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# Social Revolution, the State, and War: How Revolutions Affect War-Making Capacity and Interstate War Outcomes

Jeff Carter<sup>1</sup>, Michael Bernhard<sup>2</sup>, and Glenn Palmer<sup>3</sup>

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## Abstract

Democracy has been the primary focus of our efforts to understand the impact of domestic institutions on processes of international conflict. In this article, we examine how a particular nondemocratic regime type, postrevolutionary states, affects military capabilities and war outcomes. Drawing on scholarship that conceptualizes revolutions as a unique class of modernizing events that result in stronger state structures, we argue that postrevolutionary states should be better able to mobilize populations and economic resources for military purposes. Tests performed on a comprehensive sample of twentieth-century states and interstate wars confirm our predictions: postrevolutionary states have larger, better funded militaries and achieve more successful war outcomes.

## Keywords

revolution, war, capabilities, regime type

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The behavioral literature on conflict and war has been quite open to other parts of the discipline, especially in its quest to get the correct mix of domestic-level variables. And here its utilization of the concept of regime (form of rule), most strongly associated with comparative politics, has been exceptionally productive. Two of the more interesting and enduring findings in contemporary political science have emerged out of this tradition: the propensity of democracies to avoid war with each other (Maoz and Russett 1993) and the overwhelming success of democracies in interstate wars (Reiter and Stam 2002). Research on “dangerous democratizers” (Mansfield and Snyder 1995; Ward and Gleditsch 1998), the “dictatorial peace” (Peceny, Beer, and Sanchez-Terry 2002), and autocratic audience costs (Weeks 2008) notwithstanding, much of the scholarship that links regime type to international conflict behavior focuses exclusively on the presence, absence, or degree of democratic political institutions in a country. While the results of this stream of research have been impressive, it is possible that its focus has led scholars of international relations to ignore other possible domestic sources of interstate behavior. In this article, we focus on a facet of the comparative literature on nondemocratic regimes that has not been explored in terms of its impact on interstate conflict—social revolutions.

The most influential macro-level theorists of revolution conceptualize it as a modernizing form of regime change, in which traditionally ruled and largely agrarian ancien régimes are overthrown and replaced by modern bureaucratic states with enhanced power (Huntington 1968; Tilly 1993; Skocpol 1979). If the implications of the literature on revolutions translate into the interstate dimension, we expect to see that postrevolutionary states develop enhanced war-making capabilities and perform more successfully in interstate wars in comparison to states that did not experience a revolution. We test our predictions on two data sets covering all states in the international system during the twentieth century. We find that postrevolutionary states enjoy a significant advantage in war-making capabilities and are more likely to achieve positive interstate war outcomes.

The remainder of the article is divided into six sections. In the first, we review the macro-level theory of social revolutions and formulate hypotheses about how postrevolutionary states should perform in terms of war-making capacity and the outcome of interstate wars. The second section discusses the “revolutions” of 1989 in postcommunist Europe and argues that these events were qualitatively different than traditional revolutions. The third analyzes the prerevolutionary and postrevolutionary martial fortunes of the three most historically significant revolutionary states as a quasi-experiment and establishes the plausibility of our contentions. The fourth describes the design of our statistical tests while the fifth presents the results of our analyses. The article concludes with a discussion of the larger implications of this study.

## Social Revolutions, the State, and War

We begin by reviewing the theory of revolution developed in Theda Skocpol's (1979) *States and Social Revolutions*. Her theory has utility for our discussion for two reasons. First, her approach is state-centric and the ability of countries to wage war is predicated on national capabilities. Second, she locates the origins of social revolution to a substantial degree in the international system, in the inability of traditional states to compete effectively with more powerful neighbors. Thus, her theory is one that focuses on the impact of revolution on the state and the place of the state in the world in terms of its ability to compete globally.

Skocpol's work focuses on the three great social revolutions that dominate the literature on this subject—the French, Russian, and Chinese revolutions. There have been of course a larger number of social revolutions, which we utilize when we turn to our statistical analyses. Within comparative politics and sociology, there has been a debate over whether Skocpol's theories, and more generally theories generated by these three essential cases, are relevant to these other revolutions (Geddes 2003; Foran 1992; Goodwin 2001). We test whether revolutions, generally, have an impact on war-making capabilities and outcomes.

