Political Institutions and War Initiation: The Democratic Peace Hypothesis Revisited[†]

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Abstract. This chapter analyzes the influence of democratic institutions—specifically, the effects of (i) electoral uncertainty when individuals within a nation have different preferences over public peaceful investment and (ii) greater checks and balances that lead to a more effective mobilization of resources for both public peaceful investment and arming—on a nation's incentive to arm and willingness to initiate war. The analysis is based on a model where nations contest some given resource and where they cannot commit to their future allocations to arming; yet, the victor in a conflict today gains an advantage in future conflict and thus realizes a savings in future arming. These assumptions imply that, despite the short-term incentives to settle peacefully, one or both nations might choose to initiate war. In such a setting, electoral uncertainty tends to make a democracy more peaceful relative to an autocracy, whereas greater checks and balances tend to make a democracy less peaceful. Thus, while two democracies might be more peaceful than two autocracies when paired against each other in a contest over a given resource, this is not necessarily the case. Even under conditions where democracies are most likely to be peaceful with one another, democracies are at least as likely to be in war with autocracies as autocracies are likely to be in war each other.

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1 Introduction

A voluminous literature shows that democratic nations rarely wage war against each other—the so-called the "democratic peace." This empirical finding holds even when controlling for geography, alliances, and development (see Chan 1997 for a survey). But, are democratic nations generally more pacific than nondemocratic nations? The evidence here is somewhat mixed (e.g., Rousseau et al., 1996). Specifically, some have found that democracies are generally less prone to conflict (e.g., Benoit, 1996), while others have found that democracies are at least as likely to fight autocracies as autocracies are to fight each other (e.g., Maoz and

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Abdolali, 1989; Oneal and Russett, 1997).[1] In any case, it is clear that there is something fundamentally different about foreign policy making in democracies.

What accounts for these differences? Scholars have generally taken two approaches in answering this question. The first emphasizes differences in norms. Leaders of democracies are guided by norms of compromise and cooperation, and so are less prone to conflict (e.g., Maoz and Russett, 1993; Russett, 1993; and, Dixon and Senese, 2002). Such norms apply especially when democracies interact with each other. But, insofar as these norms are relevant for democratic leaders when dealing with autocratic leaders as well as with other democratic leaders, this approach is consistent with the notion that democracies are generally more pacific.[2]

The second approach emphasizes structural differences implied by different political institutions. For example, greater checks and balances in a democratic state can constrain its leaders in mobilizing resources for the war effort (e.g., Morgan and Campbell, 1992; and, Russett, 1993). A variant of this approach—one that is more prominent in the recent literature—highlights the effect of regime types on the link between the incumbent's likelihood of remaining in power and the outcome of a war. For example, Bueno de Mesquita et al. (2003) find that leaders in democracies devote more resources to arming, but are less likely to participate in a risky war, because their survival in office depends on satisfying a larger winning coalition. Although victory yields resources enjoyed by all to help the leader remain in power, the loss in resources associated with defeat can jeopardize the leader's incumbency. As a result, democracies might not fight each other because each expects the other to expend much effort, making such wars riskier. Autocratic rulers tend to devote more of their resources to satisfy a smaller winning coalition, and this can be done through the provision of private goods. Consequently, the survival of autocratic rulers depends less on the outcome of the war, and their willingness to fight democracies is roughly the same as their willingness to fight other autocracies.

Hess and Orphanides (1995) similarly assume that the war outcome has implications for a democratic leader's survival in power, but only to the extent that the war outcome provides new information to the voting public about the leader's ability to handle the economy. That is to say, a democratic leader possibly has a diversionary motive for going to war. However, as recognized by Hess and Orphanides (2001), there can also be an appropriative motive for going to war for both democracies and non-democracies. Since the net benefits of such

[1] See Boehmer (2008) for a discussion of the more recent evidence, which appears to lend more support to the notion that democracies are generally less prone to war.

[2] More recently, Fearon (2008) supposes that democracies, in contrast to autocracies, are committed to extending the same rights and privileges (equal taxation and the provision of public goods) enjoyed by their citizens to the inhabitants of successfully conquered territories. In the case that there are two democracies with constant returns to scale in government, little is to be gained by seizing some of the opponent's territory. The likelihood of conflict is greater where one of the two countries is an autocracy, and greatest when both countries are autocracies.

wars are more disproportionately enjoyed by the ruling elite in a non-democracy than in a democracy, this motive tends to be stronger for autocracies.[3] Nevertheless, while it is possible that a more democratic world is more peaceful, this is not necessarily the case.

In a similar vein, Baliga, Lucca and Sjöström (2007) emphasize the importance of accountability in the political survival of elected leaders, supposing that dictators remain in power regardless of the outcome of conflict, whereas leaders of democracies must appease the median voter to remain in power. Full democracies are distinguished from limited democracies in terms of the identity of the critical voter whose support is required for the leader to remain in power. In a full democracy, the critical voter corresponds with the median voter who prefers the leader to respond to aggression with aggression, but aggression without cause would result in the dismissal of the leader. By contrast, the critical voter in limited democracies exhibits a hawkish bias (relative to the median voter). Under these assumptions, limited democracies tend to exhibit more aggression than either full democracies or autocracies.[4]

But, while it seems obvious that the rate of turnover of leadership in a democracy is greater than that in an autocracy, Debs and Goemans (2009), building on the empirical work of Chiozza and Goemans (2004), question the notion that the likelihood of remaining in power for a democratic leader is more sensitive to the outcome of conflict. Under the reasonable assumption that the process by which autocratic rulers are replaced is generally more violent than the process of replacing elected leaders, the cost of losing power for an autocratic ruler is greater than that for a democratic leader. At the same time, since the strength of a leader's means of coercion is positively related to the nation's success in conflict and this coercive apparatus plays a larger role in the survival of an autocratic ruler than in the survival of a democratic leader, an autocratic ruler's tenure is more sensitive to the outcome of conflict.[5] With these results, Debs and Goemans (2010) offer a new perspective on the democratic peace hypothesis. In particular, democratic leaders view making concessions as less costly, first because the outcome of the conflict has less influence on the leader's probability of survival, and second because the costs of losing power are smaller.

The present chapter takes an entirely different approach, one that emphasizes, along the lines of Garfinkel (1994), the combined roles of (i) differences in preferences of individuals

[3]Also see Jackson and Morelli (2007), who emphasize the mechanisms that determine the extent to which leaders internalize the costs of war relative to the benefits. In particular, they suppose the net benefits to war for autocratic rulers are higher relative to the net benefits for the country as a whole, giving rise to a general bias for autocracies to wage war; the closer is the match between the net benefits of war realized by the leader and the net benefits realized by the general population, the smaller is the bias.

[4]Also see Baliga and Sjöström (this volume). With a focus on the opportunities for international cooperation (through repeated interactions), Conconi et al. (2009) highlight the importance of term limits, which hinder the effectiveness of political accountability and make democracies more conflict prone.

[5]They provide additional evidence of this implication. Also see Rosato (2003).

within a nation that play out through the political process and (ii) electoral uncertainty.[6] At the same time, along the lines of North and Weingast (1989), this chapter supposes that checks and balances within a democracy need not make the mobilization of resources more difficult. Instead, in a consolidated democracy where checks and balances are firmly in place, the incumbent leader's access to resources will be greater. The analysis fleshes out the implications of these features of democratic institutions within a setting wherein nations contest some given resource. It does so considering first the incentive to arm and second the incentive to initiate war. The case of an autocracy—where there is no electoral uncertainty and mobilizing resources for public peaceful investment and arming is more difficult—is taken as the benchmark for comparison.

Differing preferences among individuals within a nation translate into a disagreement between the current and potential future policymakers about the allocation of resources that, combined with electoral uncertainty, influences the current policymaker's choice about arming. In particular, insofar as the potential benefit of arming today is to capture resources in the future and the current and potential future policymakers disagree over the allocation of such resources, electoral uncertainty induces greater discounting of the future, and thereby tends to weaken the nation's incentive arm. Hence, although a policymaker's survival probability is important here, the potential relevance of a nation's political institutions in determining how success in conflict might influence that probability is not essential to explaining the democratic peace. However, insofar as democratic institutions enable the policymaker to convert taxed resources (which reduce private investment) more effectively into public peaceful investment and arms, such institutions tend to strengthen a nation's incentive to arm.

An extension of the analysis, following Garfinkel and Skaperdas (2000) among others, considers explicitly the possibility of peaceful settlement along with nations' arming decisions in a general equilibrium setting. The possibility of peaceful settlement itself gives rise to two possible outcomes: (i) arming with fighting and (ii) arming without fighting. While settlement would be preferred over fighting in a static setting, one or both nations might prefer to fight in a dynamic setting, particularly when there is incomplete contracting/commmitment regarding the nations' future allocation of resources to arms. For the victor in a conflict today gains an upper hand in any future contest over resources, and in doing so realizes some savings in the form of reduced future arming. As the future becomes more salient, the incentive to fight today increases. Hence, electoral uncertainty, which effectively induces more discounting of the future by the current policymaker, tends to make that policymaker less war prone. Yet, a greater ability to mobilize resources in

[6] This emphasis on the effect of electoral uncertainty makes no a priori assumptions about the influence of the conflict outcome on democratic leader's likelihood of survival. In equilibrium, there is no influence. Still, the analysis is consistent with the notion that, abstracting from the war outcome, the likelihood a democratic leader will be replaced is greater than that for an autocratic ruler (Debs and Goemans, 2010).

general implies a greater incentive to arm and hence a greater potential savings in future arming—particularly, if the nation emerges as a victor in today's conflict—and thereby tends to make a democratic leader more war prone. That is to say, differences in constraints on mobilization for a democracy could make the democratic peace less likely. The analysis suggests further that, even when the conditions that favor the democratic peace are satisfied, democracies could be at least as likely to fight autocracies as two autocracies are likely to fight each other.

