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**BUTTER, GUNS, AND MONEY:
POLITICAL SURVIVAL, GOVERNMENT SPENDING, AND INTERSTATE
CONFLICT IN AUTOCRACIES AND DEMOCRACIES**

A Dissertation in
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by
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Abstract

How does the social composition of who determines a state's leadership affect policy outcomes? My dissertation argues that variation in the political power and policy preferences of the public and elite over the distribution of resources results in different optimal policies for incumbency-valuing democratic and autocratic leaders. I first develop a model of political survival in which an incumbent and her winning coalition hold preferences over the distribution of social and military spending and the representation of the public and elite in a leader's winning coalition varies across regime type. Consistent with the model's predictions, low military and high social spending are more likely to lead to the removal from office of an autocratic incumbent and high military and low social spending are more likely to lead to the removal of a democratic leader. Based on these results, I develop an extension to the canonical bargaining model of interstate conflict in which mobilization for war is more politically costly for democratic leaders than it is for autocrats. The model provides a rational explanation for a number of known empirical regularities (e.g., the democratic peace) and the novel prediction that democratic targets should be more selective in reciprocating a conflict than autocratic targets without relying on the tenuous assumption that democrats are more likely to be punished for losing a war. The final substantive chapter analyzes the displacement effect of interstate war and how it varies across regime type. Counter to recent research, I find that contemporary governments extract greater tax revenue and allocate more resources to military spending and social spending after an interstate war than they did before involvement in a war. Additionally, I find support for the novel prediction that the increase in military spending following an interstate war is greater in autocracies than it is in democracies.

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Chapter 1

Introduction

Although our modern conception of the international system is organized around nations, the policies nations pursue depend upon who is national leader and which domestic interests this leader represents. Who gets to be leader of a nation and which interests the leader represents depend upon the nation's domestic political institutions.

Fiona McGillivray and Alastair Smith (2008, pg. 14)

They may call you Chief, but your're gonna have to serve somebody, yes indeed.

Bob Dylan (1979)

Much of the research in comparative politics and international relations conducted during the latter half of the 20th century argued that macro, structural characteristics of governments, states, and the international system explained political outcomes at the domestic and interstate level.¹ Scholars of comparative politics, for three examples, argued that democ-

¹There are exceptions of course. See Lichbach and Zuckerman (1997) for a review of different approaches to comparative politics during this period. With respect to international conflict, two prominent departures

ratization followed from the presence of a well-educated, middle class (Lipset 1959), social revolutions occurred after a country suffered a loss at the hands of a more developed international rival (Skocpol 1979), and regimes and governments fell due to macro-economic crises (Gasiorowski 1995, Haggard and Kaufman 1995). With respect to international conflict, partisans of realism (Morgenthau 1978), neo-realism (Waltz 1979), and power transition theory (Organski and Kugler 1980) argued about how dyadic and systemic distributions of power influenced the onset of war. Later, research on the democratic peace led scholars to consider how a state's form of government might condition its interstate conflict behavior (Maoz and Russett 1993). Neo-liberals, in contrast to realists and neo-realists, argued that states also had non-security interests, could cooperate with one another on their own and via international organizations, and, therefore, not all international interactions had to be nasty, brutish, and short (Axelrod and Keohane 1985, Keohane and Nye 1989).

Without question, research in the above traditions has led to a number of insights into comparative and international politics. Increasingly, though, the source of political outcomes at the domestic and interstate level is understood to be the incentives and constraints faced by national leaders. Leader-centric research has offered insights into a number of substantively interesting areas of comparative and international politics. Specifically, scholars have used the incentives facing political leaders to explain, among other things, patterns of economic growth and inequality (Przeworski, Alvarez, Cheibub and Limongi 2000); the provision of public goods and private benefits (Bueno de Mesquita, Smith, Siverson and Morrow 2003, Wright 2008); the onset of interstate conflicts (Chiozza and Goemans 2003, Debs and Goemans 2010); the escalation of interstate crises (Fearon 1994); the duration of interstate wars (Goemans 2000); the disbursement of foreign aid (Bueno de Mesquita and Smith 2009); and the imposition of and compliance with international sanc-

from the structural approach are the scholarship that ties interstate conflict to the psychological traits of leaders (George 1969) and the diversionary theory of interstate conflict (Ostrom and Job 1986).

tions (Marinov 2005).

With its recent track record as an analytical tool in mind, it is worth taking a step back and asking why scholars increasingly favor arguments that consider the agency and influence of political leaders over explanations that focus exclusively on structural features of states or the international system. The epigraph by McGillivray and Smith (2008) offers a nice answer to this question. They argue that a nation's policies and priorities are set by its political leader(s). In my mind, though, a more succinct answer exists: political leaders make policy, states do not. As such, it makes sense to study the incentives and decisions a leader faces if one wants to understand why his or her state enacted a given policy.

While the agency and role of political leaders is important to understanding political outcomes, leaders do not exist or make policy in a vacuum. Indeed *all* political leaders rely on the support of some segment in society to stay in power. Thus, the relationship between a political leader and her constituents can be thought of in terms of a principal-agent framework (for a classic application of the principal-agent relationship to interstate conflict see Downs and Rocke 1994). As the tenure of all political leaders is conditional on constituent support, it follows that all political leaders are accountable to someone; something noted by Dylan (1979), Bueno de Mesquita et al. (2003), and numerous others. Two questions naturally arise from this point. First, how does an incumbent leader stay in the good graces of those constituents whose support is necessary for her to remain in office? Second, to whom in society is a leader accountable? The answer to the first question is found in the concept of policy responsiveness (Burstein 2003). The answer to the second, identified in the second half of the McGillivray and Smith (2008) epigraph, is determined by a nation's domestic political institutions. The next section discusses these two answers and their implications for how autocratic and democratic leaders secure their tenure in office via government spending.

1.1 Leader Survival, Policy Responsiveness, Domestic Political Institutions, and Government Spending

All incumbent political leaders require the support of some portion of their citizens to stay in power. This support is maintained by the process known as policy responsiveness. According to the policy responsiveness framework, an incumbent retains the political support necessary to remain in office by enacting the policies preferred by her constituents (*inter alia*, Page and Shapiro 1983, Burstein 2003). There are then two empirical implications of policy responsiveness. First, office-valuing political incumbents should enact the policies favored by their constituents. Second, political incumbents that do not enact the policies preferred by their constituents should be more likely to be removed from office than political incumbents that do enact such policies. The empirical support for both of these predictions is robust (among others, Erikson, MacKuen and Stimson 2002, Canes-Wrone, Brady and Cogan 2002, Brooks and Manza 2007).

Policy responsiveness tells us that an incumbent political leader that values office has an incentive to enact the policies favored by her constituents. A state's domestic political institutions determines whose political support a leader needs to remain in power. Arguably the most important characteristic of a state's political institutions is whether they are autocratic or democratic.² Scholars commonly distinguish non-democratic or autocratic regimes from democratic regimes by who gets to participate in the selection of a government's leader(s) (e.g., Dahl 1971, Huntington 1991, Bueno de Mesquita et al. 2003). Broadly speaking, autocratic governments are those in which a small number of societal elites (wealthy civilians and/or members of the military depending on the type of non-democracy) choose a country's political leader(s) while the entire adult population (civilian elites, members of the military,

²The phrases non-democracies, autocracies and dictatorships and their respective derivatives are used interchangeably throughout my dissertation in a likely unsuccessful attempt to limit repetitiveness and monotony.

and the general public) have a say in choosing the leader(s) in an archetypal democracy. Therefore, more citizens have a say in determining who leads a democratic government than an autocratic government. This is the difference between autocratic and democratic political institutions typically focused on in leader-centric research, most notably the “selectorate theory” of Bueno de Mesquita, Morrow, Siverson, and Smith (among many others, 1999, 2003, 2004) and the models of leader-specific punishments used by McGillivray and Smith (2000, 2008). This approach, while analytically fruitful, misses the fact that autocracies and democracies differ not only in the number of people who can influence leader selection but also in the relative political influence of a society’s elite and general public. Specifically, in an autocracy the elite have relatively more political power than members of the public while the general public (due to its numerical advantage) has relatively more political influence than the elite in a democracy (Dahl 1971). In a Downsian framework (Downs 1957), this implies that the median “voter” choosing an autocratic leader is a member of the elite while the median voter in a democracy is a member of the general public.

The combination of policy responsiveness and the relative political power of the public and elite in autocracies and democracies has a straight-forward implication: an office-valuing democratic incumbent best secures her tenure by enacting the policies preferred by the public while an office-valuing autocratic incumbent best secures his tenure by enacting the policies favored by a society’s elite. This simple point has substantial implications for policy variation across regime type because the wealthier elite and poorer general public have materially incentives to hold significantly different policy preferences on a number of issues. For example, variation in the political influence of the public and elite across regime type means that the median voter in a democracy is poorer than the median voter in an autocracy. Drawing on Meltzer and Richard’s (1981) canonical model, Przeworski et al. (2000), Boix (2003), and Acemoglu and Robinson (2006) argue that this variation in the median voter across regime type implies that the optimal tax rate is higher and the redistribution of wealth

should be greater in democracies than it is in autocracies. Throughout my dissertation, I focus on a related issue on which the public and elite have incentives to prefer different policies – government spending on the military (guns) and social programs (butter).

I argue that, compared to a society's civilian elite and the military, members of the public should prefer a government allocate proportionately more of its economic resources to social spending and less of its resources to military spending. Consider first the relative preferences over government spending for the civilian elite and general public. The poorer public derives more direct benefits from the welfare state than the civilian elite. Further, the social welfare state is ultimately financed by higher taxes on the income and wealth of a society's civilian elite (among others, Przeworski et al. 2000, Boix 2003). Both the civilian elite and the public benefit from the military spending necessary to provided the public good of national defense (Olson 1965). The public then benefits from social spending more than the civilian elite while each group benefits equally from military spending. It therefore follows that the public should prefer a government allocate proportionately more resources to social spending and fewer to military spending than the civilian elite.

The general public should prefer relatively more social spending and less military spending than members of the military for three reasons. First, members of the military rely directly on military spending for their livelihoods while the civilian public does not. Second, military training socializes members of the military to value a stronger armed forces than the general public (Nordlinger 1977). Third, given scarce resources, high military spending crowds out the economic resources a government has to finance consumption spending and social welfare programs popular with the general public (Sprout and Sprout 1968, Fordham and Walker 2005). Therefore, the general public should prefer proportionately higher social spending and lower military spending than either the civilian elite or members of the military.

When considered jointly, policy responsiveness, the political influence of the public and elite across regime type, and the relative preferences of the public and elite over government

spending suggest that different combinations of guns-and-butter best secure the political survival of autocratic and democratic leaders. Specifically, democratic leaders are more likely than autocratic leaders to retain office given high social and low military spending while autocratic leaders are more likely than democratic leaders to remain in power given low social and high military spending. These relationships between leadership survival, government spending, and regime type and how they relate to the prosecution of interstate conflict and the effect of interstate war on state-making are the focus of my dissertation.³ The next section describes the three approximately article-length essays that constitute the main substance of my dissertation.

1.2 Three Essays

My dissertation consists primarily of three essays on the relationships between political survival, policy responsiveness, government spending, and interstate conflict across regime type. The first develops and tests the implications of a game-theoretic model in which an incumbent's political survival is a function of how she distributes resources between social and military spending and the political influence of the public and elite varies across regime type. The second essay uses game theory and statistics to analyze how the relationship between leadership survival, regime type, and a country's economic mobilization for interstate conflict influences the conflict process in autocracies and democracies. The third essay empirically examines how interstate war effects state-making in the contemporary international system and how regime type conditions this relationship. The following sub-sections briefly describe

³It is worth noting that selectorate theory (Bueno de Mesquita, Morrow, Siverson and Smith 1999, 2003) also focuses on the relationship between the distribution of government resources, regime type, and leadership survival. However, for selectorate theory, whether a leader allocates government resources to private benefits or public goods is the key determinant for his or her political survival. The framework developed here, in contrast, ignores whether government expenditures were devoted to purposes that were rival and excludable and instead focuses on whether a government's resources were allocated to the military or social programs. These points are discussed in more detail in Chapter 2.

the arguments and primary results of these three essays.

1.2.1 Leadership Survival and Government Spending

The first essay, Chapter 2, analyzes the relationship between leadership survival, policy responsiveness, government spending, and regime type. Existing leader-based explanations of differences between the domestic and foreign policies of autocracies and democracies typically follow from the assumptions that political incumbents prefer to remain in office, maintain the political support necessarily to retain power by enacting the preferred policies of their constituents (Burstein 2003), and that democratic leaders are accountable to a greater number of people than are autocratic incumbents (e.g., Bueno de Mesquita et al. 2003). These assumptions are eminently reasonable and have been very useful in helping scholars understand why autocratic and democratic states often pursue systematically different domestic and foreign policies. The research that builds upon these assumptions, however, ignores three important aspects of the political process. First, politicians often are not purely office-seeking but also care about the substance of the policies they enact or pursue (Fenno 1973, Wittman 1983, Bender and Lott 1996). Second, variation in the political influence of the public and elite across regime type results in democratic leaders relying more on the support of the general public than the elite to remain in office while autocratic incumbents must maintain the political support of a society's elite rather than the public to avoid being removed from power (among others, Dahl 1971, Acemoglu and Robinson 2006). Third, members of a state's general public and elite hold different preferences over how a government distributes its economic resources. In particular, the poorer public prefers proportionately higher social spending and lower military spending than the wealthy civilian elite and members of the military (Nordlinger 1977, Przeworski et al. 2000, Boix 2003).

With the above items in mind, I develop a game-theoretic model in which an incumbent

leader is able to determine her government's relative distribution of social and military spending, she derives utility both from her personal policy preferences over the mix of guns-and-butter and retaining office, and the relative distribution of social and military spending that best secures her political survival varies as a function of regime type.⁴ The model yields a number of interesting results. Arguably the most important two indicate that, in equilibrium, the combination of military and social spending that best secures a leader's political survival varies across regime type. Specifically, democratic leaders are more likely to retain office than are autocratic incumbents given high social spending and low military spending and autocrats are more likely to remain in power than are democratic leaders given low social spending. Duration analysis finds support for these two predictions in the experiences of 128 political executives between 1960 and 1999. These findings are important for two reasons. First, the statistical analysis offers the first empirical evidence that a leader's political survival is influenced by government spending. Second, the variation in the combination of government spending that best secures the tenure of an autocratic and democratic leader offers a set of micro-foundations for why autocracies and democracies pursue systematically different policies with respect to interstate conflict. This point is explored in much greater detail in the next essay.

1.2.2 Leader Incentives for Conflict Selection and Mobilization

Existing institutional accounts of variation in interstate conflict behavior across regime type often assume that democratic leaders are more likely to be removed from power than are autocratic leaders after participating in an interstate war (Reiter and Stam 1998) and/or losing an interstate war (Bueno de Mesquita et al. 1999). Unfortunately, neither of these assumptions is supported by the empirical record (Chiozza and Goemans 2004, Debs and

⁴Throughout the manuscript, I typically refer to abstract leaders and democratic leaders using feminine pronouns and autocratic leaders using masculine pronouns.

Goemans 2010). Therefore, our explanations for why, compared to autocracies, democracies are less likely to fight other democracies (Russett and Oneal 2001), more selective in choosing conflict opponents (Clark and Reed 2003), and more likely to win the wars they fight (Reiter and Stam 2002) follow from faulty premises. The second essay in my dissertation, Chapter 3, argues that these and other empirical patterns can be explained by variation in the incentives of autocratic and democratic leaders for conflict selection and mobilization.

Based on the formal and empirical results reported in Chapter 2, I argue that the increased military spending and decreased social spending that accompanies an economic mobilization for interstate war makes mobilization more politically costly for democratic leaders than autocratic leaders. Duration analysis is consistent with this claim: the probability of a democratic leader retaining office becomes significantly lower as she increases military spending and cuts social spending during war-time, while an autocrat's prospects for political survival are unrelated to the degree he mobilizes resources for interstate war. I analyze the implications of these results for interstate conflict by developing a crisis bargaining model in which the probabilistic outcome of a conflict is influenced by a leader's decision to mobilize his or her country's resources and the political cost of mobilization is higher for democrats than it is for autocrats. The model provides rational explanations for a number of known empirical patterns (e.g., the democratic peace) and yields the novel prediction that democratic targets are more selective in reciprocating militarized challenges than are autocratic targets. An analysis of all directed-dyads in the international system between 1950 and 2001 is consistent with the formal model's prediction. I find that the probability of a democratic target reciprocating a challenge in a militarized interstate dispute (MID) is decreasing in the initiator's share of total dyadic capabilities while the probability of an autocratic target reciprocating a challenge is invariant to the dyadic balance of power.

1.2.3 The Displacement Effect of Interstate War

The third essay in my dissertation, Chapter 4, empirically analyzes the relationship between interstate war and state-making and the role regime type plays in conditioning the effect of war on the political development of states in the contemporary international system. As Charles Tilly semi-famously noted, “War made the state and the state made war” (1975, pg. 42).⁵ Bellicist theories of state-making hold that predatory states fund foreign wars by raising taxes and then fail to fully reduce the extraction of tax revenue following the conclusion of a war (Tilly 1985, Thies 2005). States then distribute these resources according to the preferences of those in charge of their governments (Organski and Kugler 1980). The end result of a country’s participation in an interstate war, therefore, is a stronger, more powerful state that consumes more of its society’s economic resources in the form of taxes and then spends this revenue on government programs. The increase in the equilibrium levels of tax revenue and government expenditures associated with a country’s participation in an interstate war is known as the displacement effect (Peacock and Wiseman 1961).

The displacement effect is central to existing accounts of the relationship between interstate war and state-making. Empirical research, however, is divided over the existence of the displacement effect of interstate war (Rasler and Thompson 1985, Thies and Sobek 2010), questions whether it applies to contemporary states (Centeno 2002), focuses almost exclusively on the displacement of tax revenue (Thies 2004), and assumes the process is invariant to a state’s domestic political institutions (Jagers 1992). I conduct two sets of analyses in Chapter 4. The first looks for the existence of a general displacement effect of interstate war by examining whether belligerents between 1950 and 2001 had higher levels of taxation, military spending, and social spending after their participation in an interstate war than

⁵I say “semi-famously” not to minimize Tilly or any of his contributions. Rather, I think it takes quite a bit of conceptual stretching for any works of modern political science to be considered famous. See Sartori (1970) for a famous treatment of conceptual stretching.

they did before a war. Consistent with the displacement effect, I find that, on average, countries extract more tax revenue and allocate more economic resources to military and social spending after an interstate war than they did before a war.

The second set of analyses in Chapter 4 examine the relationship between the displacement effect of interstate war and regime type. The relationship between leadership survival, government spending, and regime type developed in Chapter 2 implies that the displacement of military and social spending should vary across regime type. Specifically, the relatively greater political influence of the public in democracies and elite in autocracies should result in the increases in social spending associated with the displacement effect being larger in democracies than in autocracies and the increases in military spending being larger in autocracies than in democracies. I find partial support for this argument. Consistent with my expectations, the difference between post-war and pre-war social spending is significantly larger in democracies than in autocracies. However, I find no difference in autocratic and democratic increases in military spending following an interstate war.

1.3 Conclusion

Chapter 5 concludes my dissertation. In addition to a short summary of my main theoretical and empirical findings, Chapter 5 discusses the larger implications of my results. The game-theoretic models discussed in Chapters 2 and 3 are fully characterized in Appendix 1 and Appendix 2c, respectively. Having introduced my main argument and its application in the three essays of my dissertation, I now turn to Chapter 2 and my analysis of the relationship between leadership survival, government spending, and regime type.

Chapter 2

Leadership Survival and Government Spending

Policy variation between democratic and autocratic governments at the domestic and international level increasingly is understood to be a function of the incentives faced by their respective political leaders. This recent theoretical and empirical focus on the role of leaders has resulted in a greater understanding of why domestic political priorities (Bueno de Mesquita et al. 2003), economic performance (Przeworski et al. 2000), international cooperation (McGillivray and Smith 2008) and interstate conflict behavior (Fearon 1994, Goemans 2000) are conditional on a state's form of government. These institutional explanations of policy divergence across regime type often are grounded in two observations: incumbent politicians prefer to remain in power rather than be removed from office and all democratic incumbents are politically accountable to a larger number of their country's citizens than are autocratic leaders (among many others, Bueno de Mesquita et al. 2003). Much of the recent research on the relationship between political leaders and policy outcomes, however, ignores three points made by a wide range of scholars: politicians often are motivated by the substance of the policies they enact (Fenno 1973); the citizens who determine whether

democratic and autocratic incumbents retain office are drawn from systematically different segments of society, specifically the general public vs. the elite (Dahl 1971); and the public and elite have incentives to prefer different policy outcomes (Acemoglu and Robinson 2006).

I use these five observations to develop a game-theoretic model of the relationship between leadership survival, regime type, and the distribution of government resources. The model yields a set of novel implications, two of which are tested using survival analysis on a data set of 869 leaders from 105 states during the period from 1960-1999. Consistent with the model's predictions, I find democratic leaders are more likely to lose office than are autocratic leaders when military spending is high and social spending is low and that low military and high social spending is more likely to result in the removal of an autocratic leader than of a democratic leader. The model also provides a unified rational explanation for why democracies spend relatively more resources on social spending and less on the military than do autocracies (Fordham and Walker 2005, Huber, Mustillo and Stephens 2008). Additionally, the model predicts that, regardless of regime type, policy-driven incumbents are willing to face a higher probability of being removed from office in order to enact their preferred policies.

This essay contributes to our understanding of the relationship between political leaders and government policy in four ways. First, it demonstrates that who influences whether a political executive retains office significantly affects the incentives of incumbency-valuing leaders. Second, the article highlights the role of policy responsiveness across regime type. Third, the formal analysis demonstrates how relaxing the assumption that politicians are purely office-seeking is useful for explaining policy outcomes. Fourth, the relationship between leadership survival, regime type, and government spending reported in the statistical results have important implications for the interstate conflict behavior of democratic and autocratic countries.

The remainder of the chapter proceeds as follows. The first section outlines the two

competing incentives a leader faces when enacting policy – retaining office by enacting the policies preferred by her winning coalition and implementing her own preferred policies – and how the citizens an incumbent needs to keep happy to remain in power varies across regime type. I then develop a game-theoretic model of political survival that captures this trade-off and variation in the government spending preferences of democratic and autocratic winning coalitions. The third section solves the model and presents a set of empirical implications concerning the relationship between regime type, resource distribution, and leadership survival. My empirical tests of the model’s predictions are described in the next section while the fifth reports the results of my statistical analyses. The essay concludes with an overview of my findings and a discussion of the larger implications of my results for understanding variation in how democratic and autocratic leaders prosecute interstate conflicts.

2.1 Political Incumbents and Their Policy Incentives

At a basic level, a political leader faces a dilemma when implementing policy: attempting to retain office through policy responsiveness and enacting her personally preferred policy. The following discussion develops this idea in the context of the relationship between leadership survival, government spending, and regime type.

2.1.1 Political Survival through Policy Responsiveness

Policy responsiveness describes the process by which an incumbent retains the political support of her constituents through the implementation of their preferred policies (*inter alia*, Page and Shapiro 1983, Stimson, MacKuen and Erikson 1995). The concept of policy responsive captures the idea that politicians must keep their core supporters happy in order to remain in office. Empirical support for policy responsiveness is robust (for a review see Burstein 2003). Scholars have found significant relationships between public preferences and

a wide range of policies; including but not limited to government spending (Wlezien 2004, Brooks and Manza 2007), death penalty reform (Mooney and Lee 2000), U.S. Supreme Court decisions (Erikson, MacKuen and Stimson 2002) and foreign policy behavior (Sobel 2001).

Much of the explicit theorizing and empirical work on policy responsiveness has focused on the experiences of democratic countries. This is unsurprising as it reflects the common intuition that democratic politicians can be held accountable for their actions while dictators rarely if ever have to answer for their behavior. This sentiment is given voice by Dahl, who claims that “a key characteristic of a democracy is the continuing responsiveness of the government to the preferences of its citizens” (1971, pg. 1; see also Putnam 1993). Others have argued, however, that policy responsiveness also operates in the autocratic context. In the opening paragraphs of *Public Opinion and American Democracy*, V.O. Key (1961, pg. 3) writes:

“And even in the least democratic regime opinion may influence the direction or tempo of substantive policy. Although a government may be erected on tyranny, to endure it needs the ungrudging support of substantial numbers of its people. If that support does not arise spontaneously, measures will be taken to stimulate by tactical concessions to public opinion...”

According to Key (1961), all leaders require the support of some portion of their citizens to remain in power, and this support is obtained by implementing that constituency’s preferred policies. The idea that even dictators must respond to the preferences of their supporters is present in more recent scholarship as well. In his account of the emergence of democracy and the rule of law, Weingast (1997) argues that all sovereigns must keep at least some of their subjects happy and therefore refrain from transgressing against the rights of all of their citizens. Gandhi and Przeworski (2006, 2007) argue that autocratic leaders maintain their hold on political power through a mix of repression, policy concessions and, under certain

conditions, the creation of semi-democratic political institutions. Similarly, a dictator keeps his ruling coalition satisfied, and thus retains office, through power sharing agreements and policy concessions in Svoboda's (2009) model of authoritarian politics. Thus, some scholars have recognized the role of policy responsiveness in securing the political survival of non-democratic leaders.

To demonstrate the applicability of the policy responsiveness framework across regime type, I examine the relationship between political survival and the distribution of government resources in democratic and autocratic states. The central insight of policy responsiveness is that incumbent politicians implement the preferred policies of those members of a society whose support is necessary to keep them in office. Understanding and predicting policy outcomes then requires the identification of the preferences of those who determine a country's political leader. It therefore is useful to focus on two dimensions along which a state's population can be classified: socio-economic and political status. These two dimensions determine a citizen's incentives to favor different distributions of government resources on social and military spending and, depending on the form of government, whether his preferences influence a leader's decision-making.

2.1.1.1 Societal Groups and Preferences over Government Spending

A state's population can be divided along numerous socio-economic dimensions. In terms of preferences over how a government allocates its resources between social and military spending, whether a citizen is a member of a society's elite or general public is particularly relevant. A nation's elite consists of two groups. First, the civilian elite is that small subset of wealthy members in a society. Second, the military is also classified as a subset of the nation's elite. Although not many members of a state's military are wealthy, the interests of the rich and the military often align and, therefore, the two groups frequently ally against the public (Linz and Stepan 1978, O'Donnell and Schmitter 1986, Acemoglu and Robinson 2006).

In comparison to a nation's elite, the general public are more numerous and, on average, poorer (Boix 2003).

While this classification scheme abstracts greatly from other societal cleavages, the analytical distinction between a nation's elite and general public has contributed greatly to our understanding of political regimes and policy outcomes. Dahl (1971) argues that a state's government moves from a form of closed hegemony (e.g., dictatorship, monarchy) towards democracy as it allows members of the public, and not simply a society's elite, to contest and participate in elections. For Przeworski (1991) and Przeworski et al. (2000), the difference between dictatorships and democracies is that the former is defined by the consolidation of political power in the hands of the few while the latter is characterized by institutionalized, uncertain elections in which the public determines their political representatives. Although they differ on specifics, variation in the political influence of the public and elite figure prominently in the definitions of democracy favored by Schumpeter (1947), O'Donnell and Schmitter (1986), and Huntington (1991). Taking this research as his starting point, Boix (2003) ties variation in the political influence of public and elite across regime type to the relative inequality and redistributive policies of democratic and non-democratic countries. Acemoglu and Robinson (2006) argue that the *de facto* political power of the public and elite across regime type explains variation in, among other things, tax rates, inequality, and development in democracies and dictatorships.

The division of a state's population into the elite and public is relevant to the relationship between political survival, regime type, and the distribution of government resources for two reasons. The first is introduced here and the second is discussed in the following section. First, members of each socio-economic group have personal incentives to favor different patterns of military and social spending; the familiar guns and butter. Generally speaking, members of the public should prefer greater social and less military spending than members of a society's elite. This claim rests upon four observations. One, government

spending on social programs disproportionately benefits poorer citizens at the expense of the wealthier members of a society. Specifically, the civilian elite are wealthy enough to provide themselves with the benefits that the poorer members of the general public obtain through the social welfare state (*e.g.*, education, health care, food subsidies).¹ Second, taxes on the personal estates of the wealthy civilian elite are used to finance the welfare state (Przeworski et al. 2000, Boix 2003). The civilian elite then bear the brunt of the costs of the social welfare state while deriving relatively fewer benefits than members of the general public. Consequently, compared to the public, the elite have personal economic incentives to prefer fewer government resources be allocated to the social welfare state. This claim is consistent with scholarship that finds a negative relationship between income and support for the welfare state (Cook and Barrett 1992, Jacoby 2000, Jæger 2006). Third, military spending serves a distinctly different function for members of the military than it does the general public. Citizens serving in the military benefit from military spending in two ways: it provides the public good of national defense (Olson and Zeckhauser 1968) and members of the military rely on government spending on the military for their livelihoods. The public, however, only directly benefits from military spending through its role in providing national security. Due to resource scarcity, any government resources allocated to the military over and above the level necessary to defend the nation crowds out consumption spending (among many others, Sprout and Sprout 1968, Garfinkel 1994, Fordham and Walker 2005). Fourth, military training socializes members of a state's armed forces to value a stronger military and favor higher military spending than the general civilian population (Nordlinger 1977, Geddes 2003). The general public therefore has an incentive to prefer a lower level of military spending than members of the military. Taken together, these four

¹This not to say that members of the elite obtain no benefits from social spending. In particular, the elite would benefit from some of the long-term consequences of increased social spending, such as an educated workforce. That said, it is members of the public that would then be more educated, healthier and have a longer life-expectancy and, therefore, would derive the more direct benefits from government spending on social programs.

observations imply that members of the public have personal incentives to prefer greater social spending and less military expenditures than do members of a society's civilian elite or military.

2.1.1.2 Societal Composition of Democratic and Autocratic Winning Coalitions

The second reason the public-elite distinction is important for the relationship between leadership survival, regime type, and resource distribution is related to a citizen's political status. A citizen's political status is characterized here by whether he is a member of his incumbent political executive's winning coalition (W), the subset of those people who have a say in choosing a state's leader whose support is necessary for an incumbent to retain office (Bueno de Mesquita et al. 1999, 2003). As a leader's winning coalition determines whether or not she is able to remain in power it is imperative for an office-valuing incumbent to retain the political support of her winning coalition. According to the policy responsiveness framework, an incumbent secures this support, and consequently her political survival, by enacting the preferred policies of her winning coalition. An incumbency-valuing leader then has a personal incentive to respond to her winning coalition's policy preferences but not those of other citizens. Therefore, a citizen's political status determines whether his preferences influence the substance of government policy.

The concept of a leader's winning coalition is intimately related to a state's form of government. The winning coalitions of democratic and autocratic incumbents systematically differ in both their size and socio-economic composition. The relationship between the size of a leader's winning coalition and regime type is well understood: democratic governments are associated with larger winning coalitions, in both absolute terms and relative to the size of a country's selectorate, than are autocratic winning coalitions (Bueno de Mesquita et al. 1999, 2003, Clarke and Stone 2008).² Less appreciated, however, is the relationship between regime

²To be sure, Bueno de Mesquita et al. are very clear that "a large selectorate and a large winning coalition

type and *who* gets into a leader's winning coalition. The citizens that get into the winning coalitions of democratic and autocratic incumbents are drawn from systematically different distributions of a state's population. Put simply, the winning coalitions of democratic leaders consist of proportionately more members of the public and fewer elites than do the winning coalitions of autocratic incumbents. The comparatively small winning coalitions of autocratic leaders are made-up almost exclusively by members of a society's elite (Bueno de Mesquita et al. 2003), with the relative influence of the civilian elite and military varying across non-democratic regime types (*e.g.*, civilian dictatorship vs. military junta). The political institutions of contemporary democracies make it impossible for a democratic incumbent to retain office with only the support of her country's elite. Instead, the comparatively high levels of political participation and contestation associated with democracy results in democratic leaders requiring the support of a large portion of the general public to remain in power (among many others, Dahl 1971, Bueno de Mesquita et al. 2003, Acemoglu and Robinson 2006). It therefore follows that democratic winning coalitions are composed of proportionately more members of the general public and fewer members of a society's civilian and military elite than are autocratic winning coalitions. Within a "Downsian" framework (Downs 1957), this implies the median voter in a democratic leader's winning coalition is a member of the general public and that the median "voter" in an autocratic incumbent's winning coalition is a member of the elite.

Three points about the approach taken here are worth noting before moving forward. The first is that the relationship between the composition of a leader's winning coalition and regime type described here complements scholarship that identifies a state's form of government with the relative political power of a society's elite and general public. As referenced above, this perspective defines a democratic government as one in which the public

do not in themselves define a democracy" (2003, pg. 72). However, a large winning coalition is viewed as a necessary condition for democratic government and, perhaps most importantly, "democracies require larger coalitions than autocracies or monarchies" (2003, pg. 72).

has relatively greater political power than the elite and a non-democratic regime as a government in which the opposite situation holds (Dahl 1971, Przeworski 1991, Acemoglu and Robinson 2006). Because it determines whether a political executive is able to retain office, *de facto* political power in a state rests largely with an incumbent's winning coalition. The relative political power of a given societal group then should be reflected in its representation within a leader's winning coalition. Accordingly, the claim that democratic winning coalitions consist of proportionately more members of the public and fewer members of the elite than do autocratic winning coalitions is consistent with scholarship that defines regime type according to the relative political power of the elite and public.

The second and third points are related to differences between my theory and the selectorate theory of politics (1999, 2003). First, the relationship between political status and policy outcomes outlined here allows variation in the policy preferences of a society's citizens. The selectorate model assumes that all citizens hold the same four preferences: more public goods, more private benefits, more leisure time and lower taxes (Bueno de Mesquita et al. 2003, pgs. 78-79, 108). By assuming that all citizens hold the same preferences, the inclusion of a given citizen in a leader's winning coalition matters only in that it affects the relative costs and allocation of private benefits and public goods and the size of the loyalty norm.³ Consequently, who gets into a leader's winning coalition is irrelevant to the substance of the policies that best secure an incumbent's political survival for selectorate theory. These assumptions of selectorate theory imply, for one example, that there is no logically deduced reason to expect the policies enacted by the leader of a direct, majority rule democracy whose winning coalition consisted of the wealthiest 50% + 1 of the population to differ from the policies of a leader of the same state whose W consisted of the poorest 50% + 1 members

³It is worth noting that selectorate theory does allow variation in actors' personal preferences through the concept of "affinity". Affinity, however, does not refer to policy preferences but "is simply a preference for one individual over another, *independent of the policies of the individuals*" (Bueno de Mesquita et al. 2003, pg. 61, emphasis added).

of society. In contrast, the model of politics forwarded here argues that members of the elite and public have personal incentives to hold different preferences over government spending. Given policy responsiveness, we therefore should expect fundamentally different patterns of social and military spending depending on which leader (and associated winning coalition) is in power. Beyond this hypothetical example, the findings of Gartzke and Gleditsch (2004) and Leeds, Mattes and Vogel (2009) regarding international commitments are consistent with the idea that the composition of a political executive's winning coalition influences policy outcomes.

The history of the “global gag rule” in American politics also nicely illustrates how variation in the policy preferences of an incumbent leader's winning coalition can affect policy outcomes even when the size of W remains (relatively) constant. The global gag rule, or Mexico City Policy, refers to the intermittent policy of the United States that directs the United States Agency for International Development (USAID) “to withhold funds from NGOs that use non-USAID funds to engage in a wide range of activities, including providing advice, counseling, or information regarding abortion, or lobbying a foreign government to legalize or make abortion available” (Obama 2009). In the years since its initial enactment by President Ronald Reagan in 1984, an alternation in the political party of the incumbent president has resulted in the repeal or re-instatement of the global gag rule within the first three days of the new administration.⁴ As Crane and Dusenberry (2004) note, the status of the gag rule has never been a function of the public health needs of developing countries, but rather whether the pro-life or pro-choice segment of American society was more politically powerful under a given president. Accordingly, the global gag rule has been United States law under Republican Presidents who rely on pro-life supporters to retain office and been

⁴That is, while Republican President George H.W. Bush did not alter the status of the global gag rule, Democratic President Bill Clinton repealed it on January 22, 1993, Republican President George W. Bush re-instituted it on January 22, 2001, and Democratic President Barack Obama repealed it again on January 23, 2009 (Sullivan 2009).

repealed by Democratic Presidents whose political future turns on the support of the pro-choice movement (Crane and Dusenberry 2004).

The second characteristic that distinguishes my model from selectorate theory is that I make no distinction between government resources distributed for the purpose of providing a public good and resources dedicated to private benefits for members of a leader's winning coalition (see Samuelson (1954) and Olson (1965) for canonical treatments of public versus private goods). The central insight of selectorate theory is that the optimal allocation of government resources for a democratic/large- W leader consists of the production of more public goods and fewer private benefits than the optimal distribution of resources for an autocratic/small- W leader (Bueno de Mesquita et al. 2003). Selectorate theory, therefore, seems to implicitly assume that a society's citizens (and we as analysts) can distinguish between government resources used to provide non-excludable, non-rival services and resources that financed excludable, rival benefits. I do not incorporate the public-private goods framework into my analysis for three reasons. One, my interest does not lie in the relative public or private character of a leader's distribution of government resources. Second, it seems plausible that citizens care more about whether an incumbent allocates their preferred mix of social and military spending and less about whether the latent benefit provided by the government's resources is rival and excludable. Third, it would be a particularly daunting task to empirically determine which of the resources a government allocates to social and military spending are for public goods and which are for private benefits. This point is explicitly raised by Lake and Baum (2001) in their explanation for why their argument about the relationship between regime type and the provision of public goods is tested using policy outcomes (*e.g.*, education levels, access to clean water) rather than government spending.

2.1.2 Policy-Motivated Incumbents

The relationship between political leadership and policy outcomes predicted by the policy responsiveness framework is straightforward: incumbents enact the policies preferred by their winning coalitions in order to retain the political support necessary to remain in power. Despite the theoretical and empirical fruitfulness of the Hotelling/Downsian framework (Hotelling 1929, Downs 1957), most politicians are not motivated exclusively by the desire to gain or retain office. Instead, politicians also hold preferences over the substance of the policies they enact (most notably, Fenno 1973). Political leaders, therefore, face a trade-off between enacting or running on their ideologically preferred policy and the policy that best ensures political survival or victory (Wittman 1977, 1983, Calvert 1985). The principle-agent problem of “shirking” nicely captures this trade-off among incumbent political leaders.

Political or ideological shirking is defined as those situations in which incumbents “have policy preferences that differ from those of their constituents and that this difference can cause legislators to vote against the interests of their constituents” (Bender and Lott 1996, pg. 69). The formal and empirical work on shirking is vast (for a sample, see Kalt and Zupan 1984, 1990, Peltzman 1984, Rothenberg and Sanders 2000*a*, 2007). As the logic underlying policy responsiveness would predict, shirking is costly for politicians: incumbents that support policies that deviate from those of their constituents receive fewer votes and are more likely to lose office than are incumbents who are responsive to constituent preferences (Canes-Wrone, Brady and Cogan 2002). It is not surprising then that political shirking is greatest when incumbents no longer care about being re-elected due to term limits, lame-duck status or retirement (Persson and Svensson 1989, Carey, Niemi and Powell 1998, Rothenberg and Sanders 2000*b*). Thus, politicians that do not care about retaining office are more likely to pursue their own ideologically preferred policies than are incumbency-valuing politicians.