“Social” revolutions introduce large-scale changes that go beyond the mere turnover of political power. According to Skocpol, “Social revolutions are rapid, basic transformations of a society's state and class structures; and they are accompanied and in part carried through by class-based revolts from below” (1979, 4-5). They thus overturn existing patterns of rule and social structures quickly and replace them with new patterns of order. Skocpol examines how revolutions ultimately reconstitute state power in a new form, which exceeds the ability of prerevolutionary regimes to control and direct society.

Skocpol's theory of revolution is not one that rests primarily on a relative assessment of discontent in society, but instead gauges the state's capacity to keep subaltern classes under the control of the state and the ruling class. Revolution only occurs when the repressive apparatuses of the state are sufficiently weakened to the point where the lower classes can disregard the commands of the state and its rulers. Only then can discontent and rebellion overturn the ancien régime. The precipitant for such events, however, lies in the international system. The three countries studied in *States and Social Revolutions* all faced challenges from “more economically developed military competitors” (1979, 41). Further, all three revolutions occurred in great powers in which the state was not fully modern, and in which the aristocracy, rather than a modern state bureaucracy, played the dominant role in maintaining the political and social order.

Skocpol's discussion draws heavily on Gerschenkron's (1962) ideas concerning the “relative backwardness” of “late developers.” When faced with challenges from outside that threaten their power, the rulers of old regimes undertook modernizing reforms to enhance the power of the state and its ability to contend with external challenges. For France, the problem lay in its global struggle with a more

economically formidable England. For Russia, it was a series of martial and diplomatic setbacks—the Crimean War, the Congress of Berlin, and the Russo-Japanese War—which culminated in its disastrous campaign in World War I. While Russia did manage to initiate industrialization, its growth and modernization was slower than that of the other powers with whom it would come into conflict. Both the Germans and the Japanese were more successful in their own attempts to “catch up” internationally by successful revolutions from above. Finally, the Ch’ing Dynasty in China was unable to cope with extraterritorial encroachments on coastal China by a range of external powers. The Chinese nationalists who overthrew the Ch’ing, in turn, had trouble consolidating their hold over the country due to rebellious warlords and, under Chiang Kai-shek, were spectacularly unsuccessful in repelling Japanese encroachment and extensive conquest in Northern China in the 1930s.

Skocpol’s analysis of the impact of revolution acknowledges that postrevolutionary France, Russia, and China emerged as stronger states and that this had an impact on the global system. Her detailed discussion of the impact of revolution on the state in her book, however, is limited to the domestic sphere (1979). She does address the question of how revolution changes the potential military capabilities of states in an article nine years later. The piece reflects on how more recent revolutions (Mexico, Cuba, Bolivia, Nicaragua, Vietnam, and Iran) have been more successful in resisting the encroachments of great powers. While the article is suggestive, Skocpol concludes with a call, “The full exploration of these notions will require more precise theorizing and more systematic comparative research, going beyond the historical illustrations offered here” (1988, 168).

We take up this challenge to study the question with more precise theoretical propositions and more systematic empirical evidence. Our reading of Skocpol leads us to argue that one important way that social revolution should have an impact on the international system is through enhancing a state’s war-making capacity. Skocpol, like Huntington (1968) before her, sees revolutions as modernizing political events that simultaneously increase the number of participants in the political system and erect new institutions to incorporate these populations. Great social revolutions lead to the replacement of agrarian empires that have personalistic and not fully encompassing bureaucracies with “a centralized, mass incorporating state, with enhanced great-power potential in the international arena” (Skocpol 1979, 162).

Revolutions constitute a special class of modernizing *political* events. They transform traditional state structures which placed many countries at a decided disadvantage in the interstate system. In talking about modernity we are not confining ourselves to or even primarily concerned with economic development (something that successful revolutions also promote) but the emergence of modern state structures where none or only the rudiments of them had been in place before. Revolutions replace the decentralized and fragmentary networks of local authority associated with agrarian societies and create bureaucratic polities that for the first time in the history of their nations created comprehensive centralized state power

that extended down to the local level and brought all of society directly under state authority.

There are three aspects of social revolutions that we think lead to enhanced war-making capacity and, ultimately, more successful interstate war outcomes. We believe that these factors will contribute to the ability of postrevolutionary regimes to field larger and better equipped militaries. First, there is the incorporation of heretofore excluded social classes into these new, unified state structures. Such processes include the mobilization and incorporation of the lower classes (as well as the middle classes in some cases, e.g., France 1789). Especially in the early charismatic phase of revolutionary state building this will often include a great popular revolutionary and nationalistic fervor translating into broad support for the postrevolutionary regime (Tilly 1993). This postrevolutionary *elan* should allow the regime relatively wide latitude to implement its preferred policies.