In what follows, the next section lays out the basic framework. Section 3 examines the implications for a nation's incentive to arm, while section 4 examines the general equilibrium implications for arming and war initiation. Finally, section 5 offers some concluding remarks.

2 Basic framework

The analysis builds on a simplified and modified version of Garfinkel's (1994) two-period framework of resource allocation under alternative political arrangements—democracy and autocracy—when resource endowments are not secure. The economy is populated by J consumers/voters, who are indexed by $j = 1, 2, \ldots, J$. At the beginning of each period $t = 1, 2$, consumers receive an identical endowment of some basic resource, Z_t, which is neither storable nor directly consumable. Of this endowment, individual j allocates i_t^j units to production. The total output enjoyed by individual j depends not only on this allocation, but also on the government's allocation to two types of public (peaceful) investment, $n_t = (n_{At}, n_{Bt})$, both measured in per capita terms:

$$G(i_t^j, n_t, \mu_j) = (i_t^j)^\alpha + \mu_j n_{At} + (1 - \mu_j) n_{Bt}, \quad t = 1, 2, \tag{1}$$

where $\alpha \in (0, 1)$ and $\mu_j \in [0, 1]$. According to this specification, individuals having a larger μ_j ($> \frac{1}{2}$) enjoy a larger output, given their private investment (i_t^j), when n_{At} is higher than n_{Bt}. For example, one type of peaceful investment (say n_{At}) might be more directly linked to the building of human capital, while the other (n_{Bt}) is more directly linked to the building of physical capital.

While the exact nature of the difference in the two types of public peaceful investment is not important, it is important that individuals differ in their preferences defined over them, as reflected in the parameter μ_j, which is distributed over the interval $[0, 1]$. Variation in μ_j across individuals could arise from real differences in technology, business type or location. Alternatively, variation in μ_j could be interpreted as a conflict over the distribution of resources. In this case, n_t can be thought of as a lump sum distribution from the government financed by taxes imposed on each individual. Each individual pays the same tax and receives the same distribution of n_{At} and n_{Bt}, but for individuals with a larger μ_j ($> \frac{1}{2}$), the benefit of n_{At} is marginally greater; for individuals with a smaller μ_j ($< \frac{1}{2}$), the benefit of n_{Bt} is marginally greater. Under either interpretation, given the resources available (Z_t), this variation translates into a general disagreement about the desired composition of public peaceful investment.[7]

In a democratic regime, the identity of the incumbent is given for period $t = 1$; at the end that period ($t = 1$) before Z_2 is realized and any period $t = 2$ allocations are made, individuals vote to elect a policymaker/party to take office in period $t = 2$.[8] Each individual's μ_j is constant over the two periods. However, suppose in addition that there are unpredictable changes in the distribution of voters, driven for example by random voting shocks which influence the individual's decision of whether or not to participate in the electoral process or by possible future changes in the criteria defining the voting population. This assumption implies that the identity of the median voter is not the same from period to period, and hence there is uncertainty about the future election outcome. In this framework, the autocratic regime is viewed as a degenerate case of democracy. That is to say, the incumbent (autocratic) ruler remains in power with certainty.

Under either regime, the leader imposes an identical lump sum tax, τ_t, on each individual. The proceeds can be transformed into nonmilitary (or peaceful) public investment (n_t) and military goods (m_t), both measured in per capita terms, as follows:

$$\tau_t = \lambda[n_{At} + n_{Bt} + m_t] \quad t = 1, 2, \tag{2}$$

where $\lambda \in [1, \lambda_R]$. The case where $\lambda = 1$ is viewed as that where checks and balances are sufficiently high (as in a consolidated democracy) to allow the government (led by either of the two parties) to transform tax revenues into public spending (n_t or m_t) on a one-to-one basis. But, where $\lambda > 1$, the state's ability to obtain resources to allocate to such spending is limited, and more so the larger is λ.[9] The analysis views an autocracy as having the least amount of checks and balances, such that $\lambda = \lambda_R > 1$.

Following the growing literature on the economics of conflict, the analysis assumes that

[7] Garfinkel (1994) supposes, by contrast, that the disagreement among individuals within the nation concerns the composition of public investment and private investment. The approach adopted here allows for a more transparent analysis of the effects of political institutions as they influence the ability of the incumbent to mobilize resources for either type of public peaceful investment and arming.

[8] While the precise timing of the realization of Z_2 relative to the election for choosing the second period leader does not matter in this analysis of this section where we consider only the leader's mobilization efforts, it does matter in section 4 where we consider, in addition, the decision of whether to settle peacefully or to initiate war.

[9] Note North and Weingast (1989) argue that institutional arrangements that enhance checks and balances would work to enhance the government's ability to raise revenues through credit markets. However, the present chapter abstracts from debt finance. Even so, North and Weingast's arguments would apply more generally to the government's ability to obtain resources, whether it be through taxation or borrowing. A more fully articulated model might suppose that, with fewer checks and balances, individuals have a greater incentive to engage in tax avoidance activities, thereby limiting the ability of the government to obtain funds to finance public spending. Also see Lake (1992).

One could assume that the state's effectiveness in mobilizing resources for security purposes differs from that in mobilizing resources for public investment; however, the qualitative results would remain unchanged.

military spending augments the fraction of world resources secured by the nation.[10] Given the amount of military spending by other nations, increased military spending increases the endowment received by each individual equally, but not until the following period:

$$Z_t = z(m_{t-1}) \quad t = 1, 2, \tag{3}$$

given m_0, where $z(\cdot)$ is at least twice continuously differentiable and $z_m \equiv \partial z(m_t)/\partial m_t$ is strictly positive and decreasing. While this specification reflects a strong assumption that current military spending has no possible benefits in the current period, it is only important that the potential benefits of such spending are not fully realized in the current period—i.e., in a democracy, during the incumbent's term. As discussed below in section 4, $z(\cdot)$ depends not only on the state of technology available to the nation to grab contestable resources, but also on other nations' military spending. However, since the focus here initially treats military spending by other nations as exogenous, that notation is suppressed for now.

2.1 Optimization by voters/consumers

Voters/consumers have identical preferences defined over current and future consumption, $c_t^j \quad t = 1, 2$:

$$\Gamma^j = E_1 \left\{ \sum\nolimits_{t=1}^{2} \beta^{t-1} c_t^j \right\} \quad j = 1, 2, \ldots, J, \tag{4}$$

where $\beta \in (0, 1]$ reflects the individual's time preference, which is constant across j; and E_1 denotes the expectations operator conditional on information available in the beginning of period $t = 1$. One source of uncertainty in this model arises as the identity of the median voter and hence the identity of the policymaker to be elected in period $t = 2$ is not known—particularly in the democratic regime. However, as described below in section 4, under both democratic and autocratic regimes there could also be uncertainty regarding the outcome of the conflict between nations.

The assumption that the endowment cannot be consumed directly and is non-storable implies that the individual's investment decision is trivial. In particular, taking the current and expected future tax and public spending policies as given, each individual j chooses i_t^j to maximize (4) subject to his production technology (1), and two resource constraints: (i) $c_t^j \leq G(i_t^j, n_t, \mu_j)$ and (ii) $i_t^j \leq Z_t - \tau_t$. The solution to this problem takes the following form:

$$i_t = Z_t - \tau_t \quad t = 1, 2, \tag{5}$$

for all j. The only interesting decision made by individuals in a democracy concerns which

[10]See Garfinkel and Skaperdas (2007) for an overview of this literature.

political party to support in the election at the end of period $t = 1$. Given μ_j, this decision depends on the policies expected to be implemented by each party if elected. As previously mentioned, the identity of the policymaker in an autocracy is taken to be exogenous.

2.2 Optimization by policymakers

Assume that, for democracies, there are just two political parties, indexed by $k = I, N$. The incumbent in the initial period ($t = 1$) is denoted by $k = I$, and the party not initially in power but still representing a potential successor in the next period ($t = 2$) is denoted by $k = N$. Differences in their preferences, Γ^k, which correspond to different groups of voters/consumers, result in a disagreement between the parties about the composition of public peaceful investment. In particular, each party $k = I, N$ aims to choose spending and tax policies so as to maximize the following:

$$\Gamma^k = E_1 \left\{ \sum_{t=1}^{2} \beta^{t-1} G(i_t, n_t, \mu_k) \right\}, \tag{6}$$

where $G(i_t, n_t, \mu_k)$ is given by (1) and $\mu_k \in [0, 1]$ for $k = I, N$. To fix ideas, the analysis assumes that the incumbent party, $k = I$, representing those individuals with $\mu_j = \mu_I$, has a relatively greater preference for n_{At}, whereas the other party, $k = N$, that represents those individuals with $\mu_j = \mu_N$, has a relatively greater preference for n_{Bt}: $0 \leq \mu_N < \frac{1}{2} < \mu_I \leq 1$.[11] These preferences are common knowledge.

In a democratic regime, both voters and policymakers face uncertainty at the beginning of period $t = 1$ about the identity of the period $t = 2$ policymaker. Let the probability that the incumbent (of a democracy) is reelected in period $t = 2$ be denoted by P; then, $1 - P$ denotes the probability that party $k = N$ is elected in period $t = 2$. Suppose further that the incumbent takes P as given. As will become obvious below, under the assumption that voters are rational and forward-looking, neither party can make false promises in equilibrium about spending policies to be implemented in the future. Each can credibly promise to implement only those policies considered optimal once in power in period $t = 2$. Given the preferences of the two political parties, the equilibrium determination of P depends only on the identity of median voter.

The ruler of an autocracy (indexed by $k = R$) has preferences also represented by (6), but with $P = 1$.