While scholarship that explicitly analyzes ideological shirking focuses on the experiences of democratic politicians, research on principle-agent relationships across regime type suggests that shirking is likely more prevalent in the autocratic context. Institutional explanations of the democratic peace, for instance, typically argue that while citizens of all states prefer peace, it is comparatively easier for autocratic leaders to follow their own preferences and ignore the wishes of their public than it is for democratic incumbents.(e.g., Maoz and Russett 1993, Siverson 1995). McGillivray and Smith (2000, 2008) argue that, despite the gains from interstate cooperation received by their citizens, autocrats are more likely to act in their own interests and renege on international agreements than are democratic executives. For a final example, selectorate theory argues that dictators have greater latitude in implementing their preferred policies than do democratic incumbents because (1) it is easier for autocratic incumbents to replace unhappy members of their winning coalition and (2) the greater loyalty among the members of an autocrat’s winning coalition (Bueno de Mesquita et al. 2003).

The discussion up to this point highlights five observations relevant to the relationship between political survival, regime type and the distribution of government resources. First, all leaders rely on the support of a winning coalition to remain in power (Bueno de Mesquita et al. 2003). Second, the political support necessary for an incumbent to stay in office is maintained through the allocation of benefits to key constituents via policy responsiveness (Burstein 2003). Third, political incumbents sometimes ignore their constituents’ preferences in order to pursue their own preferred policies (Bender and Lott 1996). Fourth, the political influence of the public and elite is systematically different under democratic and autocratic regimes (Dahl 1971). Fifth, members of the public and elite have incentives to prefer different distributions of government resources on social and military spending (Garfinkel 1994, Przeworski et al. 2000). The next section develops a game-theoretic model based on these observations.

2.2 A Model of Leadership Survival

I model the relationship between leadership survival, regime type, and the distribution of resources as a one shot-game between country i 's incumbent leader (L_i) and her winning coalition (W_i). The model is informally outlined here and fully characterized in Appendix 1. The incumbent political leader controls the distribution of her government's economic resources via government expenditures (x_i). All x_i consist of some combination of spending on military and social programs, with $x_i = 0$ representing the case in which all government spending is allocated to social programs and $x_i = 1$ identifies the situation in which military spending represent the totality of government expenditures. I assume that both incumbent leaders and the members of their winning coalitions hold single-peaked preferences over the relative distribution of social and military spending in x_i . The functions $z(x_i)$ and $v(x_i)$ represent the incumbent's and winning coalition's respective valuations of x_i . In addition to valuing the substance of x_i , I assume that, all else equal, an incumbent prefers to remain in office (I_i) over being ousted (O_i) by their winning coalition; $I_i > O_i$. The term α identifies the degree to which a leader is motivated by implementing her personally preferred policy relative to her preference for remaining in power, with $\alpha = 0$ representing the case in which an incumbent is driven purely by the spoils of office and $\alpha = 1$ representing the case in which a leader is purely policy-motivated.

A state's government is identified as being either democratic or autocratic; $g_i \in \{D, A\}$. While the differences between democratic and autocratic regimes are numerous, the model presented here incorporates only one. Due to the relative representation of the elite and public in winning coalitions across regime type and the personal incentives members of each socio-economic group, the median member of the winning coalitions of a democratic and an autocratic leader vary in their ideal x_i . Specifically, the median member of a democratic incumbent's winning coalition is a member of the general public and prefers greater social

spending and less military spending than does the elite median member of an autocrat's winning coalition. This variation in the domestic politics of democratic and autocratic regimes is represented by the inequality $x_m^D < x_m^A$.

I assume that replacing a leader imposes a cost (c_i) on a winning coalition. I assume c_i is a linearly increasing function of how pleased members of the winning coalition are with x_i . Thus, the model assumes that it is relatively costlier to remove a leader when the winning coalition is relatively happy with the distribution of military and social spending provided by the incumbent leader than when they are comparatively displeased with the mix of guns and butter. This captures the intuition that citizens make retrospective evaluations of incumbent politicians and that it is more difficult to remove a popular incumbent from office than an unpopular leader (e.g., Achen and Bartels 2002). Substantively, the cost term can be interpreted as campaign expenditures in a democratic government or the planning and financing of a coup attempt in an autocratic regime.

I also assume that replacing a leader brings a benefit (b_i) to a winning coalition. In substantive terms, b_i can be thought of as the winning coalition's relative preference for a domestic political challenger compared to the incumbent leader and, thus, the expected continuation value (minus the accompanying cost) of removing L_i . More formally, b_i is an exogenous shock to the model revealed after a leader has distributed x_i . Two alternative ways to model b_i would be to 1) allow b_i to be known at the beginning of the game, or 2) make b_i endogenous to x_i . Allowing b_i to be known from the outset would allow a leader to guarantee her political survival by distributing the precise x_i that makes the cost of removal marginally higher than the benefit of removal. Thus, a leader motivated to stay in office would never be removed in equilibrium if b_i was known at the beginning of the game. Another way to model b_i would be to make it endogenous to the distribution of x_i provided by the leader. This would capture the idea that the benefit to a winning coalition of removing a leader would be greater if they were relatively unhappy with the mix of military and social spending than

if they were relatively content with the combination of guns and butter. However, making b_i a negative function of $|x_i - x_m|$ would not change the substance of the results presented below because c_i is a positive function of $|x_i - x_m|$. This is because the decision by a winning coalition to remove or retain a leader comes down to an assessment of the relative benefit and cost of removal and an increase in b_i as a function of x_i is equivalent to a decrease in c_i as a function of x_i .⁵

Upon receiving x_i and the uncertainty over b_i being revealed, a winning coalition decides whether to replace (r_i) or retain (\tilde{r}_i) the incumbent leader. Given the initial uncertainty over b_i , we can define p as the probability an incumbent will receive O_i and $1 - p$ as the probability an incumbent will receive I_i . The relationship between c_i and x_i implies that a leader influences her probability of remaining in power, and thus the realization of I_i and O_i , through the distribution of government resources on social and military expenditures.

The utility functions of an incumbent leader and her winning coalition in country i are written as follows:

$$U_{L_i} = \alpha z(x_i) + (1 - \alpha)[p(b_i, c_i(x_i))O_i + (1 - p(b_i, c_i(x_i)))I_i] \quad (2.1)$$

$$U_{W_i} = \begin{cases} v(x_i) & \text{if } \tilde{r}_i \\ v(x_i) + (b_i - c_i(x_i)) & \text{if } r_i \end{cases} \quad (2.2)$$

The next section informally presents a set of results derived from the model. Formal propositions and proofs are available in Appendix 1.

⁵Put more succinctly, making b_i endogenous to x_i in the current set-up would not change the results because c_i is already endogenous to x_i .

2.3 Equilibrium Behavior

The game is solved for subgame perfect equilibria using backwards induction. Beginning with the winning coalition's decision, an incumbent leader is retained if and only if the cost of replacing her are greater than the benefit of installing a new leader. That is,

$$W_i \text{ plays } \tilde{r}_i \text{ iff } b_i < c_i(v(x_i)) \text{ and } r_i \text{ otherwise.} \quad (2.3)$$

As the cost of removing an incumbent is a function of how much a winning coalition values x_i , an incumbent influences the probability she will remain in power through the distribution of social and military spending. Her optimal x_i depends on the relative degree to which an incumbent is motivated by retaining office and implementing her personally preferred policy. The first partial derivative of Equation 2.1 with respect to α identifies how a leader's utility changes with her relative motivation.

$$\frac{\partial U_L}{\partial \alpha} = z(x_i) - [p(b_i, c_i)O_i + (1 - p(b_i, c_i))I_i] \quad (2.4)$$

The positive and negative signs on the first and second terms of Equation 2.4, respectively, indicate that the more an incumbent cares about the substance of x_i (i.e. an increase in α) the more utility she derives from implementing her preferred distribution of social and military spending and the less utility she derives from whether she retains. Accordingly, the optimal x_i^* depends on a leader's motivation for implementing policy. I solve for equilibrium behavior in the limiting cases of purely office-motivated and purely policy-motivated incumbents. I focus on the limiting cases for three reasons. First, most existing models of political survival focus on purely office-valuing incumbents (e.g., Bueno de Mesquita et al. 2003). Analyzing the case in which $\alpha = 1$, therefore, allows for direct comparisons with existing analyses. Second, focusing on the limiting cases allows the analysis to demonstrate how an archetypal

“responsive” and “selfish” incumbent leader should behave in equilibrium. As demonstrated below, the model yields implications for leader behavior across regime type that run counter to common intuitions and existing scholarship. The fact that these results emerge from situations in which we would expect them to be least likely, i.e. purely office-valuing or policy-valuing leaders, makes the results that much more striking. Third, equilibrium behavior for leaders at intermediate values of α is, as one might expect, simply a weighted-average of L_i 's personally preferred x_i and x_m . Thus, comparatively little is lost by focusing on the limiting cases of purely office- or policy-valuing incumbents.

2.3.1 Incumbency-Motivated Leader

If a leader is motivated purely by retaining office, then she derives no utility from the actual distribution of government resources and is best served by allocating the combination of social and military spending that maximizes her chances for political survival. The subgame perfect equilibrium in this situation is as follows.

Proposition 1 *A leader distributes the combination of social and military spending preferred by the member of her winning coalition holding the median preference over x_i and her winning coalition retains her if and only if the cost of removal is greater than the benefit of replacing her with a domestic challenger.*

Proof. See Appendix 1. □

Proposition 1 nicely captures the concept of policy responsiveness (Burstein 2003). Incumbents that care purely about retaining office (i.e. $\alpha = 0$) obtain utility only from the second term in Equation 2.4. Because the costs of removing a leader are increasing in a winning coalition's valuation of how a leader distributes government resources and $v(x_i)$ is

maximized at x_m , a purely incumbency-motivated leader should allocate the combination of social and military spending preferred by the median member of her winning coalition ($x_i^* = x_m \forall L_i$).

As this result pertains to all office-valuing leaders, Proposition 1 demonstrates why the claims that policy responsiveness is purely a democratic phenomenon are misguided (*e.g.*, Dahl 1971, Putnam 1993). Rather, policy responsiveness differs across regime type in whom democratic and autocratic leaders must be responsive to in order to remain in power. The relative public-elite composition of democratic and autocratic winning coalitions leads to the following corollary of Proposition 1.

Corollary 1 *The optimal distribution of government resources for an incumbency-valuing democratic leader should contain more social spending and less military spending than the optimal distribution of resources for an incumbency-valuing autocratic leader.*

Proof. See Appendix 1. □

The logic behind Corollary 1 is straightforward. As discussed above, members of the public have incentives to prefer greater social and less military spending than members of a society's elite. Additionally, the public, compared to the elite, makes up a larger proportion of the winning coalitions of democratic incumbents than of the winning coalitions of autocratic leaders. It then follows that the median member of a democratic incumbent's winning coalition should prefer less military and more social spending than the median member of an autocratic leader's winning coalition ($x_m^D < x_m^A$). From Proposition 1, when a leader is motivated purely by the spoils of office ($\alpha = 0$) the optimal distribution of social and military spending by an incumbent political leader is the combination preferred by the median member of her winning coalition ($x_i^* = x_m$). Accordingly, office-motivated

democratic leaders should allocate fewer resources to military spending and greater resources to social spending than incumbency-valuing dictators; $(x_i^* | g = D) < (x_i^* | g = A)$.

Corollary 1 provides a unified, rational explanation for the empirical observations that democracies generally allocate fewer of their resources to military expenditures (*inter alia*, Fordham and Walker 2005) and spend more on the provision of social benefits (among others, Bueno de Mesquita et al. 2003, Huber, Mustillo and Stephens 2008) than do autocracies.⁶ The model's ability to predict previously identified empirical relationships speaks to its external validity. Within this context, it is worth noting that, given Proposition 1, Corollary 1 follows from the assumption that the median member of a democratic leader's winning coalition (a member of the general public) prefers less military and more social spending than the median member of an autocrat's winning coalition (a member of society's elite) and considering what the model would predict if this assumption was relaxed. If the model assumed instead that the public and elite did not vary in their preferences over government spending, then it would predict no difference in patterns of military and social spending across regime type. If the model went further and assumed the elite preferred higher social and lower military spending than the general public, then the model would expect democracies to allocate fewer resources to social spending and more resources to the military than autocracies. Thus, the model predicts a set of known empirical regularities given the assumption that the public prefers more social and less military spending than the elite but yields empirically invalid predictions when this assumption is changed.

I now turn to the equilibrium behavior given an incumbent motivated solely by the substance of the policies she enacts.

⁶While the empirical work associated with selectorate theory finds these patterns, the selectorate model of politics is unable to theoretically identify how spending on different (ostensibly) public goods should vary with W because it collapses all public goods into the variable x (see Bueno de Mesquita et al. 2003, pg. 78).

2.3.2 Policy-Motivated Leader

The above results assume that incumbents are motivated purely by the spoils of office. Equilibrium behavior for a leader who cares only about implementing her own preferred policies differs substantially.

Proposition 2. *A policy-motivated leader distributes her preferred mix of social and military spending and is then removed by her winning coalition if and only if the benefit of replacement is greater than the cost of removal.*

Proof. See Appendix 1. □

The logic underlying Proposition 2 is transparent. A policy-motivated incumbent (i.e. $\alpha = 1$) obtains utility only from the actual distribution of government resources, and is ambivalent regarding how the allocation of social and military spending affects her ability to retain office. As a leader's valuation of x_i is maximized with x_L , a policy-motivated incumbent should distribute her personally preferred combination of government spending. While the equilibrium behavior of a leader changes with her motivation for enacting policy, a winning coalition still decides whether to replace (r_i) or retain (\tilde{r}_i) their leader based on the relative costs and benefits of removing the incumbent. Therefore, a policy-motivated incumbent is willing to enact her preferred policies at the cost of facing a higher probability of losing office than if she had allocated the distribution of government resources favored by the median member of her winning coalition.⁷

Proposition 2 has an interesting implication: an incumbent that cares only about a policy's substantive content will be unresponsive to the preferences of her winning coalition *regardless of her state's form of government*. Accordingly, this result indicates that, given

⁷It is worth briefly noting that a purely policy-motivated incumbent would not face a higher probability of removal than a purely incumbency-motivated incumbent if her policy preferences aligned perfectly with those of the median member of her winning coalition; i.e. if $x_L = x_m$.

the absence of an incentive to remain in power, a democratic leader is just as likely to enact policies contrary to the preferences of her citizens as a dictator. As with Proposition 1, this result runs counter to the common intuition and scholarship that argues democratic politicians must be more responsive to their constituents than dictators (Dahl 1971). Further, Proposition 2 is also consistent with research that finds political shirking is most common among democratic incumbents who no longer care about retaining office either because of term limits, retirement, or defeat in a re-election campaign (*e.g.*, Carey, Niemi and Powell 1998, Rothenberg and Sanders 2000*a*, 2000*b*).

The equilibrium results presented thus far nicely demonstrate how a leader's motivation affects government policy: an incumbent that wants to retain office enacts the policies that her constituents prefer while an incumbent that cares about the substance of policy is willing to face an increased probability of being removed from power in order to achieve her personally preferred policy outcome. The next two formal results describe how regime type determines under which conditions a leader is likely to be punished for a given distribution of government resources.

2.3.3 Butter, Guns and Political Survival across Regime Type

The results presented in Equation 2.4 and Proposition 2 indicate that incumbents who are motivated by policy concerns have an incentive to allocate a combination of social and military spending that differs from their winning coalition's preferred distribution of resources. Propositions 3 and 4 identify how variation in the political power of the public and elite across regime type conditions the probability an incumbent will lose office for a given mix of government expenditures. Importantly, the relationships between leadership survival, government spending, and regime type predicted by Propositions 3 and 4 are novel.

Proposition 3 *Given low levels of social spending and high levels of military spending, the*

probability a democratic leader will be removed from office is higher than the probability an autocratic leader will be removed from office.

Proof. See Appendix 1. □

The reasoning behind Proposition 3 is fairly straightforward. The single-peaked preferences over x_i held by a leader's winning coalition imply that the probability a leader will be removed from office increases as the combination of social and military expenditures she allocated gets further away from the distribution of resources preferred by the median member of her winning coalition. Because $x_m^D < x_m^A$, increasing military expenditures and decreasing social spending means the distribution of resources is likely to be further away from the median member of a democratic winning coalition than it is from the median member of an autocratic winning coalition. More precisely, all $x_i > \frac{x_m^D + x_m^A}{2}$ are further away from x_m^D than they are from x_m^A . Consequently, as $x \rightarrow 1$ and government spending consists of proportionately more military and less social spending a democratic incumbent is more likely to be removed from power than is an autocratic leader.

Proposition 4 *Given high levels of social spending and low levels of military spending, the probability an autocratic leader will be removed from office is higher than the probability a democratic leader will be removed from office.*

Proof. See Appendix 1. □

Proposition 4 is the converse of Proposition 3. As the median member of a democratic winning coalition values a distribution of resources with high social spending and low military spending to a greater degree than does his counterpart in an autocratic winning coalition, all $x_i < \frac{x_m^D + x_m^A}{2}$ are further away from x_m^A than they are from x_m^D . Accordingly, autocratic incumbents are more likely to be ousted by their winning coalitions than are

democratic leaders as $x \rightarrow 0$ and military and social spending represent increasingly smaller and larger proportions of a government's expenditures, respectively.

Propositions 3 and 4 indicate that the political implications for a given distribution of social and military spending varies as a function regime type. More precisely, democratic and autocratic leaders are more or less likely to be removed by their winning coalition for a particular combination of social and military spending because the cost of removal varies depending on regime type. To graphically illustrate these relationships, Figures 2.1 and 2.2 present, respectively, the cost of removing an incumbent and the probability an incumbent will be removed from power for a given distribution of x_i when $x_m^D = 0.25$, $x_m^A = 0.75$, and $\frac{x_m^D + x_m^A}{2} = 0.5$.⁸

⁸Note that the qualitative relationships between leadership survival, government spending and regime type depicted in Figures 2.1 and 2.2 will always hold because, by definition, $x_m^D < x_m^A$.

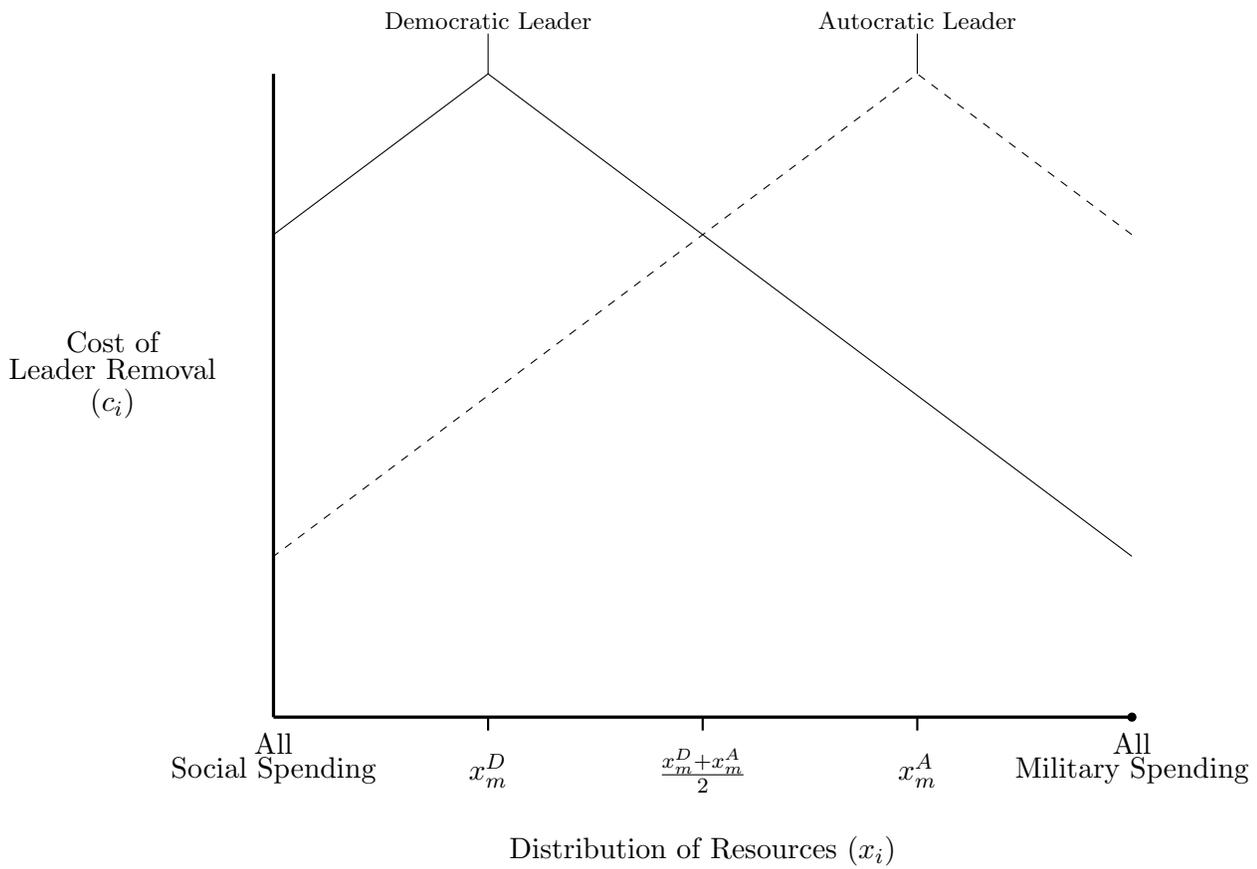


Figure 2.1: Distributions of x_i and the Cost of Replacing an Incumbent Leader

Figure 2.1 nicely illustrates how the cost of removing a leader given a particular distribution of resources varies as a function of regime type. Reading the graph from left to right, we see that it is more costly to replace a democratic leader (denoted by the solid line) than an autocratic incumbent (denoted by the dashed line) given combinations of government spending that are relatively high in social expenditures and low in military spending (i.e., the solid line is higher than the dashed line for all values of $x_i < \frac{x_m^D + x_m^A}{2}$). This makes intuitive sense as such combinations of government expenditures are closer to the preference of the median member of a democratic leader's winning coalition than the median member of an autocrat's winning coalition ($|x_i - x_m^D| < |x_i - x_m^A|$). Continuing down the x -axis, the cost of removing an autocratic leader is greater than the cost of replacing a democratic executive for combinations of spending that contain relatively high levels of military expenditures and low levels of social spending (i.e., the dashed line is higher than the solid line for all values of $x_i > \frac{x_m^D + x_m^A}{2}$).

Figure 2.2 demonstrates how, via the relationships illustrated in Figure 2.1, regime type conditions the probability a leader will actually be removed from power given a particular distribution of resources.⁹

⁹A useful way to think about Figures 2.1 and 2.2 together is that the Figure 2.1 demonstrates the mechanism that underlies the empirical predictions of Propositions 3 and 4 presented in Figure 2.2 .

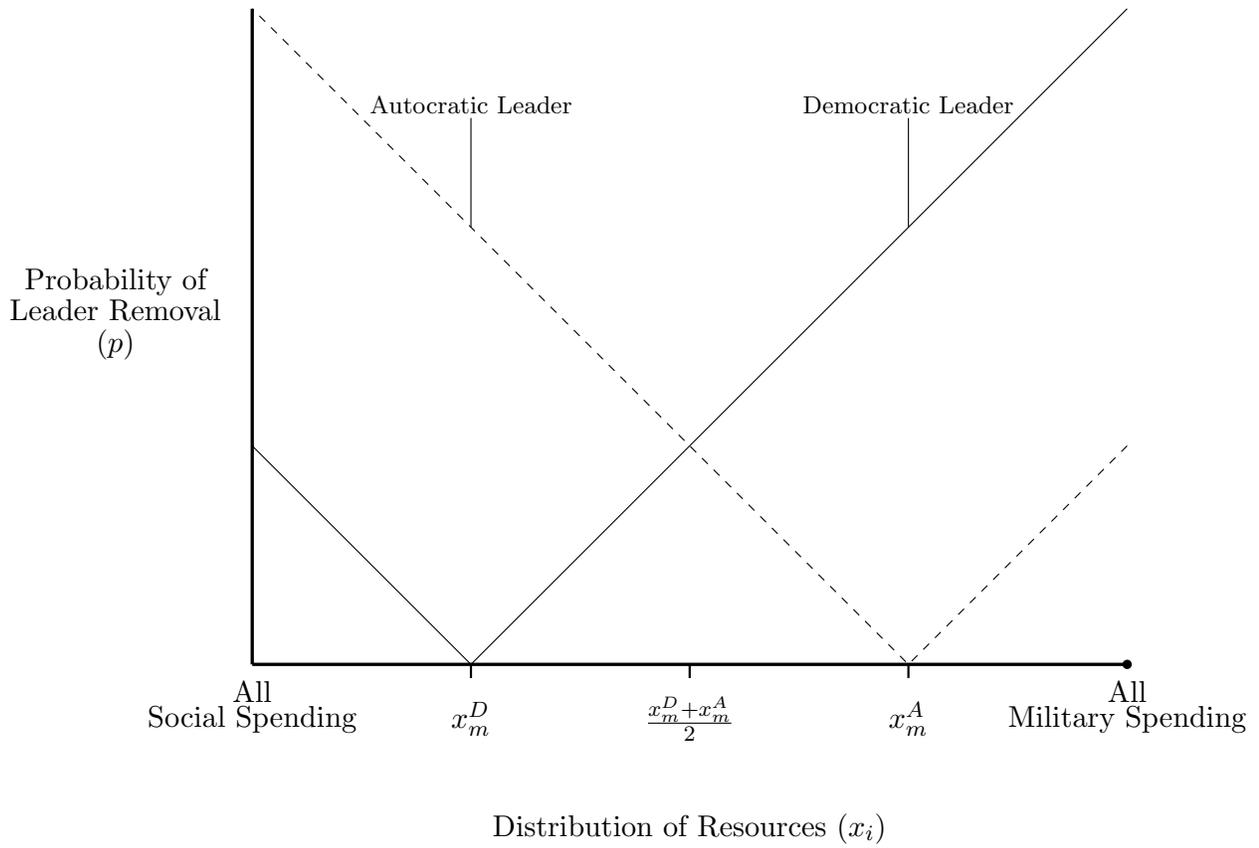


Figure 2.2: Distributions of x_i and the Probability of Replacing an Incumbent Leader

Figure 2.2 makes clear how the probability of leadership survival varies across regime type as a function of government spending on social and military programs. Again reading the graph from left to right, we see that autocratic leaders face a higher probability of removal than do democratic executives for all packages of x_i that consist of more social spending than military spending (i.e., $x_i < \frac{x_m^D + x_m^A}{2}$). The converse also holds: distributions of x_i that allocate more resources to the military than to social programs (i.e., $x_i < \frac{x_m^D + x_m^A}{2}$) are more likely to result in the removal of a democratic incumbent than an autocrat.

The model of leadership survival presented above yields several testable implications. I assess the empirical validity of the model by testing Propositions 3 and 4 for three reasons. First, existing scholarship supports Corollary 1's prediction that democracies should allocate more of their resources to social spending and fewer to military spending than autocracies (among others, Huber, Mustillo and Stephens 2008, Fordham and Walker 2005). Second, an appropriate, direct test of Proposition 2 would require systematic data on the personal preferences over social and military spending of political leaders over a substantial temporal and spatial domain. Alas, such data do not exist. Third, the empirical implications of Propositions 3 and 4 are novel. Consequently, the remainder of the paper focuses on testing the model's prediction that the combination of social and military spending that best secures an incumbent's political survival varies across democratic and autocratic regimes.

2.4 Research Design

My analysis of the relationships between leadership survival, the distribution of government resources and regime type derived in Propositions 3 and 4 were conducted on a data set of 4,556 leader-year observations covering 869 political executives from 105 states during the period from 1960 to 1999. Data on government leaders were taken from the *Archigos* project (Goemans, Gleditsch and Chiozza 2009).

I model the relationships between leadership survival, regime type and government spending outlined in Propositions 3 and 4 using five explanatory variables. The first is a dichotomous indicator of regime type. *Democracy* is coded 1 in year t if a leader's government has a value of +7 on the 21-point *Polity2* index (Marshall and Jaggers 2005) and 0 otherwise.¹⁰ Regime type is measured as a democracy/autocracy dichotomy rather than a scale or index in order to more accurately model the relationship derived from the formal analysis. *Military Spending* is operationalized as the percent of a country's nominal gross domestic product (GDP) allocated to the military in year t . Military expenditure and GDP data were taken, respectively, from the national material capabilities (NMC) data set version 3.02 (Singer, Bremer and Stuckey 1972) and the the Expanded Trade and GDP Data set (Gleditsch 2002, version 4.1). A state's social spending is proxied by the percentage of a country's nominal GDP allocated to health care spending in year t . *Health Care Spending* is used to measure a state's social spending because it was available for a greater number of countries for a longer period of time than other common indicators of social spending (*e.g.*, education spending, unemployment insurance, welfare effort). *Health Care Spending* is taken from the Relative Political Capacity data set (Kugler 2002).¹¹ I standardize a state's military and health care expenditures over GDP in order to account for the significant variation in the gross levels of government spending across countries. Further, standardizing military and health care spending over GDP also directly incorporates a country's economic growth into the measures. The interaction terms *Democracy*Military Spending* and *Democracy*Health*

¹⁰As a robustness check, I recoded *Democracy* using +6 as the critical value of *Polity2*. Models estimated with this variable led to the same substantive conclusions as those presented below.

¹¹Cross-national data on social spending is the limiting factor regarding the temporal domain of my empirical analysis. I estimated a set of models without *Health Care Spending* and its interaction with *Democracy* that spanned the period from 1875 to 2001. These results were consistent with the predictions of the theoretical model: high (low) military spending was more likely to lead to the removal of a democratic (autocratic) leader. However, the formal results derived in Propositions 3 and 4 are contingent on social and military spending. Appropriate tests of their predictions, consequently, require empirical indicators of both military and social spending. Therefore, I present the results of models estimated over the much shorter temporal domain.

Care Spending are used to model the differential effects of military and social spending on the prospects for leadership survival across regime type predicted in Propositions 3 and 4.

An alternative way to empirically model the relationships between government spending and political survival predicted by Propositions 3 and 4 would be to create a ratio of military to social spending. Indeed, such a measure would more closely match the theoretical variable x_i than the approach used here. *Military Spending* and *Health Care Spending* were chosen over this option for four reasons. First, the theoretical variable x_i is meant to represent the relative distribution of *all* government spending on military and social programs. Directly modeling x_i would require cross-national data on total government expenditures and/or all of a state's social spending over a significant temporal domain. These data do not exist. Second, existing research that examines patterns of government spending cross-nationally generally standardizes expenditures over economic resources; for representative examples see Palmer (1990), Goldsmith (2003) and Fordham and Walker (2005) on military spending and Rodrik (1998), Brown and Hunter (1999), Brooks and Manza (2007) and Huber, Mustillo and Stephens (2008) on social spending. Third, the two variables can capture every possible combination of social and military spending that could occur using a ratio of guns to butter. Therefore, no flexibility is lost in the approach used here compared to a ratio of expenditures. Fourth, conceptualizing relative government expenditures as a percentage of GDP is more intuitive than doing so in terms of a ratio (e.g., a government spent 94% of its resources on social programs and 6% on military spending vs. a 15.7:1 ratio of social to military spending). Accordingly, interpreting the statistical results is more straightforward using *Military Spending* and *Health Care Spending* than it would be with a ratio.

In addition to the five explanatory variables of substantive interest, I control for a number of factors that have been found to influence leadership survival. A state's annual *GDP Growth* (Heston, Summers and Aten 2006) was included in the model as it alternatively has been shown to decrease a leader's hazard of losing office (Bueno de Mesquita et al. 2003),

increase a leader's hazard of losing office (Goemans 2008) and initially increase a leader's hazard of losing office but with the effect diminishing significantly in the length of tenure (Chiozza and Goemans 2004, Debs and Goemans 2010). Goemans (2008) demonstrates leaders that obtain office through irregular means face a greater hazard of being removed from office than incumbents that rise to power through previously institutionalized channels. The dichotomous variable *Entry*, coded 1 if an incumbent rose to power in an irregular manner and 0 otherwise, therefore is included in the analysis.

The link between leadership survival and interstate war is central to many explanations of interstate conflict, particularly those focused on variation in the conflict behavior of democracies and non-democracies (among others, Fearon 1994, Bennett and Stam 1998, Reiter and Stam 2002, Bueno de Mesquita et al. 2003). There is no consensus, however, on the empirical relationship between interstate war and an incumbent's ability to retain office (for various perspectives see Bueno de Mesquita and Siverson 1995, Bueno de Mesquita et al. 2003, Chiozza and Goemans 2004, Goemans 2008, Debs and Goemans 2010). My initial analysis controls for three factors related to interstate war that are thought to influence political survival: a country's involvement in an *Interstate War* and whether it won (*Win War*) or lost (*Lose War*). The three war variables are based on data from Brecher and Wilkenfeld (1997). All control variables were taken from Goemans (2008).

Propositions 3 and 4 were tested using a semi-parametric Cox model extended to account for shared frailty among leaders of the same states and non-proportional hazards. The Cox model is preferable to parametric event history models (e.g., exponential, Weibull or Gompertz models) when the phenomenon of theoretical interest is the relationship between a set of covariates and the likelihood of a subject failing (Box-Steffensmeier and Jones 2004). As my substantive interest is how government spending influences a leader's prospects for survival and not the specific distributional form of leadership tenure, the Cox model is methodologically appropriate.

“Shared frailty” event history models are used to account for unobserved heterogeneity across sub-groups that makes subjects within group j more or less likely to fail than subjects in group \tilde{j} (Box-Steffensmeier and Jones 2004). Failure to account for systematic unobserved heterogeneity could lead to biased coefficient estimates and faulty inferences (Box-Steffensmeier and Jones 2004). It is likely the case that factors exist that would lead political leaders in different countries to survive in power for different lengths of time, even after including an extensive list of control variables in the model. A frailty term is included in the model to account for this variation in the likelihood of a leader losing office across countries. Formally, the frailty term ν is a random variable with a mean of 1 and variance of Θ and is drawn from the Gamma distribution. Conceptually, it is analogous to a random effect clustered on countries in the regression framework. Previously, Chiozza and Goemans (2004) and Goemans (2008) have used Cox models with shared frailty to model leadership survival.

In addition to incorporating the shared frailty among leaders of the same state over time, I extended the Cox model to account for non-proportional hazards. The Cox model rests upon the proportional hazards assumption, i.e. the influence of an explanatory variable on the hazard of a subject failing is constant over time (Cameron and Trivedi 2005, Box-Steffensmeier and Jones 2004). The coefficient estimates yielded by the Cox model are inconsistent and can result in faulty inferences if the effect of a covariate on the likelihood of failure changes over the life-spell of a subject. Analysis of the Schoenfeld residuals identified the presence of non-proportional hazards with the variables *Democracy*, *Health Care*, *Democracy*Health Care*, *GDP Growth* and *Entry*. Following Box-Steffensmeier and Zorn (2001) and Box-Steffensmeier and Jones (2004), the offending variables were interacted with the natural log of a leader’s tenure in office up to time t .

2.5 Empirical Results

The results of my empirical analysis is consistent with Propositions 3 and 4.¹² Before presenting the statistical results, two empirical relationships among the raw data are worth noting. First, autocratic incumbents typically stay in power longer than do democratic leaders, a pattern consistent with other work on leadership survival (Bueno de Mesquita et al. 2003, Chiozza and Goemans 2004). The mean tenures for autocratic and democratic leaders, respectively, are approximately 7 years and 4 months and 3 years and 5 months ($t = 27.71, p < 0.001$). Leadership tenure appears to follow a positively-skewed distribution across regime type as the median tenure for both autocratic (4 years and 4 months) and democratic (2 years and 3 months) incumbents is shorter than their respective mean tenures. Second, democratic leaders allocate significantly more resources to health care programs and fewer resources to the military than do autocratic incumbents, a finding consistent with Corollary 1 and extant research (*e.g.*, Huber, Mustillo and Stephens 2008, Fordham and Walker 2005). More precisely, *Health Care Spending* was significantly higher in democratic countries than it was in autocratic regimes (2.63% vs. 1.37%, $t = 29.40, p < 0.001$) while *Military Spending* was significantly greater in autocratic states than it was in democratic countries (3.24% vs. 2.72%, $t = 4.83, p < 0.001$).

Table 2.1 reports the coefficients and standard errors estimated by the Cox model. As such, positive coefficients indicate that higher values of an explanatory variable are associated with a leader facing a greater hazard of losing office while negative coefficients denote an inverse relationship between a covariate and an incumbent's hazard of being removed from power. Thus, positive and negative coefficients suggest that higher values of an explanatory variable are associated with a shorter and longer tenure in office, respectively. An interaction

¹²In addition to the analysis reported here and the models estimated without *Health Care Spending*, I estimated a set of models that included additional control variables (*e.g.*, population, obtaining a draw in a war), models on samples consisting solely of, respectively, democratic and autocratic countries, and models that did both of these things. The results were qualitatively similar to those presented in the manuscript.

with $\ln(t)$ signed in the opposite direction of the constituent term indicates a decay in the original effect over a leader's tenure.¹³

Table 2.1: Political Survival, Regime Type and Government Spending, 1960-1999

<i>Model 1</i>	β	s.e.
Democracy	6.56	0.71**
Democracy*ln(t)	-0.94	0.11**
Military Spending	0.00	0.02
Democracy*Military Spending	0.01	0.03
Health Care Spending	2.55	0.20**
Health Care Spending*ln(t)	-0.39	0.03**
Democracy*Health Care Spending	-2.74	0.27**
Democracy*Health Care Spending*ln(t)	0.42	0.04**
Interstate War	0.19	0.20
Win War	-1.21	0.71†
Lose War	1.17	0.38**
GDP Growth	6.73	3.17*
GDP Growth*ln(t)	-1.53	0.44**
Entry	5.62	0.41**
Entry*ln(t)	-0.82	0.06**
Observations	4,556	
Subjects	869	
Failures	764	
Log-Likelihood	-4,127.10	
χ^2	396.40	
Prob > χ^2	<0.01	
Θ	0.46	0.10**

Two-tailed: †: $p \leq 0.1$; *: $p \leq 0.05$; **: $p \leq 0.01$

Before discussing the effects of the explanatory variables on a leader's prospects for survival, recall that the frailty term ν was included in the analysis to account for any unobserved heterogeneity that would lead incumbents in different countries to have different hazard rates.

The statistically significant Θ indicates that non-trivial variation exists in the likelihood of

¹³For example, if the coefficient on *Health Care Spending* is positive, indicating that higher spending is associated with an autocratic incumbent facing a higher risk of being removed from office, a negative coefficient on *Health Care Spending*ln(t)* indicates that this greater hazard for an autocratic leader decreases the longer she remains in office.

a leader being removed from power across states. Extending the Cox model to account for shared frailty among countries therefore was methodologically appropriate. Examining the values of ν reveals that during the period from 1960 to 1999 King Hussein of Jordan enjoyed the greatest job security while whoever held the post of Prime Minister in Italy at any given point in time faced the greatest hazard of losing office.

Propositions 3 and 4 predict differences in the likelihood of democratic and autocratic leaders surviving in office given specific patterns of military and social spending. As such, it is impossible to assess their empirical accuracy using only the results in Table 2.1. The results, however, can speak to the “average” influence of the explanatory variables of interest on an incumbent’s likelihood of remaining office. Consistent with existing work on political survival (among others, Bueno de Mesquita et al. 2003, Chiozza and Goemans 2004), I find that democratic leaders face a greater hazard of losing office than do autocratic leaders. The negative and significant interaction between *Democracy* and the natural log of a leader’s time in office indicates that this autocratic advantage is decreasing in an incumbent’s tenure. Turning to the link between government spending and political survival, *Military Spending* has no significant, independent influence on the likelihood of a leader being removed from office, regardless of the type of government. *Health Care Spending*, however, has a differential affect on a leader’s prospects for survival across regime type: greater health care spending is associated with a significantly higher hazard of losing office for autocratic leaders and a lower hazard of losing office for democratic leaders. These effects are diminishing in a leader’s tenure though as the interaction terms *Health Care Spending*ln(t)* and *Democracy*Health Care Spending*ln(t)* are negative and positive, respectively.