Second, revolutions are led and completed by highly motivated ideologically coherent counterelites who are driven to mobilize society in pursuit of their transformational goals and to overcome past military failures (Skocpol 1979). Jowitt discusses how revolutionary elites are motivated with the intensity of charismatic authority in a Weberian sense (e.g., the belief in a transformative mission), while being devoted to an organizational ethos of fealty to hierarchy and command. This means that revolutionary leaders have at their disposal highly disciplined organizations that pursue their transformational goals with exceptional zeal (Weber 1968; Jowitt 1993).

Third, social revolutions lead to more modern, bureaucratized states (Huntington 1968; Skocpol 1979). By replacing the dispersed power of traditional elites with a fully bureaucratic state, social revolutions provide the regime with an enhanced power to command (Jowitt 1993) and modern state structures capable of extracting a higher level of revenue from society (North 1981; Levi 1989). Given their motivation to improve upon their states' past military failures and the support of the population, these modernized state structures provide postrevolutionary leaders with an increased ability to mobilize their citizens for military purposes (Skocpol 1988). Postrevolutionary bureaucratization institutionalizes the short-term effects of revolutionary fervor into lasting capabilities. It is for this reason that the impact of revolution on state power persists beyond the initial postrevolutionary mobilization.

In sum, elite coherence, the creation of a modern bureaucratic state, the bringing of new populations under the direct control of the state, and the shared revolutionary ethos of both elites and the population at large should allow postrevolutionary regimes to exercise a greater degree of command and control over society and thus raise larger armies, and extract greater resources. This leads to our first two hypotheses:

*Hypothesis 1:* Postrevolutionary states should exhibit larger militaries than nonrevolutionary states.

*Hypothesis 2:* Postrevolutionary states should allocate greater resources to the military than nonrevolutionary states.

Three effects of social revolutions should give postrevolutionary regimes an advantage in achieving successful war outcomes. First, as previously noted, social revolutions modernize and centralize the apparatus of the state. Second, they put in power ideologically disciplined and unified elite with high levels of domestic support who are strongly motivated to overcome poor past performance in the international system. For these two reasons, the militaries of postrevolutionary states should be less likely to suffer from many of the inefficiencies and civil–military conflicts typically associated with other nondemocratic regimes (see Feaver 1999; Reiter and Stam 2002; Biddle and Long 2004). Third, if our hypotheses about postrevolutionary capabilities are correct, social revolutions should also result in larger, better funded militaries. All in all then, social revolutions should yield stronger, more efficient militaries that should perform more successfully on the battlefield than do nonrevolutionary militaries. Conditional on a country's involvement in an interstate war, our third hypothesis is

*Hypothesis 3:* Postrevolutionary states should be more likely to win interstate wars than nonrevolutionary states.

The claim that countries with more modern militaries tend to fare better in interstate wars is not new (e.g., Stam 1996). However, the expectation that social revolutions lead to greater success in war is novel. Moreover, our claim is that social revolutions are a special class of modernizing events. This is an argument that goes beyond mere military modernization, but puts stress on the state, the way it is organized and who controls it.

To sum up, we argue that social revolutions serve as a mechanism by which countries discard traditional state structures, develop into a fully encompassing bureaucratic state, fully subject the population at large—including the rebellious subaltern classes—to the authority of the state, allow for greater, more efficient extraction of resources, and empower a hierarchical and disciplined elite motivated to overcome past military failures. Accordingly, postrevolutionary states should be able to field larger, better financed militaries that are able to achieve more successful interstate war outcomes compared to their nonrevolutionary counterparts.<sup>1</sup>

## The “Revolutions” of 1989

Among the events routinely classified as revolutions, there is one subset of cases that differs from the classical revolutions that have played such a large role in our theorization of their impact on war-making capacity and war outcomes. These are the revolutions that brought an end to Soviet-type systems in East Central Europe in

1989. British historian Timothy Garton Ash (1990) labeled these events “refolutions” because as processes of change they seemed to fall between reform and revolution (1990). Like great reforms they were (largely) peaceful and often negotiated. Like revolutions, they were rapid and brought about radical changes in patterns of rule, economic allocation, and control of property. This tension is reflected in how some political scientists treat these events as democratic transitions (Linz and Stepan 1996; Elster 1996), whereas others use the language of the study of revolutions, movements, and social conflict (Bauman 1994; Ekiert and Kubik 1999; Beissinger 2002).