3 Electoral uncertainty and equilibrium military spending

In studying the policymaker's equilibrium military spending policies that take the other nations' policies as given, the analysis assumes that the endowments received in the two

[11]The particular ordering of their preferences (μ_I vs. μ_N) is not important, only that there exists disagreement between the two parties. The analysis to follow also considers (as a benchmark case) the outcome where there is no disagreement ($\mu_I = \mu_N$).

periods, if strictly positive, are sufficiently large to ensure that the policymaker's optimizing choice of public peaceful investment is strictly positive: $n^{*k}_{At} + n^{*k}_{Bt} > 0$.[12] Then, given the time separability of preferences, the analysis can first characterize the parties' preferred peaceful investment policies for a given military spending policy, and subsequently turn to the incumbent's choice of military spending in period $t = 1$.[13] For now, note that, regardless of the identity of the policymaker in period $t = 2$ (whether it be representing party $k = I, N$ in a democracy or an autocratic ruler $k = R$), $m_2 = 0$ in this two-period setting.

3.1 The policymaker's preferred peaceful investment

The policymaker of each party k, if in power in period t, chooses the composition of peaceful investment to maximize $G(i_t, n_t, \mu_k)$ subject to individuals' choice of i_t (5) and the budget constraint (2), for a given endowment net of the resource costs of military spending in that period, $z(m_{t-1}) - \lambda m_t$. The first-order conditions to this static problem are given by (2), (5) and the following

$$-\lambda\alpha i_t^{\alpha-1} + \mu_k \leq 0 \tag{7a}$$
$$-\lambda\alpha i_t^{\alpha-1} + (1-\mu_k) \leq 0 \tag{7b}$$

for $k = I$ in $t = 1$ and $k = I, N$ in $t = 2$. These conditions, conditional on m_0, m_1 and $m_2 = 0$, require that the marginal benefits of private peaceful (i_t) and public peaceful investment (n_t) be balanced against each other. Since public peaceful investment enters linearly into $G(i_t, n_t, \mu_k)$, the assumption that $\mu_I > \frac{1}{2} > \mu_N$ implies that both (7a) and (7b) cannot hold as strict equalities for either party, k. In particular, party $k = I$ having a relatively greater preference for n_{At} chooses $n_{Bt} = 0$, whereas party $k = N$ chooses $n_{At} = 0$. The first-order conditions to party k's static optimization problem then imply the following solutions at an interior optimum (i.e., with $n^{*k}_t > 0$):

$$i_t^{*k} = \begin{cases} \left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{1}{1-\alpha}} & \text{for } k = I \\ \left(\frac{\lambda\alpha}{1-\mu_N}\right)^{\frac{1}{1-\alpha}} & \text{for } k = N \end{cases} \tag{8a}$$

$$n_t^{*k} = \begin{cases} n^*_{At} = \frac{z(m_{t-1})}{\lambda} - m_t - \lambda^{\frac{\alpha}{1-\alpha}}\left(\frac{\alpha}{\mu_I}\right)^{\frac{1}{1-\alpha}} & \text{for } k = I \\ n^*_{Bt} = \frac{z(m_{t-1})}{\lambda} - m_t - \lambda^{\frac{\alpha}{1-\alpha}}\left(\frac{\alpha}{1-\mu_N}\right)^{\frac{1}{1-\alpha}} & \text{for } k = N. \end{cases} \tag{8b}$$

$t = 1, 2$, where as previously mentioned $m_2 = 0$.

For $t = 1$ these solutions with $k = I$ represent the optimizing choices of the incumbent

[12] If $Z_t = 0$, a possible outcome when war breaks out as considered in section 4, no allocation decisions are to be made.

[13] In this case, the policymaker's choice of public peaceful investment follows from a static optimization problem, while her choice of military spending follows from a dynamic optimization problem.

in the first period. They are the actual allocations for that period. For $t=2$, these solutions represent the policymakers' preferred policies that would be implemented if in power then. These policies are the only ones that can be credibly announced in any campaign platform prior to the election that takes place at the end of period $t=1$. Note from (8b), that the focus on an interior optimum ($n_t^{*k}>0$) implicitly assumes $z(m_{t-1})-\lambda m_t$ is sufficiently large, and that this assumption is stronger the greater is the tax inefficiency (λ).

Maintaining this assumption, the solutions shown in (8) reveal that the preferred composition of resources allocated to peaceful investment from $z(m_{t-1})-\lambda m_t$, depends on the inefficiency of taxation, λ, and the policymaker's preferences, μ_k. In particular, given μ_k, the optimizing level of public peaceful investment (n_t^{*k}) falls relative to the optimizing level of private investment (i_t^{*k}) as taxation becomes less efficient (i.e., as λ rises). Given the degree of tax inefficiency λ, a larger weight attached to the policymaker's preferred public peaceful investment, μ_I for $k=I$ and $1-\mu_N$ for $k=N$, implies that more resources are allocated to public investment, n_t, and fewer resources are allocated to private investment, i_t. With (3), these solutions also imply that public peaceful investment in period t is increasing in the current $t-$period endowment and thus m_{t-1}. As emphasized below, the dependence of the policymaker's optimizing peaceful investment/tax policies on the previous period's military spending and the disagreement between the two parties has important implications for party $k=I$'s arming decision in period $t=1$.

These solutions and equations (2), (3), and (5) imply that party I's first-period indirect utility can be written as a function of m_0 and m_1:

$$G^I(m_0,m_1)=(1-\alpha)\left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{\alpha}{1-\alpha}}+\mu_I\left(\frac{z(m_0)}{\lambda}-m_1\right). \tag{9}$$

Party I's second-period indirect utility, conditional on arming in period $t=1$ and being reelected in period $t=2$, can be written as a function of m_1:

$$\hat{G}^I(m_1)=(1-\alpha)\left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{\alpha}{1-\alpha}}+\mu_I\left(\frac{z(m_1)}{\lambda}\right). \tag{10}$$

Similarly, party I's indirect utility if not reelected in period $t=2$ is given by

$$\hat{G}^{NI}(m_1)=\left(\frac{\lambda\alpha}{1-\mu_N}\right)^{\frac{\alpha}{1-\alpha}}+(1-\mu_I)\left(\frac{z(m_1)}{\lambda}-\lambda^{\frac{\alpha}{1-\alpha}}\left(\frac{\alpha}{1-\mu_N}\right)^{\frac{1}{1-\alpha}}\right). \tag{11}$$

The analysis of the next section uses these expressions to characterize the incumbent's first-period choice for military spending.

3.2 The optimizing choice of military spending

The incumbent leader in period $t = 1$ takes into account the potential influence of her choice of m_1 on the potential successor's ($k = N$) peaceful investment/tax policies and the resulting effect on $\hat{G}^{NI}(m_1)$. Thus, the incumbent solves the following optimization problem:

$$\max_{m_1} \left\{ G^I(z(m_0) - \lambda m_1) + \beta[P\hat{G}^I(m_1) + (1-P)\hat{G}^{NI}(m_1)] \right\}, \tag{12}$$

where the indirect utility functions are defined above in (9) given m_0, (10), and (11).

At an interior optimum, the first-order condition is given by:

$$-\mu_I + \frac{\beta z_m(m_1)}{\lambda}\hat{\mu}_I = 0, \tag{13}$$

where $\hat{\mu}_I \equiv P\mu_I + (1-P)(1-\mu_I) \leq \mu_I$.[14] The first term in this condition represents the marginal cost of military spending in terms of current foregone public (peaceful) investment and thus period $t = 1$ consumption. The second term represents the discounted value of the marginal benefit of military spending in terms of the additional resources secured for public peaceful investment and thus period $t = 2$ consumption. This marginal benefit accounts for the disagreement between the incumbent and the potential successor and the perceived "distortion" in choice of public peaceful investment in the case that she is not reelected. Note, in particular, given the assumptions that $\mu_I > \frac{1}{2}$ and $P < 1$, the weight attached to this benefit in terms of the additional public peaceful investment made possible with an additional unit of military spending, $\hat{\mu}_I$, is strictly less than μ_I. Note further that (13) with $P = 1$ and $\lambda = \lambda_R$ represents the first-order condition for the autocratic ruler's optimizing choice of military spending. For future reference, let m_1^{I*} denote the optimizing choice of military spending for the incumbent leader of a democracy and m_1^{R*} denote that for an autocratic ruler.

The optimizing choice of military spending, as implicitly defined by (13), generally is a function of the policymaker's time preference (β), the inefficiency of taxation (λ) and the probability of re-election (P). Regardless of the political regime in place, it is clear from (13) that the discounted marginal benefit from military spending today is increasing in β. Then, it follows from the assumed concavity of $z(\cdot)$ that the optimizing choice of military spending depends positively on β. Thus, as the future becomes relatively more important, the leader—whether she be elected or an autocratic ruler—chooses a higher level of military spending.

To consider the implications of democratic institutions, as reflected in the difference

[14] Note that $\hat{\mu}_I \leq \mu_I$ holds as a strict inequality whenever the incumbent leader faces electoral uncertainty (i.e., $P < 1$) and has a relative preference for n_A (i.e., $\mu_I > \frac{1}{2}$) while the potential successor has a relative preference for n_B (i.e., $\mu_N < \frac{1}{2}$). If either $\mu_I = \mu_N = \frac{1}{2}$ or $P = 1$, then $\hat{\mu}_I = \mu_I$.

between m^{I*} and m^{R*} given the (pure) time preferences of individuals and leaders (β), it is useful to start with the case where there is no disagreement between the two political parties: $\mu_I = \mu_N = \frac{1}{2}$. From (8), one can verify that, in this case, the peaceful investment policies that would be chosen in the second period by the two parties are identical:

$$\begin{aligned} i_2^{*k} &= (2\lambda\alpha)^{\frac{1}{1-\alpha}} \\ n_{A2}^{*k} &= n_{B2}^{*k} = \tfrac{1}{2}\left[\frac{z(m_{t-1})}{\lambda} - \lambda^{\frac{\alpha}{1-\alpha}}(2\alpha)^{\frac{1}{1-\alpha}}\right] \end{aligned}$$

for $k = I, N$, implying that the indirect utility when reelected (10) is identical to that when not reelected (11).[15] Thus, in this case, the probability of reelection for party $k = I$ has no relevance for the marginal benefit of military spending. This result remains intact more generally if $\mu_I = \mu_N \neq \frac{1}{2}$.