The control variables included in the model behave as expected. Merely participating in an interstate war does not systematically increase or decrease an incumbent’s probability of survival; a result in line with the analyses of Chiozza and Goemans (2004) and Goemans (2008) but not Bueno de Mesquita and Siverson (1995) and Bueno de Mesquita et al. (2003).

The outcome of an interstate war, however, appears to exert a significant affect on a leader's likelihood of remaining in power. Compared to an incumbent whose country did not participate in an interstate war, a leader whose state was on the victorious side of an interstate war is significantly less likely to be removed from office. At the same time, an incumbent that oversaw a losing war effort is more likely to lose power than a leader whose country did not fight an interstate war. These results are consistent with Bueno de Mesquita and Siverson (1995), Bueno de Mesquita et al. (2003) and, to a lesser degree, Chiozza and Goemans (2004) and Goemans (2008).¹⁴ Consistent with Goemans (2008), leaders that came to power through irregular means (e.g., a coup) face a significantly greater hazard of losing office than incumbents that gained office through previously institutionalized channels. My analysis indicates that GDP growth increased a leader's hazard of losing office early in her tenure but that this effect diminished over time, a result consistent with Chiozza and Goemans (2004) and Debs and Goemans (2010).

Having discussed the average influence of both the theoretically interesting and control variables, I now turn to my tests of Propositions 3 and 4.

2.5.1 Political Survival, Government Spending and Regime Type

Proposition 3 predicts that democratic leaders are more likely to be removed from office than are autocratic incumbents given the combination of high military and low social spending. This expectation was assessed by calculating the respective predicted probabilities of survival for a democratic and an autocratic incumbent through the first five years of their tenure when 11.4% of GDP is allocated to military spending (i.e. 95th percentile) and 0.32%

¹⁴Chiozza and Goemans (2004), Goemans (2008) and Debs and Goemans (2010) examine how the outcome of interstate conflicts and war influences leadership survival across various types of democratic and non-democratic regimes. Their respective analyses of the effect of interstate war outcomes on political survival, consequently, are more nuanced than those presented here. Briefly, they find that the likelihood of a democratic leader losing office is unaffected by the outcome of an interstate war while autocrats are more likely to be removed from power if they lose a war.

of GDP is allocated to health care spending (i.e. 5th percentile). To check the robustness of my findings to the selection of this particular distribution of government resources, I calculated the probability of leader survival in democratic and autocratic regimes at other values of high military and low health care spending (i.e., maximum and minimum, 75th and 25th, 90th and 10th percentile). Using these alternative definitions of high military and low health care spending did not change the qualitative nature of the results presented here. The other explanatory variables in Model 1 were set to simulate the following scenario: a leader that gained power through the official institutions of her country and whose country was at peace, enjoyed mean GDP growth and had the mean population during the leader's entire tenure. The frailty term ν was set to simulate a state whose leader faces the mean likelihood of being removed from power.

Figure 2.3 illustrates the probability of a democratic executive (solid line) and an autocratic leader (dashed line) surviving up to five years in office given the combination of high military and low social spending.

Consistent with Proposition 3, the results presented in Figure 2.3 indicate that democratic leaders are more likely to be removed from office than are autocratic incumbents given a distribution of resources that consists of high military and low social spending. Specifically, an autocratic leader has an 82% chance of surviving the first year in office, a 63% chance of lasting two years and a 16% chance of holding on to power for five years. A democratic incumbent, however, is predicted to complete her first year of office 57% of the time, successfully hold on for a second year 37% of the time, and have an 11% chance of retaining office for five years. Framing these results in a comparative context, the combination of high military and low social spending results in autocratic leaders being 44%, 68% and 45% more likely to remain in office than a democratic incumbent for one, two and five years, respectively. Analysis of the predicted first differences indicates that autocrats are significantly more likely to retain office than are democratic leaders given high military and low social

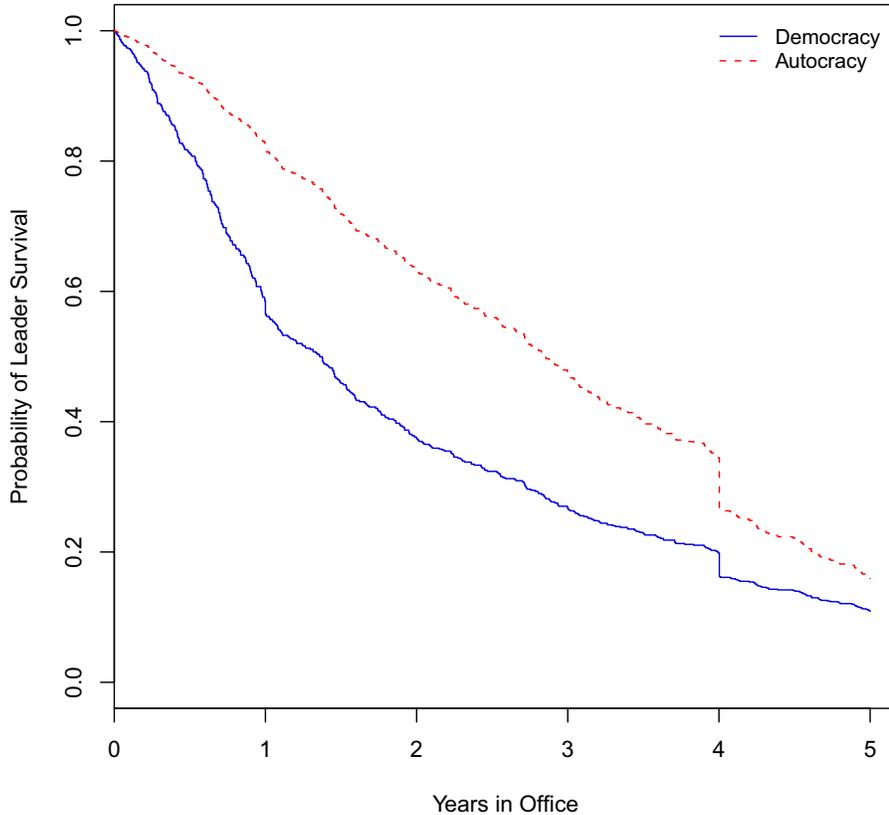


Figure 2.3: Probability of Leader Survival Given High Military and Low Social Spending

spending for about four years at the 0.10 level.¹⁵

Proposition 4 predicts that an autocratic leader is more likely to be removed from office by her winning coalition than is a democratic incumbent given the combination of low military spending and high social spending. This prediction was tested by calculating the predicted probabilities of survival for a democratic and an autocratic incumbent through the first five years of their tenure when 0.1% of GDP is allocated to military spending (i.e. 5th percentile)

¹⁵First differences and their associated confidence intervals were calculated by simulating the values of the predicted probabilities 10,000 times and taking the mean, 5th, and 95th percentile values. The directional nature of Propositions 3 and 4 make the 0.10 level, equivalent to the 0.05 level with one-tailed hypothesis testing, methodologically appropriate.

and 5.6% of GDP is allocated to health care spending (i.e. 95th percentile). I again checked the robustness of my analysis by calculating the predicted probabilities of leader survival at other high and low values of social and military spending (i.e., maximum and minimum, 75th and 25th, 90th and 10th percentile). As before, the qualitative nature of the results presented below were unchanged. Figure 2.4 presents the predicted probabilities of democratic and autocratic survival given low military and high social spending.

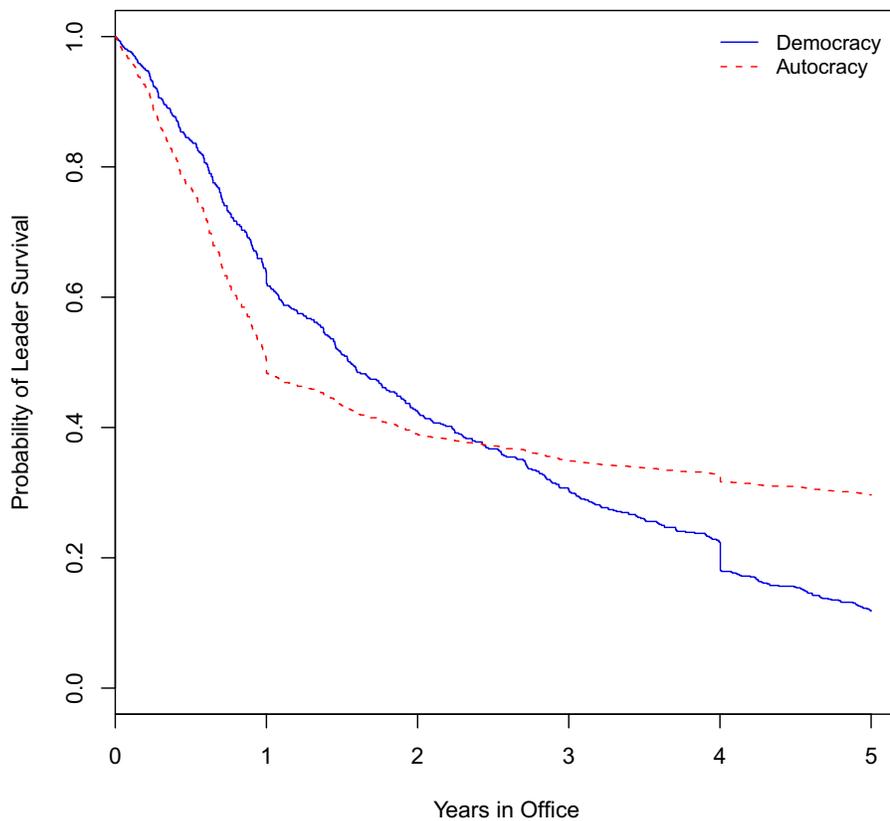


Figure 2.4: Probability of Leader Survival Given Low Military and High Social Spending

The results in Figure 2.4 indicate that empirical support for Proposition 4 is conditional on the length of time an incumbent has been in power. Consistent with Proposition 4,

relatively low military spending and high social spending results in democratic leaders having a higher probability of retaining office than autocratic incumbents for the first two years of their respective tenures (62% versus 48% and 42% versus 39%). A distribution of government resources with low military and high social expenditures is then predicted to result in a higher probability of political survival for autocratic incumbents than for democratic executives – 35% versus 30% in year three and 30% versus 12% in year five. Analysis of the first differences indicates that differences in political survival given low military and high social spending are statistically significant in the first and fifth years of a leader’s tenure; situations in which democratic leaders are, respectively, about 28% more and 60% less likely than autocratic incumbents to retain office. Figure 2.4, then, suggests that Proposition 4 accurately describes the relationship between leadership survival, resource distribution and regime type early in an incumbent’s tenure but not necessarily as a leader becomes entrenched in office.

Analysis of the predicted probabilities reveals two additional empirical relationships between the distribution of government resources and leadership survival in democratic and autocratic regimes. These relationships can be seen in Figure 2.5.

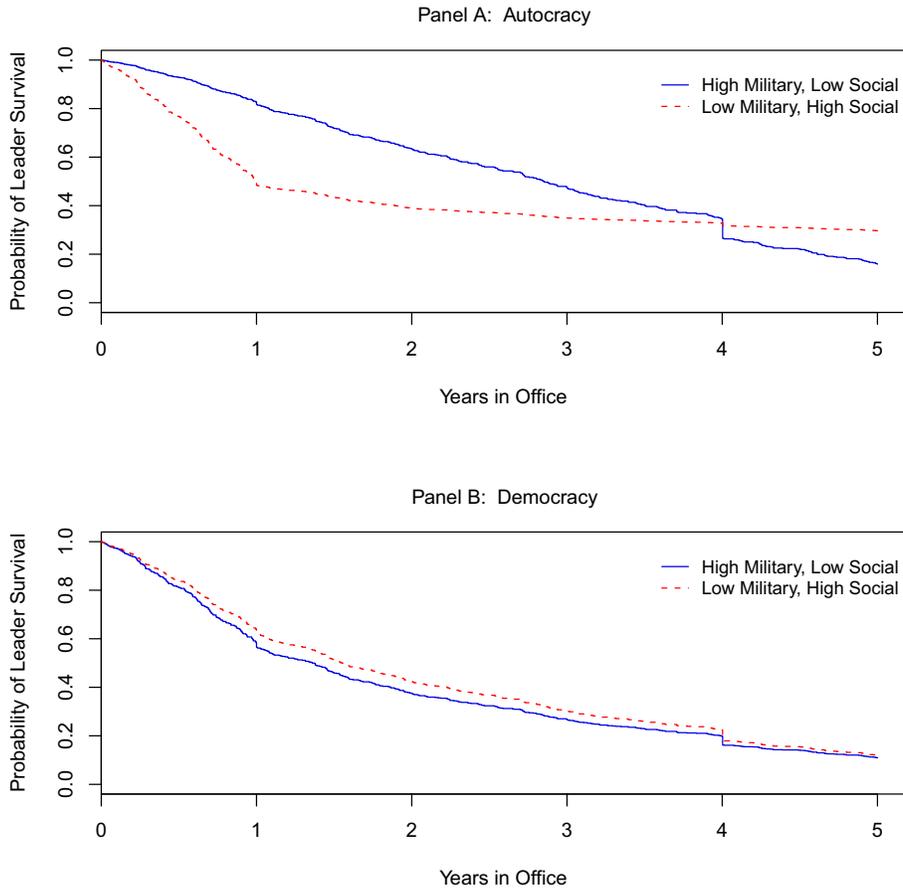


Figure 2.5: Probability of Leader Survival in Democracies and Autocracies

First, my analysis suggests that the combination of government spending that best secures an autocratic leader's survival varies during his tenure in office. From Panel A of Figure 2.5, an autocratic leader appears more likely to remain in power for the first four years of his tenure given high military and low social spending (solid line) but has a higher probability of retaining office in year five by allocating proportionately less military and more social spending (dashed line). Analysis of the first differences indicates that these relationships are significant in the first two years and the fifth year of an autocrat's tenure.

This empirical pattern has an interesting implication for both the primary threat to an

autocrat's power and the manner in which autocrats lose office. Recall that the elite have less incentive to remove an incumbent given high military and low social spending than do the public while the public has less incentive to remove their leader when she distributes high social and low military spending. As such, the results in Figure 2.5 suggest that the primary threat to an autocratic leader's political survival might lie with the elite early in his tenure and with the public the longer she remains in power. This suggests that autocrats might be more likely to be removed from office through a coup engineered by members of the elite early during their tenure and by a revolution or transition from below later in their tenure. Although verifying this claim is beyond the scope of this article, it is worth noting that this conjecture is consistent with Svoboda's (2009) formal analysis and empirical observation that the probability of a dictator losing office due to a coup is decreasing in his tenure.

Second, the results in Figure 2.5 suggest that resource distribution has a greater influence on the political survival prospects of autocratic leaders than it does for democratic executives. That is, the likelihood of an autocratic incumbent remaining in office appears to be more sensitive to the combination of military and social spending than is the probability of a democrat retaining power (Panel B). Compared to the case of high military and low health care spending, the move to low military and high health care spending increases the probability a democratic leader will survive in office for one, two and five years by 10%, 13% and 8%, respectively. This same change in spending patterns, however, is associated with an autocratic leader being 41% and 9% less likely to finish out their first and second years in office and 86% more likely to remain in office for five years. Further, the first differences in the probabilities of political survival are insignificant for democratic leaders but, as noted above, are significant in years one, two and five for autocrats. Thus, the political implications for resource distribution appear to be substantially more important for autocratic leaders than for democratic incumbents.

Why would the political survival of autocratic leaders be more sensitive to patterns of

government spending than the political survival of democratic incumbents? The answer to this question might be tied to the relationship between government spending and *how* democratic and autocratic leaders are removed from power. As Goemans (2008) notes, due to relatively stronger political institutions, democratic leaders typically lose office through regular means (e.g., losing an election or due to term limits) while non-democratic incumbents most often are removed from power in an irregular manner (e.g., a coup or a revolution). The model developed here tells us that a leader faces a higher probability of removal when his or her winning coalition is unhappy with the distribution of guns and butter. It is silent, though, on the mechanism by which this removal is accomplished. If a winning coalition is more likely to remove a leader through irregular means than through regularized channels when it is dissatisfied with how its leader is allocating resources – for instance the military removes a dictator through a coup rather than voting in an election when it is unhappy with military spending – then it follows that autocratic leaders should be more likely to lose office due to patterns of military and social spending than autocratic leaders. Further research is needed to investigate variation in the influence of government spending on the political survival of democrats and dictators.

2.6 Discussion and Conclusion

Arguably the most salient recent trend in international relations and comparative politics has been the increased theoretical and empirical focus on political leaders and the incentives and choices they face (among others, Fearon 1994, Przeworski et al. 2000, Goemans 2000, Bueno de Mesquita et al. 2003). The formal and empirical analysis presented in this article offers four significant contributions to this research program. First, it demonstrates the applicability of the policy responsiveness framework for understanding the relationship between political survival and policy outcomes across regime type. Counter to scholars that claim

policy responsiveness is purely a democratic phenomenon (Dahl 1971, Putnam 1993), the empirical analysis shows that both democratic and autocratic political leaders are more likely to retain office given patterns of government spending preferred by their winning coalitions.

Second, the article demonstrates the potential fruitfulness of allowing variation in the policy preferences of the members of a leader's winning coalition for understanding the relationship between political survival and policy outcomes. Two methodologically useful assumptions of selectorate theory are that all citizens hold the same policy preferences and that winning coalitions vary only in their absolute and relative size (Bueno de Mesquita et al. 2003). These assumptions imply that there is no logically consistent reason deduced from the selectorate model to expect policy variation across states whose winning coalitions are the same size. The framework utilized here predicts that which citizens get into an office-valuing incumbent's winning coalition will influence the substance of policy outcomes and the policies that best ensure a leader's political survival. While the model and empirical analysis in this article focused on variation across regime type, the underlying logic is applicable to a variety of other contexts (for example, variation in policy over time in democratic countries as the political parties in power alternate).

Third, the formal model suggests that relaxing the simplifying assumption that incumbents care only about retaining office can lead to counter-intuitive implications. By incorporating the observation that politicians have preferences over policy outcomes, the model presented here indicates that in equilibrium a *democratic* leader will completely ignore the wishes of her winning coalition and implement her ideal policy when she is motivated only by the substance of a particular policy. This result has two interesting implications. First, whether a democratic leader is more responsive to the wishes of her constituents than an autocratic incumbent depends on her motivation for enacting a given policy. Second, despite the frequent laments by enraged citizens about incumbents who care only about their own political careers, a self-serving politician concerned purely with retaining office is more likely

to implement policies popular with her constituents than an incumbent who feels strongly about the substance of the policies she implements.

Last, the findings presented here have implications for our understanding of the relationship between regime type and interstate conflict. The formal model predicts and the empirical analysis demonstrates that democratic leaders are more likely to be removed from office given high military and low social spending than are autocratic incumbents. Given finite resources and the observation that interstate conflicts and wars lead to greater military spending (Sandler and Hartley 1995, Goldsmith 2003), democratic incumbents are significantly more likely to be removed from office given the spending patterns associated with interstate conflict than are autocratic leaders. The political cost of mobilizing for conflict, therefore, likely varies across regime type. Office-valuing democratic incumbents then have a greater incentive to avoid costly interstate conflicts than do autocratic incumbents. Consequently, the formal and empirical analyses reported above provide a set of micro-foundations for the observations that democracies are significantly less likely to initiate interstate conflicts against substantially stronger opponents than are non-democracies (Reiter and Stam 2002, Bueno de Mesquita, Morrow, Siverson and Smith 2004) and the “selection effects” explanation of democratic success in interstate wars (Reiter and Stam 2002). Further research is needed to theoretically and empirically assess how the political consequences of resource distribution influence the interstate conflict behavior of democracies and autocracies. The next chapter does just that by examining how the change in patterns of social and military spending associated with economic mobilization conditions the crisis bargaining incentives for autocratic and democratic leaders.

Chapter 3

Leader Incentives for Conflict

Selection and Mobilization

Much of the quantitative research on interstate conflict conducted during the last twenty-five years has focused on the influence of domestic politics on conflict behavior. The most common conclusion of this scholarship is that domestic politics, and democratic political institutions in particular, effect the prosecution of interstate conflict. Three of the most widely accepted conclusions of this literature are that pairs of democracies are less likely to fight one another than are pairs of autocracies or mixed dyads (Maoz and Russett 1993), democracies are more selective in choosing their opponents in a conflict than are autocracies (Bueno de Mesquita et al. 1999), and democracies win a higher percentage of the wars they fight than do autocracies (Reiter and Stam 2002). The institutional explanations of these empirical patterns and other differences between democratic and autocratic conflict behavior generally assume that, compared to non-democratic leaders, democratic incumbents are more likely to be removed from office for involving their country in an interstate war (e.g., Reiter and Stam 2002) and/or losing an interstate war (e.g., Bueno de Mesquita et al. 1999). Unfortunately, the tenure of democratic leaders is not more sensitive to participation in an

interstate war or interstate war outcomes than is the tenure of non-democratic incumbents (Chiozza and Goemans 2004, Debs and Goemans 2010). Thus, our theoretical explanations for why democracies and autocracies pursue different conflict policies follow from faulty premises.

This essay argues that differences in the conflict behavior of democracies and autocracies can be explained by variation across regime type in a previously overlooked aspect of the conflict process – the political cost of mobilization. The economic resources a political leader needs to allocate to his or her state’s military are greater during an interstate conflict or war than they are during peace-time. This proportional increase in military spending, and the accompanying decrease in non-military spending, during war-time represents a country’s economic mobilization for war (Sandler and Hartley 1995, Anderton and Carter 2009). The political cost of mobilization refers to how the higher military spending and lower non-military spending associated with the prosecution of an interstate war affects an incumbent leader’s political survival.

For the political cost of mobilization to explain variation in democratic and autocratic interstate conflict behavior, it must be the case that the political cost of mobilization varies across regime type and influences the conflict process. I argue that variation across regime type in the political power of the public and elite in society makes mobilization relatively more costly for democratic leaders than it is for autocratic leaders. Duration analysis is consistent with this claim: the increase in military spending and decrease in social spending associated with an interstate war increases the probability a democratic incumbent will be removed from office but not the probability that an autocrat will lose power. In order to understand the strategic implications of this variation in the political cost of mobilization across regime type for interstate conflict processes, I develop a crisis bargaining model in which two political leaders bargain over a contentious issue, upon failure to reach a peaceful settlement leaders can improve their chances of winning a militarized conflict by mobilizing

their country's resources, and democratic leaders pay a higher political cost for mobilization than do autocratic leaders. In addition to offering a rational explanation for some of the known empirical regularities from the literature on regime type and interstate conflict (e.g., the democratic peace), the model yields novel predictions related to patterns of democratic and autocratic conflict selection and mobilization. To demonstrate the model's predictive power, I test its prediction that democracies should be more selective in reciprocating challenges than autocracies; that is, compared to autocracies, democracies should be increasingly more likely to back down as a challenger possess more of the total dyadic resources. Quantitative analysis of the period from 1950 to 2001 is consistent with the model's prediction that democratic targets are more selective in reciprocating than are autocratic targets.

The remainder of this chapter proceeds in six sections. The first discusses the prominence of the assumption that democratic leaders are more likely to be punished for fighting and losing interstate wars than are non-democratic incumbents, and the evidence that this claim is empirically unsupported. I then discuss the role of mobilization in the conflict process and demonstrate that its political cost is greater for democratic incumbents than for autocrats. The third section introduces and solves the formal model while the fourth derives the model's empirical implications for the relationship between regime type and interstate conflict. I then test the model's prediction that democratic targets are relatively more selective in reciprocating the challenges of stronger opponents than are autocratic targets. The sixth section concludes.

3.1 Regime Type, Interstate Conflict, and Leader Survival

The literature on the relationship between regime type and interstate conflict has yielded numerous empirical findings. The institutional explanations for these results often have two things in common. The first is that democratic and non-democratic political institutions provide leaders with different incentives to participate in interstate conflicts and/or mobilize resources for waging interstate conflict. The second is that institutional explanations for variation in democratic and autocratic conflict behavior often follow from one of two assumptions: 1) democratic leaders are more likely to lose office for participating in an interstate conflict or war than are autocratic leaders; or 2) democratic leaders are more likely to lose office for losing an interstate conflict or war than are autocratic leaders. A review of the massive domestic politics and conflict research program is far beyond the scope of this chapter. However, a brief look at some of the influential explanations for three of the more robust findings of this literature demonstrates the prevalence of these two characteristics.¹

Within the vast literature on regime type and interstate conflict, three empirical findings seem particularly robust. The first is the democratic peace. Prominently identified by Levy (1988) as the closest thing there is to a “law of international relations,” the dyadic democratic peace refers to the observation that democracies are less likely to fight one another than are other pairs of states (Babst 1964, Maoz and Russett 1993).² Several institutional

¹This is not to say that all institutional explanations for variation in the conflict behavior of democracies and non-democracies focus on incentives for selection and/or mobilization or follow from the assumptions that the tenure of democratic leaders is relatively more sensitive to conflict involvement or outcomes. For example, Morgan and Campbell (1991) argue that the relatively greater decisional constraints placed on democratic leaders explain why democracies are less likely to have conflicts escalate to war than are non-democracies. Considering another example, Debs and Goemans (2010) develop a formal model that predicts, among other things, the democratic peace. Their model is noteworthy because it assumes that the tenure of *autocratic* leaders is more sensitive to war outcomes than is the tenure of democratic leaders.

²It should be noted that not all scholars agree that joint democracy is associated with a lack of militarized conflict and/or war between countries. For example, Gowa (1999) argues that an alignment of interests during the Cold War explains the relative peace between democracies, Gartzke (2007) argues that capitalism

explanations for the democratic peace focus on the relative sensitivity of democratic and autocratic leaders to interstate war participation and outcomes. For example, Schultz (2001*a*) argues that media freedom and the presence of a strategic opposition in democracies make it more likely that democratic leaders will be punished for losing a war than will autocratic leaders. He then develops a set of formal models that predict, among other things, that democracies should be less likely to initiate a militarized conflict or reciprocate when targeted in a dispute. It then follows that pairs of democracies should be less likely to fight one another than other pairs of states. Although not the only two mechanisms they posit, Russett and Oneal (2001) argue that the democratic leg of the Kantian Triangle is partially a function of the greater sensitivity of democratic leaders to both the cost of war and a negative conflict outcome. Jackson and Morelli (2007) argue that the democratic peace follows from democratic leaders having a smaller political bias toward war than autocratic leaders and cite the greater sensitivity of democratic leaders to fighting a war and losing a war as two sources of this bias.

A second robust finding of the literature on regime type and interstate conflict is that democracies are more selective in choosing their conflict opponents than are autocracies (e.g., Clark and Reed 2003). That is, scholars have demonstrated that democratic countries are less likely than autocratic countries to initiate interstate conflicts and wars in which they face a relatively high probability of losing (Reiter and Stam 1998, 2002) or their opponent possesses relatively more material capabilities (Buono de Mesquita et al. 2004, Bak and Palmer N.d.). Reiter and Stam (1998, 2002) argue that democratic leaders are more careful than autocratic leaders when selecting interstate conflicts because democratic leaders are more likely to be punished for making their citizens fight a war than are dictators.³ Similarly, Filson and

underlies the liberal peace, and Henderson (2002) argues that the democratic peace is limited to wealthy, Western countries. However, Dafoe (2011) demonstrates that the negative correlational relationship between joint democracy and interstate conflict is robust to these and other recent critiques of the dyadic democratic peace.

³Reiter and Stam alternatively argue that democratic leaders are more risk averse in selecting conflicts

Werner (2004) develop a bargaining model that predicts democracies should be less likely than non-democracies to initiate conflicts against stronger opponents because democratic leaders are relatively more sensitive to the political costs of war.

A third result generally agreed upon by conflict scholars is that democracies are more likely to win the interstate wars they fight than are autocracies (Lake 1992, Clark and Reed 2003).⁴ There are two prominent explanations for this finding. First, democratic selectivity allows democratic initiators to systematically fight “easier” wars than their autocratic counterparts (among others, Reiter and Stam 2002, Filson and Werner 2004). As noted above, these arguments follow from the assumptions that democratic leaders are more likely to face punishment for fighting or losing an interstate war. A second explanation for democratic success in interstate wars is that democracies are able to mobilize more resources for a war effort than are non-democracies (Lake 1992, Schultz and Weingast 2003). Drawing on Schultz (2001*a*), Goldsmith (2007) argues that the existence of opposition parties in democracies provides democratic incumbents with an incentive to mobilize more resources for war absent for non-democratic leaders. Specifically, citizens in a democracy, but not in an autocracy, can punish an incumbent that fails to allocate the resources necessary for a winning war effort by voting for a leader’s political opposition in the next free-and-fair election.

than are autocratic leaders because their hold on office is more tenuous in general (1998) and because they must govern with the consent of the people to a significantly greater degree (2002). These different logics both lead to the conclusion that a democratic leader faces a higher probability of losing office for becoming involved in a war.

⁴There have been two recent challenges to this result. First, Desch (2003, 2008) questions this conclusion of the so-called “democratic triumphalism” literature and argues that democracies are no more or less likely to win “fair fights” against equally strong opponents than are non-democracies. Desch’s argument, however, ignores the point that one of the reasons democracies are thought to win wars is precisely because they avoid strong opponents. See Lake (2003) and Reiter and Stam (2003) for more in-depth critiques of the logic and methodology underlying Desch’s conclusion. Second, Downes (2009) re-analyzes Reiter and Stam’s (2002) data and finds that democracies are no more or less likely to win wars than are non-democracies if one includes wars that ended in draws and non-originator participants are re-coded as joiners. Downes (2009), however, fails to explicitly account for the non-random population of interstate war participants. Using an ordered probit selection estimator that can account for draws and the non-random population of war participants, Carter, Bernhard and Palmer (N.d.) find that democratic initiators and targets are significantly more likely to achieve more positive war outcomes than are non-democratic initiators or targets.

The selectorate theory of Bueno de Mesquita and colleagues (1999, 2003) offers a unified explanation of the democratic peace, democratic selectivity, and democratic war success. Following from the assumption that democratic leaders are more likely to be removed from power after losing an interstate war than are autocrats,⁵ selectorate theory argues that democratic incumbents should be more selective in becoming involved in interstate conflicts than autocratic leaders. Therefore, all else equal, pairs of democracies should be less likely to fight than either jointly autocratic dyads or mixed dyads. Further, conditional on their involvement in an interstate war, democratic leaders have a greater incentive to mobilize scarce resources for a war effort than do autocratic incumbents because democrats are more likely to be punished for losing a war. It therefore follows that democracies should achieve more successful war outcomes than autocracies because, relative to autocratic countries, democracies are better at selecting themselves out of wars they might lose and they will mobilize more resources in order to win the wars they do fight. In sum, selectorate theory argues that the greater sensitivity of democratic leaders to interstate war outcomes explains the democratic peace, democratic selectivity, and democratic interstate war success by altering the relative incentive democratic and autocratic leaders have for conflict selection and mobilization.

3.1.1 The Empirical Relationship

The above discussion makes clear that many of our prominent explanations for the democratic peace, democratic conflict selectivity, and democratic success in interstate wars assume that democratic leaders are more likely to be removed from power for participating in an interstate war or losing an interstate war. Unfortunately, the empirical basis for these assumption is tenuous at best. As Debs and Goemans (2010) note, scholars most often cite the results of Bueno de Mesquita and Siverson (1995) as empirical justification for these

⁵The logic behind this assumption is that winning a war is a type of public good, and democratic leaders are more likely to be removed from office for failing to provide public goods than are autocratic leaders.

assumptions. However, the inference that democratic leaders are more likely to lose office after losing an interstate conflict does not follow from the analysis of Bueno de Mesquita and Siverson (1995). They instead show that the unconditional probability of being removed from power is greater for a democratic leader than it is for a non-democratic incumbent. Bueno de Mesquita and Siverson are silent, however, on the crucial question of how political survival differs across regime type conditional on the outcome of an interstate war.⁶

Two recent articles have explicitly examined the empirical relationship between political survival, interstate war, and regime type. Chiozza and Goemans (2004) report that the probability of an incumbent retaining office is statistically unrelated to her country's involvement in an interstate war as either the initiator or challenger. With respect to the link between war outcomes and political survival, the analyses of Chiozza and Goemans (2004) and Debs and Goemans (2010) suggest the assumption that democratic leaders are more likely to be punished for losing an interstate war than are autocratic incumbents is significantly misguided. They find that the tenure of *autocratic* leaders is more sensitive to interstate war outcomes than is the political survival of democratic leaders. Their analyses indicate that the probability a democratic incumbent will be removed from office is not significantly affected by her country's performance in an interstate war. Non-democratic incumbents, however, are rewarded with a lower probability of losing office upon winning an interstate war and are punished with a higher probability of removal from power after losing a war (Chiozza and Goemans 2004, Debs and Goemans 2010).

It is possible that strategic behavior on the part of leaders might obscure the true relationship between political survival, regime type, and conflict outcomes. Schultz (2001*b*) argues that political leaders have an incentive to not participate in interstate wars in which a losing effort would see them removed from power. Subsequently, the wars we observe are disproportionately drawn from the non-random sample of the wars for which leaders would

⁶Interested readers are directed to Debs and Goemans (2010) for a more in-depth discussion of this issue.

not lose power even if their states performed poorly. If a leader's ability to identify which wars fall into this non-random sample of conflicts is a function of regime type, then statistical analyses would not capture the true data generating process. More precisely, if all leaders are more likely to lose office if they lose an interstate war and democratic leaders are more successful than autocratic leaders at avoiding wars in which a losing effort would result in an incumbent losing power, then duration analysis would indicate that losing an interstate war lowers an autocrat's probability of retaining office but not a democratic leader's probability of retaining office. Thus, it is possible that a strategic selection process might be obscuring the true relationship between political survival and interstate conflict outcomes across regime type.⁷

To sum up the preceding discussion, there is no systematic support for the common assumptions that democratic leaders are more likely to be removed from power than autocratic leaders for either participating in an interstate war or losing an interstate war. Thus, a number of our influential explanations for the democratic peace, democratic selectivity, and the success of democracies in interstate wars rely on empirically untenable assumptions. The next section identifies a previously overlooked factor that might provide an explanation for these findings and other differences in the conflict behavior of democracies and autocracies.

3.2 The Political Cost of Mobilization

Interstate conflicts and wars are costly. Setting aside the inherent fatalities, a state's participation in an interstate conflict or war inevitably results in its government increasing the economic resources allocated to the military (*e.g.*, Hewitt 1992, Sandler and Hartley 1995,

⁷It should be noted that Debs and Goemans (2010) raise two critiques to Schultz's (2001*b*) argument that strategic selection can explain why we might not observe democratic leaders being punished for losing wars. First, why is it the case that democratic leaders are able to avoid wars in which losing decreases the probability they will be removed from office but not select wars in which winning increases their expected tenure? Second, it is unclear why democratic leaders should be able to strategically choose wars that will not endanger their political survival but autocratic incumbents cannot.

Goldsmith 2003, Bueno de Mesquita et al. 2003, Fordham and Walker 2005). The difference between a country's allocation of economic resources to military spending during times of peace and war represents a state's economic mobilization for war (Goldsmith 2007, Anderton and Carter 2009). It is instructive to consider the degree to which mobilization for war influences a country's defense burden (i.e., military spending/GDP). Countries fighting in an interstate war allocated, on average, 6.69% of their annual gross domestic product to military spending while countries at peace spent only 2.59% of their annual GDP on the military between 1816 and 1998 (This difference is statistically significant at greater than the 0.01 level).⁸ Framed differently, the average, national defense burden has been 159% higher during war-time than during peace-time. Economic mobilization for war, therefore, is associated with countries allocating significantly more of their economic resources to the military.

Scholars have argued that mobilization affects the interstate conflict process in two ways. First, as one might expect, mobilization increases the probability a country will win an interstate war (Organski and Kugler 1980, Kugler and Domke 1986, Stam 1996, Bueno de Mesquita et al. 1999, Goldsmith 2007).⁹ This is not to say that mobilization is the only or even the most important factor in determining a war's outcome, e.g., see Stam (1996) for the importance of strategy and its interaction with terrain, but merely that countries are more likely to achieve better outcomes the more of their available resources they dedicate to fighting. Second, crisis bargaining theorists argue that mobilization can influence the onset

⁸These figures are based on data from Fordham and Walker (2005).

⁹Two points are worth noting. First, Organski and Kugler (1980) and Kugler and Domke (1986) do not look at a state's economic mobilization per se, rather they define effort in terms of a state's relative political capacity and total resources. Second, mobilization is not the same as capabilities. Indeed some of the scholarship on the relationship between mobilization and war outcomes has been motivated by the desire to improve upon predictions of war outcomes based on the naive balance of capabilities (Organski and Kugler 1980, pgs. 66-67). It is possible (and arguably common) that states fewer total resources mobilize their available resources to a greater degree than do states with greater total resources. For instance, consider the relative degree to which North Vietnam and the United States allocated their available resources to waging the Vietnam War.

and escalation of an international conflict by serving as a costly signal of a state's resolve (Schelling 1960, Fearon 1997) and/or altering a conflict's probabilistic outcome (Slantchev 2005, Arena N.d.). The existing literature, however, largely ignores the political cost of mobilization and its implications for the interstate conflict process.

The political cost of mobilization refers to how a country's mobilization for interstate war affects an incumbent leader's political survival. Mobilization for war, as the term is used here, refers to the increase in the economic resources allocated to the military associated with the prosecution of an interstate war. Resource scarcity necessitates that the increase in military spending associated with mobilization be met with a complementary decrease in the resources allocated to non-military, and in particular social, programs (Sandler and Hartley 1995, Anderton and Carter 2009).¹⁰ Mobilization for interstate war, therefore, requires leaders to engage in the classic guns-and-butter trade-off. Thus, at a basic level mobilization for interstate war alters the distribution of government resources between military and non-military spending. The political cost of mobilization then refers to how the increase in military spending and decrease in non-military spending associated with mobilization for interstate war affects a leader's ability to stay in power.

For the political cost of mobilization to influence the relationship between regime type and interstate conflict, it must be the case that democratic and autocratic leaders pay different political costs for mobilizing. To my knowledge, selectorate theory (Buono de Mesquita et al. 1999, 2003, 2004) is the only existing piece of scholarship that explicitly considers the political cost of mobilization across regime type. Buono de Mesquita et al. argue that economic mobilization for war should be relatively more costly for autocratic leaders than for democratic leaders. The logic behind this claim rests upon three points. The first is the selectorate model's key formal result: the political survival of a democratic

¹⁰Mobilization for war can usefully be thought of as an opportunity cost for a government's political leaders: the resources necessary to prosecute an interstate war would have been directed at other purposes absent a state's participation in a war.

leader is more efficiently secured with relatively more public goods and fewer private benefits than is the political survival of an autocratic leader (Bueno de Mesquita et al. 1999, 2003). The second is the assumption that all of the resources not spent on mobilization are then distributed to a leader's winning coalition in the form of private benefits (2003, pgs. 233, 266). Third, selectorate theory assumes that winning an interstate war is a public good (2003, pg. 266). From these three points, it follows that mobilization is relatively more politically costly for autocratic leaders because the resources mobilized in the pursuit of the public good of a winning war effort otherwise could have been distributed as private benefits. Put differently, mobilization increases the probability an autocratic leader will lose office because it decreases the resources available for private benefits but mobilization does not threaten the political survival of democratic leaders because it does not decrease the resources available for the provision of public goods. Thus, selectorate theory argues that the political cost of mobilization should be higher for autocratic leaders than democratic leaders.