The events of 1989 differ from other twentieth-century revolutions in two distinct ways. First, the events associated with the end of the Soviet Bloc did not enable underdeveloped traditional regimes to make a multidimensional jump to political modernity. The countries of Central and Eastern Europe, if they had not already embarked on modern forms of rule and economy, either were transformed by the Russian Revolution or the adoption of Soviet-type institutions in the wake of World War II. Thus, the revolutions of 1989 are different from earlier revolutions because they replaced one form of modernity (Soviet-type systems) with another—liberal democratic rule and a market economy. Second, the post-Soviet revolutions in our sample produced democratic regimes. This is in marked contrast to other twentieth-century social revolutions, all of whom replaced one form of nondemocratic regime with another (see appendix).

These differences suggest that the post-Soviet revolutions should not have the same effect on war-making capabilities and war outcomes as other social revolutions. First, as the countries of Eastern and Central Europe already had modern encompassing bureaucratic states, post-Soviet revolutions would not have had the same modernizing effect on those states as social revolutions that occurred in countries with more traditional state structures. For instance, we would not expect the Polish revolution of 1989 to bring previously unincorporated populations under the control of the state, extract untapped resources to enhance the capacities of the state, or to substantively expand and professionalize the state to the same extent that the Russian Revolution of 1917 did.

Second, because the revolutions of 1989 ended in democracy, we expect these states to adopt the more modest military recruitment and spending patterns of other democracies. Therefore, postcommunist regimes should place fewer men under arms and have lower levels of military spending than they did as part of the Soviet bloc (Goldsmith 2003; Fordham and Walker 2005). Additionally, we would expect the post-Soviet states to be more successful in interstate wars outcomes than nonrevolutionary states would be but because of the greater selectivity and various war-fighting advantages attributed to democracies.<sup>2</sup> From the preceding analysis, we expect that the states that have experienced post-Soviet revolutions to behave like other democracies rather than the other revolutionary states in our sample.

## The Cases of France, Russia, and China as a Natural Experiment

Before subjecting our hypotheses to statistical analysis, we investigate the military performances of the three states which figure centrally in the study of social revolutions before and after their own revolutions. We treat these longitudinal observations of the prerevolutionary and postrevolutionary military fortunes of France, Russia, and China as a quasi-natural experiment which establishes the plausibility of our argument (Shadish, Cook, and Campbell 2001).

The historical record shows that postrevolutionary France, Russia, and China achieved superior outcomes in the type of interstate conflicts that helped to undermine their prerevolutionary predecessors. The most plausible change that explains these different war outcomes before and after the revolution is the transformation of the state brought about by the revolution itself. Though this historical evidence is not sufficient in and of itself to validate our claims fully, it adds robustness to the statistical findings that we present in the following section.

In the case of prerevolutionary France, the Bourbon monarchy was unable either to contend with England globally for control of colonies or to wage successful land campaigns on the European mainland. France's one unambiguously successful campaign of the epoch, that to assist England's North American colonies in the Revolutionary War, was an act of fiscal suicide that not only broke the bank but also the whole ancien régime. It led to the calling of the Estates General, and, eventually, the storming of the Bastille. Compare this to Napoleon's campaigns and the fact that the French army got all the way to Moscow. The ability of the postrevolutionary regime to raise troops on the basis of *levee-en-masse* equipped Napoleon with substantially larger armies composed of citizen-soldiers who fought with conviction, used flexible (not set piece) tactics, and foraged off the land (rather than remaining tied to supply trains). This was a new, more effective type of army that made the small professional armies of the eighteenth century obsolete and changed the face of warfare (Skocpol 1988, 153).

The Russian experience is also supportive of the idea that revolution has tangible military benefits. The Russian economy and the Imperial Army both collapsed in 1917, setting the stage for the seizure of power by the Bolsheviks following the failure of the Provisional Government. The fledgling Bolshevik authorities, in turn, were forced to sign the humiliating Treaty of Brest-Litovsk which ceded control of large swaths of Poland, Ukraine, and the Baltic region to the Central Powers. Compare this to the thirty years following the Russian Revolution. The Red Army defeated the German army on the Eastern Front of World War II, despite suffering extremely heavy losses. Then, following the conclusion of hostilities, the Soviet state established de facto control over Europe east of the Oder-Neisse line running all the way to Trieste. The size of the Russian military and the resources spent on it in World War I and World War II offer further support for our claims. At its peak, prerevolutionary Russia fielded a military of nearly 11 million men during World War I.