Indeed, the case of no disagreement between the incumbent and the potential successor ($\mu_I = \mu_N$) is identical to that where $P = 1$: neither the incumbent party's preferred type of public peaceful investment nor the probability of reelection has any relevance for the optimizing choice of military spending in period $t = 1$. This point can be verified by noting that, when $\mu_I = \mu_N$ so that $\hat{\mu}_I = \mu_I$, the first-order condition (13) simplifies as follows:

$$-1 + \beta z_m(m_1)/\lambda = 0. \tag{14}$$

This condition with $\lambda = \lambda_R$, also implicitly defines the autocratic ruler's optimizing military spending as a function of the inefficiency of taxation, λ. Applying the implicit function theorem to (14), while invoking the second-order condition, one can easily verify that the optimizing choice of military spending is negatively related to the tax inefficiency parameter. Thus, given military spending by the rival country, equilibrium military spending will be strictly greater in a democracy with a homogeneous population than in an autocracy: $m_1^{I*} \geq m_1^{R*}$ holds when $\mu_I = \mu_N$ and as a strict inequality for $\lambda < \lambda_R$.

However, a similar line of reasoning shows that, when there is disagreement between the two political parties, electoral uncertainty has an offsetting effect on the incumbent party's optimizing choice of m_1 relative to that of the autocrat. In particular, given $\mu_I > \frac{1}{2} > \mu_N$, an exogenous decrease in P implies a lower value for $\hat{\mu}_I \equiv P\mu_I + (1-P)(1-\mu_I)$ and thus a decrease in the overall marginal benefit of military spending. Since the marginal cost is unaffected, the incumbent party's optimizing choice of military spending m_1^{I*} is necessarily decreasing in the probability of being replaced by the other party.[16]

[15] To be sure, when $\mu_I = \mu_N = \frac{1}{2}$, the composition of n_t is not determined. Here I assume, without any loss of generality, that both parties split that allocation evenly between n_A and n_B.

[16] By the same token, given $P < 1$, an increase in $\mu_I > \frac{1}{2}$, which since $\mu_N < \frac{1}{2}$ would indicate an increase in the degree to which the two political parties disagree, implies a smaller net marginal benefit from military spending, and thus a smaller m_1^{I*}. In a more general setting, but one that abstracts from possible tax inefficiencies, Garfinkel (1994) shows similarly that an increase in the degree to which the parties disagree

This discussion reveals that democratic institutions potentially produce two offsetting effects on a country's military spending relative to military spending by an autocrat, given military spending by the rival nation: the greater efficiency of taxation (i.e., a smaller value for λ) tends to add to military spending, while electoral uncertainty given disagreement between the political parties tends to reduce military spending. Thus, although democratic institutions can induce lower military spending even when the likelihood of reelection for the incumbent is independent of the outcome of the war, such institutions and the associated constraints do not necessarily imply lower military spending. The Appendix confirms that the net effect on equilibrium military spending by an elected policymaker relative to that by an autocratic ruler (whether larger or smaller) is consistent with the equilibrium determination of P.

4 Implications for international conflict: Peaceful settlement versus war initiation

The analysis now turns to study the implications of democratic institutions for international conflict. The objective is to consider further how these institutions influence the incentives of leaders to mobilize resources to the conflict in a more general equilibrium framework, supposing that two countries contest a given resource. At the same time, the analysis permits a distinction between mobilization and actual conflict, to consider explicitly the decision to settle peacefully or to initiate war. A critical assumption of the analysis is that nations in conflict cannot enter into binding commitments over the future allocation of resources to arms; however, victory in a war today weakens the opponent and, therefore, can help solve this problem.

Under settlement in period t, the division of world resources depends on m_{t-1} and $\tilde{m}_{t-1}$:

$$Z_t = z(m_{t-1}, \tilde{m}_{t-1})Z \text{ and } \widetilde{Z}_t = [1 - z(m_{t-1}, \tilde{m}_{t-1})]Z, \tag{15a}$$

where the tilde ($\sim$) indicates values of the variable for the foreign nation and

$$z(m_{t-1}, \tilde{m}_{t-1}) = \begin{cases} \frac{m_{t-1}}{m_{t-1}+\tilde{m}_{t-1}} & \text{if } m_{t-1} + \tilde{m}_{t-1} > 0 \\ \frac{1}{2} & \text{otherwise} \end{cases} \tag{15b}$$

for $t = 1, 2$. The share of Z secured by the foreign nation is symmetrically defined as $z(\tilde{m}_{t-1}, m_{t-1}) = 1 - z(m_{t-1}, \tilde{m}_{t-1})$, implying that $Z_t/\widetilde{Z}_t = m_{t-1}/\tilde{m}_{t-1}$ for $t = 1, 2$.[17] Ac-

about the allocation of resources to private investment vs. public peaceful investment can result in lower military spending by the elected official. In that analysis, however, the disagreement implies that military spending has a dynamic strategic effect not present here.

[17] This specification represents the simple ratio form of the contest success function, as first introduced by Tullock (1980). This functional form falls within the general class of contest success functions, axiomatized by Skaperdas (1996): $z(m, \tilde{m}) = h(m)/[h(m) + h(\tilde{m})]$, where $h(\cdot)$ is a non-negative, increasing function.

cording to this specification, the resources secured by each nation under peaceful settlement depends positively on its own allocation to military spending (m for the domestic nation and $\tilde{m}$ for foreign nation) and negatively on the other nation's allocation.[18]

By contrast, under war in period t, the winner obtains the entire prize (or contested resource) with some probability determined by both nations' previous military spending, as in a "winner-take-all contest." In particular, the domestic nation wins the entire contested resource, Z, in period t with probability $z(m_{t-1}, \tilde{m}_{t-1})$, defined in (15b); the foreign nation takes control of Z with probability $z(\tilde{m}_{t-1}, m_{t-1}) = 1 - z(m_{t-1}, \tilde{m}_{t-1})$.

The timing of events in period $t = 1$ is as follows:

Stage 1. Given the military spending choices from the previous period, m_0 and $\tilde{m}_0$, the leaders of each country come together to consider the peaceful division of Z according to (15).[19] If, however, the leader of at least one of the two nations finds this division unacceptable, then the two engage in a winner-take-all contest.

Stage 2. Once the outcome of the period $t = 1$ conflict is realized, whether it be through peaceful settlement or war, the distribution of Z is determined. In the case of settlement, the incumbent leaders of both nations make their allocations to peaceful investment and military spending, and the one-period payoffs are realized. In the case of war, only the victor has resources to allocate; the game effectively ends for the losing nation.

Stage 3. An election takes place at the end of period $t = 1$ to choose the nation's leader for period $t = 2$. In the case of an autocracy, the leader of period $t = 1$ remains in power in the next period.

When the two nations settle peacefully in period $t = 1$, the first two stages specified above for period $t = 1$ are repeated in period $t = 2$. When war breaks out in period $t = 1$, there is no conflict at all in period $t = 2$; since the winner controls all of Z in this case, only stage 2 occurs and only for the winner.

As illustrated below, in a static version of this model (say starting in period $t = 2$), both nations' leaders always have an incentive to settle peacefully. However, in the dynamic setting presented here, an additional strategic consideration comes into play. In particular, as in Garfinkel and Skaperdas (2000), the setting described above implies that winning the

Hirshleifer (1989) investigates the properties of two important functional forms of this class, including the "ratio success function," where $h(m) = m^{\eta}$ with $\eta > 0$, which simplifies to (15b) when $\eta = 1$. Also see the chapter by Jia and Skaperdas in this volume.

[18] Note that the efficient frontier defining the highest payoffs for both nations under all possible distributions of Z when no resources are allocated military spending is not linear. Thus, although the nations' leaders are risk neutral and war is not assumed to be destructive, a peaceful division of the resources according to the nations' winning probabilities does not correspond to the "split-the-surplus rule." See Anbarci et al. (2002) for a discussion of a this and other rules derived from different bargaining solution concepts.

[19] As before, the analysis takes the identity of the period $t = 1$ incumbent as given.

conflict today (period $t = 1$) gives the victor a large advantage in the future conflict ($t = 2$) and savings in future arming; and, the possibility realizing the savings in future military spending by fighting today can induce nations to initiate war, despite the short-term gains from peaceful settlement.[20] This section studies the role that political institutions—in particular, electoral uncertainty and the effectiveness of resource mobilization—can play in the period $t = 1$ decision to initiate war or settle peacefully.

In this dynamic setting, the decision by each nation to settle peacefully or to wage war in period $t = 1$ influences the amount of resources available to them not only in period $t = 1$, but also in the next period. Assuming that the leaders are rational and forward-looking parties, they will account for this influence when choosing between war and settlement in the first period. Of course, doing so requires that they know what would occur in the second period for each possible outcome (war and settlement) in period $t = 1$. Thus, in accordance with the notion of *subgame perfection*, an appropriate equilibrium concept for such dynamic games, the model is solved backwards, starting from the second and final period, $t = 2$.