In contrast to selectorate theory, I argue that mobilization for interstate war should be more politically costly for democratic leaders than autocratic leaders. The logic behind this claim follows from four factors: the relative political influence of the public, civilian elite, and military across regime type; the relative preferences over government spending of those three societal groups; the distribution of government resources associated with mobilization for interstate war; and the relationship between political survival and policy responsiveness. As Dahl (1971), Acemoglu and Robinson (2006), and others argue, we can distinguish between democratic and non-democratic governments by the relative political power of the public and elite – defined here as consisting of the wealthy civilian elite and military. Specifically, members of the public have relatively more political power and influence *vis-à-vis* the elite in a democracy than they do in an autocracy.¹¹

¹¹That is not to say that the relative political power of each societal group does not vary within each type

Variation in the political power of the public and elite in democracies and autocracies has implications for the political cost of mobilization across regime type because members of each societal group have incentives to prefer different patterns of government spending. Members of the general public derive relatively greater benefits from proportionately higher social spending and lower military spending than do the civilian elite and military. Why would this be? Consider first the spending preferences of the public relative to those of the civilian elite. The public should prefer proportionately higher social and lower military spending than the civilian elite for two reasons. First, the public derives more direct benefits from social spending than do the wealthy civilian elite, whom can provide themselves with the services that the general public receives via the welfare state (*e.g.*, education, health care, food subsidies).¹² Second, spending on social programs typically are financed through taxes on the wealth of the civilian elite (Przeworski et al. 2000, Boix 2003). Thus, the civilian elite bear the brunt of the costs of the social welfare state while deriving relatively fewer benefits than members of the general public. As both groups benefit from the military spending required to provide the public good of national defense (Olson and Zeckhauser 1968), it follows that the general public would prefer a government allocate proportionately more of its resources to social spending than the civilian elite.

With respect to members of the military, the public has three reasons to prefer proportionately higher social spending and lower military spending. First, members of a nation's armed forces rely directly on military spending for their livelihoods. Second, military training socializes members of the military to value a strong armed forces and favor high military spending (Nordlinger 1977, Geddes 2003). Third, scarcity implies that higher military spend-

of regime (*e.g.*, parliamentary vs. presidential democracy, or military junta vs. personalistic dictatorship), merely that the relative political power of the public and elite is systematically different in democracies than it is in non-democracies.

¹²Of course, members of the civilian elite do derive some benefits from social spending. In particular, the elite would benefit from some of the long-term consequences of increased social spending, such as an educated and healthier workforce. That said, it is members of the public, and not the elite, that would be better educated, healthier and have a longer life-expectancy due to government spending on social programs.

ing crowds out the resources available to a government for social spending popular with the general public (Sprout and Sprout 1968, Garfinkel 1994, Fordham and Walker 2005). It therefore follows that the general public should prefer relatively lower military spending and higher social spending than members of the military.

Members of the general public then have incentives to prefer proportionately higher social spending and lower military spending than members of both the civilian elite and military. From the discussion above, economic mobilization for war increases the proportion of a government's resources allocated to the military. Given scarce resources, mobilization for war also implies a complementary reduction in the economic resources a government can allocate to non-military spending (Sandler and Hartley 1995, Anderton and Carter 2009). Notably, this reduction includes spending on social programs favored by the general public (Sprout and Sprout 1968). For example, from 1960 to 1999 countries allocated, on average, 24.9% fewer of their economic resources to health care spending during war-time than during times of peace (1.97% annual GDP during peace-time vs. 1.48% annual GDP during war-time per Kugler (2002)). As incumbent politicians retain office by responding to the preferences of their key constituents (Key 1961, Canes-Wrone, Brady and Cogan 2002, Burstein 2003), it follows that office-valuing democratic incumbents are more likely than autocratic incumbents to be removed from office if they enact policies that run counter to the preferences of the public. Because the public prefers relatively lower military spending and higher social spending than the elite and mobilization for war is associated with higher military spending and lower social spending, the variation in the political power of the public and elite across regime type should result in the political cost of mobilization being higher for democratic leaders than autocratic leaders.

3.2.1 Estimating the Political Cost of Mobilization across Regime Type

We therefore have two competing expectations about the relationship between leadership survival, regime type, and economic mobilization for war. I argue that the increase in military spending and decrease in social spending associated with mobilization should make it relatively more costly for democratic leaders. In contrast, selectorate theory (Buono de Mesquita et al. 1999, 2003) argues that mobilization should be more likely to result in autocratic leaders losing office than democratic incumbents. Ultimately, whether democratic or autocratic incumbents pay a higher political cost for mobilizing is an empirical question. Accordingly, I estimate the relationship between leadership survival, regime type, and mobilization for interstate war using a semi-parametric Cox model. The data set contains 4,488 leader-year observations (863 leaders from 103 countries) from 1960 to 1999.¹³ The dependent variable is the number of days a leader had been in power and is based on data from the *Archigos* project (Goemans, Gleditsch and Chiozza 2009).

The following explanatory variables are included in the model.¹⁴ I use a dichotomous measure of a country's regime type. *Democracy* is coded 1 in year t if a leader's government has a value of +7 on the 21-point *Polity2* index (Marshall and Jaggers 2005) and 0 otherwise.¹⁵ *Military Spending* is operationalized as the percent of a country's nominal gross domestic product (GDP) allocated to the military in year t . I standardize a state's military over GDP in order to account for the significant variation in the gross levels of government spending across countries. Military expenditure data are taken from the Na-

¹³Leaders who left office due to a natural death were removed from the data set. I thank Joe Wright for this suggestion.

¹⁴With the exception of the variables measuring government spending, all explanatory variables were taken from the Replication Material associated with Goemans (2008): <http://www.rochester.edu/college/faculty/hgoemans/research.htm>.

¹⁵The analyses presented below were re-estimated using +6 on the *Polity2* index as the cut-point for *Democracy*. The results led to the same substantive inferences presented below.

tional Material Capabilities data set Singer, Bremer and Stuckey (1972) and GDP data are taken from Gleditsch (2002). The interaction term *Democracy*Military Spending* is used to model the differential effects of military spending on the prospects of leadership survival across regime type. The variable *Health Care Spending*, measured as the percent of a state's nominal GDP allocated to health care in year t , is used to proxy a government's social spending. Variation in the effect of social spending on leadership survival across regime type is modeled using the interaction term *Democracy*Health Care Spending*. The dichotomous variable *Interstate War* is coded 1 if a leader's country is involved in an interstate war and 0 otherwise and is based on data from the International Crisis Behavior (ICB) project (Brecher and Wilkenfeld 1997). To identify how interstate war conditions the effect of regime type and government spending on leadership survival, the following interaction terms are included in the model: *Democracy*Interstate War*, *Military Spending*Interstate War*, *Health Care Spending*Interstate War*, *Democracy*Military Spending*Interstate War*, and *Democracy*Health Care Spending*Interstate War*. Considered jointly, these explanatory variables allow us to assess how the changes in government spending associated with mobilization for war influence the political survival of democratic and autocratic leaders.

In addition to the variables of theoretical interest, a number of factors that have been shown to affect political survival are included in the statistical model. A state's annual *GDP Growth* (Heston, Summers and Aten 2006) is controlled for as it alternatively has been shown to decrease a leader's hazard of losing office (Bueno de Mesquita et al. 2003), increase a leader's hazard of losing office (Goemans 2008) and initially increase a leader's hazard of losing office but with the effect diminishing significantly in the length of tenure (Chiozza and Goemans 2004, Debs and Goemans 2010). Goemans (2008) demonstrates leaders that obtain office through irregular means face a greater hazard of being removed from office than incumbents that rise to power through the previously institutionalized channels of their country. The dichotomous variable *Irregular Entry*, coded 1 if an in-

cumbent came to power in an irregular manner and θ otherwise, therefore is included in the analysis. I control for a state's involvement in a *Civil War* in a given year with a dichotomous indicator based on the UCDP/PRIO Armed Conflict Database (Gleditsch, Wallensteen, Erikson, Sollenberg and Strand 2002). I control for war outcomes using a set of variables that indicate whether the leader's country was victorious (*Win War*), vanquished (*Lose War*), or obtained a draw (*Draw War*) in an interstate war during a leader's tenure. Each variable is modeled as a decay function of $War\ Outcome = \frac{1}{1+t}$, where $War\ Outcome \in \{Win\ War, Draw\ War, Lose\ War\}$ and t stands for the number of years since the given outcome was achieved.¹⁶

The relationship between leadership survival and mobilization for war across regime type was tested using a semi-parametric Cox model. The Cox model is preferable to parametric event history models (e.g., exponential, Weibull or Gompertz models) when the phenomenon of theoretical interest is the relationship between a set of covariates and the likelihood of a subject failing and not the distributional form of subject failure (Box-Steffensmeier and Jones 2004). As my substantive interest is how leadership survival varies as a function of the interaction between government spending, interstate war, and regime type, the Cox model is methodologically appropriate.

I extend the standard Cox model to account for shared frailty among leaders of the same state and non-proportional hazards. "Shared frailty" event history models are used to account for unobserved heterogeneity across sub-groups that makes subjects within group j more or less likely to fail than subjects in group \tilde{j} (Box-Steffensmeier and Jones 2004). Failure to account for systematic unobserved heterogeneity could lead to biased coefficient estimates and faulty inferences (Box-Steffensmeier and Jones 2004). It is likely the case that factors exist that would lead political leaders in different countries to survive in power

¹⁶For example, if a leader oversaw a winning war effort in year t *Win War* takes on a value of 1 in year t , 0.5 in $t + 1$, 0.333 in $t + 2$, etc.

for different lengths of time, even after including an extensive list of control variables in the model. A frailty term is included in the model to account for this variation in the likelihood of a leader losing office across countries. Formally, the frailty term ν is a random variable with a mean of 1 and variance of Θ and is drawn from the Gamma distribution. It is conceptually analogous to a random effect clustered on countries in the regression framework. Chiozza and Goemans (2004), Goemans (2008), and Debs and Goemans (2010) have used Cox models with shared frailty to model leadership survival.

The duration model estimated here also accounts for non-proportional hazards between covariates and leader survival. The Cox model rests upon the proportional hazards assumption, i.e. the influence of an explanatory variable on the hazard of a subject failing is constant over time (Cameron and Trivedi 2005, Box-Steffensmeier and Jones 2004). The coefficient estimates yielded by the Cox model are inconsistent and can result in faulty inferences if the effect of a covariate on the likelihood of failure changes over the life-spell of a subject. Analysis of the Schoenfeld residuals identified the presence of non-proportional hazards with the variables *Democracy*, *Military Spending*, *Health Care Spending*, *Democracy*Health Care Spending*, *Health Care Spending*Interstate War*, *GDP Growth*, *Irregular Entry*, and *Civil War*. Following Box-Steffensmeier and Zorn (2001) and Box-Steffensmeier and Jones (2004), the non-proportional hazards were corrected by interacting the offending variables with the natural log of a leader's tenure in office up to time t . The results of my analysis are reported in Table 3.1.

Three points are worth noting before discussing the results. First, positive coefficients indicate that higher values of an explanatory variable are associated with a leader facing a greater hazard of losing office while negative coefficients denote an inverse relationship between a covariate and an incumbent's hazard of being removed from power. Thus, positive and negative coefficients suggest that higher values of an explanatory variable are associated with a shorter and longer tenure in office, respectively. Second, an interaction with $\ln(t)$

Table 3.1: Leadership Survival, Regime Type, and Mobilization for War, 1960-1999

<i>Dependent Variable: Days in Office</i>	β	s.e.
Democracy	6.24	0.76**
Democracy*ln(t)	-0.92	0.11**
Military Spending	0.45	0.07**
Military Spending*ln(t)	-0.07	0.01**
Democracy*Military Spending	0.04	0.03
Health Care Spending	2.69	0.21**
Health Care Spending*ln(t)	-0.42	0.04**
Democracy*Health Care Spending	-2.93	0.29**
Democracy*Health Care Spending*ln(t)	0.46	0.04**
Interstate War	-0.58	0.66
Democracy*Interstate War	1.63	1.76
Military Spending*Interstate War	0.04	0.11
Democracy*Military Spending*Interstate War	-0.05	0.13
Health Care Spending*Interstate War	0.19	0.56
Health Care Spending*Interstate War*ln(t)	0.19	0.11*
Democracy*Health Care Spending*Interstate War	-1.77	1.01*
Win War	-1.39	0.81*
Draw War	0.73	0.57
Lose War	1.20	0.45 **
GDP Growth	9.77	3.11**
GDP Growth*ln(t)	-2.11	0.45**
Entry	5.95	0.44**
Entry*ln(t)	-0.90	0.07*
Civil War	1.38	0.48**
Civil War*ln(t)	-0.17	0.07*
Observations	4,488	
Subjects	863	
Failures	696	
Log-Likelihood	-3745.6453	
χ^2	437.63	
Prob > χ^2	<0.01	
Θ	0.61	0.13**

Two-tailed: *: $p \leq 0.05$; **: $p \leq 0.01$

signed in the opposite direction of the constituent term indicates a decay in the original effect over a leader's tenure.¹⁷ Third, the statistically significant Θ indicates that non-trivial

¹⁷For example, if the coefficient on *Health Care Spending* is positive, indicating that higher spending when

variation exists in the likelihood of a leader being removed from power across states and that extending the Cox model to account for shared frailty among leaders of the same country was methodologically appropriate.

The control variables behave as expected. Consistent with Debs and Goemans (2010), positive *GDP Growth* increases the hazard a leader will be removed from office early during her reign, but this relationship is decreasing in an incumbent's tenure. An incumbent that came to power in an irregular manner (e.g., a coup) faces a higher hazard of losing power early in her tenure than a leader whom obtained office through the previously institutionalized channels of her country. This relationship degrades over time, however. A similar relationship exists between political survival and civil war. Early on, a leader whose state is fighting a civil war faces a higher probability of being replaced by a challenger compared to an incumbent whose state is not in a civil war. This negative relationship between civil war and leadership survival is decreasing in an incumbent's tenure. Unsurprisingly, compared to a leader whose state has not participated in an interstate war, an incumbent's probability of remaining in power is greater if they won an interstate war and lower if they lost an interstate war. An incumbent's hazard of losing office is unrelated to obtaining a draw in an interstate war.

The various interaction terms and estimation of the statistical model via maximum likelihood limit the usefulness of Table 3.1 for assessing whether mobilization for interstate war is more likely to result in democratic or autocratic leaders being removed from power.¹⁸ As discussed above, economic mobilization for war refers to the increase in military spending that accompanies a country's involvement in an interstate war (Anderton and Carter 2009). In addition to higher military spending, resource scarcity leads mobilization for war to also

a country is not involved in an interstate war is associated with an autocratic incumbent facing a higher risk of being removed from office, a negative coefficient on *Health Care Spending*ln(t)* indicates that this greater hazard for an autocratic leader decreases the longer she remains in office.

¹⁸ Among others, see Braumoeller (2004) and Brambor, Clark and Golder (2006) on interaction terms and Greene (1997) and King, Tomz and Wittenberg (2000) on obtaining valid statistical inferences from maximum likelihood estimates.

be associated with a decrease in social spending. I therefore used the parameter estimates reported in Table 3.1 to calculate an incumbent leader’s probability of surviving in office for five years given three hypothetical mobilization scenarios. Each scenario assumes that a leader mobilized her country’s resources, fought, and won an interstate war in her first year in office, and then was able to return military and social spending back to their mean peace-time levels in the following four years. To provide a baseline for comparison, I calculated the predicted probability of leader survival given that an incumbent was able to fight a war without changing the allocation of economic resources to military and social spending from their peace-time levels (i.e., *Military Spending* and *Health Care Spending* were set to their sample peace-time values, 2.45% and 1.97%, respectively, during the year a leader’s country was at war). I then simulated the probability of incumbent survival given an average mobilization of resources, that is *Military Spending* and *Health Care Spending* were set to their respective war-time means (5.18% and 1.97%) in year one and then reverted back to their peace-time means in years two through five. The third scenario assumes that a leader required a large mobilization for the war effort, which was simulated by setting *Military Spending* and *Health Care Spending*, respectively, to the 95th (18.82%) and 5th (0.21%) percentile observations during war-time.¹⁹ The various interaction terms in Model 1 were manipulated as necessary for the different scenarios. The other explanatory variables included in the model were set to simulate the following scenario: a leader who gained power through the official institutions of her country, enjoyed mean GDP growth, had the mean population during her entire tenure, and whose country was not engaged in a civil war. The frailty term ν was set to simulate a state whose leader faces the mean likelihood of being removed from office.

Figures 3.1 and 3.2 present the predicted probability of leadership survival given these

¹⁹While the military spending value might seem high, it is worth putting this figure into context by considering that the average annual U.S. defense burdens was approximately 32% in World War II, 10% in the Korean War, and 7% in the Vietnam War. Thus, military spending in the “large” mobilization scenario is closer to the U.S. experience in the Korean War than it is to the mobilization of the “Arsenal of Democracy” in World War II.

three scenarios in an autocracy and a democracy, respectively. The solid blue lines in the graphs report the predicted probability of a leader remaining in office up to that point in time given that she was able to fight the war without mobilizing her country's resources. The dashed red line in each figure represents the predicted probability of survival given an average mobilization. The black, dash-dotted lines graph the predicted probability of leader survival given a large economic mobilization for war.

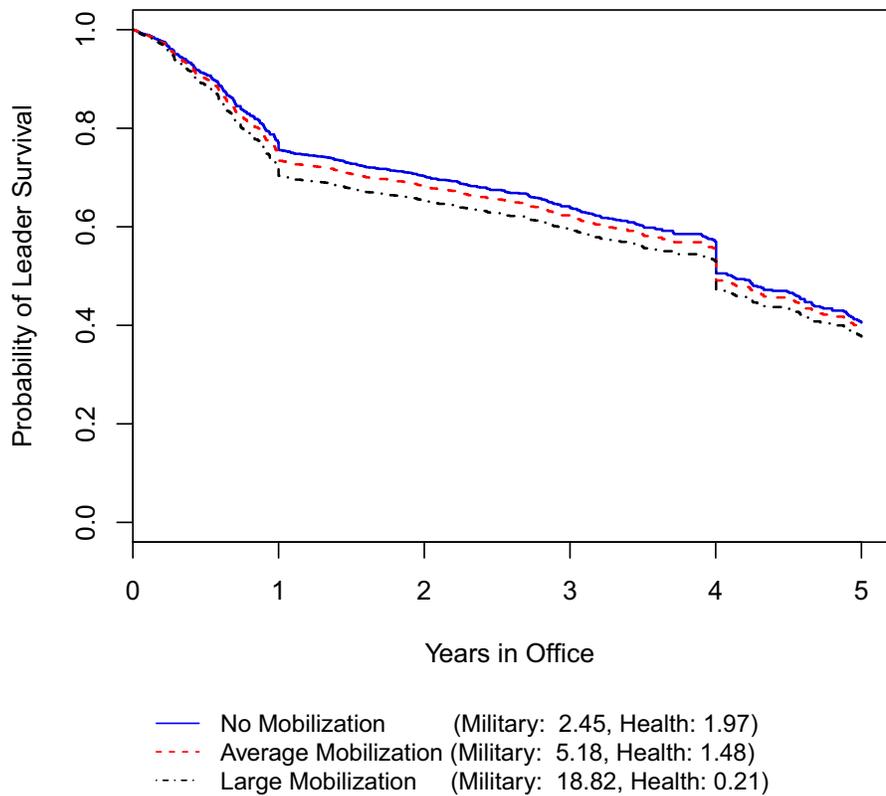


Figure 3.1: Leadership Survival and Mobilization for War in an Autocracy

Considered jointly, Figures 3.1 and 3.2 strongly support my claim that democratic leaders pay a higher political cost for mobilizing than do autocratic leaders. Focusing first on the autocratic case, the predicted probabilities reported in Figure 3.1 indicate that mobilization

for interstate war does not substantively influence whether an autocratic incumbent remains in power. If an autocrat is able to win a war without mobilizing any resources he has a 76% chance of surviving in office for one year and a 51% chance of holding onto power for four years. Larger mobilization efforts do not significantly reduce an autocrat's odds of survival and have only a modest substantive effect. The chance of an autocrat surviving in office for one and four years given an average mobilization are 74% and 49%, respectively. Similarly, an autocrat's respective chances for holding on to power for one and four years given a large mobilization are 70% and 47%. In sum, mobilization for interstate war does not impose a political cost on autocratic leaders.

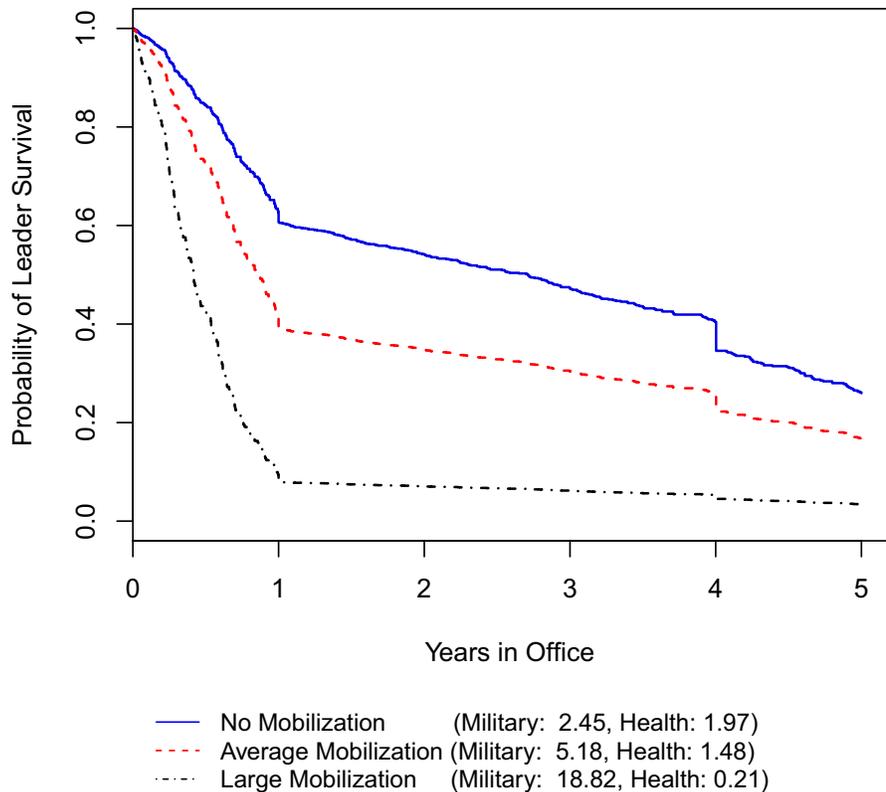


Figure 3.2: Leadership Survival and Mobilization for War in a Democracy

A different story emerges when we consider the relationship between economic mobilization for war and the political survival of democratic leaders presented in Figure 3.2. A democratic leader has a 61% chance of completing her first year in office and a 36% chance of finishing her fourth year in office if she is able to win an interstate war without altering the peace-time allocation of resources to military and social spending. The likelihood a democratic incumbent remains in power drops significantly with larger mobilization efforts. Given an average mobilization of resources a democratic leader has approximately a 39% chance of finishing her first year in office and only a 22% chance of remaining in power for four years. Even more startling, the chances a democratic incumbent completes her first and fourth years in office after a large mobilization of resources are only 8% and 5%, respectively. Compared to the baseline scenario of fighting a war without mobilizing, a democratic leader is approximately 36% less likely to successfully complete her first and fourth years in office given an average mobilization of resources and approximately 87% less likely to finish years one and four after large mobilizations.

The analysis presented here indicate that the political cost of mobilization is higher for democratic leaders than it is for autocratic leaders. The next section explores the implications of this result for the relationship between regime type and the interstate conflict process by developing a crisis bargaining model in which democratic leaders pay a higher cost for mobilizing resources than do autocratic leaders.

3.3 Crisis Bargaining with Costly Mobilization

The above discussion and analysis highlight four features of the complex relationship between political survival, interstate conflict, regime type, and mobilization. First, mobilization for interstate war increases the economic resources dedicated to the military at the expense of spending on non-military programs (Anderton and Carter 2009). Second, mobi-

lization for war increases the probability a country will win an interstate war (Organski and Kugler 1980). Third, mobilization can influence the onset and escalation of an interstate conflict (Slantchev 2005). Fourth, the political cost of mobilization is higher for democratic incumbents than it is for autocratic leaders. To identify the implications of these relationships for the interstate conflict process, I develop a bargaining model in which the probabilistic outcome of a conflict is a function of a leader's decision to mobilize and democratic leaders pay a higher political cost for mobilizing than do autocratic leaders. The model is presented informally here and fully characterized in Appendix 2.

The game analyzes the leaders of Country 1 (L_1) and Country 2 (L_2) bargaining over the continuously divisible good $x \in [0, 1]$, which can be thought of as a piece of territory or a contentious policy issue.²⁰ L_1 makes demand x of L_2 , which L_2 either accepts or rejects. Accordingly, L_1 can be viewed as the Challenger and L_2 can be viewed as the Target. If L_2 accepts demand x , the game ends with L_1 receiving x and L_2 receiving $1 - x$. If L_2 rejects demand x , then Countries 1 and 2 fight one another. I model conflict as a costly lottery, where the value of winning is normalized to 1, the value of losing is normalized to 0, the probability of Country 1 winning is p , the probability of Country 2 winning is $1 - p$, and fighting imposes cost $c_i > 0$ on each side (among many others, see Fearon 1995).

L_1 and L_2 can increase their country's probability of winning the conflict by mobilizing its economic resources. L_i 's mobilization effort μ_i consists of distributing e_i resources among military spending (g_i) and social spending (b_i). The optimal allocation of guns and butter in a given mobilization effort is a function of the relative efficiency of g_i and b_i . I assume that the relative efficiency of military and social spending in a given mobilization for L_i is a function of the pre-mobilization balance of capabilities (F_i), regime type (R_i), and L_j 's mobilization of resources to the military (g_j). Specifically, I assume that military spending is relatively more efficient than social spending against stronger opponents than against weaker opponents, for

²⁰For expositional convenience, I assume L_1 is female and L_2 is male.

autocratic leaders than for democratic leaders, and against larger opposing mobilizations than smaller opposing mobilizations. I further assume that mobilization imposes the political cost $\delta_i > 0$ upon L_i . Based on the results presented in Figures 3.1 and 3.2, the model assumes democratic leaders pay a higher cost for mobilization than do autocratic leaders and that the cost of mobilization is increasing in the size of the mobilization for democratic leaders. I assume that L_1 always mobilizes to fight but whether L_2 mobilizes is a function of his type; $\theta \in \{l, h\}$, where L_2 mobilizes if $\theta = h$ but will not mobilize if $\theta = l$. I assume that L_2 knows his own type but that L_1 knows only that $\theta = l$ with probability w and $\theta = h$ with probability $1 - w$.

The expected conflict payoff for each leader depends on L_2 's type. After rejecting x , L_2 does not mobilize her country's resources before fighting Country 1 if $\theta = l$. In this case, L_1 's expected utility is $\bar{p} - c_1 - \delta_1$ and L_2 's expected utility is $1 - \bar{p} - c_2$; where $\bar{p} = \frac{m_1}{m_1 + \underline{m}_2}$, \bar{p} represents the balance of dyadic military capabilities when L_2 does not mobilize, and \underline{m}_2 represents Country 2's military capabilities without a mobilization effort. If $\theta = h$, after rejecting demand x , L_2 mobilizes his country's resources before fighting L_1 . In this scenario L_1 's expected conflict payoff is $\underline{p} - c_1 - \delta_1$ and L_2 's expected payoff for fighting is $1 - \underline{p} - c_2 - \delta_2$; where $\underline{p} = \frac{m_1}{m_1 + \bar{m}_2}$, $\bar{m}_2 = \underline{m}_2 + g_2$, $\bar{p} > \underline{p}$, and $\bar{p} - \underline{p} = g_2$.

The timing of the game is as follows. In the first stage, Nature (N) chooses L_2 's type $\theta \in \{l, h\}$. L_1 then makes demand x of L_2 , which L_2 chooses to accept or reject. If L_2 accepts x , the game ends. If L_2 rejects x and $\theta = l$, L_1 mobilizes, and the two countries fight. If L_2 rejects x and $\theta = h$, L_1 and L_2 mobilize, and the two countries fight.

3.3.1 Equilibria

Due to the asymmetric information over θ , the model is solved for perfect Bayesian equilibria in pure strategies. The game has two pure strategy equilibria, one in which L_1 and L_2

always reach a peaceful agreement and another where the two fight with positive probability.

Proposition 1 (Peace Equilibrium). The following is a perfect Bayesian equilibria if $w \leq \hat{k}$: L_1 demands \underline{x} , both types of L_2 accept and peace obtains.

Proof. See Appendix 2. □

Proposition 1 indicates that there are conditions under which conflict will not occur in equilibrium. In order to avoid conflict, L_1 must make a demand that is greater than or equal to L_2 's expected value for fighting. Therefore, if $\theta = l$, then L_1 can avoid conflict with a demand of $\bar{x} \equiv \bar{p} + c_2$. If $\theta = h$, then L_1 can avoid war only if she makes a demand that incorporates the cost L_2 pays to mobilize and L_2 's increased likelihood of success in a war: $\underline{x} \equiv \underline{p} + c_2 + \delta_2$. As $\bar{x} > \underline{x}$, it follows that both types of L_2 will accept demand \underline{x} from L_1 . When will L_1 make the more modest demand? L_1 will demand \underline{x} if and only if she believes that there is only a small probability that L_2 will not mobilize to fight a war (i.e. w is less than or equal to the critical value $\hat{k} \equiv \frac{c_1 + c_2 + \delta_1 + \delta_2}{(\bar{p} - \underline{p} + c_1 + c_2 + \delta_1)}$). This makes intuitive sense. L_1 would prefer not to provoke a fight against an L_2 who will mobilize his country's resources for war. As such, if L_1 thinks L_2 is likely to mobilize for war she will make the modest demand \underline{x} that an L_2 willing to mobilize ($\theta = h$) would prefer to fighting. Therefore, if $w \leq \hat{k}$ then L_1 's optimal play is to demand \underline{x} , which both types of L_2 will accept rather than fighting. While conflict is avoided under these conditions, the model indicates that an alternative scenario exists in which L_1 and L_2 fail to reach a bargain and militarized conflict ensues.

Proposition 2 (Conflict Equilibrium). The following is a perfect Bayesian equilibria if $w > \hat{k}$: L_1 demands \bar{x} , L_2 accepts the demand and peace obtains if $\theta = l$; and, if $\theta = h$, L_2 rejects the demand, L_1 and L_2 choose their optimal mobilizations, and the two countries fight.

Proof. See Appendix 2.

□

The model's second perfect Bayesian equilibrium obtains when L_1 believes with a sufficiently high probability (i.e. $w > \hat{\kappa}$) that L_2 will not mobilize his country's resources to fight. Given this scenario, L_1 derives the greatest utility in expectation by making the bold demand $\bar{x} \equiv \bar{p} + c_2$. As noted above, \bar{x} is the smallest demand that L_2 will accept instead of going to war if $\theta = l$. However, if $\theta = h$ \bar{x} is larger than the smallest demand L_2 will accept rather than mobilizing and fighting a war. Thus, if L_1 demands \bar{x} and $\theta = h$, L_2 will reject the demand, both leaders will choose their optimal mobilizations, and Countries 1 and 2 will fight.

Proposition 2 nicely highlights the risk-return trade-off inherent with crisis bargaining under incomplete information (Fearon 1995, Powell 2002). Specifically, if L_1 makes the bold demand \bar{x} and $\theta = l$ she will obtain utility that would have been left on the bargaining table if she made the more modest demand \underline{x} . At the same time, attempting to capture this utility by making the bold demand \bar{x} increases the risk of having to fight against an opponent who is willing to mobilize his country's resources to fight.

3.4 Empirical Implications

The model yields a set of empirical implications related to the relationships between regime type and conflict selection and mobilization. Consistent with the logic of backwards induction, I work "up the tree" and begin with the model's prediction for the relationship between regime type and economic mobilization.

Proposition 3: The optimal mobilization of military resources is greater in an autocracy than in a democracy.

Proof. See Appendix 2.

□

Proposition 3 predicts that the optimal mobilization of resources for an autocratic leader contains greater military spending than does the optimal mobilization for a democratic leader. The logic behind this claim is fairly transparent. Recall that L_i distributes his available economic resources e_i between military (g_i) and social spending (b_i) based on the relative efficiency of each. Specifically, a leader should allocate greater resources to the type of spending that is better at allowing him to remain in power and fewer resources to the type of spending that is less efficient in securing his tenure. Based on the analyses presented in Figures 3.1 and 3.2, higher military spending and lower social spending are more likely to result in a democratic leader losing office than an autocrat. Thus, compared to the autocratic case, military spending is relatively less efficient and social spending is relatively more efficient in securing a democratic incumbent's political survival. It therefore follows that an autocrat's optimal mobilization effort contains more military spending than does a democratic leader's optimal mobilization.

The empirical scholarship on the relationship between regime type economic mobilization for war is divided in its conclusions. In the earliest work on the subject, Kugler and Domke (1986) find no difference in the mobilization efforts of democratic and autocratic major power belligerents in the global wars of the twentieth century (Russo-Japanese, World War I and World War II). Reiter and Stam's (2002) analysis of all interstate war participants between 1816 and 1990 fails to find a significant difference between democratic and autocratic war-time defense burdens. In contrast, Bueno de Mesquita et al. (2003, 2004) and Goldsmith (2007) conclude that democracies mobilized more of their resources for 19th and

20th century interstate wars than did non-democracies. Focusing on the post-World War II period, Carter and Palmer (N.d.) demonstrate that non-democracies increase military spending, and decrease social spending, to a greater degree than do democracies. Carter (N.d.) offers an explanation for these disparate findings. Specifically, he demonstrates that democracies mobilized more resources for war than did autocracies in the period from 1816 to 1945, but that there has been an autocratic advantage in economic war effort during the post-World War II era. This empirical finding, according to Carter (N.d.), can be attributed to embedded liberalism and the expansion of the social welfare state constraining the ability of post-World War II democratic leaders to allocate scarce resources to waging interstate war.

Given the existing research, how should we interpret the empirical validity of Proposition 3? Recall that Proposition 3 follows from the assumption that military spending is relatively more efficient in securing the political survival of autocratic leaders than democratic leaders. The duration analysis underlying this assumption (Table 3.1 and Figures 3.1 and 3.2 presented above) are based on data during the period from 1960 to 1999. Thus, Proposition 3 is consistent with the empirical record, per Carter and Palmer (N.d.) and Carter (N.d.), for the time period during which the model's key assumption holds empirically (i.e., the post-World War II era).

The model's second empirical prediction concerns the relative selectivity of democratic and autocratic targets in rejecting a challenger's demand.

Proposition 4: As the relative strength of the challenger increases, democratic targets are increasingly less likely to resist than are autocratic targets.

Proof. See Appendix 2. □

Proposition 4 argues that democratic leaders are more selective than autocratic leaders

in rejecting the demands of and fighting against challengers. This claim follows from a leader's optimal mobilization effort and how the relative cost of mobilization varies as a function of the size of a mobilization across regime type. The optimal allocation of military spending in a mobilization effort is increasing in the relative strength of a state's opponent. This makes intuitive sense: the stronger a country's opponent is the more resources that a leader will need to dedicate to an interstate war effort. The duration analysis reported in Figures 3.1 and 3.2 indicate that the political cost of mobilization is increasing in the size of a mobilization for democratic leaders but not autocratic leaders. It therefore follows that the optimal mobilization effort against a relatively stronger challenger is increasingly costlier for a democratic incumbent than it is for an autocratic leader. As the probability of conflict is decreasing in the target's political cost of mobilization (see the proofs of Propositions 1 and 2), it follows that democratic targets will be increasingly less likely than autocratic targets to resist the demands of relatively stronger challengers.

The model's prediction that democracies are more selective in rejecting the demands of challengers than are autocracies differs from existing research on the relationship between regime type and the conflict behavior of targeted states. Fearon (1994) argues that domestic "audience costs" should result in democratic leaders being less likely to back down in interstate crises than autocratic leaders. Consistent with the audience costs argument, Partell and Palmer (1999) find that democracies, and countries with a constrained executive more generally, are less likely to back down after being challenged in a militarized interstate dispute. In contrast, Schultz (2001*a*) develops a signaling model that predicts democratic targets should be less likely to resist a challenge than autocratic targets. Contrary to both his expectations and the work of Fearon (1994) and Partell and Palmer (1999), Schultz finds no empirical relationship between regime type and a target's probability of conflict reciprocation. In a departure from each of these pieces, the model developed here suggests that the relationship between regime type and target reciprocation is conditional on the rela-

tive balance of capabilities between belligerents. The next section empirically analyzes this prediction.

Proposition 4 also offers an institutional explanation for the success of democratic targets in interstate wars.²¹ Arguments that locate the interstate war success of democracies in the selection of opponents focus on the decision of a challenger to initiate an interstate conflict (among others, Reiter and Stam 2002, Bueno de Mesquita et al. 2003). The model developed here, however, predicts that democratic targets are more selective in reciprocating a challenge than are autocratic targets. If, *ceteris paribus*, relatively weaker countries are less likely to win the wars they fight than are stronger countries (e.g., Clark and Reed 2003), then Proposition 4 provides a rational institutional explanation for why democratic targets are more likely to win interstate wars than are autocratic targets.

The model also provides an explanation for the most prominent finding of the literature on regime type and interstate conflict: the democratic peace.

Proposition 5: A pair of democracies is less likely to fight than a mixed dyad or a pair of autocracies.

Proof. See appendix. □

The model's explanation for the dyadic democratic peace (Russett and Oneal 2001) follows from variation in the optimal mobilizations of democratic and autocratic leaders, the interdependent nature of a leader's optimal mobilization, and the influence of mobilization on a conflict's probabilistic outcome. The optimal mobilization for an autocratic leader contains relatively more military spending than does the optimal mobilization for a demo-

²¹While claims that democracies mobilize to a greater degree than autocracies would cover democratic initiators and targets (e.g., Bueno de Mesquita et al. 2003, Goldsmith 2007), Proposition 3 demonstrates that this argument does not hold when the political cost of mobilization is taken into account.

cratic leader (Proposition 3). Recall that, in addition to his or her country's regime type, a leader's mobilization effort is also a function of the opposing leader's mobilization of military resources. The optimal military mobilization for a leader, then, is larger against an autocratic opponent than it is against a democratic opponent. It therefore follows that a democratic target will mobilize fewer military resources than an autocratic target, irrespective of the challenger's regime type, and that the optimal mobilization for a democratic target will consist of lower military spending against a democratic challenger than against an autocratic challenger. How does this lead to a dyadic democratic peace? From the critical cut-point $\hat{\kappa}$, the probability two countries will fight is decreasing in the degree to which a target's military mobilization affects the probabilistic outcome of the conflict (i.e. $\bar{p} - \underline{p} = g_2$). The probability of two democracies fighting is thus lower than the probability of conflict given a jointly autocratic or mixed dyad because a pair of democracies yields the smallest optimal military mobilization for the targeted state in a crisis.