While this is certainly a sizable army, the Soviet Union put approximately 12.5 million men in the field in the final year of World War II, about 13.6 percent more men. The difference is starker in terms of military spending. In constant 1995 US dollars, prerevolutionary Russia spent an average of \$36 billion dollars per year on its military during World War I. The Soviet Union spent 68 percent more per year (about \$63.5 billion) during World War II.<sup>3</sup>

Finally, the Chinese case also lends credibility to our argument. Both the failing Empire and the fledgling nationalist state that replaced it had insufficient capacity to fend off foreign encroachments. In contrast, the postrevolutionary People's Liberation Army (PLA) was able to fight the forces of the United Nations to a standstill in neighboring Korea in the early 1950s. Looking at the resources spent on the Chinese military during World War II and the Korean War, the postrevolutionary advantage is striking. In constant 1995 US dollars, the prerevolutionary Chinese government spent, on average, approximately \$1.7 billion dollars per year on its military during World War II. In sharp contrast, the People's Republic of China spent just over \$14.2 billion per year on the military throughout the Korean War, an increase of approximately 750 percent. The sizes of the prerevolutionary and postrevolutionary Chinese militaries seemingly run counter to our expectations but in actuality reflect very different circumstances and are thus hard to directly compare. During World War II, the Chinese army peaked at approximately 4.7 million men in 1945. The postrevolutionary, People's Liberation Army reached a maximum of about four million men during the Korean War in 1950. The contexts of these two numbers though are markedly different. The combined forces of the Nationalist and Communists during WWII included a substantial number of irregulars, whereas the postwar PLA was a conventional fighting force. And furthermore the resolution of the civil war meant that a substantial military force was evacuated by the nationalists from the mainland to Formosa and is not taken into account as part of the Chinese military.<sup>4</sup>

Overall, these longitudinal comparisons of France, Russia, and China support our argument. In all three cases, prerevolutionary states fared abysmally in conflict with international rivals. Within a relatively short time, however, states transformed by social revolutions faced similar military challenges and achieved much better results. Having demonstrated the plausibility of our hypotheses using the examples of the three most important social revolutions, we now turn to a more systematic testing of our predictions.

## Research Design

Our hypotheses are tested on two data sets, each generated using EUGene (Bennett and Stam 2000, version 3.201). Our capabilities hypotheses are tested on a country-year, time-series cross-sectional data set covering all states in the international system. The temporal domain of our analyses covers the period from 1900 until 2001 for our test of Hypothesis 1 and, due to data constraints on our dependent variable, 1900 to 1998 for our analysis of Hypothesis 2. Our claim that postrevolutionary

states should achieve greater success in interstate wars is tested on a directed-dyad-year data set covering all countries in the interstate system from 1900 to 2001.

We use directed-dyads for three primary reasons. First, dyadic analysis allows us to incorporate characteristics about the relationship between belligerents that affect war outcomes in a more straightforward manner than is possible with a state-year approach (e.g., relative capabilities, and contiguity). The dyadic approach is particularly useful given our attempt to correct for the nonrandom sample selection of countries into the population of interstate wars with a selection model (see the following discussion). Second, compared to a nondirected setup, a directed-dyadic approach allows us to more easily analyze cases in which two postrevolutionary regimes fought against one another in an interstate war (China vs. Vietnam in 1978 and 1986 and Vietnam vs. Cambodia in 1975). Third, a directed-dyadic approach allows us to identify a state's role in an interstate war (initiator or target) and the context(s) under which social revolutions lead to more successful war outcomes, something not readily accomplished with an analysis of nondirected dyads.

### *Statistical Estimators*

The war-making capabilities hypotheses are estimated using linear regression with fixed-country effects. The fixed effects estimator has become standard for analysis of cross-sectional time-series data in international relations and comparative politics as it allows analysts to avoid the substantial omitted variable bias associated that occurs when significant country-level variation in the dependent variable is not modeled and can be estimated efficiently when the unit effects are correlated with the other explanatory variables in the model (among many others, Cameron and Trivedi 2005; Beck 2008).<sup>5</sup> As country-fixed effects explicitly model variation in the dependent variable between states, the parameter estimates yielded by a fixed-effects model are based on within-panel variation in the explanatory variables (Cameron and Trivedi 2005; Beck 2008). Thus, coefficient estimates represent the expected change in the dependent variable associated with an increase in an explanatory variable *within* a given country.