4.1 Possible outcomes in the second period

To fix ideas, suppose that the two nations are identical with respect to the number of citizens J, peaceful investment technologies, and the preferences of citizens. For analytical convenience, the analysis imposes symmetry in the political parties' preferences within each nation: $\mu_N = 1 - \mu_I$ and $\tilde{\mu}_N = 1 - \tilde{\mu}_I$. From (8), this symmetry implies that $i_2^{*I} = i_2^{*N}$, $\tilde{i}_2^{*I} = \tilde{i}_2^{*N}$, and in addition that $n_{A2}^{*I} = n_{B2}^{*N}$ and $\tilde{n}_{A2}^{*I} = \tilde{n}_{B2}^{*N}$. But, while the quantities allocated to peaceful investment, i and n, are the same for both parties (within each nation), the preferred type of public peaceful investment differs. For example, the domestic nation's party $k = N$ would, if in power in period $t = 2$, allocate all public peaceful investment to n_B, while party $k = I$ in the domestic nation allocates all such resources to n_A. Despite the disagreement within each nation, imposing this symmetry across the political parties allows us to abstract from the identity of the incumbent leader in the second period.

[20] See McBride and Skaperdas (2009), who provide some experimental evidence in support of this hypothesis. The analysis of this chapter, like Fearon (1995) and Powell (2006) as well as Garfinkel and Skaperdas (2000), points to commitment problems to explain the emergence of war, despite the short-run incentives to settle. [See Jackson and Morelli (2007), who explore a variant of this explanation in connection with the democratic peace hypothesis.] A complementary explanation relies on asymmetric information. [Recent analyses taking this approach while focusing on the democratic peace hypothesis include Levy and Razin (2004) and Tangerås (2009)]. Fearon (2008), in his analysis of "colonial" democracies (defined as those democracies not committed to extending the rights and privileges enjoyed by their citizens to the inhabitants of conquered territories) combines both approaches.

4.1.1 When the two nations settle peacefully in the first period

At the beginning of period $t = 2$ given m_1 and $\tilde{m}_1$, the leaders first must choose whether to negotiate a peaceful settlement or to fight.

Expected payoffs under settlement. When the leaders choose to settle peacefully, the distribution of the contestable resource is given by (15). Then, one can easily confirm using the solutions to peaceful investment as described above for an interior optimum (see also (8)), the expected period $t = 2$ payoffs for the leaders of the domestic and foreign nations under settlement, given settlement in period $t = 1$, are as follows:

$$\hat{G}^k_{SS}(m_1, \tilde{m}_1) = (1-\alpha)\left(\frac{\lambda\alpha}{\mu_k}\right)^{\frac{\alpha}{1-\alpha}} + \frac{\mu_k Z}{\lambda}\left(\frac{m_1}{m_1 + \tilde{m}_1}\right) \tag{16a}$$

$$\tilde{\hat{G}}^k_{SS}(\tilde{m}_1, m_1) = (1-\alpha)\left(\frac{\tilde{\lambda}\alpha}{\tilde{\mu}_k}\right)^{\frac{\alpha}{1-\alpha}} + \frac{\tilde{\mu}_k Z}{\tilde{\lambda}}\left(\frac{\tilde{m}_1}{m_1 + \tilde{m}_1}\right), \tag{16b}$$

where the subscript "*SS*" indicates settlement in both periods. Not surprisingly these payoffs are increasing in the nation's own military spending and decreasing in that of the opponent.

Expected payoffs under war. When war breaks out in period $t = 2$, the domestic nation secures the entire endowment and the foreign nation secures no resources with probability $z(m_1, \tilde{m}_1) = m_1/(m_1 + \tilde{m}_1)$; and with probability $1 - z(m_1, \tilde{m}_1) = \tilde{m}_1/(m_1 + \tilde{m}_1)$, the foreign nation secures the entire endowment and the domestic nation gets nothing. Thus, the expected period $t = 2$ payoffs from going to war for the leaders (k) of the domestic and foreign nations, given settlement in period $t = 1$, are given respectively by the following:

$$\hat{G}^k_{SW}(m_1, \tilde{m}_1) = \frac{m_1}{\tilde{m}_1 + m_1}\left[(1-\alpha)\left(\frac{\lambda\alpha}{\mu_k}\right)^{\frac{\alpha}{1-\alpha}} + \frac{\mu_k Z}{\lambda}\right] \tag{17a}$$

$$\tilde{\hat{G}}^k_{SW}(\tilde{m}_1, m_1) = \frac{\tilde{m}_1}{m_1 + \tilde{m}_1}\left[(1-\alpha)\left(\frac{\tilde{\lambda}\alpha}{\tilde{\mu}_k}\right)^{\frac{\alpha}{1-\alpha}} + \frac{\tilde{\mu}_k Z}{\tilde{\lambda}}\right], \tag{17b}$$

where the subscript "SW" indicates settlement in period $t = 1$ and war in the next period. These expected payoffs are increasing in the nation's own military spending and decreasing in that of the opponent.

Comparing the expected payoffs under settlement for each nation (16) with those under war (17) shows that, given settlement in period $t = 1$ and any allocation to guns from period $t = 1$, each nation's leader unambiguously prefers settlement in period $t = 2$. Thus, given that the two nations settle peacefully in the first period, they will settle peacefully in the second. Note that this result depends on neither the policymakers' preferences nor the political institutions in place.

4.1.2 When the two nations go to war in the first period

When war breaks out in the first period, the winner receives the entire amount of the contested resource, Z, leaving the loser with nothing. As a result, the loser has no resources then to allocate to military spending and thus receives none of the endowment in the second. Although this would seem to be an extreme assumption, it is captures in a very simple way the notion that victory in war today can give that nation a strategic advantage in the future.[21] The victor of a war in the first period is assured of securing all of Z not only in that period ($t = 1$), but also in the future ($t = 2$) and without having to allocate any resources in period $t = 1$ to military spending.[22] Thus, victory by the domestic nation or by the foreign nation in period $t = 1$ war implies respectively the following period $t = 2$ payoffs for the leader (k) of that nation:

$$\hat{G}^k_{WV} = (1-\alpha)\left(\frac{\lambda\alpha}{\mu_k}\right)^{\frac{\alpha}{1-\alpha}} + \frac{\mu_k Z}{\lambda} \tag{18a}$$

$$\tilde{\hat{G}}^k_{WV} = (1-\alpha)\left(\frac{\tilde{\lambda}\alpha}{\tilde{\mu}_k}\right)^{\frac{\alpha}{1-\alpha}} + \frac{\tilde{\mu}_k Z}{\tilde{\lambda}}, \tag{18b}$$

where the subscript "WV" indicates the victor of war in period $t = 1$. If the nation emerges as the loser in the period $t = 1$ conflict, then the period $t = 2$ payoff for the leader of that nation ($\hat{G}^k_{WL}$ for the domestic nation and $\tilde{\hat{G}}^k_{WL}$ for the foreign nation) is zero.

4.2 The decision to settle peacefully or go to war in the first period

With the results above, the analysis now turns to examine the leaders' incentives to wage war in period $t = 1$. This decision is made by each incumbent leader given the allocations to military spending by both nations in the previous period: m_0 and $\tilde{m}_0$.

[21] The analysis of Skaperdas and Syropoulos (1996), conducted in a more general setting wherein the production technology exhibits diminishing returns and complementarity in the two parties' inputs, suggests the result that nations might choose to engage in conflict despite the short-term incentive to settle peacefully would follow through with a less extreme assumption regarding the fate of the defeated nation; all that is required is that the defeated side's second-period initial resource is sufficiently small relative to that of the victor as a result of combat.

[22] Strictly speaking, according to the specification in (15b), even if the other nation allocates nothing to military spending, assurance of securing Z in the second period by the victor of the first-period war requires an infinitesimal amount of resources be allocated to such spending. For simplicity, I assume that amount is zero.

4.2.1 When the two nations settle peacefully

From section 4.1.1, it is clear that when the two nations settle peacefully in the first period, they will do the same in the second period. Recall also the assumption that $\mu_N = 1 - \mu_I$, implying that $i_2^{*I} = i_2^{*N}$ and that $n_{A2}^{*I} = n_{B2}^{*N}$. An analogous assumption for the foreign nation implies that $\tilde{i}_2^{*I} = \tilde{i}_2^{*N}$ and that $\tilde{n}_{A2}^{*I} = \tilde{n}_{B2}^{*N}$. Assume further that $\mu_I, \tilde{\mu}_I > \frac{1}{2}$.[23] Thus, the expected two-period payoffs for the leaders of the domestic nation and foreign nation ($k = I$) are respectively given by

$$\begin{aligned}
\Gamma_S^I &= (1-\alpha)\left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{\alpha}{1-\alpha}} + \mu_I\left(\frac{m_0}{m_0+\tilde{m}_0}\frac{Z}{\lambda} - m_1\right) \\
&\quad + \beta\left[\left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{\alpha}{1-\alpha}} + \hat{\mu}_I\left(\frac{m_1}{m_1+\tilde{m}_1}\frac{Z}{\lambda} - \lambda^{\frac{\alpha}{1-\alpha}}\left(\frac{\alpha}{\mu_I}\right)^{\frac{1}{1-\alpha}}\right)\right] \qquad (19a)
\end{aligned}$$

$$\begin{aligned}
\widetilde{\Gamma}_S^I &= (1-\alpha)\left(\frac{\tilde{\lambda}\alpha}{\tilde{\mu}_I}\right)^{\frac{\alpha}{1-\alpha}} + \tilde{\mu}_I\left(\frac{\tilde{m}_0}{m_0+\tilde{m}_0}\frac{Z}{\tilde{\lambda}} - \tilde{m}_1\right) \\
&\quad + \beta\left[\left(\frac{\tilde{\lambda}\alpha}{\tilde{\mu}_I}\right)^{\frac{\alpha}{1-\alpha}} + \tilde{\hat{\mu}}_I\left(\frac{\tilde{m}_1}{m_1+\tilde{m}_1}\frac{Z}{\tilde{\lambda}} - \tilde{\lambda}^{\frac{\alpha}{1-\alpha}}\left(\frac{\alpha}{\tilde{\mu}_I}\right)^{\frac{1}{1-\alpha}}\right)\right] \qquad (19b)
\end{aligned}$$