Proposition 5, and the logic underlying it, is consistent with the work of Banks (1990) and Fearon (1995) on crisis bargaining under asymmetric information. Using the mechanism design framework,²² Banks (1990) formally demonstrates that the probability of conflict is increasing in the military capabilities of the informed player in *any* bargaining model with asymmetric information. Autocratic targets are able to mobilize more military resources than are democratic targets in the model developed here (Proposition 3). Further, all targets should mobilize more resources against an autocratic challenger than against a democratic challenger. It therefore follows that, all else equal, a jointly democratic dyad will result in the fewest military capabilities mobilized by the target. Given Banks's (1990) analysis, it then must be the case that two democracies are less likely to fight than are two autocracies

²²Rarely used in political science (although see Fey and Ramsay (2011) for a recent application to interstate conflict), mechanism design allows for the identification of characteristics that *any* equilibrium must possess in a given class of games. See Myerson (1979) and Myerson and Satterthwaite (1983) for canonical examples of mechanism design in economics. Textbook treatments of mechanism design theory are given in Chapter 7 of Fudenberg and Tirole (1991) and Chapter 11 of McCarty and Meirowitz (2007).

or a mixed dyad.

Where Banks (1990) demonstrates that Proposition 5 must be true given the features of the model, Fearon (1995) is useful for understanding the mechanism by which pairs of democracies should be less likely to fight than other dyads. Fearon demonstrates that, by leading to uncertainty over a player's value for conflict, uncertainty over capabilities and/or resolve is a rationalist explanation for war. Further, the probability of conflict goes to zero as this uncertainty is removed.²³ In the model presented here, L_1 is uncertain over whether L_2 will mobilize resources to fight and, ultimately, her valuation of fighting (i.e., $\bar{p} - c_1$ vs. $\underline{p} - c_1$). Given that the optimal military mobilization is larger in autocracies than it is in democracies (Proposition 3) and the assumption that the optimal mobilization for L_i is increasing increasing in the military mobilization of L_j , it follows that there is less uncertainty about L_1 's value for conflict given a pair of democracies than either a mixed or jointly autocratic dyad.²⁴ As the probability of conflict is decreasing in the uncertainty over a player's value for conflict, two democracies are less likely to fight one another than are other pairs of states.

The last empirical implication derived from the model concerns the relative “attractiveness” of democratic and autocratic targets.

Proposition 6: Challengers prefer democratic targets over autocratic targets.

Proof. See appendix. □

Proposition 6 argues that challengers prefer democratic targets to autocratic targets. More precisely, compared to facing an autocratic target, a challenger is never worse off in

²³This is because when uncertainty is removed the asymmetric model becomes a model of complete information in which war does not occur in equilibrium (Fearon 1995).

²⁴That is, $\bar{p} - \underline{p}$ is smaller given two democracies than any other pair of states.

expectation when facing a democratic target and is typically strictly better off in expectation when facing a democratic target. To demonstrate this point, consider the challenger's expected payoff in the four exhaustive and mutually exclusive scenarios that can occur in the game. The first scenario occurs when L_1 believes with a sufficiently high probability that L_2 will not mobilize and L_2 is not willing to mobilize ($w \leq \hat{k}$ and $\theta = l$). In this situation, L_1 demands $\bar{x} \equiv \bar{p} + c_2$ and L_2 accepts. There is no difference in L_1 's utility between a democratic and an autocratic target. In the second scenario L_1 believes with a sufficiently high probability that L_2 will not mobilize but, in reality, L_2 will mobilize his country's resources ($w \leq \hat{k}$ and $\theta = h$). Equilibrium behavior requires that L_1 demands $\bar{x} \equiv \bar{p} + c_2$, L_2 rejects the demand, L_i mobilizes g_i^* resources for military spending, and Countries 1 and 2 fight. L_1 's expected payoff is equal to $\underline{p} - c_1 - \delta_1$. From Proposition 3, the optimal mobilization for an autocratic L_2 contains more military spending than the optimal mobilization for a democratic L_2 . Holding the pre-mobilization balance of military capabilities constant, it therefore follows that $\underline{p}^D > \underline{p}^A$ and that L_1 is strictly better off if the target is a democracy. The third scenario obtains when L_1 believes with a sufficiently high probability that L_2 will mobilize resources for conflict but in truth L_2 is unwilling to mobilize ($w > \hat{k}$ and $\theta = l$). In this case, L_1 demands $\underline{x} \equiv \underline{p} + c_2 + \delta_2$ and L_2 accepts. As $\delta^D > \delta^A$, L_1 is strictly better off if the target is a democracy. In the final possible scenario in the model, L_1 believes with a sufficiently high probability that L_2 will mobilize and L_2 is willing to mobilize ($w > \hat{k}$ and $\theta = h$). This leads to L_1 demanding $\underline{x} \equiv \underline{p} + c_2 + \delta_2$ and L_2 accepting the demand. As $\delta^D > \delta^A$, L_1 is strictly better off if the target is a democracy. Therefore, of the four possible combinations of w and θ that can occur in the model, L_1 's expected utility is strictly higher when facing a democracy than it is when facing an autocratic in three scenarios and is the same regardless of the target's regime type in the other scenario.²⁵

²⁵It is worth noting that because autocracies should mobilize more resources than democracies (Proposition 3) this result is consistent with Banks's (1990) result that stronger informed players (L_2 in the model developed here) should obtain larger equilibrium payoffs from peaceful settlements in *any* bargaining game

The existing scholarship is divided on the relative attractiveness of democratic and autocratic targets. Selectorate theory (Bueno de Mesquita et al. 1999, 2003) argues that democracies are worse targets than autocracies because democratic leaders are willing to mobilize more of their resources to defend against a militarized challenge.²⁶ Unfortunately, Bueno de Mesquita et al. do not empirically test this prediction. In contrast to selectorate theory but consistent with the model developed here, Schultz (1999, 2001a) argues that institutional features of democratic governments, in particular media freedom and opposition parties, should lead challengers to prefer democratic targets over autocratic targets. Empirically, Schultz finds that democracies are more likely than autocracies to be targeted in militarized interstate disputes. Proposition 6, then, provides an alternative theoretical explanation for Schultz's (2001a) empirical results.

The model developed here has implications for four areas of the extensive literature on regime type and the interstate conflict process. First, it provides a rational, institutional explanation for the democratic peace that does not rely on the empirically unsupported assumption that democratic leaders are more likely to be punished for fighting or losing a war. Second, it demonstrates that once the political cost of mobilization is explicitly considered incumbency-valuing democratic leaders do not have an incentive to mobilize greater military resources than do autocratic leaders. Third, the model provides an alternative logic for Schultz's (2001a) finding that democracies are more attractive targets than autocracies. Last, the model offers a novel explanation for why democratic targets are more successful in interstate wars than their autocratic counterparts: democratic targets are more likely to select themselves out of an interstate crisis against a stronger opponent than are autocratic targets. The next section empirically analyzes this prediction.

with asymmetric information.

²⁶Note, again, that this argument rests on the empirically tenuous assumption that democratic leaders are more likely to be removed from power after losing an interstate war than are autocratic leaders and that Proposition 3 argues autocracies should mobilize more resources for conflict than democracies.

3.5 Regime Type and Target Selectivity

The model predicts that, due to the relative political cost of mobilization across regime type, autocratic leaders will be more likely to reject the demands of relatively stronger challengers than will democratic leaders. This expectation is tested by analyzing the relationship between regime type, relative capabilities, and the conditional probability a target reciprocates when challenged in a militarized interstate dispute (MID). If the model's prediction is right, democracies should be less likely than autocracies to reciprocate the challenges of relatively stronger opponents.

The hypothesis that democratic targets are more selective than autocratic targets is tested on a directed-dyad year data set covering all country-pairs between 1950 and 2001.²⁷ I omit “ongoing”, “reverse”, and “joiner” dyad-years (see Bennett and Stam 2000*b*). As the decision to reciprocate requires that an initial challenge be made, the relationship between regime type and target selectivity is estimated using a selection model. Specifically, I use a censored probit that allows me to model the probability a country responds militarily to a challenge, conditional on a crisis being initiated in the first place.²⁸ Failure to explicitly account for the non-random initiation of a crisis could result in inefficient and biased estimates of the probability of reciprocation and, ultimately, incorrect inferences about the relationship between regime type and target selectivity (Greene 1997, Reed 2000).²⁹ Using a censored probit to test Proposition 4 requires the use of two dichotomous dependent variables. The first, *Initiation*, is coded 1 if Country 1 in a directed-dyad initiates a militarized interstate dispute against Country 2 in a given year and 0 otherwise. The second dependent variable, *Reciprocation*, is coded 1 if upon being challenged Country 2 reciprocates and 0 if Country

²⁷The data set was created using the EUGene software (Bennett and Stam 2000*a*).

²⁸For applications of the censored probit in studies of interstate conflict, see Reed (2000), Lemke and Reed (2001), and Clark and Reed (2003).

²⁹Technical details of the censored probit are given in, among others, Greene (1997) and Cameron and Trivedi (2005).

2 yields to Country 1's initial demand. *Initiation* and *Reciprocation* are both based on the MID data set (Ghosn, Palmer and Bremer 2004).³⁰

The following explanatory variables are included in the statistical model. *Democracy*₁ is coded 1 if Country 1 in a dyad has a value of +7 on the 21-point *Polity2* index in year *t* and 0 otherwise (Marshall and Jaggers 2005). *Democracy*₂ is coded analogously.³¹ *Relative Capabilities* identifies the dyadic balance of material capabilities and is measured as $\frac{cap_1}{cap_1 + cap_2}$, where *cap*_{*i*} represents a country's annual CINC score from the National Material Capabilities data set (Singer, Bremer and Stuckey 1972). Therefore, *Relative Capabilities* theoretically ranges from 0 to 1, where 0 represents a situation in which Country 2 controls all of the capabilities in the dyad and 1 indicates that Country 1 possesses all of the capabilities in a dyad. The model predicts that democracies should be less likely to reject the demands of stronger challengers than autocracies. The interaction term *Relative Capabilities* * *Democracy*₂ is included in the model to capture this (hypothesized) effect.

The above explanatory variables are needed to test the relationship between regime type and target selectivity and are included in both the selection and outcome equations of the censored probit estimator. I also include a set of variables that predict the initiation of a conflict but not the probability of reciprocation in order to identify the model (Greene 1997, Cameron and Trivedi 2005). The variable *Contiguity* is a six-point index in which higher values represent a greater level of contiguity and is based on the Direct Contiguity Data, 1816-2006, v.3.1 (Stinnett, Tir, Schafer, Diehl and Gochman 2002). *Major Power*, coded 1 if either state in the dyad is considered a major power per the Correlates of War project

³⁰The analysis presented below do not distinguish between the hostility level of the MID initiated by Country 1. As a robustness check, I re-estimated the model using different hostility levels to see if the results held at different levels of hostility; e.g., what are the results if we consider only MIDs with a hostility level of 1, a hostility level of ≤ 2 , etc. The results of the robustness checks led to the same substantive conclusions as those presented here.

³¹The statistical results presented below were re-estimated using +6 as the critical value in determining a country's regime type. The results led to the same substantive inference as those presented in the main text.

(Correlates of War Project 2008) and θ otherwise, is included in the model as major powers are significantly more likely to be involved in interstate conflicts than other states. Last, the cubic polynomial of the number of years since Country 1 initiated a conflict against Country 2 ($Time$, $Time^2$, and $Time^3$) are included in the first stage of the model to account for temporal dependence within the data (Carter and Signorino 2010). Table 3.2 reports the model's estimates of conflict initiation and reciprocation.

Table 3.2: Regime Type and Interstate Conflict Reciprocation, 1950-2001

Dependent Variable	<i>Initiation</i> β (s.e.)	<i>Reciprocation</i> β (s.e.)
Democracy ₁	-0.07(0.02)**	-0.71(0.09) **
Democracy ₂	0.26(0.04)**	0.04(0.17)
Relative Capabilities	0.29(0.04)**	-0.09(0.17)
Relative Capabilities*Democracy ₂	-0.21(0.07)**	-0.51(0.26) *
Contiguity	0.30(0.00)**	
Major Power	0.52(0.02)**	
Time	-0.11(0.01)**	
Time ²	4.07E-03(2.96E-04)**	
Time ³	-4.27E-05(4.33E-06)**	
Constant	-3.27(0.04)**	1.87(0.17)**
Selection Parameter (ρ)	-0.21(0.06)**	
Log-Likelihood	-8,064.54	
χ^2 -statistic	86.03	
Probability > χ^2	<0.01	
Uncensored N	1,451	
Censored N	868,292	

Two-tailed: * : $p \leq 0.05$; ** : $p \leq 0.01$

Before analyzing the estimated relationship between regime type and target selectivity, recall that a censored probit was used in an attempt to avoid inefficient and biased estimates of conflict reciprocation (Greene 1997). The statistically significant selection parameter ρ indicates that the selection (*Initiation*) and outcome (*Reciprocation*) equations of the censored probit are not statistically independent from one another. Accordingly, the use of a

selection model to account for the non-random sample of targeted states is methodologically appropriate.

Similar to the above analysis of the relationship between leadership survival and mobilization, the interaction term *Relative Capabilities* * *Democracy*₂ and estimation of the censored probit via maximum likelihood limit the usefulness of Table 3.2 for assessing the relative selectivity of democratic and autocratic targets (among others, Brambor, Clark and Golder 2006, King, Tomz and Wittenberg 2000). Interpretation of the results in Table 3.2 is further complicated by the conditional nature of selection models (e.g., Greene 1997). Following the recommendations of King, Tomz and Wittenberg (2000), I assess whether democracies are statistically less likely to reciprocate the challenges of stronger opponents than are autocracies using a set of post-estimation simulations of the model reported in Table 3.2. More specifically, I used the parameter estimates of the censored probit to calculate the conditional probability that a democracy and an autocracy would reciprocate a challenge across the range of *Relative Capabilities*, given that a challenge had initially occurred. I then calculated the first difference (and associated confidence interval) of these two conditional probabilities to assess statistical significance.³²

The formal model predicts that democratic leaders should be less likely than autocrats to reject the demands of relatively stronger challengers. If this prediction is borne out empirically, a democratic target should become increasingly less likely than an autocratic target to

³²The post-estimation simulations were conducted through the following six steps. First, 10,000 draws were taken from a multivariate normal distribution based on the coefficient and variance-covariance matrices of the model reported in Table 3.2. Second, I set the explanatory variables in the model to mimic a substantively interesting situation: a pair of directly contiguous, non-major power states which had not experienced a conflict against one another in 17 years (the sample median). Third, the predicted probability of State A initiating an interstate conflict against State B and State B reciprocating the conflict across the range of the explanatory variable *Relative Capabilities* was calculated given an autocratic target. Fourth, the values of the explanatory variables were manipulated to mimic the same dyad as described in Step 2 but with a democratic target. Fifth, I repeated Step 3. Sixth, the first difference, with corresponding standard errors, between the conditional predicted probabilities of State D reciprocating a conflict against State A across the range of *Relative Capabilities* was calculated. See King, Tomz and Wittenberg (2000) on the utility of post-estimation simulations for interpreting the results of statistical analyses.

reciprocate a challenge as Country 1 controls more of the capabilities in a dyad. Figure 3.3 reports the predicted conditional probabilities of democratic and autocratic reciprocation given a democratic challenger.

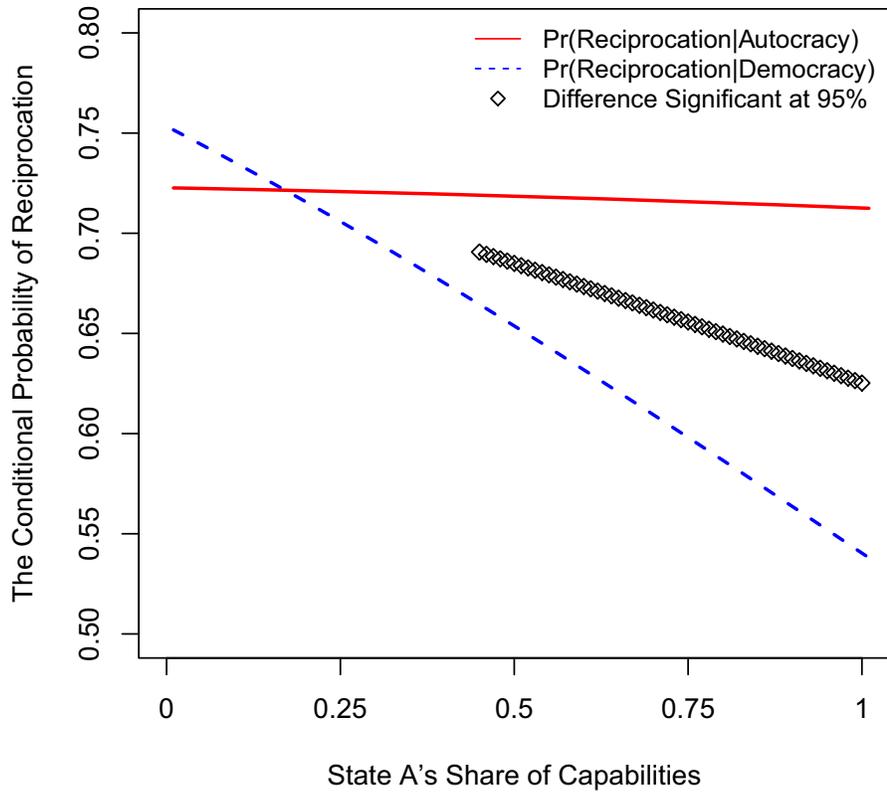


Figure 3.3: Conditional Probabilities of Reciprocation, Democratic Initiator

The dashed blue and solid red lines in Figure 3.3 represent, respectively, the conditional probabilities of a democracy and an autocracy reciprocating the challenge of a democratic initiator. The diamonds indicate that the two probabilities are statistically different from one another at the 95% level. The flat solid line in Figure 3.3 indicates that the predicted probability of an autocratic target reciprocating the challenge of a democratic initiator is insensitive to the balance of power within a dyad. Specifically, an autocracy is expected

to resist the demands of a democratic challenger about 73% of the time regardless of the dyadic distribution of capabilities. In contrast, the probability of a democratic target reciprocating a challenge declines substantially in the share of dyadic capabilities controlled by the democratic initiator. For example, a democratic target is expected to reciprocate the challenge of a democratic opponent that controls 25% percent of the resources about 71% of the time but will yield to the demands of a democratic challenger that commands 75% of the dyadic capabilities approximately 60% of the time – or a 16% reduction in the probability of reciprocation. Figure 3.3 therefore supports the model’s prediction that democratic targets are less likely than autocratic targets to reciprocate the challenges of stronger initiators. It is possible, though, that these results hold only given a democratic challenger.

Figure 3.4 reports the predicted conditional probabilities of a democracy and an autocracy reciprocating the challenge of an autocratic initiator. The solid red line indicates that whether an autocratic target reciprocates the challenge of a fellow autocracy is unrelated to the relative balance of capabilities. An autocracy that possesses all of the resources in a dyad is expected to resist a demand approximately 91% of the times while an autocracy that controls none of the resources will reciprocate approximately 90% of challenges. A democratic target, however, becomes more selective in the challenges it reciprocates as its autocratic opponent controls relatively more resources. Given 75% of the total dyadic capabilities a targeted democracy will resist the demands of an autocratic challenger 90% of the time, or as often as an autocratic target. However, if an autocratic initiator possesses 75% of the dyadic resources a targeted democracy is predicted to reciprocate a challenge 84% of the time – a 7% reduction in the conditional probability of reciprocation. Thus, the results reported in Figures 3.3 and 3.4 support the claim that democratic targets are more selective in reciprocating the challenges of initiators than are autocratic targets.

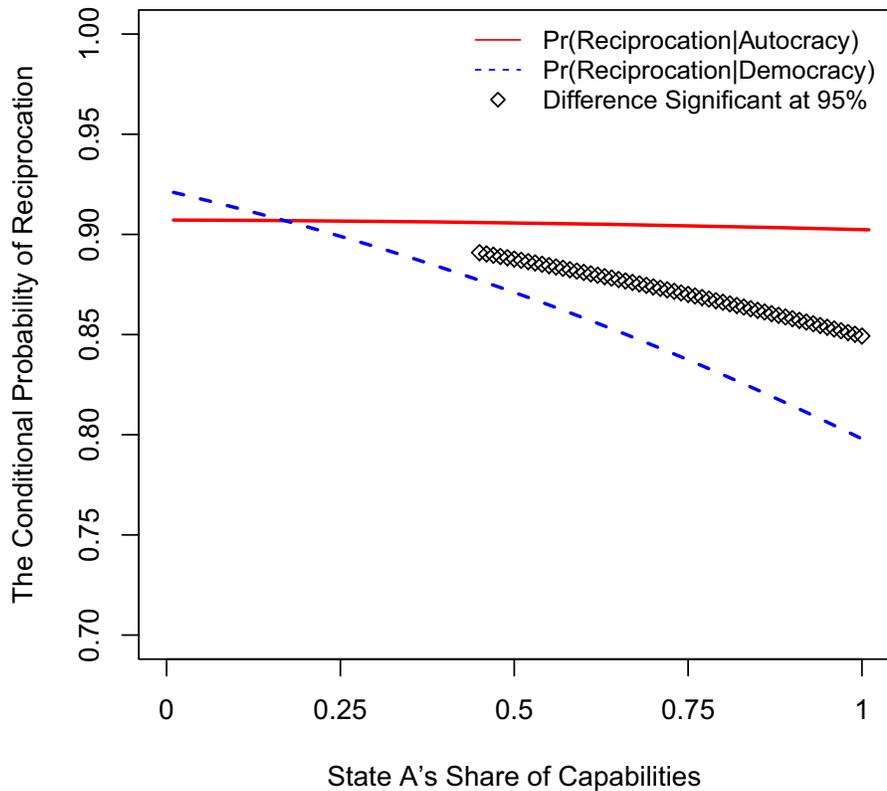


Figure 3.4: Conditional Probabilities of Reciprocation, Autocratic Initiator

3.6 Conclusion

Quantitative research on the relationship between regime type and interstate conflict has consumed much of the contemporary study of international relations. Unfortunately, our explanations for three of the strongest findings that have emerged out of this scholarship – the democratic peace, democracies are more selective in conflicts than autocracies, and democracies are more successful in interstate wars than autocracies – are based on the empirically unsupported assumptions that democratic leaders are more likely to be punished for fighting or losing an interstate war than are autocratic leaders (Chiozza and Goemans 2004, Debs

and Goemans 2010). This paper represents an attempt at explaining variation in interstate conflict behavior across regime type based on more firmly grounded micro-foundations. The mobilization of economic resources to the military at the expense of government spending on non-military programs is central to the prosecution of interstate war (Sandler and Hartley 1995, Anderton and Carter 2009). I demonstrate that the political cost of these mobilization efforts vary significantly across regime type. Specifically, economic mobilization increases the probability a democratic incumbent will lose office but has no effect on the likelihood an autocratic leader remains in power. A bargaining model built upon this empirical result sheds light on why, compared to autocracies, democracies are less likely to fight one another (Russett and Oneal 2001), are more selective in the opponents they fight (Bueno de Mesquita et al. 2004), and are more likely to win the wars they fight (Lake 1992).

The paper makes three contributions to the extensive literature on regime type and interstate conflict. First, while fighting or losing an interstate war does not shorten the expected tenure of a democratic incumbent (Chiozza and Goemans 2004, Debs and Goemans 2010), the increase in military spending and decrease in social spending associated with mobilization does. This result potentially offers an explanation for why democracies select themselves out of long and difficult wars (Bennett and Stam 1998, Reiter and Stam 2002). Additionally, it suggests that democratic leaders have a greater incentive than autocratic leaders to avoid the guns-and-butter trade-off, a relationship found by Carter and Palmer (N.d.). This implies that democratic leaders would have a greater incentive than autocratic leader to finance expensive war efforts through deficit spending (Slantchev 2010). Although the logic differs, this leads to the same implication as Schultz and Weingast's argument that democratic leaders should be more likely to pay for international competitions by borrowing money on the open market than autocratic leaders (1998, 2003).

Second, the finding that democratic targets are more selective than autocratic targets in reciprocating the challenges of stronger initiators suggests a rational, institutional explana-

tion for why democratic targets are more likely to win interstate wars than autocratic targets. Reiter and Stam (2002) report that democratic targets won 63% of the wars they fought from 1816 to 1990 while non-democracies won only 37% of the wars in which they were initially targeted. As discussed above, the most common institutional explanations for democratic success in interstate wars are that democracies are better at avoiding difficult wars and mobilize more of their resources than autocracies. Proponents of the democratic selectivity arguments focus on the behavior of democratic *initiators* (Reiter and Stam 2002, Bueno de Mesquita et al. 2004). With respect to a democratic advantage in mobilization efforts, the empirical record is mixed on the relationship between regime type and economic war effort (Reiter and Stam 2002, Bueno de Mesquita et al. 2003, Carter and Palmer N.d.). Further, the model developed here indicates that once the political cost of mobilization is explicitly considered democratic leaders have less of an incentive to mobilize a large amount of their resources than do autocratic leaders. Therefore, the formally derived and empirically supported result that democracies are less likely to resist stronger challengers than are autocracies suggests that the success of democratic targets in interstate war might be due to a selection effect.

Last, and arguably most importantly, the paper suggests that focusing on the political cost of mobilization is a potentially fruitful way to analyze the relationship between regime type and interstate conflict. While the model developed here is simple, it offers an explanation for the central empirical finding of the literature on regime type and conflict, provides an alternative logic to why democracies might make better targets than autocracies, and generates a novel prediction about the conflict behavior of democracies and autocracies. A natural extension to the present paper would be to identify how the cost of mobilization varies among different types of democracies and autocracies and use these results to analyze variation in their conflict behavior. A more nuanced model that incorporates intra-war bargaining and multiple opportunities to mobilize could generate predictions regarding the

magnitude and timing of mobilization and why democracies and autocracies alter their behavior as a war endures (Bennett and Stam 1998). Models that consider interactions between the political cost of mobilization and signaling (Slantchev 2005), the prospect of leadership turnover (Wolford 2007), and incumbent preferences beyond retaining office (Chapter 2 of this dissertation), would also appear to offer promising insights into the interstate conflict process. Regardless of the specific form future research might take, the formal and empirical results presented here suggest that explicitly considering the political cost of mobilization holds promise for improving our understanding of interstate conflict processes.

Chapter 4

The Displacement Effect of Interstate War

The relationship between interstate war and state-making has long drawn the attention of political scientists, economists, historians, and sociologists (among others, Bean 1973, Tilly 1975, Alesina and Spolaore 2005, Bank, Stark and Thorndike 2008, Thies and Sobek 2010). Bellicist accounts of state development argue that predatory governments seeking to maximize their control over a society and its economic resources expand their political power by financing foreign wars through higher taxation and then not fully reducing the level of taxation following the conclusion of hostilities (Tilly 1985, Campbell 1993). This pool of additional resources is then used to fund a government's preferred policies and programs. The end result of a state's participation in an interstate war is a more powerful government that extracts more resources from its society in the form of tax revenue and allocates more of its society's resources to government spending than it did before the war. The process by which a government uses interstate wars to increase the scope of government through higher equilibrium levels of taxation and expenditures is known as the displacement effect (Peacock and Wiseman 1961).

The displacement effect is central to theoretical accounts of the relationship between interstate war and state-making. Empirical support for the displacement effect of interstate war, however, is mixed. Early scholarship found support for the displacement effect in the development experiences of Western countries. Specifically, between the 18th century and the mid-20th century European and American countries typically extracted greater tax revenue and had higher military spending in the years after an interstate war than they did before participating in a war (Bean 1973, Jagers 1992, Rasler and Thompson 1985). More recently scholars have argued that the current international context does not allow states to increase their political power via interstate war, as they did in Europe and North America (Herbst 2000, Centeno 2002), and have failed to find a positive relationship between interstate war involvement and a state's tax revenue (e.g., Thies 2005).

This essay seeks to make three contributions to the literature on war and state-making. First, I analyze whether interstate war has resulted in an increase in the equilibrium levels of taxation, military spending, and social spending. Recent scholarship has focused on the displacement of tax revenue following an interstate war. Early work on the displacement effect and the relationship between war and state-making, however, argued that interstate war also resulted in higher levels of government spending (Bean 1973, Tilly 1985, Jagers 1992). Further, Campbell (1993) notes that the displacement effect will be particularly persistent if a government spends its new pool of resources on programs popular with the public. This suggests that the (near) exclusive focus on the extraction of tax revenue has resulted in scholars missing an important way in which interstate war leads to more powerful, expansive states.

Second, my analysis covers the population of countries that participated in an interstate war in the post-World War II era. Research on the displacement effect in the contemporary international system has focused on whether interstate war results in the expansion of polit-

ical power among developing countries.¹ The predatory theory of the state underlying the displacement effect, however, is not limited to developing nations (Levi 1981). Indeed, the term "displacement effect" was coined in a study of patterns of taxation and spending in the United Kingdom in the 20th century (Peacock and Wiseman 1961). I therefore analyze the difference between post-war and pre-war levels of taxation and government spending using a country-year data set of the 52 nations that participated in an interstate war during the period between 1950 and 2001.

Third, I examine how the displacement effect of interstate war operates within autocracies and democracies and across regime type. Existing studies of the displacement effect have assumed that the process operates the same in all states. In particular, scholars have ignored the role domestic political institutions might play in determining how a government might distribute the increased tax revenue associated with the displacement effect. I argue that this approach is misguided due to variation in the optimal allocation of military and social spending for incumbency-motivated leaders across regime type. More precisely, the displacement of military spending following an interstate war should be greater in autocracies than in democracies and the increase in social spending should be greater in democracies than in autocracies.

My statistical analyses yield two main results. First, I find support for the existence of a general displacement effect of interstate war in the contemporary international system. On average, governments extract significantly more tax revenue and dedicate significantly more of their nation's economic resources to both military and social spending in the years after an interstate war than they did before participating in a war. Second, I find that the displacement effect of interstate war is different in democracies and autocracies. In particular, while the displacement of tax revenue and military spending does not vary across regime type, the increase in social spending following an interstate war is significantly larger

¹Thies and Sobek (2010) is an exception to this claim and is discussed below.

in democracies than it is in autocracies.

The remainder of this chapter proceeds as follows. The first section provides an overview of the existing scholarship on the displacement effect of interstate war. I then test for the existence of the displacement effect among all interstate war participants between 1950 and 2001. The next section draws on Chapter 2 and argues that the optimal distribution of military and social spending differs for democratic and autocratic leaders. The fourth section develops my theoretical expectations for variation in the displacement effect across regime type while the fifth describes my empirical tests. The results of my statistical analyses are reported in the sixth section. I then conclude with a discussion of the larger implications of the findings presented here.

4.1 The Displacement Effect of Interstate War

The processes of interstate war and state-making are intertwined historically.² Most theoretical accounts of the relationship between state-making and conflict build upon the “predatory theory” of the state. Predatory theory views the state, and the government controlling it, as a representative agent of some portion of a state’s citizens that seeks to maximize its control over a society and its economic resources (e.g., Lane 1958, Levi 1988, Cohen, Brown and Organski 1981, Alesina and Spolaore 2005, Thies and Sobek 2010). A state’s control over a society in the contemporary international system typically is identified by its ability to extract revenue via taxation and then use this revenue to pursue its preferred policies. In a classic treatment of the issue Organski and Kugler define a state’s political power or development as “the capacity of the political system to carry out the tasks imposed upon it by its own political elite” (1980, pg. 72). A modern predatory state, then, will pursue policies that increase its tax revenue and then use this revenue to pursue the policies

²Hence, Charles Tilly’s maxim that “War made the state and the state made war” (1975, pg. 42).

avored by those members of society in charge of its government.

What are the implications of a predatory state for the relationship between interstate war and state-making? The canonical bellicist account of state-making is seen in Charles Tilly's research (1975, 1985, 1992). Tilly argued that the development of modern European states followed from four activities: war-making, state-making, protection, and extraction (1985, pg. 181). War-making refers to a state waging interstate wars in which it eliminates, or at least neutralizes, its foreign rivals. State-making is the process by which a state pacifies its internal rivals (i.e., civil conflict or war). Protection refers to the activities a government undertakes to ensure the safety of its supporters. The preceding three activities are all financed by the extraction of resources from the population and territory under a state's control. Importantly, participation in a given activity resulted in an "organizational residue" that increased the size and scope of a state's government (Tilly 1985, pg. 181). For example, a state that frequently fought interstate wars during its development should have a larger military and a more extensive bureaucracy servicing the military than a state that rarely fought interstate wars. The relationship between interstate war and the fiscal and physical growth of states in Tilly's model is straightforward: states extract resources from their citizens and territory in order to wage war against external rivals whom they seek to defeat in order to extract additional resources.³

The mechanism that links interstate war and state-making in Tilly's model and other bellicist approaches to state-making is known as the displacement or ratchet effect. Coined by Peacock and Wiseman (1961) in their analysis of 20th century British taxation and expenditures, the displacement effect refers to the process by which political leaders use national crises to increase the equilibrium levels of government revenue and spending. The displace-

³Tilly described the link between interstate war and the development of the state as follows: "In an idealized sequence, a great lord made war so effectively as to become dominant in a substantial territory, but that war making led to increased extraction of the means of war – men, arms, food, lodging, transportation, supplies, and/or the money to buy them – from the population within that territory. The building up of war-making capacity likewise increased the capacity to extract" (1985, pg. 183).

ment effect stems from the combination of political incumbents that want to maximize the resources under their control, the public's hesitancy to question government policies during crises and the "sticky" nature of government policy. As Peacock and Wiseman (1961) describe the process, leaders desire greater economic resources, the "people will accept, in a period of crisis, tax levels and methods of raising revenue that in quieter times they would have thought intolerable, and this acceptance remains when the disturbance itself has disappeared. As a result, the revenue and expenditure statistics of the government show a displacement after periods of social disturbance" (pg. 27). The type of national crisis most likely to lead to a displacement is a country's involvement in an interstate war (Peacock and Wiseman 1961). The displacement effect links interstate war and the political development of a state by providing its government, and the political leader(s) controlling it, with an opportunity to increase its control over society through higher levels of taxation and spending.

Early empirical analyses largely found support for the displacement effect of interstate war. Bean (1973) found a positive relationship between the growth of European states in terms of taxation and military expenditures from the 15th century onwards to their involvement in international wars. Jagers (1992) demonstrates that, among 19th and 20th century European and American countries, interstate wars that required large mobilization efforts were associated with increased tax revenue and military spending. Rasler and Thompson's (1985) analysis concludes that the positive relationship between war and state-making is contingent on the type of war. They find that only "global wars", defined as those "decisive contests fought over the issue of succession to world leadership" (pg. 494), are capable of permanently increasing a state's tax revenue and military spending.

More recently, some scholars have questioned whether the displacement effect of interstate war exists or is relevant for modern state development. Herbst (1990) and Centeno (2002) argue that a dearth of interstate wars, a relatively greater political importance of

internal rivals, and low population density in Africa and South America, respectively, limit the influence of interstate war on state-making. Additionally, the international environment in which contemporary states develop is fundamentally different than the context in which the modern European states that underly Tilly's model developed. Most importantly, there is an international norm against using war, either interstate or intrastate, as a pathway to state development (Herbst 2000, Englebert 2000, Thies 2005). Contemporary states, therefore, should not have been able to increase their control over societal resources via their participation in interstate wars.

The quantitative research of Cameron Thies seems to support this argument among the extraction patterns of contemporary developing states. Specifically, Thies finds no consistent relationship between interstate war and tax revenue among Latin American countries in the 20th century (2005) and that war is associated *lower* levels of tax revenue in Central American countries (2006). Using a significantly different research design on a sample of developing and developed states from 1960 to 2000, Thies and Sobek (2010) analyze the theoretically endogenous relationships among political development, economic development, and interstate war using a system of three equations. They find a negative short-term and long-term relationship between the number of battle deaths a country has suffered in interstate wars and its level of political development.

Thies's conclusions, however, do not necessarily contradict the existence of the displacement effect of interstate war in the contemporary international system for two reasons. First, his models of the experiences of Latin America (2005) and Central American (2006) countries estimate whether interstate war has a contemporaneous effect on a state's tax revenue. That is, Thies reaches his conclusions about the effect of war on the political development of Latin American and Central American states based on the sign and statistical significance of dichotomous variables indicating that a country was involved in an interstate war in that year. However, the displacement effect refers to the difference between pre-war and post-war

levels of taxation and spending (Peacock and Wiseman 1961, Campbell 1993). Second, the analysis in Thies and Sobek (2010) does not estimate how participation in an interstate war affects taxation and expenditures. Rather, they analyze the relationship between the number of battle deaths and a country's relative political capacity. The only recent analysis that considers both developing and developed states in the modern international system, therefore, cannot speak to how involvement in an interstate war *per se* might alter a country's equilibrium level of taxation.

At this point, three things about the preceding discussion are worth highlighting. First, predatory theorists argue that interstate war leads to more powerful states via the increased revenue and government spending associated with the displacement effect (Peacock and Wiseman 1961). Second, the existing empirical research typically has focused on the extraction aspect of the displacement effect. Scholars that have considered the effect of interstate war on patterns of government spending have analyzed military spending (e.g., Jagers 1992, Rasler and Thompson 1985). The argument underlying the displacement effect, however, does not suggest that it exclusively applies to military spending. Indeed, Campbell (1993) notes that the displacement effect of interstate war will be particularly persistent if a government spends its increased revenue on programs popular among the citizenry. Thus, it is possible that the spending side of the displacement effect of interstate war might (partially) manifest itself in expenditures on social programs favored by the general public. At least anecdotally, this claim is consistent with the enactment of the G.I. Bill in the United States and the establishment of the National Health Service in England following World War II. Third, recent accounts of the relationship between war and state-making have focused on the experiences of the developing world (e.g., Thies 2005). While this is understandable, the logic underlying the displacement effect, and the predatory of the state more broadly, applies to both developing and developed states. Thus, scholarship that concludes interstate war is not associated with an increase in a state's control over society

in the contemporary international system after an analysis of exclusively developing states might be misguided. Ultimately, whether the displacement effect of interstate war holds in the post-World War II era and whether it is limited to the extraction of resources are empirical questions. The next section therefore analyzes the the displacement of tax revenue, military spending, and social spending after an interstate war among the population of war participants after 1950.

4.2 An Empirical Analysis of the Displacement Effect

If the displacement effect of interstate war exists, we should observe higher rates of taxation and government spending after a country's participation in an interstate war than before its participation in a war. I use a country-year data set of the 52 nations that participated in the 27 interstate wars fought during the period from 1950 to 2001, per the MID data (Ghosn, Palmer and Bremer 2004), to test for the displacement effect. The data largely were compiled using the software program EUGene (Bennett and Stam 2000a). To address concerns about missing data, I created five imputed data sets using *Amelia II* (Honaker, King and Blackwell 2007).⁴

4.2.1 Estimator

The analysis of time-series cross-sectional data presents several methodological challenges (for an overview see Beck 2008). Key among these challenges is dealing with unmodeled unit heterogeneity or effects. Unit heterogeneity exists when the value of a dependent variable

⁴Following the advice of Honaker, King and Blackwell (2007), the multiple imputation model contained only those variables ultimately used in the statistical models. Given the time-series, cross-sectional nature of the data, the multiple imputation model assumed panel-specific series and included a cubic polynomial when estimating the variables *Tax Ratio*, *Military Spending*, and *Health Care Spending* to account for non-linearities in the series within a panel over time. The number 22 was specified as the seed for the random number generator.

varies among units given the same values on the explanatory variables (*inter alia*, King, Keohane and Verba 1994). Failing to account for unit effects can result in biased point estimates (Cameron and Trivedi 2005, Beck 2008). A series of joint-F tests revealed the presence of statistically significant unit effects. That is, factors not controlled for in the statistical models resulted in systematic variation in the values of the dependent variables across countries. Generally speaking, analysts have two options when with significant unit effects in time series cross-sectional data: a random effects estimator or a fixed effects estimator. A random effects estimator models unit effects as a random variable. Importantly, this allows for the efficient estimation of indicators that are time invariant or have low within-panel variation (Cameron and Trivedi 2005, Beck 2008). A random effects model, however, can be consistently estimated only if the unit effects are uncorrelated with the explanatory variables included in the model. This assumption is rarely met with observational data. Indeed, this is the case with the data used here: the correlation between the explanatory variables and unit effects in the different models I estimated varied between 0.31 and 0.84.