Our analysis of the relationship between social revolutions and the outcome of interstate wars are conducted using two estimators. The first is a standard ordered probit. Most of existing analyses model war outcomes as a dichotomous concept, with a participant either winning or losing (Reiter and Stam 2002; Clark and Reed 2003). Many wars, however, end without an obvious winner and/or loser but instead with an outcome more closely resembling a draw (Stam 1996). Following Stam, we argue that interstate war outcomes are conceptualized more accurately as a win, lose, or draw proposition for each participant. If we assume that winning is preferred to losing or obtaining a draw and a draw is preferable to losing, then an ordered estimator is methodologically appropriate. Thus, our initial analysis of the relationship

between social revolutions and interstate war outcomes is conducted using an ordered probit.<sup>6</sup>

The interstate wars we observe represent a nonrandom, strategically censored sample of the population of theoretically possible wars (inter alia, Reed 2000). If the outcome of interstate wars is statistically related to the decision of states to initiate interstate wars, failing to account for this selection process can lead to biased estimates and incorrect inferences (Reed and Clark 2000; Clark and Reed 2003). Thus, analysis using a standard ordered probit could result in a substantively misleading conclusion about the relationship between social revolutions and interstate war outcomes. To capture both the nonrandomly censored population of interstate war participants and a trichotomous measure of war outcomes, we estimate a two-step selection model with an ordered probit outcome equation as a robustness check.<sup>7</sup> Technical details about the estimator and the code used to implement it are available in the supplementary appendix.

### *Dependent Variables*

We use four dependent variables to test our hypotheses. *Population under Arms* is used to test Hypothesis 1 and is drawn from data on the size of a state's military and total population in the National Material Capabilities data set (version 3.02; Singer, Bremer, and Stuckey 1972). We use the percentage of a state's population that serves in the military in order not to bias our results against less populous countries. *Defense Burden*, our second dependent variable, is used to test Hypothesis 2 and was created by dividing a state's annual military expenditures by its Gross domestic product (GDP) and multiplying by one hundred. The data are taken from Fordham and Walker (2005). We standardize expenditures by GDP so as to avoid bias in our findings against states with smaller economies.

Our analysis of the relationship between social revolutions and interstate war outcomes requires two dependent variables. The first is a trichotomous indicator of interstate war outcomes. *War Outcome*, is coded 2 if state A won, 1 if the war ended as a draw, and 0 if state A loss per the militarized interstate dispute (MID) data set, version 3.10 (Ghosn, Palmer, and Bremer 2004).<sup>8</sup> By coding *War Outcome* in this way, higher values of the dependent variable are associated with better outcomes to the war for state A and worse outcomes for state B. At the same time, lower values of *War Outcome* indicate better interstate war outcomes for state B and worse outcomes for state A. The final dependent variable identifies the initiation of an interstate war in a dyad in a given year and is used in the first stage of our selection model. Based on data from the MID project (Ghosn, Palmer, and Bremer 2004), *War Initiation* is coded 1 if state A was on the initiating side of an interstate conflict that escalated to war against state B in a given year and 0 otherwise.<sup>9</sup>

### Explanatory Variables

The first three explanatory variables used to test our hypotheses are dichotomous indicators that identify whether a state has undergone a social revolution. *Postrevolutionary* is coded 1 if a state has undergone a revolution and 0 otherwise and is used in our analysis of the relationship between postrevolutionary states and war-making capacity. *Postrevolutionary<sub>A</sub>* and *Postrevolutionary<sub>B</sub>* are coded similarly and are used to identify if state A or state B, respectively, experienced a revolution in our analysis of interstate war outcomes. Conceptually, we use the following definition of a social revolution: when “a state or political regime is overthrown and thereby transformed by a popular movement in an irregular, extraconstitutional and/or violent fashion [ . . . ] (and) also more or less rapid and fundamental social, economic, and/or cultural change during or soon after the struggle for state power” (Goodwin 2001, 9). We use the list of social revolutions provided by Goodwin (2001, 4) to operationalize postrevolutionary states. All told, we code twenty-one states as having undergone a revolution during the twentieth century. A list of these states and the year they underwent a revolution is included in the online appendix.<sup>10</sup>

We control for two other regime types which we think should affect military capabilities and war outcomes. Because we believe that the post-Soviet revolutions of 1989 will create states that will behave more like democracies than will other post-revolutionary regimes, we create a variable to separate the effect of these revolutions from traditional revolutions. The dichotomous variable *Post-Soviet Revolution* is included in our analysis of war capabilities and is coded 1 to mark this particular set of revolutions and 0 otherwise. The effect of the post-Soviet revolutions on war outcomes cannot be estimated because none of these countries were involved in an interstate war at the level of war participant after 1989 per the MID data set (Ghosn, Palmer, and Bremer 2004).