where as previously defined $\hat{\mu}_I \equiv P\mu_I + (1-P)(1-\mu_I) \leq \mu_I$ and similarly $\tilde{\hat{\mu}}_I \equiv \tilde{P}\tilde{\mu}_I + (1-\tilde{P})(1-\tilde{\mu}_I) \leq \tilde{\mu}_I$. The first line of each expression represents the period $t = 1$ payoff to the incumbent leader from settling peacefully. This first-period payoff is realized since that leader controls the allocation of resources implied by the outcome of negotiations—most notably, among the two types of public peaceful investment—in that period. While there is no uncertainty about the allocation of world resources between the two countries in period $t = 2$ under peaceful settlement, the period $t = 2$ payoff is subject to uncertainty—namely, electoral uncertainty. From the incumbent leaders' perspective in period $t = 1$, this uncertainty gives rise to uncertainty about the allocation of future resources secured. Only in the case where the incumbent of period $t = 1$ is reelected will that leader be able to choose her most preferred type of public peaceful investment in the next period, n_{A2}^{*I} for the leader of the domestic nation and $\tilde{n}_{A2}^{*I}$ for the leader of the foreign nation. Since the allocation that would be chosen by the challenger (with $\mu_N < \frac{1}{2} < \mu_I$ and $\tilde{\mu}_N < \frac{1}{2} < \tilde{\mu}_I$) is viewed as suboptimal, the expected discounted period $t = 2$ payoff , shown in the second line of each expression, is less than what would be expected if the incumbent leader were

[23] To be sure, it is only important that the relative weight the incumbent of each nation attaches to n_B differs from the relative weight of the other party, so that the incumbent's indirect utility in period $t = 2$ when not elected will be less than that when elected given the incumbent's choice of m_1. One could assume that the leader of the foreign nation has a relative preference for n_B. The assumption made here that both have a relatively greater preference for n_A only simplifies the notation.

reelected with probability equal to one.

4.2.2 When the two nations go to war

As noted earlier, when war breaks out in the first period, the winner seizes all of Z in both periods. Thus, the winner need not allocate any resources to military spending in the first period. The loser gets zero resources and thus a payoff of zero in both periods. Hence, the expected two-period payoffs from going to war in the first period for the leaders of the domestic nation and the foreign nation respectively are as follows:

$$\begin{aligned}\Gamma_W^I &= \frac{m_0}{m_0+\tilde{m}_0}\left[(1-\alpha)\left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{\alpha}{1-\alpha}} + \mu_I\left(\frac{Z}{\lambda}\right)\right.\\ &\quad \left. + \beta\left[\left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{\alpha}{1-\alpha}} + \hat{\mu}_I\left(\frac{Z}{\lambda} - \lambda^{\frac{\alpha}{1-\alpha}}\left(\frac{\alpha}{\mu_I}\right)^{\frac{1}{1-\alpha}}\right)\right]\right] \end{aligned} \tag{20a}$$

$$\begin{aligned}\widetilde{\Gamma}_W^I &= \frac{\tilde{m}_0}{m_0+\tilde{m}_0}\left[(1-\alpha)\left(\frac{\tilde{\lambda}\alpha}{\tilde{\mu}_I}\right)^{\frac{\alpha}{1-\alpha}} + \tilde{\mu}_I\left(\frac{Z}{\tilde{\lambda}}\right)\right.\\ &\quad \left. + \beta\left[\left(\frac{\tilde{\lambda}\alpha}{\tilde{\mu}_I}\right)^{\frac{\alpha}{1-\alpha}} + \tilde{\hat{\mu}}_I\left(\frac{Z}{\tilde{\lambda}} - \tilde{\lambda}^{\frac{\alpha}{1-\alpha}}\left(\frac{\alpha}{\tilde{\mu}_I}\right)^{\frac{1}{1-\alpha}}\right)\right]\right], \end{aligned} \tag{20b}$$

where $\hat{\mu}_I$ and $\tilde{\hat{\mu}}_I$ are as defined previously. The first line of each expression represents the expected period $t = 1$ payoff. The realized payoff is strictly positive only in the case of victory. Similarly, the second line (weighted by $z(m_0, \tilde{m}_0)$ for the domestic nation and by $1 - z(m_0, \tilde{m}_0)$ for the foreign nation) represents the expected, discounted period $t = 2$ payoff, with uncertainty coming both from the conflict between nations and that between the political parties within each nation.

4.3 War or peaceful settlement?

Using these expected two-period payoffs, the analysis now turns to consider the nations' incentive to go to war. The two nations choose to settle peacefully in both periods, if both $\Gamma_S^I > \Gamma_W^I$ and $\widetilde{\Gamma}_S^I > \widetilde{\Gamma}_W^I$ hold; otherwise, the nations go to war. Analyzing these conditions can be quite complicated, even in this simple setting. The analysis to follow, then, considers two separate cases: one where the two nations are identical in all respects including their political institutions and the other where the two nations differ only in terms of their political institutions.

4.3.1 Two identical nations

Suppose that the preferences of the two incumbent leaders and their nation's tax inefficiencies are identical. For simplicity assume further that $m_0 = \tilde{m}_0$. With these additional assumptions, it follows that $z(m_0, \tilde{m}_0) = 1 - z(m_0, \tilde{m}_0) = \frac{1}{2}$, $z(m_1, \tilde{m}_1) = 1 - z(m_1, \tilde{m}_1) = \frac{1}{2}$ and furthermore that $P = \tilde{P}$ so that $\hat{\mu}_I = \tilde{\hat{\mu}}_I$. Then, the condition for the domestic nation to prefer war in period $t = 1$ ($\Gamma_W^I > \Gamma_S^I$) is identical to that for the foreign nation to prefer war ($\widetilde{\Gamma}_W^I > \widetilde{\Gamma}_S^I$), and can be written as follows:

$$m_1^{*I} > \bar{m}_1 \equiv \frac{\lambda^{\frac{\alpha}{1-\alpha}}}{2\mu_I}\left[(1+\beta)(1-\alpha)\left(\frac{\alpha}{\mu_I}\right)^{\frac{\alpha}{1-\alpha}} + \beta(\mu_I - \hat{\mu}_I)\left(\frac{\alpha}{\mu_I}\right)^{\frac{1}{1-\alpha}}\right]. \tag{21}$$

As revealed by this condition, the incentive to go to war in period $t = 1$ depends on the possible savings in military spending afforded through victory. If the leaders' optimizing choice of military spending in period $t = 1$ under peaceful settlement is sufficiently high, then the leader will choose war over peaceful settlement.

Evaluating the effect of the various parameters of interest on the emergence of war requires one to account simultaneously for their effects on the incentive to arm and their effects on $\bar{m}_1$. To this end, let us reconsider the incentive to arm, looking at the first-order condition to the incumbents' choice for military spending (13) given the symmetry assumptions made and the specification for $z(m_1, \tilde{m}_1)$ in (15b). At an interior optimum, this condition becomes

$$-\mu_I + \frac{\beta Z}{\lambda}\frac{1}{4m_1}\hat{\mu}_I = 0,$$

for both nations, which implies the following solution in the symmetric outcome:[24]

$$m_1^{*I} = \tilde{m}_1^{*I} = \frac{\beta Z}{4\lambda}\frac{\hat{\mu}_I}{\mu_I}. \tag{22}$$

While the minimum amount of savings in future military spending to induce a nation to initiate war ($\bar{m}_1$) is independent of the size of the contested resource (Z), the solution above reveals that the incentive to arm is increasing in Z.

Accordingly, the condition for the (identical) nations to prefer war over peaceful settle-

[24]Note that this symmetric solution is consistent with the earlier findings of section 3.2. That is to say, military spending in the symmetric outcome depends negatively on the inefficiency of taxation λ and positively on the discount factor β and on the probability of reelection which implies an increase in $\hat{\mu}_I < \mu_I$. In the extreme case where (i) $P = 1$ such that $\hat{\mu}_I = \mu_I$ and (ii) $\lambda_R = \lambda$, the solution for arming by the two democratic leaders is identical to that when two autocratic rulers are contesting the resource, Z; in this special case, the leaders' relative preference for public peaceful investment (μ_I) has no effect on the incentive to arm.

ment ($m_1^{*I} > \bar{m}_1$) is that the contestable resource (Z) is sufficiently large:

$$Z > \bar{Z} \equiv 2\left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{1}{1-\alpha}}\left[\frac{(1+\beta)(1-\alpha)}{\alpha\beta}\frac{\mu_I}{\hat{\mu}_I} + \frac{\mu_I - \hat{\mu}_I}{\hat{\mu}_I}\right]. \tag{23}$$

Clearly, when $\bar{Z}$ is smaller, this condition becomes weaker, and war is more likely to be preferred over peaceful negotiation by the two nations' leaders.[25] Regardless of the political institutions in place (i.e., the values of P and λ), $\bar{Z}$ falls as the discount factor β rises. Although an increase in β increases the minimum savings in period $t = 1$ military spending required to make war preferable [$\bar{m}_1$ shown in (21)], it also increases each contending nation's incentive to arm [m_1^{*I} shown in (22)], and the latter effect dominates. Thus, consistent with the findings of Garfinkel and Skaperdas (2000) who abstract from political institutions, as the future becomes more salient, the two nations have a greater incentive to initiate a war.

To analyze the influence of democratic institutions on the likelihood of war, I follow the approach taken earlier in section 3.2 when considering the effects of such institutions on the incumbent leader's incentive to devote resources to military spending. Specifically, I start with the benchmark case where there is no disagreement between the political parties of the two countries: $\mu_I = 1 - \mu_I = \mu_N = \frac{1}{2}$, which implies $\mu_I = \hat{\mu}_I$. Then, the condition in (23) becomes

$$Z > \bar{Z} \equiv 2\left(\frac{\lambda\alpha}{\mu_I}\right)^{\frac{1}{1-\alpha}}\left[\frac{(1+\beta)(1-\alpha)}{\alpha\beta}\right]. \tag{24}$$

This condition shows that electoral uncertainty has no implications for either leader's incentive to go to war when the political parties within each nation agree about the allocation of resources to public peaceful investment.