When correlation exists between explanatory variables and the unit effects, a fixed effects model is the more appropriate estimator for time series cross-sectional data (Greene 1997, Cameron and Trivedi 2005, Beck 2008). The fixed effects estimator assumes that unit effects are constant over time and estimates a unique intercept for each unit (or country in the case at hand). This allows coefficients and standard errors to be estimated efficiently. The main drawback of using a fixed effects model is that it uses only within-panel variation for its parameter estimates. As such, a fixed effects model cannot estimate the effect of time-invariant indicators and will yield inefficient and inconsistent coefficient estimates for low within-panel variance indicators (Plümper and Troeger 2007, Beck 2008). Fortunately, the key explanatory variable in my models of the general displacement effect, a dummy variable indicating whether a country previously had fought an interstate war, has more within-panel variation than between-panel variation. I therefore use a series of linear regression models

with fixed country-effects to analyze the displacement effect of interstate war.⁵

4.2.2 Variables

Three dependent variables are used in my analysis of the displacement effect. The first captures the economic resources a government is able to extract from its society. *Tax Ratio* is measured as a government's tax revenue in year t divided by Gross Domestic Product (GDP) in year t between 1960 and 1999 and is taken from the Relative Political Capacity data set (Kugler 2002). *Tax Ratio* is the most common measure of a government's strength in the war and state-making literature (e.g., Peacock and Wiseman 1961, Cohen, Brown and Organski 1981, Thies 2004). The second and third dependent variables proxy a government's allocation of economic resources to military and social spending. *Military Spending* is measured as a state's defense burden – the proportion of a country's annual GDP dedicated to the military. Military expenditure and GDP data were taken from the National Material Capabilities data set (Singer, Bremer and Stuckey 1972, version 4.0) and the Expanded Trade and GDP Data set (Gleditsch 2002, version 4.1), respectively. *Military Spending* covers the period between 1950 and 2001. A state's social spending is proxied by the percentage of a country's GDP allocated to health care spending in year t . *Health Care Spending* is used to measure a state's social spending because it was available for a greater number of countries for a longer period of time than other common indicators of social spending (e.g., education spending, unemployment insurance, welfare effort). *Health Care Spending* is taken from the Relative Political Capacity data set (Kugler 2002) and covers the period from 1960 and 1999.

Modeling the displacement effect of interstate war in a multiple regression model requires two explanatory variables. The first, *Post-War*, is a dichotomous indicator coded 1 in the years following the end of a state's participation in an interstate war and 0 otherwise.

⁵The results of a Hausman test offered further support for this decision. Specifically, the Hausman test indicated that the coefficient estimates yielded by the random effects models were inconsistent and, accordingly, that the fixed effects estimator was more appropriate.

The second explanatory variable, *Interstate War*, is coded 1 during the years of a state's participation in an interstate war and 0 otherwise. Both *Post-War* and *Interstate War* are based on the MID data set (Ghosn, Palmer and Bremer 2004, version 3.1). The inclusion of *Post-War* and *Interstate War* in the same statistical model allows the coefficient on *Post-War* to identify the difference in the value of a dependent variable before and after an interstate war.⁶

In addition to *Post-War* and *Interstate War*, a set of potentially intervening factors are controlled for in the statistical models. The first is a dichotomous indicator of a state's regime type. *Democracy* is coded 1 in those years in which a country has a value of at least +7 on the composite *polity2* index (Marshall and Jaggers 2005) and 0 otherwise.⁷ *Democracy* is included in the models because scholars have found that democratic countries spend more of their resources on social spending (Bueno de Mesquita et al. 2003) and fewer resources on the military (Fordham and Walker 2005) than autocracies. With respect to taxation, Thies (2004) finds that democracies are able to extract more tax revenue from their countries' total resources than non-democracies. A country's *Economic Development* also is thought to effect tax revenue, military spending, and social spending. Developed countries are associated with modern bureaucracies that are more efficient in collecting taxes than the administrative units of developing countries (Levi 1981, Arbetman and Kugler 1997).⁸ Economic development typically is associated with proportionately lower levels of military

⁶More precisely, the inclusion of the dichotomous variables *Post-War* and *Interstate War* in a statistical model means that the "omitted" or baseline category in an analysis is pre-war years. The coefficient on *Post-War* then represents how much higher or lower a dependent variable is in expectation after an interstate war compared to before a war, while the coefficient on *Interstate War* represents how much higher or lower a dependent variable is in expectation during an interstate war compared to before a war.

⁷A set of models were estimated substituting the 21-point *polity2* scale for the dichotomous *Democracy*. The results of these models yielded the same substantive inference as the models presented below.

⁸Thies finds that the relationship between economic development and tax revenue among *developing* countries is conditional on region, with a positive relationship in Latin America (Thies 2005) and a negative relationship in Africa (Thies 2007). Disaggregating the short- and long-run effects of economic development on political development, Thies and Sobek (2010) find that higher levels of economic development hinder a government's (relative) ability to extract taxes from its population in the short-term but help in the long-term.

spending and proportionately higher levels of social spending. I measure a state's *Economic Development* as its per capita energy consumption (Singer, Bremer and Stuckey 1972, version 4.0).

An intrastate conflict could affect patterns of government taxation and spending. Civil conflict would likely limit a government's ability to extract revenue from society (Thies 2004). It also would provide a government with an incentive to increase its military spending and, given resource scarcity, decrease social spending. Therefore, the statistical models of the displacement effect all include a dichotomous variable coded 1 if a government is involved in a civil conflict in year t and 0 otherwise. *Civil Conflict* is taken from the UCDP/PRIO Armed Conflict Dataset (Gleditsch et al. 2002). Numerous scholars have argued that burden sharing can allow a government to allocate fewer resources to military spending and, implicitly, more resources to social spending (Olson and Zeckhauser 1968).⁹ I therefore include a count variable of the *Number of Alliances* a country had in year t in the models of government spending. *Number of Alliances* is taken from the Alliance Treaty Obligations and Provisions (ATOP) project (Leeds, Ritter, Mitchell and Long 2002, version 3.0).¹⁰

All statistical models include a one-year lag of the dependent variable (LDV) for two reasons. First, although objections to the use of LDVs have been raised (most notably by Achen 2000), Keele and Kelly (2006) illustrate that models with a lagged dependent variable are generally superior to other model specifications when the underlying process is a dynamic one. Specifically, if an autoregressive process exists among the data, the inclusion of a LDV can prevent or at least mitigate the presence of serial autocorrelation among the errors (Cameron and Trivedi 2005). As diagnostics revealed the presence of a statistically

⁹Although Palmer (1990) finds support for a reduction in military spending only among smaller allied states.

¹⁰The models of *Tax Revenue* reported here do not include *Number of Alliances* because I lacked a theoretical reason to include it as an explanatory variable. In a set of otherwise identically specified statistical models not reported here, I found no statistical relationship between a state's *Number of Alliances* and its *Tax Revenue*.

significant AR-1 process in the *Tax Ratio*, *Military Spending*, and *Health Care Spending* series, the inclusion of a one-year lag of the dependent variable in the statistical models is methodologically appropriate. Second, by suppressing the explanatory power of other explanatory variables in a model (Achen 2000), model specifications that include a LDV yield more conservative tests of a hypothesis.

4.2.3 Results

Before reporting the results of the fixed effects models, it is worth examining whether the displacement effect of interstate war exists in the raw data. Table 4.1 reports the mean levels of *Tax Ratio*, *Military Spending*, and *Health Care Spending* across the five data sets before and after a state’s participation in an interstate war.

Table 4.1: Pre-War and Post-War Taxation and Government Spending

	Tax Ratio	Military Spending	Health Care Spending
Pre-War	13.6	2.6	1.4
Post-War	17.3	4.3	2.2
Displacement Effect	3.6*	1.8*	0.8*

*Statistically Significant at the 0.05 level.

Table 4.1 is consistent with the displacement effect of interstate war. On average, governments extracted 26.8% more tax revenue from their countries’ total economic resources after an interstate war than they did in the years before an interstate war (17.3% vs. 13.6%). The data also suggest that interstate war displaces military and social spending. Governments allocate 68.5% (4.3% vs. 2.6%) and 58.8% (2.2% vs. 1.4%) more of their GDP to military and health care spending, respectively, in the years following an interstate war than they did in the years prior to participating in a war. Moving to a more systematic analysis, Table 4.2 reports the results of the fixed effects models.¹¹

¹¹Table 4.2 reports the mean value of the coefficients (\bar{Q}) and standard errors and significance levels, as

Table 4.2: The Displacement Effect of Interstate War

<i>Dependent Variable</i>	Model 1	Model 2	Model 3
	<i>Tax Ratio</i>	<i>Military</i>	<i>Health Care</i>
Post-War	1.29** (0.32)	0.50† (0.28)	0.22** (0.07)
Interstate War	1.17** (0.42)	1.24** (0.34)	0.19** (0.08)
Democracy	-0.03 (0.44)	0.04 (0.38)	0.21** (0.09)
Economic Development	6.12E-07† (3.94E-07)	-7.03E-07† (4.08E-07)	5.75E-07** (9.34E-08)
Civil Conflict	-0.72** (0.33)	0.14 (0.26)	0.01 (0.06)
Number of Alliances	–	-0.13 (0.08)	-9.56E-04 (1.07E-02)
Tax Ratio _{t-1}	0.60** (0.02)	–	–
Military Spending _{t-1}	–	0.62** (0.02)	–
Health Care Spending _{t-1}	–	–	0.63** (0.03)
Constant	5.68** (0.42)	1.60** (0.29)	0.39** (0.07)
Overall R ²	0.83	0.63	0.72
F-Statistic	198.41	236.93	247.67
Probability > <i>F</i>	< 0.01	<0.01	<0.01
Observations	1853	2331	1853

Temporal Domain – Models 1 and 3: 1960-1999; Model 2: 1950-2001

Two-tailed Significance Tests: †: $p \leq 0.1$; * : $p \leq 0.05$; ** : $p \leq 0.01$

Standard errors in parentheses

I first discuss the performance of the control variables in Models 1-3. Democracies, on average, do not differ from autocracies in their extraction of tax revenue or allocation

computed by Rubin's (1987) method, yielded by the estimation of identically specified statistical models on each of the five *Amelia II*-generated data sets (Honaker, King and Blackwell 2007). Using Schafer and Olsen's (1998) notation, the standard errors are computed by taking the square root of $T = \bar{U} + (1 + \frac{1}{m})B$, where T is the total variance associate with the mean coefficient estimate, \bar{U} is the within-imputation variance of the estimated coefficient [$\bar{U} = \frac{1}{m} \sum_{i=1}^m U_i$], B is the between-imputation variance [$B = \frac{1}{m-1} \sum_{i=1}^m (\hat{Q} - \bar{Q})^2$], and $1 + \frac{1}{m}$ is a correction factor to account for simulation error in \bar{Q} .

of resources to military spending, but do spend significantly more on health care than do autocracies. Consistent with expectations, *Economic Development* is positively associated with tax revenue and health care spending and negatively associated with military spending. Governments involved in a *Civil Conflict* extract less tax revenue but do not differ from governments not engaged in a civil conflict in the resources they allocate to military or health care spending. I find no statistical relationship between a state's *Number of Alliances* and its military spending or health care spending. Last, the coefficient on each one-year lag of the dependent variable is positive and statistically significant.

Turning to the results of primary interest, the models reported in Table 4.2 indicate that the displacement effect of interstate war exists in the contemporary international system. More specifically, the positive and statistically significant coefficients on the variable *Post-War* tell us that, on average, governments extract more tax revenue (Model 1), spend more of their total resources on the military (Model 2), and allocate more resources to health care spending (Model 3) after an interstate war than they did in the years before an interstate war. To provide greater context to these results and help with their interpretation, I calculated the predicted value of each dependent variable before and after an interstate war and the difference in these predicted values with a set of post-estimation simulations based on the parameter estimates reported in Table 4.2.¹² The results of these post-estimation simulations for a government's *Tax Ratio* are presented in Figure 4.1.

¹²The post-estimation simulations for Model 1 were conducted through the following steps. First, 10,000 draws were taken from a multivariate normal distribution based on the coefficient and variance-covariance matrices. Second, I set the explanatory variables in the model to represent an autocratic country with the mean level of economic development that was not involved in an interstate war or civil conflict, had not fought an interstate war, and had the mean level of tax ratio in the previous year. This scenario represents the median values of the nominal and ordinal variables and mean values of the continuous variables in the model. Third, I calculated the predicted value of *Tax Ratio*. Fourth, the variable *Post-War* was changed to represent a country that had previously experienced an interstate war. Fifth, I calculated the predicted value of *Tax Ratio*. Sixth, I calculated the difference in the value of *Tax Ratio* in the two scenarios. The other post-estimation simulations done for this manuscript were conducted analogously. See King, Tomz and Wittenberg (2000) on the utility of post-estimation simulations for interpreting the results of statistical analyses.

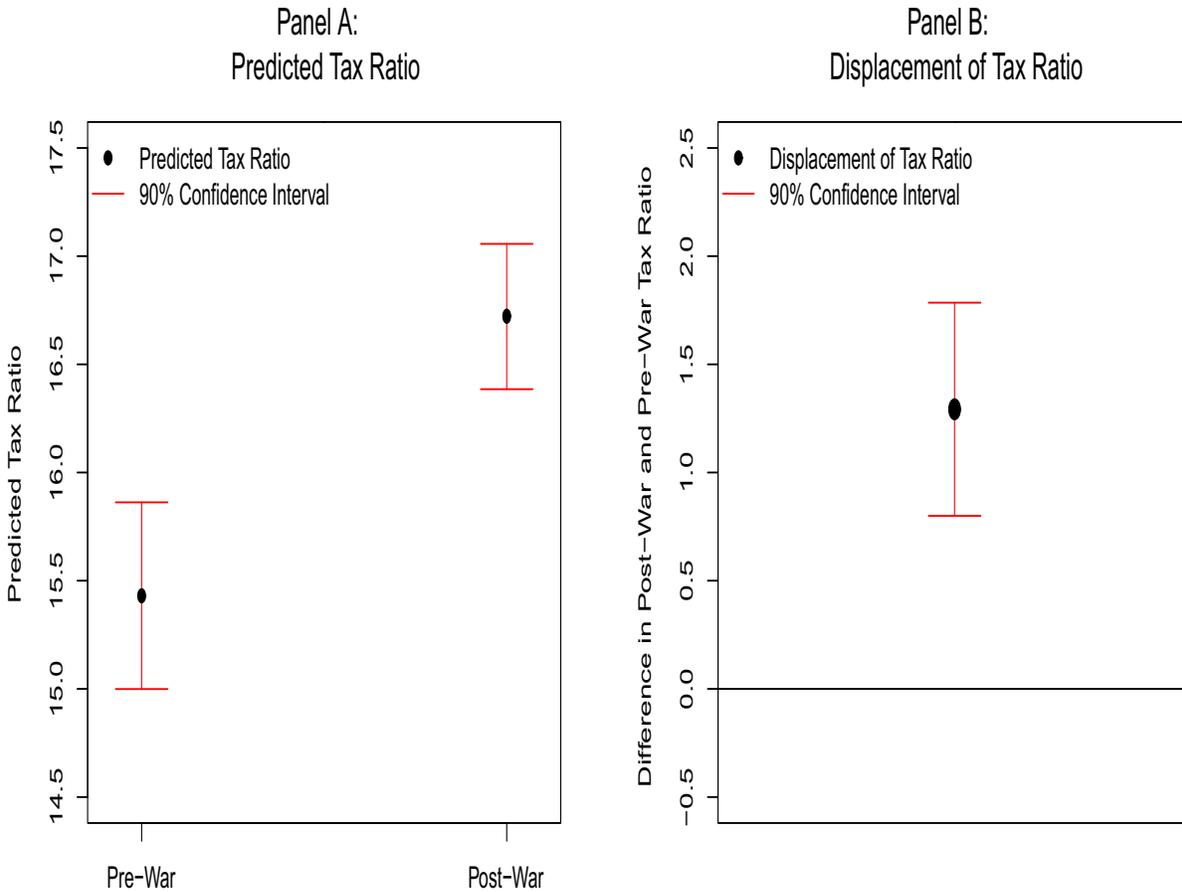


Figure 4.1: The Displacement Effect of Interstate War on Tax Ratio

A state's predicted pre-war and post-war *Tax Ratio* and associated 90% confidence intervals are presented in Panel A of Figure 4.1.¹³ Consistent with the displacement effect of interstate war, a government is predicted to extract 8.4% more tax revenue from its total GDP in the years following an interstate war than it did in years before a war (16.7% vs. 15.4%). The predicted difference and the associated 90% confidence interval in a country's post-war and pre-war *Tax Ratio* are presented in Panel B of Figure 4.1. As the confidence interval of the predicted difference lies completely above the zero-line in Panel B, the 1.3

¹³I use 90% confidence intervals because of the directional nature of the expected relationship between *Post-War* and the respective dependent variables.

percentage point increase in a country's post-war *Tax Ratio* is statistically significant. The results in Table 4.2 and Figure 4.1 therefore indicate the presence of a significant displacement of tax revenue following an interstate war.

Figure 4.2 presents a state's predicted pre-war and post-war *Military Spending* (Panel A) and the predicted difference in *Military Spending* under the two scenarios (Panel B). On average, a government is predicted to allocate 14% more of its annual GDP to military spending after an interstate war than in the years before it participated in a war (4.1% vs. 3.6%). Panel B indicates that the 0.5 percentage point difference between post-war and pre-war military spending is statistically significant. Accordingly, it appears that participation in an interstate war is associated with a long-term increase in the economic resources a government allocates to military spending.

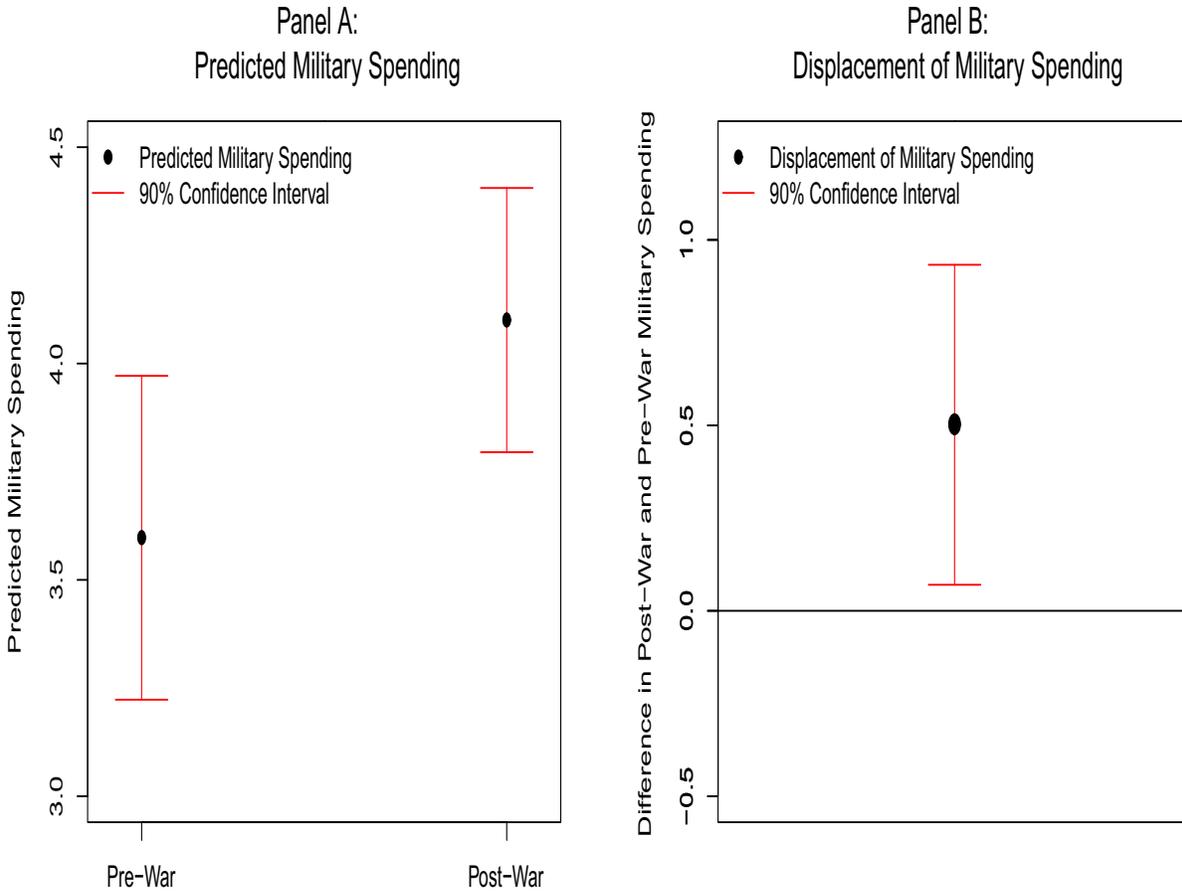


Figure 4.2: The Displacement Effect of Interstate War on Military Spending

The results of my post-estimation simulations of Model 3 are presented in Figure 4.3. On average, countries allocated 1.7% of their GDP to health care spending in the years before an interstate war and 1.92% of GDP in the years following a war (Panel A). That is, a country's participation in an interstate war was associated with a 13.1% increase in the proportion of its economic resources dedicated to health care spending. As the confidence interval about the predicted difference in *Health Care Spending* does not contain the zero-line, Panel B indicates that the 0.22 percentage point increase in a state's health care spending associated with the displacement effect of interstate war is statistically significant.

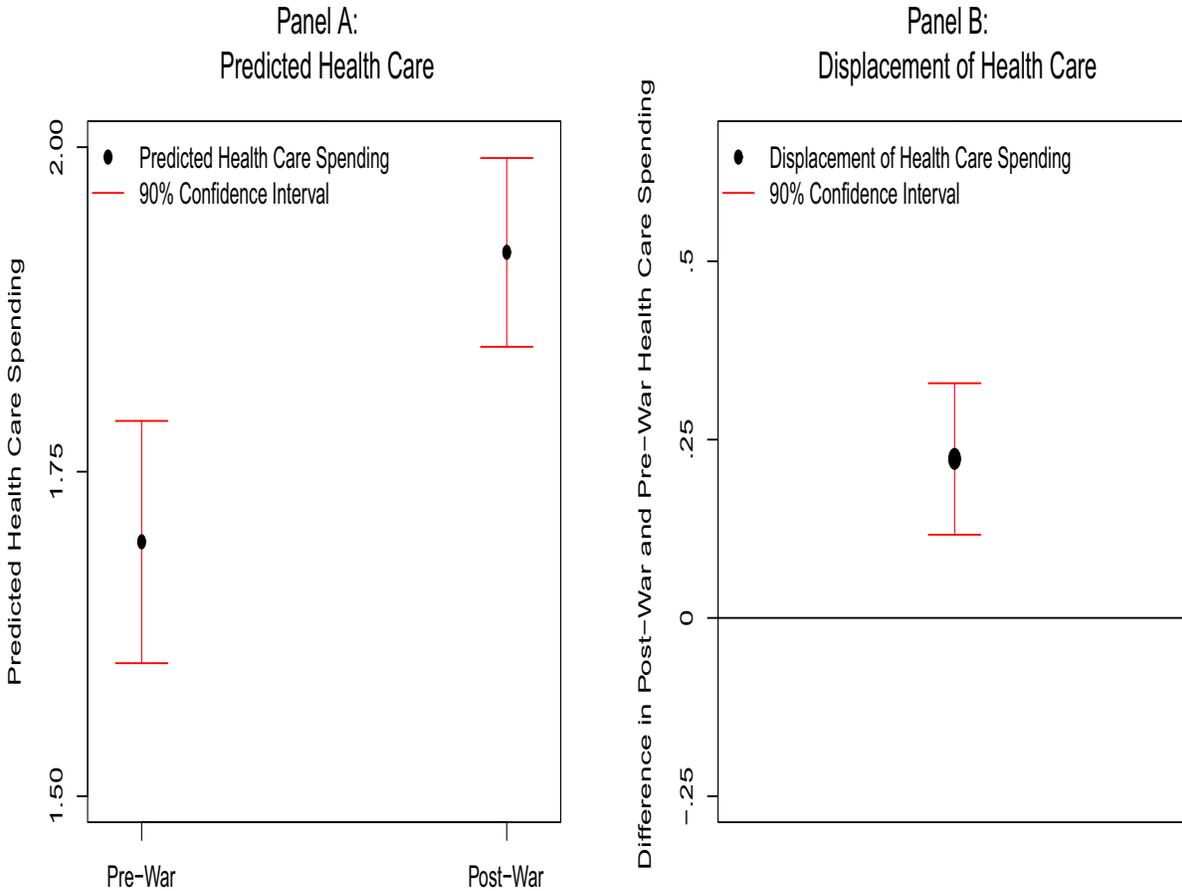


Figure 4.3: The Displacement Effect of Interstate War on Health Care Spending

The results in Tables 4.1 and 4.2 and Figures 4.1 - 4.3 demonstrate that, on average, countries extract greater tax revenue and allocate more resources to military and health care spending after participating in an interstate war than they did before waging war. Framed differently, these analyses are consistent with the argument that interstate war is linked to stronger, more powerful states via higher equilibrium levels of taxation and government spending. Having established empirical support for both aspects of the displacement effect (increased government revenue and spending), the next two sections argue that existing analyses of the displacement effect have missed an important intervening factor: whether a democratic or autocratic government controls the state.

4.3 Political Survival, Government Spending, and Regime Type

Existing empirical analyses, including those presented in the previous section, assume that domestic political institutions are unrelated to the displacement effect of interstate war. I argue, in contrast, that regime type should condition the increase in military and social spending associated with the displacement effect. Specifically, variation in the optimal distribution of guns and butter for incumbency-valuing leaders across regime type should result in autocracies increasing military spending to a greater degree than democracies and democracies increasing social spending to a greater degree than autocracies. This section details why democratic and autocratic leaders have different optimal allocations of social and military spending.

The claim that office-valuing democratic and autocratic leaders differ in their optimal distributions of social and military spending follows from three factors: the relative political power of the public and elite across regime type; the relative preferences of those societal groups over government spending on the military and social programs; and the relationship between political survival and policy responsiveness.¹⁴ The first factor is the political influence of the public and elite across regime type. There are numerous differences between democratic and autocratic governments. Following Dahl (1971), Acemoglu and Robinson (2006), and others, arguably the most important is the difference in the political power of a society's public and elite – defined here and elsewhere as a society's wealthy civilian elite and members of the military – across regime type. Specifically, the general public has relatively greater *de facto* political power and influence *vis-à-vis* a society's elite in a democracy than it does in an autocracy. This has implications for patterns of taxation (Acemoglu and Robinson 2006), redistribution (Boix 2003), social and military spending (Chapter 2), and

¹⁴See Chapter 2 for a more thorough, formal treatment of the relationship between these factors.

the prosecution of interstate conflict (Chapter 3) in autocracies and democracies.

The second factor underlying the argument that the displacement effect should vary across regime type is the relative preferences of the public and elite over military and social spending. Broadly speaking, members of the general public should prefer that its government allocate proportionately more of its economic resources to social spending and fewer resources to military spending than members of the elite. There are two reasons the public should prefer relatively greater social spending and less military spending than the civilian elite. First, members of the poorer, general public derive more direct, material benefits from social spending (e.g., health care, education, food subsidies) than do members of the wealthy, civilian elite. This explains the persistent negative relationship between an individual's income and support for the welfare state found by public opinion scholars (e.g., Cook and Barrett 1992, Jacoby 2000). This is not to say that members of the elite obtain no indirect benefits from social spending, for instance a better educated and healthier work force. However, it seems questionable to argue that wealthy members of society derive greater direct benefits from spending on the welfare state than do members of the general public. Second, social welfare states most often are financed via taxes on the earnings and wealth of a society's civilian elite (Przeworski et al. 2000, Boix 2003). Accordingly, the civilian elite bear the brunt of the financial costs of the social welfare state while deriving proportionately fewer benefits as compared to the general public. Assuming that an individual prefers greater material benefits to fewer benefits, it follows that members of the general public should prefer greater social spending than members of the civilian elite. As both groups benefit from the military spending required to provide the public good of national defense (Olson and Zeckhauser 1968), resource scarcity implies that the general public would prefer a government allocate proportionately more of its resources to social spending than the civilian elite.

Members of the general public have three reasons to prefer proportionately higher social

spending and lower military spending than members of the military. First, members of the military rely directly on military spending for their livelihoods. This is not the case for members of the civilian public. Second, as Nordlinger (1977), Geddes (2003) and others point out, military training socializes members of the military to place a higher value on a strong armed forces and favor higher military spending than the general public. Third, resource scarcity implies that military expenditures crowd out the economic resources available to a government for spending on social programs popular with the members of the public (Sprout and Sprout 1968, Fordham and Walker 2005). Taken together, these three points suggest that the general public prefers relatively higher social spending and lower military spending than do members of the military.

The third factor that underlies variation in the displacement effect of interstate war across regime type is the relationship between political survival and policy responsiveness. Policy responsiveness describes the process through which an incumbent politician retains the support necessary to remain in office by enacting the preferred policies of his or her constituents (Page and Shapiro 1983, Stimson, MacKuen and Erikson 1995). Policy responsiveness then captures the intuition that politicians need to keep their key supporters happy in order to stay in power. The large literature on policy responsiveness has focused almost exclusively on democracies (see Burstein (2003) for a review). However, as all political incumbents require the support of some portion of society to remain in power (Buono de Mesquita et al. 2003), policy responsiveness also operates in the autocratic context (e.g., Key 1961, Weingast 1997, Svobik 2009). The key difference in policy responsiveness across regime type is that democratic and autocratic politicians must be responsiveness to systematically different segments of society in order to remain in power. Namely, variation in the relative political power of the public and elite across regime type implies that democratic political leaders need to be responsive to the policy preferences of the public to stay in office while autocratic incumbents must enact the policies preferred by a society's elite in order to

remain in power.

The above discussion makes three key points: 1) political leaders secure their tenure in office by enacting the preferred policies of their key constituents; 2) the public has relatively greater political power than the elite in democratic governments while a society's elite has greater political power than the public in autocratic governments; and 3) members of the public should prefer relatively higher social spending and lower military spending than members of a society's elite. These three factors, when considered jointly, imply that different combinations of government spending best secure the political survival of democratic and autocratic leaders. Specifically, democratic leaders are more likely than autocratic leaders to stay in power given high social spending and low military spending and autocratic leaders are more likely than democratic leaders to retain office given high military spending and low social spending. These predicted relationships between leadership survival, government spending, and regime type are consistent with the experience of democratic and autocratic leaders between 1960 and 1999 (see Chapter 2). If we assume political incumbents prefer to retain office over being removed from power (Bueno de Mesquita et al. 2003), this argument implies the optimal combination of social and military spending for a political leader varies across regime type. Therefore, the optimal combination of government spending for an office-valuing democratic leader should consist of relatively greater social spending and less military spending than the optimal mix of guns and butter for an office-valuing autocratic leader. This prediction is consistent with research that finds democracies allocate more of their economic resources to social spending (e.g., Bueno de Mesquita et al. 2003, Huber, Mustillo and Stephens 2008) and fewer of their resources to military spending than do non-democracies (e.g., Fordham and Walker 2005, Goldsmith 2007).

To sum up, I argue that policy responsiveness, public and elite preferences over government spending, and variation in the political power of the public and elite across regime type imply that a democratic incumbent who values office has an incentive to allocate more

resources to social spending and fewer resources to military spending than an office-valuing autocratic leader. The next section develops the implications of this argument for the relationship between regime type and the displacement effect of interstate war.

4.4 Democracy, Autocracy, and the Displacement Effect of Interstate War

The displacement effect refers to the phenomenon in which governments, acting as the representative agent of the ruling segment of society (Levi 1981), use national crises to increase their control over their population and territory through higher equilibrium rates of taxation and government spending (Peacock and Wiseman 1961). Existing theoretical and empirical accounts of the displacement effect of interstate war assume that a country's domestic political institutions have no influence on the process. This assumption is questionable when one considers the relationship between leadership survival, government spending, and regime type described in the preceding section. Indeed, variation in the optimal distribution of social and military spending for office-valuing autocratic and democratic leaders implies two differences in the displacement effect of interstate war across regime type: the increase in military spending should be higher in autocracies than in democracies and the increase in social spending should be higher in democracies than in autocracies.

My argument that the displacement effect of interstate war should be conditional on regime type follows from five assumptions. First, the displacement effect results in a country's government controlling a greater proportion of its society's economic resources after an interstate war than it did before war (Peacock and Wiseman (1961), Tables 1 and 2 and Figure 1 above). Second, all governments are led by political executives who prefer remaining in power to being removed from office (Bueno de Mesquita et al. 2003). Third, all political

executives retain the political support necessary to remain in office via policy responsiveness, i.e., enacting the preferred policies of their key constituents (Key 1961, Burstein 2003). Fourth, the political influence of the public *vis-à-vis* the elite is greater in a democracy than in an autocracy (Dahl 1971, Acemoglu and Robinson 2006). Fifth, the public prefers relatively higher social spending and lower government spending than do members of a society's elite (among others, Sprout and Sprout 1968, Przeworski et al. 2000).

The above assumptions, when considered jointly, suggest that the increases in military and social spending associated with the displacement effect of interstate war should vary across regime type. The logic behind this claim is straightforward. As governments are led by office-valuing political executives, a political leader should implement the policies favored by those members of society whom can secure her tenure. Comparatively speaking, the public has more political power in a democracy and the elite have more political influence in an autocracy. A democratic leader, then, has a greater incentive than an autocratic leader to enact the preferred policies of the public, and an autocratic leader has a greater incentive than a democratic leader to implement the policies favored by a society's elite. As the public and elite have different preferences over the relative distribution of guns and butter, it follows that how a leader, and therefore government, distributes the increased revenue associated with the displacement effect of interstate war should be conditional on regime type.

The previous paragraph suggests the increases in military spending and social spending associated with the displacement effect of interstate war should vary across regime type. Consider the displacement effect of war on military spending first. A society's civilian elite and members of its military prefer relatively greater military spending than do its general public. Accordingly, the increase in military spending associated with the displacement effect should be higher in those states in which the elite have relatively more political influence. As a society's elite have relatively more political power under autocratic regimes than democratic governments, it therefore follows that autocratic leaders have a greater incentive than

democratic leaders to allocate the increased revenue associated with the displacement effect of interstate war to military spending.

Hypothesis 1 The increase in military spending associated with the displacement effect of interstate war should be larger in autocracies than in democracies.

An analogous logic underlies my expectations about the displacement of social spending after an interstate war across regime type. Members of the general public prefer relatively higher social spending than do members of a society's elite. The policy responsiveness framework tells us that political incumbents secure their tenure by enacting the preferred policies of their key constituents. As the public has greater political power *vis-à-vis* the elite in a democracy than they do in an autocracy, it follows that a democratic leader has a greater incentive than an autocratic leader to allocate relatively more of the additional revenue associated with the displacement effect to social spending.

Hypothesis 2 The increase in social spending associated with the displacement effect of interstate war should be larger in democracies than in autocracies.

The relationship between political survival, government spending, and regime type developed here predicts that how a government distributes the increased revenue associated with the displacement effect of interstate war is conditional on regime type. It is silent, though, on whether the increase in taxation associated with the displacement effect should vary across regime type. The following sub-section discusses the implications of some existing scholarship for potential variation in the displacement of tax revenue across regime type

4.4.1 Regime Type and the Displacement of Tax Revenue

The implications of the existing literature are divided over whether the displacement of revenue after an interstate war should be larger in democracies or autocracies. The research of Lake (1992, 2003) and Bueno de Mesquita et al. (1999, 2003) implies that the equilibrium increase in tax revenue that follows from an interstate war should be greater in democracies. Lake (1992, 2003) argues the relatively lower cost of political participation for citizens in democratic countries constrains the rent-seeking ability of democratic regimes relative to autocratic governments. This results in democratic citizens being relatively wealthier and more supportive of government policies than the citizens of autocratic regimes. This greater wealth and higher domestic support allows democratic regimes to extract more resources from their populations during an interstate war than autocratic governments. As democracies should be able to generate a greater war-time increase in tax revenue than autocracies and all governments seek to maximize the resources under their control (Levi 1981), it therefore should be the case that the difference between the post-war and pre-war tax revenue is greater in democracies than in autocracies.

Selectorate theory's account of the relationship between leadership survival, interstate war outcomes, and regime type also suggests that democracies might have a larger displacement of tax revenue than autocracies (Bueno de Mesquita et al. 1999, 2003). According to Bueno de Mesquita et al., democratic leaders are more likely than autocratic leaders to be removed from office after losing an interstate war. This relative fear of being removed from power after losing a war implies that democratic leaders have a relatively greater incentive than autocratic leaders to mobilize their country's economic resources to wage war.¹⁵ The selectorate model of interstate conflict assumes a closed economy, thus mobilization efforts

¹⁵However, as demonstrated in Carter (N.d.) and discussed in Chapter 3, the relationship between regime type and mobilization efforts appears to be conditional on the time period under analysis. Specifically, democracies seem to have mobilized more resources for war than autocracies before the end of World War II while autocracies have mobilized more resources for war than democracies after 1945.

must be financed by domestic revenue. It therefore follows that democratic leaders have an incentive to raise taxes during war-time to a greater degree than autocratic leaders. As all governments seek to maximize the resources under their control, the increased revenue associated with the displacement effect of interstate war should be higher in democracies than in autocracies.

The research of another set of scholars suggests the displacement of tax revenue associated with the displacement effect of interstate war should be larger in autocracies than in democracies. Schultz and Weingast (1998, 2003) argue that the relatively greater transparency and accountability of democratic governments provides democratic leaders with a greater incentive to repay their debts than autocratic leaders. As democratic governments should be less likely to default on their loans than autocratic regimes, democracies are able to borrow money on the international market at relatively lower interest rates than autocracies. Accordingly, it is easier for democracies than autocracies to finance an interstate war effort without having to resort to politically unpopular tax increases. The relative access of democracies and autocracies to cheap credit suggests that, compared to democratic governments, autocracies would need to raise more of the increased revenue needed to fight a war through higher taxes. Because the war-time tax increases should be greater in autocracies and governments seek to maximize the revenue under their control, the difference between post-war and pre-war rates of taxation should be higher in autocracies than in democracies.

The empirical findings of Chiozza and Goemans (2004) and Debs and Goemans (2010) also suggest that autocracies should experience a larger displacement of tax revenue than democracies. Counter to the claims of Bueno de Mesquita and Siverson (1995) and Bueno de Mesquita et al. (1999), Chiozza and Goemans (2004) and Debs and Goemans (2010) demonstrate that *autocratic* incumbents are more likely to be removed from office after losing an interstate war than are democratic incumbents. Autocratic leaders then have a greater incentive than democratic leaders to mobilize the resources necessary to wage a winning

war effort. This implies that, needing a win to secure their political survival, autocratic leaders should increase taxes to a greater during an interstate war than democratic leaders. As governments seek to maximize their control over societal resources, it follows that the displacement of tax revenue should be greater in autocracies than in democracies.