Our analyses include three explanatory variables to account for a state’s level of democracy because of the repeated demonstration of the effect of this regime type on war capabilities and outcomes. *Democracy*, *Democracy<sub>A</sub>*, and *Democracy<sub>B</sub>* are based on the twenty-one-point *Polity2* measure from the Polity IV project (Marshall and Jaggers 2005).<sup>11</sup> *Democracy* is used in our analyses of the war capabilities while *Democracy<sub>A</sub>* and *Democracy<sub>B</sub>* identify, respectively, how democratic country A and country B are in our analysis of interstate war outcomes. Compared to more authoritarian regimes, we expect democratic countries to have smaller militaries and allocate fewer of their economic resources to military spending (Fordham and Walker 2005) and to be more likely to achieve positive interstate war outcomes (Reiter and Stam 2002).

We control for *Interstate War*, coded 1 in the years a country is involved in an interstate war per the MID data set (Ghosn, Palmer, and Bremer 2004) and 0 otherwise, in the models that test our war capabilities hypotheses. This is because it has been shown that states tend to place more men under arms and allocate more of their economic resources to the military in time of war (Fordham and Walker

2005). We control for *Economic Development* because of its potential effect on a country's war-making capabilities. It is operationalized as GDP per capita measured in constant 1995 US dollars. The GDP data are from Fordham and Walker (2005), and population data are from Singer, Bremer, and Stuckey (1972, version 3.02).

Scholars often have focused on the relative strength of belligerents when assessing the likely outcome of interstate war (e.g., Organski and Kugler 1980). We thus include a measure of relative capabilities across dyads in our interstate war outcome models. *Relative Capabilities* was constructed by dividing state A's material capabilities by the sum of state A's and state B's capabilities (i.e.,  $\frac{\text{Capabilities}_A}{\text{Capabilities}_A + \text{Capabilities}_B}$ ). We operationalize a state's capabilities in year  $t$  as its composite indicator of national capability (CINC) score in year  $t$  (Singer, Bremer, and Stuckey 1972, version 3.02).<sup>12</sup>

We control for *Contiguity* in the selection equation of our war outcome estimator as an exclusion restriction (Cameron and Trivedi 2005). Contiguity is a six-point index that measures the level of contiguity between states in a dyad and is taken from the direct contiguity data set, version 3.1 (Stinnett et al. 2002). *Contiguity* was reindexed so that higher values represent greater contiguity between states.

We include a set of variables in our analyses to account for temporal dependence in each data set. Informally, temporal dependence exists when the value of an observation at one point in time is not independent of the value of an observation at an earlier point in time. We include a one-year lagged dependent variable (LDV) in our analyses of the relationship between social revolutions and a state's war-making capabilities. Although some objections to the use of LDVs have been raised (Achen 2000), Keele and Kelly (2006) demonstrate that models with LDVs typically are superior to models that omit a lag under conditions of temporal dependence. Diagnostics indicated a statistically significant one-year autoregressive process in the *Population under Arms* and *Defense Burden* series.

Our analyses of the link between revolutions and war-making capabilities include a count variable for the number of years since a country last participated in an interstate war (*Years Since War*) in order to account for the process of demobilization (Bueno de Mesquita et al. 2004). We include the number of years since a dyad fought an interstate war (*Time*), its square ( $Time^2$ ) and its cube ( $Time^3$ ) in the first stage of our selection model of war outcomes to account for duration dependence in the probability any two states would fight a war against one another (Carter and Signorino 2010). We now turn to the results of our statistical analyses.

## Results

We find states that have undergone a social revolution have greater war-making capabilities and are more likely to achieve positive interstate war outcomes than are nonrevolutionary states. As expected, we also find that the revolutions of 1989 do not exhibit the same enhanced war-making capabilities as more standard

revolutions. We first discuss the tests of our war-making capabilities hypotheses and then turn to our analysis of the link between postrevolutionary states and interstate war outcomes.