To fix ideas, suppose that $\mu_I = \mu_R$. Then the condition above, with λ_R substituted in for λ, gives us the condition for the autocratic ruler to prefer war over peaceful settlement when in conflict with an identical autocracy. For future reference, let $\bar{Z}_{RR}$ denote that threshold, and similarly let $\bar{Z}_{DD}$ denote generally (i.e., for any value of $P < 1$, $\mu_I \geq \frac{1}{2} \geq 1 - \mu_I$, and $\lambda \leq \lambda_R$) the threshold when the two nations are democracies. The only difference between $\bar{Z}_{RR}$ and the threshold value for a democracy with a homogeneous population, $\bar{Z}_{DD}|_{\hat{\mu}_I = \mu_I}$ as shown in (24), is the tax inefficiency of the autocracy. A greater tax inefficiency, λ_R relative to λ, has two reinforcing effects. First, it implies a larger minimum savings in military spending required to make war preferable to peaceful settlement ($\bar{m}_1$); second it implies a smaller equilibrium incentive to arm under peaceful settlement (m_1^{*I}). Hence, the critical value of Z is increasing in λ, and the assumption that the inefficiency of taxation in

[25] The analysis' focus on the case where the incumbent leaders allocate a strictly positive amount of the endowment (when $Z_1 > 0$) to public peaceful investment implicitly places a lower bound on Z; however, that condition neither implies nor is implied by the condition in (23), without further restrictions on the parameters—namely, β and α, as well as μ_I and P.

an autocracy is greater than that in a democracy ($\lambda_R < \lambda$) implies that $\bar{Z}_{DD}|_{\hat{\mu}_I=\mu_I} < \bar{Z}_{RR}$, so that democratic institutions, absent disagreement within either nation, imply a greater incentive for the leaders to go to war.

However, along similar lines to what was seen in section 3.2, where there exists disagreement between the political parties of each nation, democratic institutions can have an offsetting effect on the leader's incentive to go to war. In particular, when $\mu_I > \frac{1}{2} > 1-\mu_I = \mu_N$ in both nations, a decrease in each incumbent's probability of reelection implies a smaller $\hat{\mu}_I \equiv P\mu_I + (1-P)(1-\mu_I)$, which not only decreases the incentive to arm under peaceful settlement (m_1^{*I}), but also increases the minimum amount of future savings in military spending that makes war preferable ($\bar{m}_1$). Thus, as is clear from (23), an exogenous decrease in P (or equivalently $\hat{\mu}_I$ given μ_I) implies a larger threshold value of the contestable resource, $\bar{Z}_{DD}$, thereby making war less likely.[26]

Both of these implications are consistent with the predictions regarding the optimizing choice of military spending. That is to say, arming is higher and war is more likely when (i) the tax system is more efficient and (ii) when the incumbent is more likely to be reelected in the second and last period. Although it is quite possible that two identical democracies contesting some resource are less likely to initiate war against each other than are two identical autocracies, this is not necessarily the case.[27]

4.3.2 A democracy versus an autocracy

Suppose now that one nation is a democracy and that the other is an autocracy. For analytical convenience, we maintain the assumption that the leaders of the two nations in period $t=1$ are identical with respect to their preferences; that is to say, $\mu_R = \mu_I$. In this case, the first-order conditions for the leaders' optimizing choice of military spending, (13) for the democratic leader and (14) for the autocratic ruler, imply the following:

$$m_1^{*I} = \beta Z \frac{\lambda_R \hat{\mu}_I^2}{(\lambda_R \hat{\mu}_I + \lambda \mu_I)^2} \tag{25a}$$

$$m_1^{*R} = \beta Z \frac{\lambda \mu_I \hat{\mu}_I}{(\lambda_R \hat{\mu}_I + \lambda \mu_I)^2} \tag{25b}$$

[26] As mentioned above, a greater disagreement between the two political parties (i.e., a larger $\mu_I > \frac{1}{2}$) given $P < 1$ results in a smaller allocation to military spending [see footnote 16]. At the same time, however, an increase in μ_I implies that the minimum savings in military spending required to make war preferable ($\bar{m}_1$) is smaller [see equation (21)], and signing the net effect on $\bar{Z}_{DD}$ is not possible.

[27] To be more precise, the following inequality,

$$\frac{\mu_I}{\hat{\mu}_I} > \frac{a^{\frac{1}{1-\alpha}} + \frac{\alpha\beta}{(1+\beta)(1-\alpha)}}{1 + \frac{\alpha\beta}{(1+\beta)(1-\alpha)}},$$

is both necessary and sufficient to make the likelihood of war between two identical democracies smaller than that between two identical democracies: $\bar{Z}_{DD} > \bar{Z}_{RR}$. A sufficient condition for this inequality to hold, given $\mu_I > \hat{\mu}_I$, is that $\mu_I > \hat{\mu}_I a^{\frac{1}{1-\alpha}}$.

To economize on notation, let $\lambda_R = a\lambda$, with $a \geq 1$. Then, these allocations to military spending with the specification of the technology of conflict (15b) imply the following shares of Z for the democratic nation and the autocratic nation respectively under peaceful settlement:

$$z(m_1^{*I}, m_1^{*R}) = \frac{a\hat{\mu}_I}{(a\hat{\mu}_I + \mu_I)} \tag{26a}$$

$$1 - z(m_1^{*I}, m_1^{*R}) = z(m_1^{*R}, m_1^{*I}) = \frac{\mu_I}{(a\hat{\mu}_I + \mu_I)}. \tag{26b}$$

Thus, as revealed by the expressions above, the optimizing choices of military spending by the two countries (25) imply that the democracy will have an effective advantage in securing resources for period $t = 2$ under settlement ($z(m_1^{*I}, m_1^{*R}) > \frac{1}{2}$) if and only if $a\hat{\mu}_I > \mu_I$.

Of course, the conditions for each nation to want to initiate a war also depend on the (given) arming decisions in the previous period, m_0^I and m_0^R—or, more specifically, $z(m_0^I, m_0^R)$. To fix ideas, suppose that $z(m_0^I, m_0^R) = z(m_1^{*I}, m_1^{*R})$. Then, from equations (25) and (26) and the expected two-period payoffs under settlement and war, respectively equations (19) and (20) with the appropriate substitutions for the autocratic ruler (i.e., $\tilde{P} = 1$, implying that $\tilde{\mu} = \mu_R = \mu_I$, and $\tilde{\lambda} = \lambda_R = a\lambda$), one can derive the threshold levels of the contestable resource (Z), above which the respective nation would choose to initiate war:

$$Z > \bar{Z}_{DR} \equiv \frac{(a\hat{\mu}_I + \mu_I)}{a\hat{\mu}_I}\left[\frac{\lambda\alpha}{\mu_I}\right]^{\frac{1}{1-\alpha}}\left[\frac{(1-\alpha)(1+\beta)}{\alpha\beta}\frac{\mu_I}{\hat{\mu}_I} + \frac{\mu_I - \hat{\mu}_I}{\hat{\mu}_I}\right] \tag{27a}$$

$$Z > \bar{Z}_{RD} \equiv \frac{a^{\frac{1}{1-\alpha}}(a\hat{\mu}_I + \mu_I)}{\mu_I}\left[\frac{\lambda\alpha}{\mu_I}\right]^{\frac{1}{1-\alpha}}\left[\frac{(1-\alpha)(1+\beta)}{\alpha\beta}\right]. \tag{27b}$$

The subscript "DR" ("RD") indicates the threshold value of Z for a democracy (autocracy) when paired against an autocracy (democracy). Of course, for war to break out, it is sufficient that only one of these two conditions be satisfied. Note first that, as in the case where the two countries are identical, the threshold values of Z shown above fall as the future becomes relatively more important (i.e., a larger β), making the likelihood of war greater.

Turning to the implications of democratic institutions, consider first the case where there is no disagreement within the democracy, so that $\mu_I = 1 - \mu_I = \mu_N = \frac{1}{2}$, implying that $\hat{\mu}_I = \mu_I$. Then, electoral uncertainty becomes irrelevant, and the only meaningful distinction between the two nations is that the democratic leader can mobilize resources more easily ($\lambda < \lambda_R$ or $a > 1$). As such, the democratic leader has a greater incentive than the autocratic ruler not only to arm but to initiate a war as well: $\bar{Z}_{DR}|_{\hat{\mu}_I = \mu_I} > \bar{Z}_{RD}|_{\hat{\mu}_I = \mu_I}$. More generally for $\hat{\mu}_I \leq \mu_I$, equation (25) with $\lambda_R = a\lambda$ shows that an exogenous increase in a (or in λ_R given λ) reduces the autocratic ruler's incentive to arm and increases that for the democratic leader if $\mu_I > a\hat{\mu}_I$ or decreases that incentive if $\mu_I < a\hat{\mu}_I$. In either case, from (26), it implies an increase in the likelihood of success in war for the democracy, $z(m_0^I, m_0^R) = z(m_1^{I*}, m_1^{R*})$. The smaller incentive to arm for the autocratic ruler means not only a smaller possible savings in future arming under war, but also a smaller probability of winning such a war. As such, an increase in a reduces the autocratic ruler's incentive to initiate war: $\partial \bar{Z}_{RD}/\partial a > 0$. At the same time, even though the possible savings in arming for the democracy might fall with an increase in a, the greater likelihood of possibly winning a war against the autocracy is sufficiently large to make war more appealing relative to peaceful settlement for the democratic leader: $\partial \bar{Z}_{DR}/\partial a < 0$.