4.5 Research Design

The relationship between regime type and the displacement effect of interstate war is estimated using the same country-year data sets used in the above analyses. The data contain information on the 52 countries that participated in an interstate war between 1950 and 2001, per the MID data set (Ghosn, Palmer and Bremer 2004, version 3.1). Identifying variation across regime type in the difference in a country's *Tax Ratio*, *Military Spending*, and *Health Care Spending* before and after an interstate war requires four explanatory variables: *Interstate War*, *Post-War*, *Democracy*, and *Post-War*Democracy*. The inclusion of these four explanatory variables in a statistical model allows us to interpret *Post-War* and *Post-War*Democracy* as the differences between post-war and pre-war values of a dependent variable in an autocracy and a democracy, respectively.¹⁶ In addition to these four theoretically relevant explanatory variable, *Economic Development*, *Civil Conflict*, and *Number of Alliances* (in the models of *Military Spending* and *Health Care Spending*) are included in the models as control variables. The coding of these variables are described above. The statistical models also include a one-year lag of the relevant dependent variable.

The relationship between the displacement effect of interstate war and regime type is estimated using a set of linear regression models with fixed country-effects. I chose a fixed

¹⁶More specifically, the combination of the dichotomous variables *Interstate War*, *Post-War*, and *Democracy* and the interaction term *Post-War*Democracy* result in pre-war, autocratic country-years being the excluded category of country-years and the baseline of analysis. As such, *Democracy* identifies the pre-war, democratic country-years in the data, *Post-War* identifies the post-war, autocratic country-years in the sample, and *Post-War*Democracy* identifies the post-war, democratic country-years in the sample.

effects model over a random effects model because, as above, significant correlation existed between the unit effects and the explanatory variables included in the statistical models (among others see Cameron and Trivedi 2005, Beck 2008). While more appropriate than a random effects model, the fixed effects estimator is not particularly well suited for my analysis of the displacement effect of war across regime type.¹⁷ The primary drawback of a fixed effects model, as discussed above, is that its parameter estimates are based exclusively on the within-panel variation of the explanatory variables (Greene 1997, Cameron and Trivedi 2005). This inherent feature of fixed effects models has two implications. One, fixed effects models are unable to estimate the effect of time-invariant variables. Two, fixed effects models provide inefficient and inconsistent estimates of indicators that have relatively low within-panel variance. Fortunately, we can obtain parameter estimates for each of the explanatory variables because none of the indicators are time invariant. Unfortunately, the theoretically interesting variables *Democracy* and *Post-War*Democracy* each have relatively low within-panel variation.¹⁸ This implies that the predicted effects of *Democracy* and *Post-War*Democracy* are inefficiently estimated and might yield biased inferences about the relationship between regime type and the displacement effect of interstate war. This point should be kept in mind when interpreting the analyses presented below.

¹⁷As above, the results of a Hausman test rejected the use of a random effects model.

¹⁸Following Cameron and Trivedi (2005) and Plümer and Troeger (2007), an indicator is designated as having relatively low within-panel variation if it varies more between panels than within panels; i.e., the ratio of between-panel variation to within-panel variation is greater than one. *Democracy* has an average between-panel standard deviation of 0.41 and an average within-panel variation of 0.23 across the five imputed data sets, yielding an average between-panel to within-panel ratio of 1.8. *Post-War*Democracy* has an average between-panel standard deviation of 0.34 and an average within-panel standard deviation of 0.29 across the five imputed data sets, yielding an average between-panel to within-panel ratio of 1.2. Framed differently, there is 75.7% and 17.4% more between-panel variation than within-panel variation in *Democracy* and *Post-War*Democracy*, respectively.

4.6 Empirical Results

I first present a set of summary statistics concerning the relationship between regime type and the displacement effect of interstate war before turning to the more systematic analyses. Table 4.3 reports the mean values of *Tax Ratio*, *Military Spending*, and *Health Care Spending* in democracies and autocracies before and after a country’s participation in an interstate war across the five *Amelia* II-generated data sets (Honaker, King and Blackwell 2007).

Table 4.3: Pre-War and Post-War Taxation and Spending in Democracies and Autocracies

	<i>Tax Ratio</i>		<i>Military Spending</i>		<i>Health Care Spending</i>	
	Democracy	Autocracy	Democracy	Autocracy	Democracy	Autocracy
Pre-War	12.8	13.7	1.5	2.7	1.2	1.4
Post-War	17.8	16.9	2.7	5.7	2.7	1.7
Displacement Effect	5.0*	3.2*	1.5*	3.0*	0.8*	0.3*

All values are as a percentage of GDP.

*Statistically Significant at the 0.05 level.

The second and third columns in Table 4.3 suggest that the statistically significant displacement of tax revenue after an interstate war is larger in democracies than in autocracies. The proportion of GDP democracies extract from their societies in the form of tax revenue increases by almost 39% after an interstate war (17.8% vs. 12.8%). The post-war extraction of tax revenue in autocracies, by comparison, is 23% higher than pre-war levels (16.9% vs. 13.7%). An analogous comparison of pre-war and post-war levels of *Military Spending* indicates that, consistent with Hypothesis 1, the displacement of military spending is greater in autocracies than in democracies. As compared to their respective pre-war levels, autocracies increase the proportion of their economic resources dedicated to military spending after an interstate war by approximately 110% (5.7% vs. 2.7%) while post-war military spending is “only” 83.3% higher in democracies (2.7% vs. 1.5%). The data also appear to support Hypothesis 2, as the statistically significant displacement of health care spending after an

interstate war is greater in democracies than in autocracies. Democracies spend, on average, 119.9% more of their economic resources on health care after an interstate war than they did before a war (2.7% vs. 1.2%). In comparison, *Health Care Spending* in an autocracy is 24.2% higher after an interstate war than before a war (1.7% vs. 1.4%). Simple comparisons of the three dependent variables before and after an interstate war, then, are consistent with Hypotheses 1 and 2 and suggest that the displacement of tax revenue after a war might be larger in democracies than in autocracies. Having described the general patterns within the data, Table 4.4 reports the results of the fixed effects models of the relationship between regime type and the displacement effect of interstate war.¹⁹

I again report the performance of the control variables before turning to my assessment of the relationship between regime type and the displacement effect. The control variables largely behave as they did in the models of the general displacement effect presented above. Higher levels of *Economic Development* are associated with lower military spending and higher health care spending. The positive relationship between *Economic Development* and *Tax Ratio* is statistically insignificant here. I again find that involvement in an intrastate conflict is associated with lower tax revenue but find no relationship between *Civil Conflict* and a state's military or health care spending. Consistent with burden sharing arguments, *Number of Alliances* is negatively related to a state's military spending. I find no relationship between a state's number of alliances and the resources it allocates to health care spending. Last, a one-year lag of the dependent variable is positive and statistically significant in all of the models.

With respect to the relationship between regime type and the displacement effect, the inclusion of the multiplicative interaction term *Post-War*Democracy* in the statistical models

¹⁹Table 4.4 reports the mean value of the coefficients (\bar{Q}) and standard errors and significance levels as computed by Rubin's (1987) method yielded by the estimation of identically specified statistical models on each of the five *Amelia II*-generated data sets (Honaker, King and Blackwell 2007). See footnote 11 for the formulas used to compute the standard errors reported in Table 4.4.

Table 4.4: The Displacement Effect of Interstate War across Regime Type

<i>Dependent Variable</i>	Model 4	Model 5	Model 6
	<i>Tax Ratio</i>	<i>Military</i>	<i>Health Care</i>
Post-War	1.20** (0.34)	0.36 (0.29)	0.17* (0.07)
Democracy	-0.38 (0.61)	-0.51 (0.51)	0.01 (0.12)
Post-War*Democracy	0.45 (0.53)	0.72 (0.47)	0.25** (0.12)
Interstate War	1.22** (0.43)	1.37** (0.35)	0.22** (0.08)
Economic Development	5.86E-07 (3.95E-07)	-7.13E-07† (4.08E-07)	5.69E-07** (9.32E-08)
Civil Conflict	-0.72* (0.33)	0.14 (0.26)	0.01 (0.06)
Number of Alliances	–	-0.13** (0.08)	-0.002 (0.01)
Tax Ratio _{t-1}	0.60** (0.02)	–	–
Military Spending _{t-1}	–	0.62** (0.02)	–
Health Care Spending _{t-1}	–	–	0.63** (0.03)
Constant	5.73** (0.43)	1.69** (0.30)	0.42** (0.07)
Overall R ²	0.83	0.63	0.72
F-Statistic	170.16	207.76	217.85
Probability > <i>F</i>	< 0.01	<0.01	<0.01
Observations	1853	2331	1853

Temporal Domain – Models 4 and 6: 1960-1999; Model 5: 1950-2001

Two-tailed Significance Tests: †: $p \leq 0.1$; * : $p \leq 0.05$; ** : $p \leq 0.01$

Standard errors in parentheses

limits the utility of Table 4.4. More precisely, the standard errors reported in standard results tables do not reflect the covariance between the constituent terms and the interaction term (Brambor, Clark and Golder 2006, Kam and Franzese 2007). I therefore conducted a set of post-estimation simulations of Models 4-6 that allow me to take into account the

covariance among *Post-War*, *Democracy*, and *Post-War*Democracy* when calculating the relationship between regime type and the displacement effect of interstate war.²⁰

My theoretical expectations are that 1) post-war levels of taxation and government spending should be higher than pre-war levels in both autocracies and democracies; 2) the relative increase in military spending should be higher in autocracies than in democracies; and 3) the relative increase in social spending should be higher in democracies than in autocracies. To assess whether the displacement effect of interstate war operates in all countries, I calculated the mean pre-war and post-war values of *Tax Ratio*, *Military Spending*, and *Health Care Spending* and the difference between the predicted values of each dependent variable *within* autocracies and democracies. To assess whether the displacement effect varies *across* regime type, I then calculated the difference between the democratic and autocratic displacements of tax revenue, military spending, and social spending. Given the sequential nature of the displacement effect of interstate war, I first report the results for the displacement of tax revenue before turning to government spending.

The results of the post-estimation simulations indicate that participation in an interstate war is associated with an increase in the level of tax revenue in both autocratic and democratic countries, and that the difference between post-war and pre-war tax revenue does not vary across regime type. Panel A in Figure 4.4 shows that, compared to the years before an interstate war, autocracies extract 7.8% more tax revenue from their societies after a war (16.6% vs. 15.5%) while democracies gather 10.9% more in tax revenue following an inter-

²⁰With one exception, the post-estimation simulations of Models 4-6 were analogous to those conducted after Models 1-3 and described in footnote 12. The covariance between the constituent terms and interaction term is accounted for by the draws from the variance-covariance matrix of each model using a multivariate normal distribution. This is the same procedure Clarify (King, Tomz and Wittenberg 2000) uses to calculate substantive quantities of interest. The one notable difference between the two sets of simulations is that those conducted after Models 4-6 included the additional step of calculating the difference, and associated 90% confidence interval, between the estimated democratic and autocratic displacements of *Tax Ratio*, *Military Spending*, and *Health Care Spending*. That is, the post-estimation simulations after Models 4-6 calculated the difference in the difference between post-war and pre-war levels of the dependent variables across regime type.

state war (16.7% vs. 15.1%). As neither confidence interval crosses the zero-line, Panel B in Figure 4.4 tells us that these 1.2 percentage point (autocracies) and 1.6 percentage point (democracies) increases are both statistically significant.

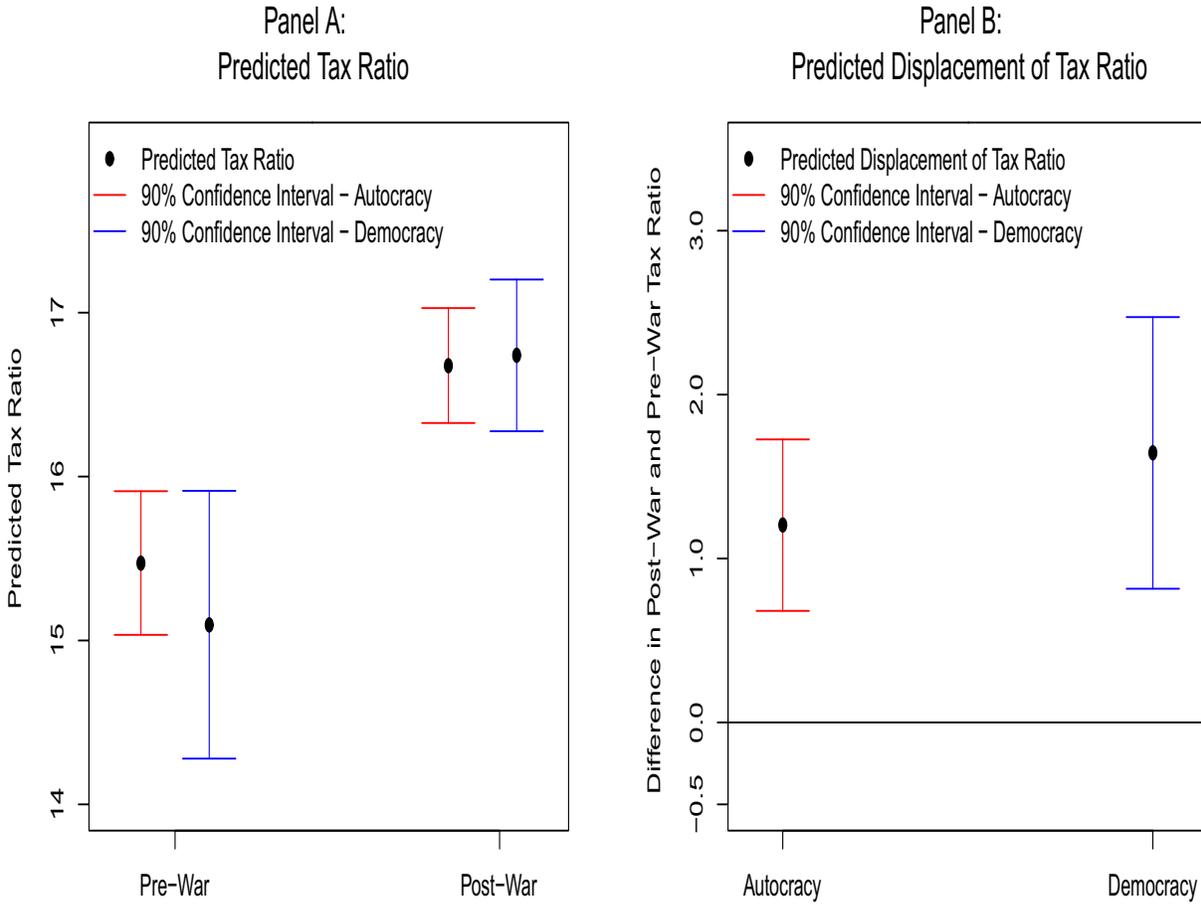


Figure 4.4: Regime Type and the Displacement Effect of Interstate War on Tax Ratio

Where Figure 4.4 allows us to assess whether autocracies and/or democracies extracted greater tax revenue after an interstate war, Figure 4.5 reports the difference between democratic and autocratic displacements of tax revenue. Interstate war results in a 36.5% larger displacement of tax revenue in democracies than in autocracies (1.6 percentage points vs. 1.2 percentage points). This difference however is statistically insignificant, as noted by the confidence interval including zero. Taken together, Figures 4.4 and 4.5 indicate post-war

levels of taxation are higher than pre-war levels in both autocracies and democracies and that the displacement of tax revenue does not vary across regime type.

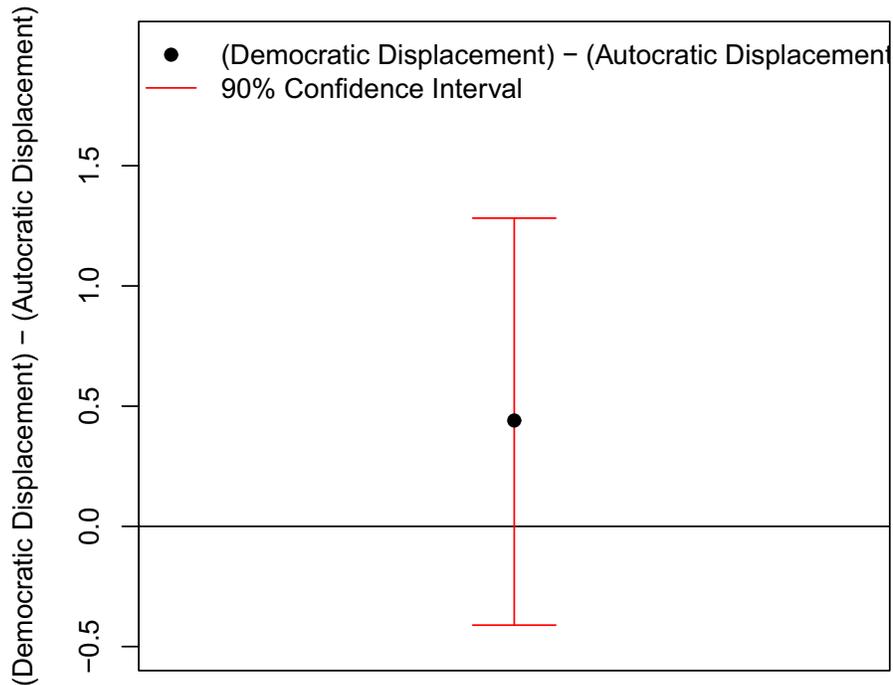


Figure 4.5: The Difference in the Displacement of Tax Ratio across Regime Type

Turning to the relationship between regime type and the displacement effect of interstate war on military spending, Figure 4.6 presents the predicted pre-war and post-war levels of *Military Spending* (Panel A) and the difference between the two predicted values within autocracies and democracies (Panel B). It appears that the displacement of military spending following an interstate war is not larger in autocracies than it is in democracies. Panel A indicates that, compared to pre-war levels of military spending, autocracies allocate approximately 9.7% more of their GDP to military spending after an interstate war (4.0% vs.

3.7%) while democratic post-war military spending, on average, is 34% higher than before a war (4.2% vs. 3.2%). The difference between post-war and pre-war military spending, per Panel B, is statistically significant in democracies but not in autocracies. The models then suggest, surprisingly, that there is no significant displacement of military spending following an interstate war in autocracies.

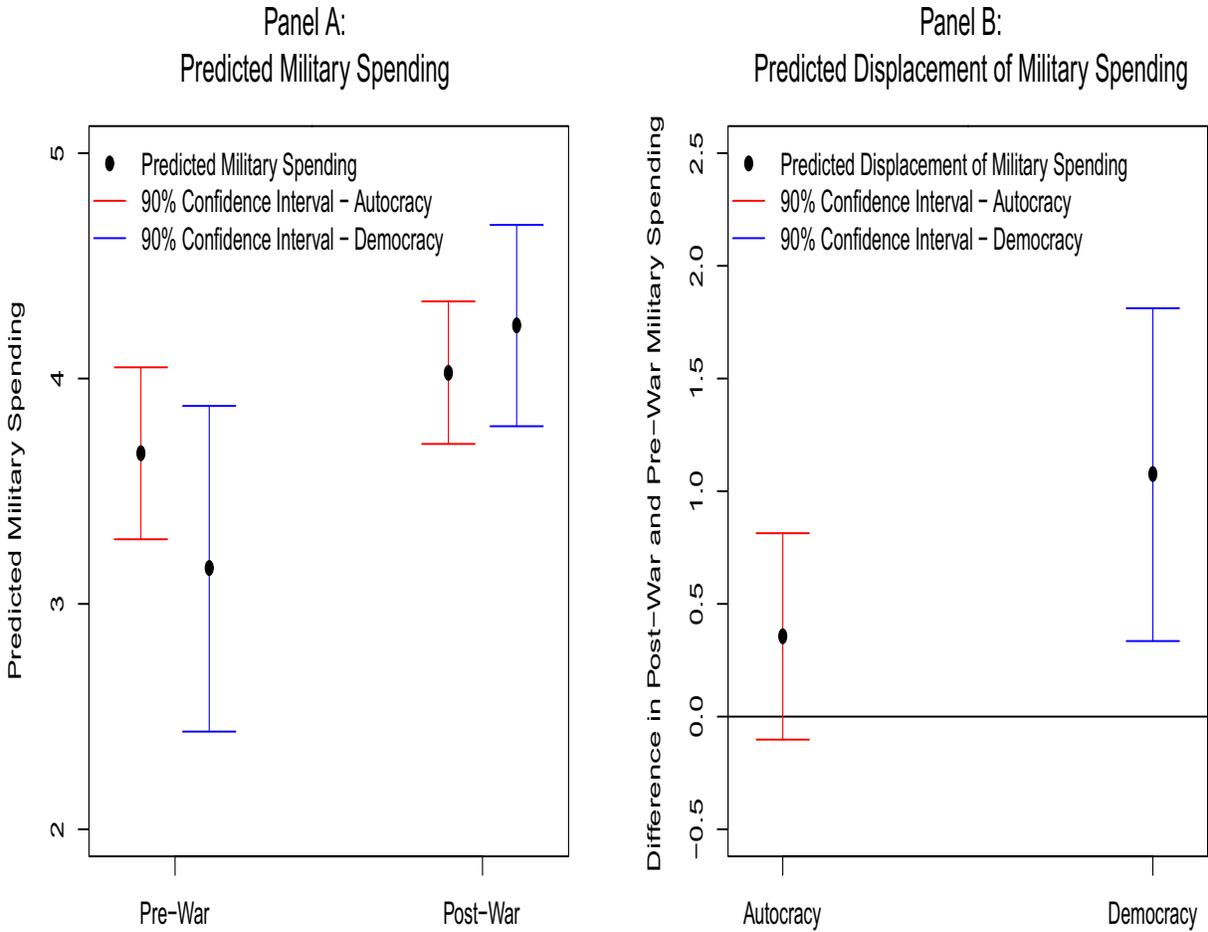


Figure 4.6: Regime Type and the Displacement Effect of Interstate War on Military Spending

The difference in the displacement effect of interstate war on military spending across regime type is presented in Figure 4.7. The difference between post-war and pre-war military spending is 0.7 percentage points greater in democracies than in autocracies. The 90% confidence interval about this predicted difference, however, contains zero. My analysis

therefore indicates that, contrary to Hypothesis 1, the displacement effect of interstate war on military spending was not larger in autocracies than it was in democracies between 1950 and 2001.

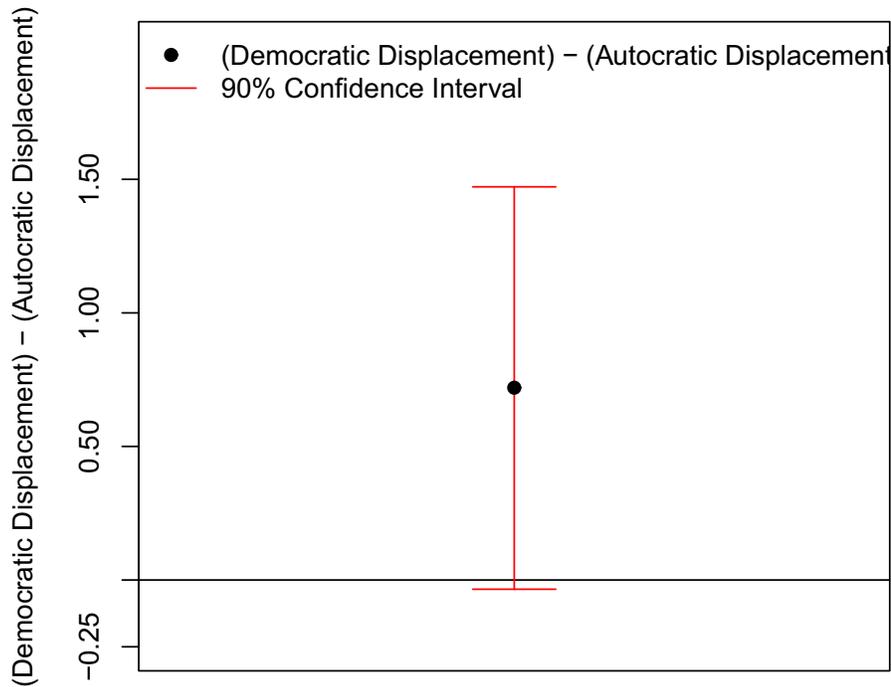


Figure 4.7: The Difference in the Displacement of Military Spending across Regime Type

Last, my analysis of the relationship between the displacement effect of interstate war on social spending and regime type is presented in Figures 4.8 and 4.9. Consistent with Hypothesis 2, the displacement of *Health Care Spending* after a war is larger in democracies than in autocracies. From Panel A in Figure 4.8, we see that autocracies, on average, allocated approximated 10.1% more of their GDP to health care spending after an interstate war than before a war (1.9% vs. 1.7%). At the same time, post-war health care spending

in democracies, on average, was 24.7% higher than pre-war health care spending (2.2% vs. 1.7%). Panel B indicates that the increases in health care spending associated with the displacement effect are statistically significant in both autocracies and democracies.

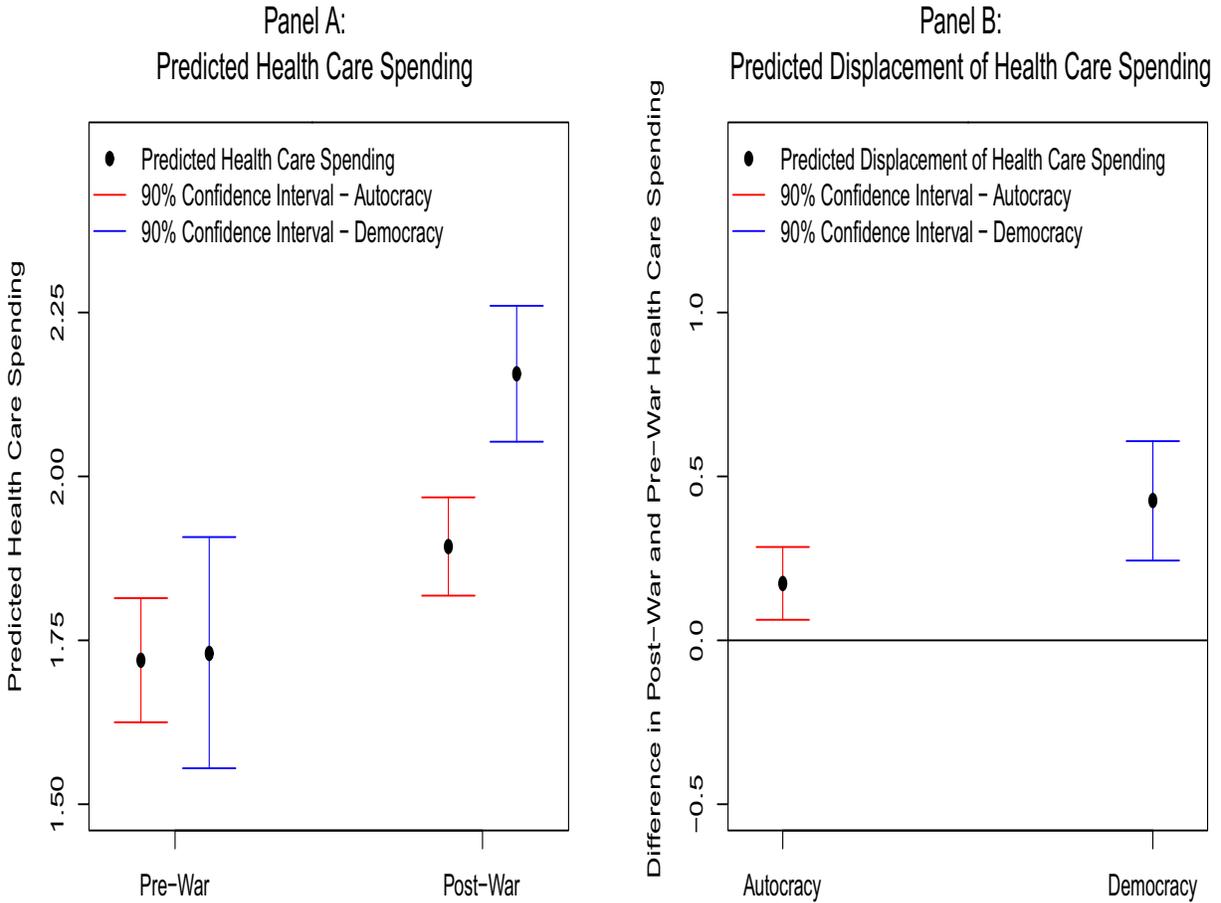


Figure 4.8: Regime Type and the Displacement Effect of Interstate War on Health Care Spending

Figure 4.9 presents the difference between the displacement effect of interstate war on health care spending across regime type. The displacement of health care spending after a war is 0.25 percentage points, or 146%, greater in democracies than it is in autocracies (0.43% of GDP vs. 0.17% of GDP). Note that the confidence interval about this difference does not contain zero. Thus, consistent with Hypothesis 2, Figure 9 indicates that the displacement

effect of interstate war on health care spending is greater in democratic countries than in autocracies.

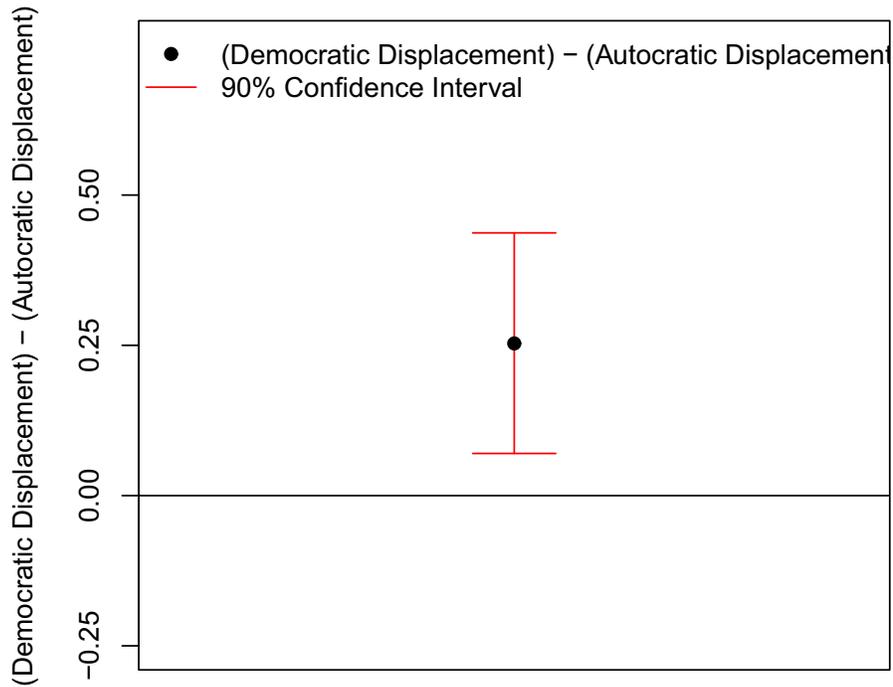


Figure 4.9: The Difference in the Displacement of Health Care Spending across Regime Type

4.7 Discussion and Conclusion

The mechanism through which interstate war led to the political development of modern states, the displacement effect describes the process by which political leaders increase equilibrium levels of taxation and government spending (e.g., Peacock and Wiseman 1961, Bean 1973, Tilly 1985, Jagers 1992, Campbell 1993, Bank, Stark and Thorndike 2008). Recent

research that purports to examine the displacement effect of interstate war has focused on the contemporary developing world, exclusively analyzed the extraction of tax revenue, and does not examine whether governments control more economic resources after an interstate war than they did before a war. The analyses presented here suggest that, in general, the displacement effect still holds. I find that in the post-World War II era governments extracted greater tax revenue from their societies and allocated more of their nations' total economic resources to military and social spending after an interstate war than they did before their participation in a war. Thus, in addition to the role it played in the development of the modern international system, interstate war continues to allow governments to expand their power and influence by increasing their control over societies' economic resources.

Existing scholarship assumes that the displacement effect of interstate war is unrelated to a country's domestic political institutions. I argue that this assumption is misplaced. More specifically, based on the relationship between leadership survival, government spending, and regime type developed in Chapter 2, I argue that the increase in military spending associated with the displacement effect should be larger in autocracies while the increase in social spending should be larger in democracies. Analyzing the displacement effect across regime type required me to first estimate the difference between post-war and pre-war tax revenue and spending within autocracies and democracies and then estimate the difference between autocratic and democratic displacements. Generally speaking, I found evidence of the displacement effect of interstate war within both democracies and autocracies. Democracies in the contemporary international system have extracted greater tax revenue and allocated more of their societies' resources on military and social spending after participating in an interstate war than before a war. Autocracies have maintained significantly higher rates of taxation and social spending after an interstate war, but, surprisingly, participation in a war is not associated with higher equilibrium levels of military spending in autocratic regimes.

My results suggest that the displacement effect of interstate war partially varies across

regime type. I find no difference between the displacement of tax revenue and military spending in democracies and autocracies. The latter runs contrary to my theoretical expectation that the increase in military spending associated with the displacement effect should be larger in autocracies than in democracies. Additionally, the raw data suggest that the difference between post-war and pre-war levels of military spending is greater in autocracies and democracies (from Table 4.3, autocratic military spending increases by 3 percentage points of GDP while democratic military spending increases by 1.5 percentage points of GDP). Given the raw data, it is plausible that the regression models fail to find relatively larger displacements of military spending in autocratic governments because of the inconsistent estimation of the explanatory variables used to model the relationship between regime type and the displacement effect (see the discussion in Section 5). Consistent with my theoretical expectations, I find that the increase in social spending associated with the displacement effect of interstate war is significantly greater in democracies than in autocracies.

The statistical findings presented here suggest three avenues for future research. The first would be to examine how the displacement effect of interstate war varies as a function of region. A number of scholars have questioned whether participation in an interstate war plays a central role in the political development of non-European states in the contemporary international system (among others, Herbst 2000, Centeno 2002). Ultimately, this is an empirical question. Systematic, quantitative research on the relationship between interstate war and state-making in the contemporary developing world, however, does not precisely analyze whether governments are able to control more resources via taxation and government spending after an interstate war than before a war (see the above discussion of Thies 2005, 2006). A first step in analyzing how region conditions the displacement effect of interstate war would be to apply the research design used here to the different regions of the world. A more fruitful approach, though, would integrate regional-centric factors into the theoretical and empirical framework used here (as suggested by, among others, Herbst 2000, Centeno

2002, Lemke 2003). A model for this approach can be seen in Thies's research on how interstate and intrastate rivalry leads to increased contemporaneous levels of tax revenue in Africa, the Middle East and Asia (2004), Latin America (2005), and sub-Saharan Africa (2007).

A second avenue for future research would be to examine whether and how the displacement effect of interstate war varies within autocratic and democratic regimes. The theoretical and empirical analyses used here focus on differences between autocratic and democratic regimes. However, scholars working at the intersection of comparative politics and international relations frequently find significant, within-regime variation in conflict behavior (e.g., Ireland and Gartner 2001, Peceny, Beer and Sanchez-Terry 2002, Debs and Goemans 2010, Weeks N.d.). The relationship between leadership survival, government spending, and regime type developed in Chapter 2 implies we should observe within-regime variation in the displacement of military and social spending as a function of the relative degree to which political executives rely on the public and elite for their political survival. For example, within non-democracies I would expect a larger increase in military spending after an interstate war in a military junta than in a one-party system and a larger increase in social spending in a one-party system than in a military junta.

Last, a potentially fruitful project would be to analyze how the ideological leanings of a democratic government conditions the displacement effect of interstate war. A number of scholars have uncovered systematic differences in the conflict behavior of left and right democratic governments (e.g., Fordham 1998, Palmer, London and Regan 2004, Arena and Palmer 2009). The theoretical framework developed here suggests that variation in the policy preferences of the political supporters of left and right governments should lead to variation in the displacement effect of interstate war. Specifically, assuming that supporters of left parties (and coalitions) prefer proportionately more social spending and less military spending than the supporters of right parties (and coalitions), we would expect the displacement of social

spending to be greater under left governments and the displacement of military spending to be greater under right governments.

In sum, my analyses find the presence of a general displacement effect of interstate war and that regime type conditions the degree to which governments use the increased tax revenue associated with a war to increase social spending. These results indicate that governments in the contemporary international system continue to use interstate wars as a way to increase their control over a society's economic resources and that domestic political institutions influence this process. Looking forward, the findings reported here hold promise for future research on how the displacement effect of interstate war is conditioned by region, different types of non-democratic and democratic regimes, and the ideological orientation of democratic governments.

Chapter 5

Conclusion

All incumbent leaders, regardless of whether their title is President, Prime Minister, *Comandante en Jefe*, or Chief, have to keep their key constituents happy in order to remain incumbent leaders (Bueno de Mesquita et al. 2003). A leader keeps her key constituents happy by enacting their preferred policies (Key 1961). A state's domestic political institutions determine who in a society a leader needs to keep happy in order to retain office (McGillivray and Smith 2008). Autocratic and democratic political institutions result in the general public having significantly more political power *vis-à-vis* a society's elite in a democracy than in an autocracy (Dahl 1971, Acemoglu and Robinson 2006). It therefore follows that an autocratic leader must keep the elite happy in order to stay in power while a democratic incumbent needs to keep the public happy. Given the variation in public and elite preferences over government spending (Sprout and Sprout 1968, Przeworski et al. 2000), democratic leaders should be more likely to remain in power than autocratic leaders given high social spending and low military spending and autocratic leaders should be more likely to retain office than democratic leaders given low social spending and high military spending.

The above theoretical argument links the three essays in my dissertation. It is straightforward, simplistic even, but also novel and analytically powerful. In this final chapter, I

briefly summarize the theoretical and empirical results presented in the preceding essays and then conclude with a discussion of the larger implications of my dissertation.

The first essay in my dissertation uses a game-theoretic model to formalize the relationship between leadership survival, government spending, and regime type summarized at the beginning of this chapter. The model demonstrates that, in equilibrium, different combinations of guns-and-butter best secure the political survival of autocratic and democratic incumbents. Consistent with the formal model's predictions, duration analysis finds high social spending and low military spending is more likely to result in an autocratic leader being removed from office than a democratic leader and that low social spending and high military spending is more likely to result in a democratic leader losing power than an autocratic incumbent. These formal and empirical results are the first to empirically link government spending to leadership survival, offer a unified explanation for why social and military spending vary across regime type, and offer a set of micro-foundations for a number of empirical findings concerning the relationship between regime type and interstate conflict. This last point is explored in more detail in the next chapter of my dissertation. The formal model also indicates that, contrary to democratic theorists, both autocratic and democratic leaders who are motivated by the substance of a policy will ignore their constituents' preferences, even at the cost of facing a higher probability of being removed from power.

The second substantive chapter analyzes how the political cost of economic mobilization influences the interstate conflict behavior of autocracies and democracies. Mobilization for war is associated with proportionately higher military spending and lower social spending (Anderton and Carter 2009). As this combination of guns-and-butter is more likely to result in a democratic leader being removed from office than an autocratic leader (as demonstrated in Chapter 2), I argue that the political cost of mobilization should be higher for democratic leaders than for autocratic leaders. This prediction is borne out by duration analysis. I find that increasing military spending and cutting social spending during an interstate war

increases the probability a democratic leader will lose power but has no effect on an autocrat's prospects for political survival.

With these empirical results in mind, I develop a crisis bargaining model in which a leader can increase her country's probability of winning by mobilizing her available resources and a democratic leader pays a higher political cost for mobilizing than does an autocratic leader. Importantly, the formal model does not rely on either of the near ubiquitous, but empirically unsupported, assumptions that democratic leaders are more likely than autocratic leaders to be removed from power after losing an interstate war and/or participating in an interstate war. The model provides a rational explanation for multiple known empirical regularities concerning the relationship between regime type and interstate conflict – including the democratic peace (Russett and Oneal 2001) – and the novel prediction that democratic targets are more selective in reciprocating challenges than are autocratic targets. Quantitative analysis of all directed-dyads in the international system between 1950 and 2001 is consistent with this prediction. I find that the probability of an autocratic target reciprocating a challenge is unrelated to the balance of power, but that democratic targets are increasingly less likely to reciprocate a militarized interstate dispute as the challenger possess a greater share of the total dyadic capabilities.

