma_B} \tag{A.99}$$

which is not possible provided that $\gamma_B < 1$ and $\gamma_A < 1$. Obviously, if $\gamma_B = \gamma_A = 1$, the elites would not want to go to war.

Next, we show that there exists a range of parameters for which at least one country wishes to go to war. It is easy to show the expressions in the bracket parenthesis in (A.95) and (A.96) cannot both be strictly negative. Then, when public goods are not provided and total effort and/or ρ are not too high, at least one country will want to go to war. If transfers cannot credibly made between the two countries, a war occurs for sure.

The second case is when public goods are provided and $\pi_i = 1$ (no rents) in both countries $i = A, B$. Then, public spending g_i is equal to t_i, for $i = A, B$. In case of victory, the value for the elites of each unit of public spending is θ. In case of defeat, public spending is provided by the opponent, giving a smaller payoff to the elites.

The elite of country A initiates a war if

$$P_A\left(y_A + \theta t_A + (1-\gamma_A)\frac{t_B(1-q)}{s_A}\right) + (1-P_A)\left(y_A + \theta t_B(1-(C_B-C_A))\right) - \rho e_A > y_A + \theta t_A \tag{A.100}$$

The elite of country B initiates a war if

$$(1-P_A)\left(y_B + \theta t_B + (1-\gamma_B)\frac{t_A q}{s_B}\right) + P_A\left(y_B + \theta t_A(1-(C_B-C_A))\right) - \rho e_B > y_B + \theta t_B \tag{A.101}$$

Write the above inequalities as:

$$\frac{1}{s_A}(1-\gamma_A)(1-q)t_B - \frac{1-P_A}{P_A}\left[t_A\theta - \theta t_B(1-(C_B-C_A))\right] > \rho\frac{E}{q} \tag{A.102}$$

and

$$\frac{1}{s_B}(1-\gamma_B)qt_A - \frac{P_A}{1-P_A}\left[t_B\theta - \theta t_A(1-(C_B-C_A))\right] > \rho\frac{E}{1-q} \tag{A.103}$$

It is relatively simple to observe that when s_A and s_B are sufficiently small (and either E or ρ are low) both inequalities (A.102) and (A.103) hold, implying that *both* countries wish to go to war. As a result, wars cannot be avoided. This would also be true if transfers were allowed. Since the incidence of war is assumed to be increasing in the number of countries that wish to initiate war, the likelihood of a conflict will be higher when public goods are provided. The intuition for this result is as follows. By providing concessions to the population in the form of public spending, the elites make it worthwhile for citizens to fight in order to keep their sovereignty. At the same time, since by Assumption 1 the elites value public spending less than

monetary payoffs, these concessions make peace *less* worthwhile for the elites. The perspective of obtaining the spoils of war, which will be shared among the elites, provides strong incentives to start a war for the elites of *both* countries.