Of course, as before, given disagreement between the policymaker and the challenger in the democracy, electoral uncertainty matters. In particular, assuming $\mu_I > \frac{1}{2} > 1-\mu_I = \mu_N$ that implies $\hat{\mu}_I < \mu_I$, a decrease in $P < 1$ implies a lower weight attached to any given amount of future resources for the democratic leader ($\hat{\mu}_I$). Using (25) with $\lambda_R = a\lambda$ and the definition of $\hat{\mu}_I \equiv P\mu_I + (1-P)(1-\mu_I)$, one can confirm that a decrease in P implies a decrease in arming by the elected leader and a decrease in arming by the autocratic ruler if $\mu_I > a\hat{\mu}_I$ or an increase if $\mu_I < a\hat{\mu}_I$. But, in either case, equation (26) shows that a decrease in P and thus a decrease in $\hat{\mu}_I$ implies a decrease in the likelihood of success in war for the democracy, $z(m_0^I, m_0^R) = z(m_1^{I*}, m_1^{R*})$. With a smaller possible savings in future arming and a lower likelihood of victory in the case of war, the democratic leader's incentive to initiate war falls: $\partial \bar{Z}_{DR}/\partial P < 0$. While the potential savings in future arming for the autocracy when fighting against the democracy might decline with the democratic leaders's probability of reelection, the greater likelihood of winning such a war is sufficiently large to unambiguously increase the autocratic ruler's incentive to fight: $\partial \bar{Z}_{RD}/\partial P > 0$.

4.3.3 How war prone are democracies relative to autocracies?

With the results obtained above, we can tease out some additional implications regarding the war-proneness of the various dyads. First, observe from (23) and (27a) that $\bar{Z}_{DD} < \bar{Z}_{DR}$ holds when $\mu_I > a\hat{\mu}_I$, or equivalently from (26a) when $z(m_0^I, m_0^R) = z(m_1^{I*}, m_1^{R*}) < \frac{1}{2}$. That is to say, the democratic leader will be more willing to initiate a war against another (identical) democracy than against an autocracy precisely when the probability of winning the period $t = 1$ war against another (identical) democracy is larger than that against an autocracy. At the same time, from (24) with $\lambda = \lambda_R (= a\lambda)$ and (27b), $\mu_I > a\hat{\mu}_I$ implies that $\bar{Z}_{RR} > \bar{Z}_{RD}$, meaning that the autocratic ruler is less willing to fight another (identical) autocracy than fight a democracy.

To get a deeper sense of these implications, consider the case where democracies are most likely to be peaceful—that is, where they have no inherent advantage in mobilizing resources ($a = 1$). In the presence of electoral uncertainty ($P \in [0, 1)$), this assumption implies that $\mu_I > a\hat{\mu}_I$ and furthermore that $\bar{Z}_{DD} > \bar{Z}_{RR}$.[28] It follows then in this special case that, while the democratic leader is less likely to initiate a war against an autocracy than against an identical democracy, the autocratic ruler is generally more willing to initiate a war—that is,

$$\bar{Z}_{DR}|_{a=1} > \bar{Z}_{DD}|_{a=1} > \bar{Z}_{RR}|_{a=1} > \bar{Z}_{RD}|_{a=1}.$$

But, keeping in mind that it takes only one of the two countries to initiate a war, these inequalities support the dyadic hypothesis. In particular, democracy-autocracy dyads are more war prone than are autocracy-autocracy dyads, which are more war prone than democracy-democracy dyads. As the relative tax inefficiency parameter for autocracies a rises above one, the analysis remains consistent with the dyadic hypothesis, provided that $\mu_I > a\hat{\mu}_I$ and other restrictions on the parameters are satisfied.[29]

More generally, however, as $a > 1$ increases the ordering the dyads according to how prone they are to war becomes more complicated. It is possible, for example, even when $\mu_I > a\hat{\mu}_I$, that $\bar{Z}_{RR} > \bar{Z}_{DD}$ holds, indicating that two identical democracies are more war prone than are two identical autocracies. As a rises sufficiently so that $\mu_I < a\hat{\mu}_I$ and hence $\bar{Z}_{DD} > \bar{Z}_{DR}$ and $\bar{Z}_{RD} > \bar{Z}_{RR}$, it is necessarily the case that $\bar{Z}_{RR} > \bar{Z}_{DD}$ holds at the same time.[30] In this case, democracy-autocracy dyads are more war prone than are democracy-democracy dyads, which are more war prone than autocracy-autocracy dyads. In any case, this logic rules out the possibility that democracy-democracy dyads are less war-prone than are democracy-autocracy dyads, which are less war-prone than are autocracy-autocracy dyads in the present setting.[31]

[28]See footnote 27.

[29]A sufficient but not necessary condition for the inequalities above to hold (without imposing the restriction that $a = 1$) is that $\mu_I > a^{\frac{1}{1-\alpha}}\hat{\mu}_I$. This condition is sufficient to imply $\bar{Z}_{DD} > \bar{Z}_{RR}$ (again, see footnote 27); in turn, it implies $\mu_I > a^{\frac{2-\alpha}{2(1-\alpha)}}\hat{\mu}_I$ which is sufficient to imply that $\bar{Z}_{DR} > \bar{Z}_{RD}$, as well as $\mu_I > a\hat{\mu}_I$; as noted above, this last inequality is both necessary and sufficient for $\bar{Z}_{DR} > \bar{Z}_{DD}$ and $\bar{Z}_{RR} > \bar{Z}_{RD}$ to hold.

[30]Suppose to the contrary that both $\mu_I < a\hat{\mu}_I$ and $\bar{Z}_{DD} > \bar{Z}_{RR}$. Then it must be the case that

$$a > \frac{\mu_I}{\hat{\mu}_I} > \frac{a^{\frac{1}{1-\alpha}} + \frac{\alpha\beta}{(1+\beta)(1-\alpha)}}{1 + \frac{\alpha\beta}{(1+\beta)(1-\alpha)}},$$

which requires that

$$a > \frac{a^{\frac{1}{1-\alpha}} + \frac{\alpha\beta}{(1+\beta)(1-\alpha)}}{1 + \frac{\alpha\beta}{(1+\beta)(1-\alpha)}}.$$

But, this last inequality can never hold for $a \geq 1$, as can be verified by noting that the right hand side is smallest at the minimum value of $a(= 1)$, and increases in a at a faster rate than one.

[31]This particular ordering (the monadic hypothesis) requires $\bar{Z}_{DD} > \bar{Z}_{RR}$ along with $\bar{Z}_{DD} > \bar{Z}_{DR}$ and $\bar{Z}_{RD} > \bar{Z}_{RR}$.

5 Concluding remarks

While scholars in political science have long been interested in the interactions between domestic political institutions and international conflict, economists have only begun study how democratic institutions might influence outcomes of interstate conflict. A central question of this large and growing literature is whether we might expect the recent spread of democracy to bring about a more peaceful world. The objective of the present chapter is more modest, not to provide a comprehensive analysis of how democratic institutions matter, but to highlight two specific and potentially offsetting features of such institutions—namely, to give rise to electoral uncertainty and possibly to make resource mobilization easier.

The analysis has shown how the democratic peace need not be due to the effect of war outcomes on the likelihood that the incumbent leader maintains power, which can itself differ across political regimes. Here the driving force behind the effect of democratic institutions to weaken the severity of conflict (as reflected in the amount of resources diverted from production or the likelihood of war initiation) is through the reduced the importance of the future relative to today implied by electoral uncertainty. Insofar as there is disagreement between the incumbent political party and the challenger and at the same time there is a strictly positive probability of losing power to the challenger, the incumbent discounts the future benefit of arming today and furthermore of initiating war today.

At the same time, however, democratic institutions can make conflict more severe. In particular, insofar as democratic institutions include a system of checks and balances that give the leader (of either party) a more effective means of mobilizing resources, democratic nations could be more prone to conflict, as reflected in a higher level of arming and a greater likelihood of war initiation. Even when the conditions that make two democracies more peaceful than two autocracies hold, democracy-autocracy dyads are more war-prone than are autocracy-autocracy dyads.

Of course, in abstracting from the other effects of political institutions that have been highlighted in the literature, the analysis might seem somewhat limited. Indeed, one important extension left for future research would be to consider explicitly the role of political institutions in influencing the relationship between the survival probability of the incumbent ruler or elected official and the decision to participate in international conflict. By looking, in particular, at how disagreement between individuals or groups of individuals plays out through alternative political institutions (democracy vs. autocracy), while allowing for the possibility that the autocratic ruler can be removed from power, it might be possible to shed new light on how such institutions matter for both domestic and international conflict and how the two sorts of conflict are themselves related.

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A Appendix: Equilibrium determination of P

Individual j's voting decision at the end of period $t = 1$ depends on the level of consumption that he can expect when party $k = I$ remains in power relative to that when the other party $k = N$ takes office. Without any loss of generality, assume that indifferent voters support the incumbent. In addition, for analytical convenience, assume that the two parties place opposite weights on the two types of public peaceful investment: $1 - \mu_N = \mu_I$. In this case, equation (8) implies that $i_2^{*I} = i_2^{*N}$, and furthermore that $n_{A2}^{*I} = n_{B2}^{*N}$. Then, equation (1) implies that voter j is willing to vote for party I if and only if $\mu_j \geq \frac{1}{2}$. Thus, voter j's voting decision in period $t = 2$ is independent of the first-period incumbents military spending. Moreover, the probability that party I is reelected in period $t = 2$ is simply the probability that the median voter, identified by μ_m, places an equal or greater weight on type-A public peaceful investment: $P = \text{Prob}(\mu_m > \frac{1}{2})$. That is to say, the probability of reelection is determined independently of the previous period's military spending.

Note that this independence holds also when one considers also the decision to settle peacefully or to go to war as studied in section 4.