The third essay in my dissertation empirically analyzes the displacement effect of interstate war and how it is conditioned by regime type. The displacement effect refers to the process by which political leaders use interstate wars to increase the equilibrium level of tax revenue and government spending (Peacock and Wiseman 1961, Thies 2005). Contrary to recent research that questions its applicability in the contemporary international system (e.g., Thies and Sobek 2010), my analyses are consistent with the displacement effect of interstate war. I find countries that participated in an interstate war during the period between 1950 and 2001 extracted more tax revenue from their societies, allocated more economic resources to the military, and allocated more economic resources to social spending in the

years following a war than they did in the years before an interstate war.

My initial analyses of the displacement effect of interstate war assume the process is invariant to a state's domestic political institutions. The formal and empirical relationships between leadership survival, government spending, and regime type analyzed in Chapter 2, though, imply that the increase in military and social spending associated with the displacement effect should differ between autocracies and democracies. Specifically, the increase in military spending should be greater in autocracies than in democracies and the increase in social spending should be greater in democracies than in autocracies. My analyses yield mixed support for these predictions. As predicted, I find that the displacement of social spending following an interstate war is greater in democracies than it is in autocracies. In contrast to my expectations, though, I found no difference across regime type in the increase in military spending associated with the displacement effect of interstate war. Drawing on arguments from the literature on the mobilization for interstate war in democracies and autocracies (e.g., Lake 1992, Bueno de Mesquita et al. 2003), I also analyzed the relationship between regime type and the displacement of tax revenue. I found no evidence that the increase in tax revenue following an interstate war varied across regime type.

5.1 Implications

The research in my dissertation has implications for specific scholarly literatures, political science more broadly, and the practice of politics. I conclude by discussing two of my dissertation's implications for the scientific analysis of domestic and interstate political outcomes and a larger insight that has implications for both political scientists and policy makers. The first result of my dissertation that has important implications for the study of politics is that the policy responsiveness framework applies to both autocratic and democratic leaders. The claim that policy responsiveness applies to both democrats and autocrats is not

novel (see, for instance, Key 1961). However, I believe my dissertation is the first work that formally predicts that both autocratic and democratic leaders who value office will pursue the policies preferred by their key constituents and, importantly, empirically demonstrates that both are punished with removal from office when they fail to implement those policies (see the duration analyses in Chapters 2 and 3).

The application of the policy responsiveness framework to all leaders opens up a number of avenues for future research. I discuss two here. The first is to examine the relative incentives democratic and autocratic leaders have to respond to the policy preferences of their key constituents. Scholars typically argue that democratic incumbents should be more responsive to their constituents than autocratic incumbents (Dahl 1971, Putnam 1993). If we consider the relative benefits of office and post-tenure fates of leaders across regime type, though, then *autocratic* incumbents should be relatively more responsive to consistent preferences. Focusing first on the spoils of office, autocratic leaders typically are able to enrich themselves, their families, and close supporters while in power at the expense of the state coffers while, at least in relative terms, democratic executives are not (Buena de Mesquita et al. 2003). Thus, autocrats derive greater material benefits from office than do democrats. In terms of the post-exit fate of leaders, non-democratic leaders are typically killed, jailed, or forced into exile upon leaving office while former democratic Presidents and Prime Ministers are able to make millions of dollars by giving speeches (Goemans 2000, Debs and Goemans 2010, Debs 2010). It therefore follows that autocratic incumbents should value remaining in office to a greater degree than democratic incumbents. As leaders secure their political survival via policy responsiveness, autocratic leaders have a greater incentive to be responsive to their constituents' preferences than do democratic leaders.

A second project that follows from the concept of policy responsiveness would analyze the relationship between political survival and government spending on the military and social programs across different types of democratic and non-democratic governments. My

dissertation “black boxes” differences among democracies (e.g., parliamentary vs. presidential systems, right vs. left governments) and non-democracies (for example, military junta vs. one-party system). The logic underlying the theory and model developed in Chapter 2 is that the distribution of military and social spending that best secures an incumbent’s political survival is a function of the preferences of her winning coalition. If the leaders of different types of democratic and non-democratic governments systematically rely on constituents with different preferences over government spending, we should observe two empirical patterns. First, we should observe within-regime differences regarding the distribution of guns and butter that best secures a leader’s tenure. Second, we should observe systematic within-regime variation in military and social spending.

A second finding from my dissertation with important implications for how we analyze international politics is that the relationship between government spending and political survival influences the interstate conflict process. Chapter 3 demonstrates the political cost of economic mobilization for war is higher for democratic leaders than it is for autocratic leaders, affects the decisions political leaders make regarding the initiation, reciprocation, and prosecution of interstate conflict, and, due to the previous two factors, can explain a number of empirical differences in the conflict behavior of autocracies and democracies.

The findings concerning the relationship between government spending and interstate conflict suggest a general point about studying the conflict process and at least two potentially fruitful avenues for research. The general insight is that scholars should consider how a given decision related to the prosecution of interstate conflict (e.g., to ally with another country, to escalate a low-level conflict, to intervene in an existing conflict) influences the distribution of military and social spending, and how this might affect a leader’s prospects for political survival. The first specific project concerns within-regime variation in the political cost of mobilization and interstate conflict behavior. An increasing number of scholars are moving beyond the dichotomous distinction between democracies and non-democracies

and analyzing how different types of democratic and non-democratic political institutions affect the prosecution of interstate conflict (among others, Ireland and Gartner 2001, Palmer, London and Regan 2004, Debs and Goemans 2010, Weeks N.d.). Echoing the suggestion above, we should observe variation in the political cost of economic mobilization if leaders of different kinds of autocracies and democracies systematically rely on constituencies with different preferences over social and military spending. In light of the results presented in Chapter 3, we would then expect variation in patterns of conflict initiation, escalation, and mobilization among different democratic and non-democratic regimes.

A second project that follows from the variation in the political cost of mobilization across regime type is concerned with how interstate wars are financed. Economic mobilization for war is associated with higher military spending and lower social spending (Anderton and Carter 2009). Political leaders historically have financed interstate war efforts at least partially through deficit spending and borrowing money on the international market (Slantchev 2010). Doing so provides leaders with a way to increase military spending to the degree necessary to wage war while simultaneously limiting the need to cut social spending. Because they are more likely to be removed from office due to the higher military spending and lower social spending associated with mobilization for war, democratic leaders have a greater incentive to try to wage war without engaging in the guns-and-butter trade-off than do autocratic leaders.¹ Further, Schultz and Weingast (1998, 2003) demonstrate that democracies involved in international competitions historically have been able to borrow money on the international market at lower interest rates than autocracies. Compared to autocracies, we therefore should observe contemporary democracies financing a relatively greater portion of their war efforts through deficit spending and international lending instead of cutting social spending.

¹This logic is consistent with the results of Carter and Palmer (N.d.), who find that post-World War II democracies have managed to wage war without decreasing the proportion of GDP allocated to education spending.

The final implication of my dissertation is its most fundamental and is relevant for both political scientists and policy makers. The research presented here suggests that, due to the applicability of policy responsiveness across regime type, democratic and autocratic leaders allocate their available economic resources differently and pursue systematically different foreign policies because the people they have to please in order to stay in office want different policies. More descriptively, my dissertation argues that autocrats spend their money on tanks and not on hospitals because they need the support of the generals and not the poor to stay in office, and, in contrast, democratic incumbents support social welfare states and avoid difficult, costly wars because they need the political support of the average person on the street and not merely the wealthiest members in society to remain in power. The logic underlying the theoretical argument running through my dissertation however is not limited to preferences over government spending or differences across regime type. Rather, it should apply to constituent preferences over any policy issue and political incumbents at any level.² The largest implication of my formal and empirical analyses then is that the preferences of the people a political incumbent is accountable to have a significant influence on policy outcomes.

The insight that the preferences of an incumbent's winning coalition affect policy outcomes has implications for both scholars and policy makers. For political scientists, it indicates that the key to explaining and predicting variation in policy outcomes is the identification of the policy preferences of incumbent politicians' key constituents. Given that all political incumbents require the support of some constituency to stay in office, this insight should be beneficial to scholars of American, comparative, and international politics. The politics surrounding the disbursement of foreign aid provide a nice example of this claim. A number of scholars have noted that foreign aid is an issue without a natural constituency

²This claim is consistent with existing research on policy responsiveness and the punishment for ideological shirking on non-spending issues at various levels of government (for example, Mooney and Lee 2000, Rothenberg and Sanders 2000*a*, Canes-Wrone, Brady and Cogan 2002, Sobel 2001).

(see Lancaster 2006). This view ignores the fact that foreign aid, as a form of international economic integration, has distributional consequences for domestic producers and thus, depending on the substance of a given policy, should be favored by citizens associated with some sectors of production and opposed by others (Milner and Tingley 2010). An individual's preference on the appropriate level of foreign aid is also a function of his or her political ideology, religiosity, and education (Wittkopf 1986, Baker, Fitzgerald and Pepinsky N.d.). Within the context of American politics, the theoretical framework developed here suggests that we should observe 1) variation in a President's, Representative's, and Senator's support of particular foreign aid policies as a function of whether it is supported by his or her winning coalition and 2) a President, Representative, and a Senator facing a higher probability of losing power if his or her position runs against the preferences of his or her key supporters.³ This logic should also apply to the comparative context. That is, we should see variation in support for specific foreign aid policies, and the consequences of supporting or objecting a policy, by Prime Ministers and Members of Parliament as a function of their constituents' relative preferences for or against a given policy. With respect to the international dimension of foreign aid, we should also see systematic variation in who receives aid as a function of the preferences of a donor country's leader's key supporters. For instance, if the members of a donor country's leader's winning coalition support providing economic assistance to a former colony but not to a recipient country with the same primary export, we should expect to see greater aid flows from the donor country to its former colony than to its economic competitor.

The relationship between national policies and the preferences of an incumbent politician's key constituents demonstrated in my dissertation also has implications for the practice of foreign policy. Numerous scholars of international relations have argued that absent

³The first prediction is consistent with the results of Milner and Tingley (2010), who find that between 1979 and 2003 members of Congress whose districts are relatively capital-abundant are more likely to support increasing economic foreign aid than are legislators whose districts have low capital but are labor-abundant.

harmony in preferences State A would prefer that State B modify its behavior to be in accordance with the ideal policy of State A, and vice-versa (for example, Keohane 1984, Axelrod and Keohane 1985, Palmer and Morgan 2006). States and governments, though, do not have preferences nor do they make policies. Instead, as the epigraph at the beginning of my dissertation notes, “the policies nations pursue depend upon who is national leader and which domestic interests this leader represents” (McGillivray and Smith 2008, pg. 14). Coercive diplomacy and international cooperation therefore can be recast as situations in which Leader A, as the representative agent of Winning Coalition A, would prefer that Leader B, as the representative agent of Winning Coalition B, modify his behavior to be in accordance with the ideal policy of Leader A, and vice-versa.⁴

The above framework for international interactions captures the point that a nation’s policies are (at least partially) determined by an incumbent leader who is politically accountable to some portion of his or her society. Within this framework, the relationship between policy outcomes and the preferences of an incumbent leader’s key constituents suggests three pathways through which Leader A can seek to alter the policies implemented by Leader B.⁵ The first is to induce Leader B to enact policies counter to the preferences of his winning coalition. From Leader B’s perspective, the downside to this option is that he faces a higher probability of being removed from office for not implementing his winning coalition’s preferred policy. Thus, with the formal analysis from Chapter 2 in mind, this approach will only be successful if Leader B values the substance of the policy (or some side-payment) to a greater degree than maximizing the probability he remains in power.

The second option through which Leader A could plausibly effect a change in State B’s policies is to alter the preferences of Winning Coalition B. In this scenario, Leader A would

⁴I assume Leader A is female and Leader B is male.

⁵The following examples each assume that State B’s status quo policy is that policy position favored by Winning Coalition B and the preferred policies of Winning Coalition A and Winning Coalition B differ from one another.

provide Leader B with enough aid money to purchase the political support necessary to change the status quo policy. Thus, we would see a change in State B's policies and Leader B would not face a higher probability of removal because his winning coalition prefers the new policy. An example of this would be the use of economic or military aid to stop a state's pursuit of nuclear weapons (e.g., U.S. agreements with North Korea in 1994 and Libya in 2003).

The third pathway to policy change in State B would likely be harder for Leader A to accomplish than either of the two preceding options. Specifically, Leader A could try to change the policies of State B by replacing Leader B and Winning Coalition B with people whose policy preferences are closer to those of Leader A and Winning Coalition A.⁶ That is, Leader A could seek a policy change in State B through regime change. Leader A would likely seek a policy change via regime change only when the policy issue is very salient for the Leaders and Winning Coalitions in both State A and B. Otherwise, it is unlikely Leader A or Winning Coalition A would be willing to bear the costs of pursuing regime change or Leader B or Winning Coalition B would be willing to risk being removed from their places of political power. The obvious examples of this in the contemporary international system would be regime changes in Afghanistan over the Taliban's refusal to surrender Al-Qaeda and Iraq over Saddam Hussein's alleged nuclear weapons program.

The argument that connects the three essays in my dissertation is that political leaders have an incentive to implement the policies favored by those citizens who determine a state's political leadership. Consistent with this claim, the formal and empirical analyses reported here indicate that variation in whose opinion matters in autocracies and democracies, the elite and the public respectively, can explain policy variation across regime type at the domestic and international level. This has important implications both for the study and

⁶In theory, Leader A could also pursue policy changes in State B by replacing Leader B or Winning Coalition B but not both. However, it is unclear to me what this would look like in practice.

practice of politics. It is my hope that future research builds upon the framework developed here and furthers our understanding of comparative and international politics.

Appendix A

Model from Chapter 2

The model is a one-shot game between a state's leader (L_i) and her winning coalition (W_i). L_i 's strategy set is $x_i \in [0, 1]$, where x_i represents the proportion of government spending dedicated to military spending and $1 - x_i$ the proportion of spending dedicated to social spending. W_i 's strategy set $d \in \{r, \tilde{r}\}$, whether to replace or not replace the incumbent leader. All incumbents are assumed to hold a preference for remaining in office (I_i) over being ousted (O_i); $I_i > O_i$. I assume that L_i and W_i hold single-peaked, symmetric preference profiles over x_i and define the valuations of x_i for L_i and W_i as the strictly concave functions $z(x_i)$ and $v(x_i)$, respectively.

I define x_L as L_i 's ideal policy and x_m as the ideal policy of the member of W_i holding the median preference over x_i . Given Definitions 1 and 2, $\operatorname{argmax}_x z(x_i) = x_L \forall L_i$ and $\operatorname{argmax}_x v(x_i) = x_m \forall W_i$. Let α represent an incumbent's relative motivation behind implementing policy; where $\alpha \in [0, 1]$, 0 represents a purely office-seeking incumbent and 1 represents a purely policy-motivated incumbent. State i 's form of government is identified as being either democratic or autocratic; $g_i \in \{D, A\}$. Per the discussion in the main text, the median member of a democratic incumbent's winning coalition prefers an x_i consisting of greater social spending and less military spending than the median member of an autocratic

leader's winning coalition:

$$x_m^D < x_m^A \quad (\text{A.1})$$

I assume that replacing a leader brings a benefit (b_i) to and imposes a cost (c_i) upon a winning coalition. Formally, b_i is an exogenous preference shock to the model, unknown at the beginning of the game and follows a uniform distribution $U[l, h]$, where $l \leq 0$ and $h > 0$ and arbitrarily large. The cumulative distribution function of b_i is written as F . I assume the cost of removing an incumbent is greater than zero ($c_i > 0$) and a linearly increasing function of the winning coalition's valuation of x_i :

$$\frac{\partial c_i(v(x_i))}{\partial v(x_i)} \geq 0 \quad \forall W_i \quad (\text{A.2})$$

The timing of the game is as follows:

1. Incumbent leader L_i distributes x_i .
2. Uncertainty over b_i is lifted.
3. Winning coalition W_i decides to replace (r_i) or retains (\tilde{r}_i) L_i as a function of b_i and c_i .

Due to the uncertainty over b_i and its role in determining r_i or \tilde{r}_i , L_i receives O_i with a probability p and I_i with probability $1 - p$. As noted in the man text, utility functions for L_i and W_i are written as follows:

$$U_{L_i} = \alpha z(x_i) + (1 - \alpha)[p(b_i, c_i(x_i))O_i + (1 - p(b_i, c_i(x_i)))I_i] \quad (1)$$

$$U_{W_i} = \begin{cases} v(x_i) & \text{if } \tilde{r}_i \\ v(x_i) + (b - c(x_i)) & \text{if } r \end{cases} \quad (2)$$

As the model is a dynamic game of perfect information with exogenous uncertainty, the game is solved for subgame perfect equilibria using backwards induction (Osborne 2004, pg. 226). Upon receiving x_i and observing preference shock b_i , a winning coalition's decision rule for removing an incumbent is

$$W_i \text{ plays } \tilde{r}_i \text{ iff } b_i < c_i(v(x_i)) \text{ and } r_i \text{ otherwise.} \quad (3)$$

As F is the cumulative distribution function of b_i , $F(c_i(v(x_i)))$ identifies the probability with which a winning coalition removes its leader. L_i then distributes x_i . A leader's optimal x_i depends on her relative motivation for implementing policy: incumbency-valuing or policy-valuing. We can observe how a leader's utility changes with her motivation by taking the first partial derivative of Equation 2.1 with respect to α :

$$\frac{\partial U_L}{\partial \alpha} = z(x_i) - [p(b_i, c_i)O_i + (1 - p(b_i, c_i))I_i] \quad (4)$$

As α increases, a leader's utility is increasing in $z(x_i)$ and decreasing in her payoff for retaining office as she cares more about the substance of x_i . I solve for equilibrium behavior in the limiting cases in which a leader is motivated purely by the spoils of office ($\alpha = 0$) and purely by the substance of policy ($\alpha = 1$).

Proposition 1. *If $\alpha = 0$, L_i distributes $x_i^* = x_m$ and W_i plays \tilde{r}_i iff $b_i < c_i(v(x_i))$ and r_i otherwise is a subgame perfect equilibrium.*

Proof. From Equation 2.4, L_i derives utility solely from the second term of her utility function when $\alpha = 0$. Given $I_i > O_i$ and Equation 2.3, L_i seeks to provide the x_i that maximizes $c_i(v(x_i))$ and, ultimately, minimizes $F(c_i(v(x_i)))$. From Equation A.2, $c_i(v(x_i))$ is increasing in $v(x_i) \forall W_i$. Recall that $\operatorname{argmax}_x v(x_i) = x_m \forall W_i$. Therefore, $\operatorname{argmax}_x c_i(v(x_i)) = x_m \forall W_i \Rightarrow \operatorname{argmin}_x F(c_i(v(x_i))) = x_m \forall W_i$. Accordingly, if $\alpha = 0$ then $x_i^* = x_m$ is L_i 's best response to W_i 's strategy. □

Corollary 1. *If $\alpha = 0$, then $(x_i^* | g_i = D) < (x_i^* | g_i = A)$.*

Proof. From Proposition 1, $x_i^* = x_m \forall L_i$ if $\alpha = 0$. As Equation A.1 notes, $x_m^D < x_m^A$. It therefore follows that if $\alpha = 0$, then $(x_i^* | g_i = D) < (x_i^* | g_i = A)$. □

Proposition 2. *If $\alpha = 1$, then L_i distributes $x_i^* = x_L$ and W_i plays \tilde{r}_i iff $b_i < c_i(v(x_i))$ and r_i otherwise is a subgame perfect equilibrium.*

Proof. From Equation 2.4, L_i derives utility only from the first term of her utility function when $\alpha = 1$. Recall that $\operatorname{argmax}_x z(x_i) = x_L \forall L_i$. It therefore follows that if $\alpha = 1$, then $x_i^* = x_L$ is L_i 's best response to W_i 's strategy. □

Proposition 3. *As $x_i \rightarrow 1$, $(F(c_i(v(x_i))) | g_i = D) > (F(c_i(v(x_i))) | g_i = A)$*

Proof. From Equations 2.3 and A.2 and the proof of Proposition 1, $F(c_i(v(x_i)))$ is decreasing with $v(x_i)$ and $\operatorname{argmin}_x F(c_i(v(x_i))) = x_m \forall W_i$. It follows from Definitions 1 and 2, then, that $F(c_i(v(x_i)))$ is increasing in $|x_i - x_m| \forall W_i$. As Equation A.1 notes $x_m^D < x_m^A$, $(F(c_i(v(x_i))) | g_i = D) > (F(c_i(v(x_i))) | g_i = A) \forall x_i > \frac{x_m^D + x_m^A}{2}$. Therefore, as $x_i \rightarrow 1$ $(F(c_i(v(x_i))) | g_i = D) > (F(c_i(v(x_i))) | g_i = A)$.

□

Proposition 4. *As $x_i \rightarrow 0$, $F(c_i(v(x_i))) | g_i = A > F(c_i(v(x_i))) | g_i = D$*

Proof. The proof of Proposition 4 is analogous to the proof of Proposition 3. The only difference is that because $x_m^D < x_m^A$, $(F(c_i(v(x_i))) | g_i = A) > (F(c_i(v(x_i))) | g_i = D) \forall x_i < \frac{x_m^D + x_m^A}{2}$. Accordingly, as $x_i \rightarrow 0$ $(F(c_i(v(x_i))) | g_i = A) > (F(c_i(v(x_i))) | g_i = D)$. □

Appendix B

Model from Chapter 3

The model assumes that the leader of Country 1 (L_1) and the leader of Country 2 (L_2) are bargaining over policy issue $x \in [0, 1]$, it is within the power of each leader to determine his or her country's participation in an interstate war, and each leader can distribute her country's available economic resources toward the pursuit of his or her preferred policies. For expositional purposes, I treat L_1 as female and L_2 as male. There are two types of L_2 ; $\theta \in \{l, h\}$, where $\theta = l$ does not mobilize before fighting and $\theta = h$ mobilizes before fighting. I assume that L_2 knows his own type but that L_1 only knows that L_2 is $\theta = l$ with probability w and $\theta = h$ with probability $1 - w$. I assume L_1 will always mobilize and that this is common knowledge.

L_i 's mobilization effort μ_i refers to her/his allocation of military spending (g_i) and non-military spending (b_i) subject to the budget constraint of economic resources e_i ; $e_i = g_i + b_i$. The distribution of g_i and b_i are functions of the relative efficiency of each type of spending in securing L_i 's political survival; $\pi_i \in \{\gamma_i, \beta_i\}$, where γ_i represents the relative efficiency of g_i , β_i represents the relative efficiency of b_i , $0 < \gamma_i \leq 1$, $0 \leq \beta_i < 1$, and $\gamma_i + \beta_i = 1$. I assume that γ_i and β_i are functions of three factors: 1) Country i 's regime type $R_i \in \{D, A\}$, where D = democracy and A = autocracy; 2) the pre-mobilization balance

of capabilities $F_i \in \{0, 1\}$, where $F_i = \frac{m_j}{m_i + m_j}$, m_i is Country i 's capabilities, and m_j is Country j 's capabilities; and 3) Country j 's mobilization of g_j . That is, $\gamma_i(R_i, F_i, g_j)$ and $\beta_i(R_i, F_i, g_j)$. With respect to γ_i , I assume that military spending is relatively more efficient for autocratic leaders than democratic leaders, and increasingly more efficient in the share of pre-mobilization capabilities possessed by a state's opponent and the military mobilization of a state's opponent. These assumptions are formally written, respectively, as follows:

$$\gamma(D_i, F_i, g_j) < \gamma(A_i, F_i, g_j) \quad \forall F_i, g_j \quad (\text{B.1})$$

$$\frac{\partial \gamma(R_i, F_i, g_j)}{\partial F_i} > 0 \quad \forall R_i, g_j \quad (\text{B.2})$$

$$\frac{\partial \gamma(R_i, F_i, g_j)}{\partial g_j} > 0 \quad \forall R_i, F_i \quad (\text{B.3})$$

As $\gamma_i + \beta_i = 1$, Equations (B.1) - (B.3) imply the following functional characteristics for β_i :

$$\beta(D_i, F_i, g_j) > \beta(A_i, F_i, g_j) \quad \forall F_i, g_j$$

$$\frac{\partial \beta(R_i, F_i, g_j)}{\partial F_i} < 0 \quad \forall R_i, g_j$$

$$\frac{\partial \beta(R_i, F_i, g_j)}{\partial g_j} < 0 \quad \forall R_i, F_i$$

In words, the three preceding equations indicate that social spending is relatively more efficient for democratic leaders than autocratic leaders, and is increasingly less efficient in the share of pre-mobilization capabilities possessed by a state's opponent and the military mobilization of a state's opponent.

L_i 's mobilization effort is written as the Cobb-Douglas production function $\mu_i = g_i^{\gamma_i} b_i^{\beta_i}$.

I assume that mobilization μ_i imposes the political cost of mobilization δ_i upon L_i and δ_i is a function of a state's regime type (R_i) and the distribution of military (g_i) and social (b_i) spending in a given mobilization effort; $\delta_i(R_i, g_i, b_i)$ and $0 < \delta_i \leq 1 \forall (R_i, g_i, b_i)$. Figures 3.1 and 3.2 suggest three aspects of the relationship between the political cost of mobilization and regime type: 1) democratic leaders pay a higher political cost for mobilizing than do autocratic leaders; 2) the political cost of mobilization is increasing in military spending for democratic leaders; and 3) the political cost of mobilization is decreasing in social spending for democratic leaders. These aspects of the relationship between regime type and the political cost of mobilization are written, respectively, as follows:

$$\delta_i^D > \delta_i^A \quad \forall \quad g_i, b_i \quad (\text{B.4})$$

$$\frac{\partial \delta_i(D_i, g_i, b_i)}{\partial g_i} > 0 \quad \forall \quad D_i, b_i \quad (\text{B.5})$$

$$\frac{\partial \delta_i(D_i, g_i, b_i)}{\partial b_i} < 0 \quad \forall \quad D_i, g_i \quad (\text{B.6})$$

The game begins with Nature (N) choosing L_2 's type $\theta \in \{l, h\}$. L_1 then demands x from L_2 . If L_2 accepts demand x , the game ends with L_1 receiving x and L_2 receiving $1 - x$. If L_2 rejects the demand, L_1 and L_2 have the opportunity to mobilize resources and then fight. Interstate conflict is modeled as a costly lottery, where the value of winning a war is normalized to 1, the value of losing a war is normalized to θ , and fighting entails some positive, non-zero cost to each leader ($0 < c_i \leq 1 \forall L_i$). Therefore, if L_2 rejects demand x and $\theta = l$, L_1 chooses μ_1 , Countries 1 and 2 fight, L_1 receives the expected payoff of $\bar{p} - c_1 - \delta_1$ and L_2 receives the expected payoff of $1 - \bar{p} - c_2$; where $\bar{p} = \frac{m_1}{m_1 + m_2}$ is equal to the balance of military capabilities given that L_1 mobilized but L_2 did not. If L_2 rejects demand x and $\theta = h$, L_1 and L_2 choose μ_1 and μ_2 and then Countries 1 and 2 fight. L_1 receives the

expected payoff of $\underline{p} - c_1 - \delta_1$ and L_2 receives the expected payoff of $1 - \underline{p} - c_2 - \delta_2$; where $\underline{p} = \frac{m_1}{m_1 + \bar{m}_2}$ is equal to the balance of military capabilities after L_2 's mobilization, $\bar{p} > \underline{p}$, and $\bar{p} - \underline{p} = g_2$.

B.1 Solution

Asymmetric information over L_2 's type makes perfect Bayesian equilibria the appropriate solution concept. The model has two pure strategy perfect Bayesian equilibria, one in which peace always obtains and one in which fighting can occur with positive probability.

Proposition 1 (Peace Equilibrium). If $w \leq \hat{k}$, the following is a perfect Bayesian equilibrium in pure strategies: L_1 demands \underline{x} and both types of L_2 accept demand \underline{x} .

Proof. Following the logic of backwards induction, I first solve for L_i 's optimal mobilization, then L_2 's decision to accept or reject L_1 's demand, and finally L_1 's optimal demand. L_i 's optimal $\mu^* = g_i^{*\gamma_i} b_i^{*\beta_i}$ is the relative allocation of g_i and b_i that most efficiently secures L_i 's political survival, subject to the resource constraint $e_i = g_i + b_i$. L_i 's maximization problem is solved with the following Lagrangian function:

$$\mathcal{L}_i = \gamma_i \ln g_i + \beta_i \ln b_i + \lambda_i (e_i - g_i - b_i)$$

Setting the partial derivatives of \mathcal{L}_i with respect to g_i and b_i to zero and solving yields

$$\begin{aligned} \frac{\partial \mathcal{L}_i}{\partial g_i} &= \frac{\gamma_i}{g_i} - \lambda_i = 0 \\ \Rightarrow g_i^* &= \frac{\gamma_i}{\lambda_i} \end{aligned} \tag{B.7}$$

$$\begin{aligned}\frac{\partial \mathcal{L}_i}{\partial b_i} &= \frac{\beta_i}{b_i} - \lambda_i = 0 \\ \Rightarrow b_i^* &= \frac{\beta_i}{\lambda_i}\end{aligned}\tag{B.8}$$

Substituting Equations B.7 and B.8 into the budget constraint and solving for λ_i we get

$$\lambda_i = \frac{\gamma_i + \beta_i}{e_i}$$

Substituting the above equation into Equations B.7 and B.8 allows us to define the optimal marginal provision of g_i and b_i in a given μ_i in terms of e_i , γ_i , and β_i .

$$g_i^* = \frac{\gamma_i e_i}{\gamma_i + \beta_i}\tag{B.9}$$

$$b_i^* = \frac{\beta_i e_i}{\gamma_i + \beta_i}\tag{B.10}$$

Equations B.9 and B.10 tell us that, holding e_i constant, L_i will allocate marginally more resources to g_i than to b_i as γ_i increases relative to β_i and marginally more resources to b_i than to g_i as β_i increases relative to γ_i .

Having identified the optimal mobilization for L_i , I now turn to L_2 's decision to accept or reject L_1 's demand x . If $\theta = l$, then L_2 will accept demand x iff $U_{L_2|\theta=l}(\text{accept}) \geq EU_{L_2|\theta=l}(\text{reject}) \Rightarrow 1 - x \geq 1 - \bar{p} - c_2 \Rightarrow x \leq \bar{p} + c_2 \equiv \bar{x}$. If $\theta = h$, then L_2 will accept demand x iff $U_{L_2|\theta=h}(\text{accept}) \geq EU_{L_2|\theta=h}(\text{reject}) \Rightarrow 1 - x \geq 1 - \underline{p} - c_2 - \delta_2 \Rightarrow x \leq \underline{p} + c_2 + \delta_2 \equiv \underline{x}$. As $\delta_i > 0 \forall L_i$, $\bar{x} > \underline{x}$. It therefore follows that if L_1 demands \underline{x} , both types of L_2 will accept.

We now turn to L_1 's optimal demand. L_1 will demand \underline{x} iff $EU_{L_1}(x = \underline{x}) \geq EU_{L_1}(x = \bar{x}) \Rightarrow \underline{p} + c_2 + \delta_2 \geq w(\bar{p} + c_2) + (1 - w)(\underline{p} - c_1 - \delta_1) \Rightarrow$

$$w \leq \frac{c_1 + c_2 + \delta_1 + \delta_2}{(\bar{p} - \underline{p} + c_1 + c_2 + \delta_1)} \equiv \hat{\kappa}\tag{B.11}$$

Therefore, if $w \leq \hat{k}$, L_1 's optimal demand is \underline{x} , which both types of L_2 will accept.

□

Proposition 2 (Conflict Equilibrium). If $w > \hat{k}$, the following is a perfect Bayesian equilibrium in pure strategies: L_1 demands \bar{x} . If $\theta = l$, L_2 accepts \bar{x} and peace obtains. If $\theta = h$, L_2 rejects \bar{x} , L_1 and L_2 choose their optimal mobilizations $\mu_1^* = g_1^{*\gamma_1} b_1^{*\beta_1}$ and $\mu_2^* = g_2^{*\gamma_2} b_2^{*\beta_2}$, respectively, and Countries 1 and 2 fight.

Proof. From the proof of Proposition 1, \bar{x} is the smallest x that L_2 will accept if $\theta = l$, \underline{x} is the smallest x that L_2 will accept if $\theta = h$ will accept, and $\bar{x} > \underline{x}$. Given Equation B.11, when $w > \hat{k}$ L_1 's optimal demand is \bar{x} , which L_2 will accept if $\theta = l$ and will reject if $\theta = h$. If $\theta = h$, then L_1 and L_2 will mobilize before Countries 1 and 2 fight. From Equations (B.9) and (B.10) in the proof of Proposition 1, L_i 's optimal mobilization $\mu_i^* = g_i^{*\gamma_i} b_i^{*\beta_i}$ is defined by $g_i^* = \frac{\gamma_i e_i}{\gamma_i + \beta_i}$ and $b_i^* = \frac{\beta_i e_i}{\gamma_i + \beta_i}$.

□

Proposition 3. Optimal autocratic mobilization includes more military spending than optimal democratic mobilization.

Proof. From Equation B.9, L_i 's optimal military mobilization is defined as $g_i^* = \frac{\gamma_i e_i}{\gamma_i + \beta_i}$. From Equation B.1, $\gamma(D_i, F_i, g_j) < \gamma(A_i, F_i, g_j) \forall (F_i, g_j) \Rightarrow g_i^{A*} > g_i^{D*} \forall (F_i, g_j)$.

□

Proposition 4. Democratic targets are increasingly less likely than autocratic targets to fight stronger challengers.

Proof. Recall that the Conflict Equilibrium obtains iff $w > \frac{c_1+c_2+\delta_1+\delta_2}{(\bar{p}-\underline{p}+c_1+c_2+\delta_1)} \equiv \hat{\kappa} \Rightarrow$ increases in $\hat{\kappa}$ decrease the probability of conflict. From Equations B.3, B.9, and B.5, $\frac{\partial \gamma(R_i, F_i, g_j)}{\partial F_i} > 0 \forall (R_i, g_j)$, $g_i^* = \frac{\gamma_i e_i}{\gamma_i + \beta_i}$, and $\frac{\partial \delta_i(D_i, g_i, b_i)}{\partial g_i} > 0 \forall (D_i, b_i)$. As such, increases in F_2 imply increases in δ_2^D but not δ_2^A . Accordingly, $(\delta_2^D - \delta_2^A | \overline{F_2}) > (\delta_2^D - \delta_2^A | \underline{F_2}) \forall \overline{F_2} > \underline{F_2} \Rightarrow (\hat{\kappa} | D_2, \overline{F_2}) - (\hat{\kappa} | A_2, \overline{F_2}) > (\hat{\kappa} | D_2, \underline{F_2}) - (\hat{\kappa} | A_2, \underline{F_2}) \forall \overline{F_2} > \underline{F_2}$.

□

Proposition 5. Pairs of democracies are less likely to fight than mixed dyads or jointly autocratic dyads.

Proof. Recall that the Conflict Equilibrium obtains iff $w > \frac{c_1+c_2+\delta_1+\delta_2}{(\bar{p}-\underline{p}+c_1+c_2+\delta_1)} \equiv \hat{\kappa} \Rightarrow$ increases in $\hat{\kappa}$ decrease the probability of conflict. Accordingly, the probability of conflict is decreasing as $\bar{p}-\underline{p} \rightarrow 0$. From Equations B.3, B.9, and Proposition 3, $\frac{\partial \gamma(R_i, F_i, g_j)}{\partial g_j} > 0 \forall (R_i, F_i)$, $g_i^* = \frac{\gamma_i e_i}{\gamma_i + \beta_i}$, and $g_i^{A*} > g_i^{D*} \forall (F_i, g_j) \Rightarrow (g_2^{D*} | R_1 = A_1) > (g_2^{D*} | R_1 = D_1)$ and $(g_2^{A*} | R_1 = A_1) > (g_2^{A*} | R_1 = D_1)$. By assumption, $\bar{p} - \underline{p} = g_2 \Rightarrow (\bar{p} - \underline{p} | R_1 = D_1, R_2 = D_2) < (\bar{p} - \underline{p} | R_1 = A_1, R_2 = D_2)$ and $(\bar{p} - \underline{p} | R_1 = D_1, R_2 = D_2) < (\bar{p} - \underline{p} | R_1 = D_1, R_2 = A_2) \Rightarrow (\hat{\kappa} | R_1 = D_1, R_2 = D_2) > (\hat{\kappa} | R_1 = A_1, R_2 = D_2)$ and $(\hat{\kappa} | R_1 = D_1, R_2 = D_2) > (\hat{\kappa} | R_1 = D_1, R_2 = A_2)$.

□

Proposition 6. Challengers are never worse off when facing a democratic target.

Proof. Proposition 6 is proved by considering equilibrium behavior and L_1 's expected payoff in the four exhaustive and mutually exclusive cases that can occur in the model.

Case 1: $w \leq \hat{k}$ and $\theta = l$.

L_1 demands $\bar{x} \equiv \bar{p} + c_2$ and L_2 accepts $\Rightarrow EU(L_1) = \bar{p} + c_2$. As $\bar{p} = \frac{m_1}{m_1 + m_2}$ and c_1 does not vary across regime type $\Rightarrow EU(L_1|R_2 = D) = EU(L_1|R_2 = A)$.

Case 2: $w \leq \hat{k}$ and $\theta = h$.

L_1 demands $\bar{x} \equiv \bar{p} + c_2$, L_2 rejects \bar{x} , L_i chooses mobilization $\mu_i^* = g_i^{*\gamma_i} b_i^{*\beta_i}$, and Countries 1 and 2 fight $\Rightarrow EU(L_1) = \underline{p} - c_1 - \delta_1$. As $\underline{p} = \frac{m_1}{m_1 + m_2}$, $\overline{m_2} = \underline{m_2} + g_2$, $(g_2^*|R_2 = D) < (g_2^*|R_2 = A)$ $\Rightarrow (\underline{p}|R_2 = D) > (\underline{p}|R_2 = A) \Rightarrow EU(L_1|R_2 = D) > EU(L_1|R_2 = A)$.

Case 3: $w > \hat{k}$ and $\theta = l$.

L_1 demands $\underline{x} \equiv \underline{p} + c_2 + \delta_2$ and L_2 accepts $\Rightarrow EU(L_1) = \underline{p} + c_2 + \delta_2$. From Case 2, $(\underline{p}|R_2 = D) > (\underline{p}|R_2 = A) \Rightarrow EU(L_1|R_2 = D) > EU(L_1|R_2 = A)$. Further, from Equation B.4, $(\delta_2|R_2 = D) > (\delta_2|R_2 = A) \Rightarrow EU(L_1|R_2 = D) > EU(L_1|R_2 = A)$.

Case 4: $w > \hat{k}$ and $\theta = h$.

L_1 demands $\underline{x} \equiv \underline{p} + c_2 + \delta_2$ and L_2 accepts $\Rightarrow EU(L_1) = \underline{p} + c_2 + \delta_2$. From Case 2, $(\underline{p}|R_2 = D) > (\underline{p}|R_2 = A) \Rightarrow EU(L_1|R_2 = D) > EU(L_1|R_2 = A)$. Further, from Case 3, $(\delta_2|R_2 = D) > (\delta_2|R_2 = A) \Rightarrow EU(L_1|R_2 = D) > EU(L_1|R_2 = A)$.

To summarize, L_1 's expected payoff is independent of the target's regime type in Case 1 and is strictly higher against a democratic target than against an autocratic target in Cases 2, 3, and 4. It therefore follows that L_1 is never worse off when facing a democratic target.

□

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PUBLICATIONS

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