### *Social Revolutions and War-Making Capabilities*

Consistent with Hypotheses 1 and 2, states that have experienced a social revolution have larger militaries and allocate more of their economic resources to the military than do nonrevolutionary states.<sup>13</sup> Further, the revolutions of 1989 led to a decrease in national war-making capabilities. We first report a set of summary statistics that support these conclusions before presenting a set of multivariate analyses of the relationship between social revolutions and war-making capabilities. The raw data indicate that the effect of a social revolution on a nation's population under arms is dependent on whether the revolution was associated with the fall of the Soviet-type regimes. Specifically, traditional social revolutions were associated with an average 39 percent increase in the proportion of a state's population serving in the military (from 0.65 percent to 0.90 percent) while the post-Soviet revolutions were accompanied with an average 44 percent smaller military (from 1.53 percent to 0.86 percent). The importance of context for the effect of social revolutions on a state's war-making capabilities is even greater when we focus on the proportion of GDP a state allocates to its military. The traditional social revolutions, on average, were accompanied with a 264 percent increase in a state's annual defense burden (from 1.12 percent to 4.07 percent). At the same time, the social revolutions of the post-Soviet states were associated, on average, with a 65 percent reduction in the percentage of GDP spent on the military (from 3.3 percent to 1.15 percent).

We present our multivariate analyses of the relationship between revolutions and war-making capacity in Table 1. Models 1 and 2 estimate a state's *Population under Arms*, and models 3 and 4 estimate a nation's annual *Defense Burden*. Models 1 and 3 estimate the dependent variables as a function of only a state's revolutionary status and interstate war, while models 2 and 4 control for *Democracy*, *Economic Development*, and *Years Since War*.<sup>14</sup>

The results in Table 1 strongly support our predictions. From model 1, we see that social revolutions were, on average, associated with a 0.07 percentage point increase in a state's *Population under Arms*. Post-Soviet revolutions, however, were associated with a 0.27 percentage point *reduction* in the portion of the total population serving in the military. While these figures may seem substantively small, our data show that countries, on average, had only 0.77 percent of their population serving in the military in a given year during the period from 1900 to 2001. These results are essentially the same when we control for the potentially confounding variables *Democracy*, *Economic Development*, and *Years since War*: postrevolutionary states increase their *Population Under Arms* by 0.09 of a percentage point while post-Soviet countries saw a 0.21 percentage point decrease. In terms of our control variables, countries at war have significantly larger militaries and the size of a

**Table 1.** Social Revolutions and War-Making Capabilities

	Model 1	Model 2	Model 3	Model 4
Postrevolution	0.07* (1.71)	0.09* (1.87)	0.60** (2.89)	0.36* (1.78)
Post-soviet revolution	-0.27** (-2.98)	-0.21** (-2.21)	-1.10** (-2.65)	-0.49 (-1.20)
Interstate war	0.59** (20.75)	0.62** (20.31)	1.72** (14.06)	1.91** (15.60)
Democracy		-0.01** (-4.15)		-0.03** (-5.05)
Economic development		-5.33E-07 (-0.77)		-5.33E-06 <sup>†</sup> (-1.64)
Years since war		-1.87E-05 (-0.05)		-3.57E-03** (2.12)
Population under arms $t_{-1}$	0.65** (90.50)	0.65** (86.28)		
Defense burden $t_{-1}$	0.23** (27.22)	0.25** (15.33)	0.76** (109.44)	0.82** (117.67)
Constant			0.46** (13.77)	0.31** (4.98)
Overall R <sup>2</sup>	0.68	0.69	0.76	0.80
F statistic	2,454.31	1,305.19	3,319.91	2,268.38
Probability > F	<0.01	<0.01	<0.01	<0.01
Observations	9,633	8,531	8,266	7,487

Note: Dependent Variable: Models 1 & 2: Population under Arms; Models 3 & 4: Defense Burden.  
 Temporal domain: Models 1 & 2: 1900–2001; Models 3 & 4: 1900–1998. t-scores in parentheses.  
 One-tailed significance: <sup>†</sup>  $p < .1$ . \* $p < .05$ . \*\* $p < .01$ .

country's military is decreasing in its level of democracy. We find no significant relationship between *Economic Development* and *Years Since War* and the portion of a state's citizens serving in the military.

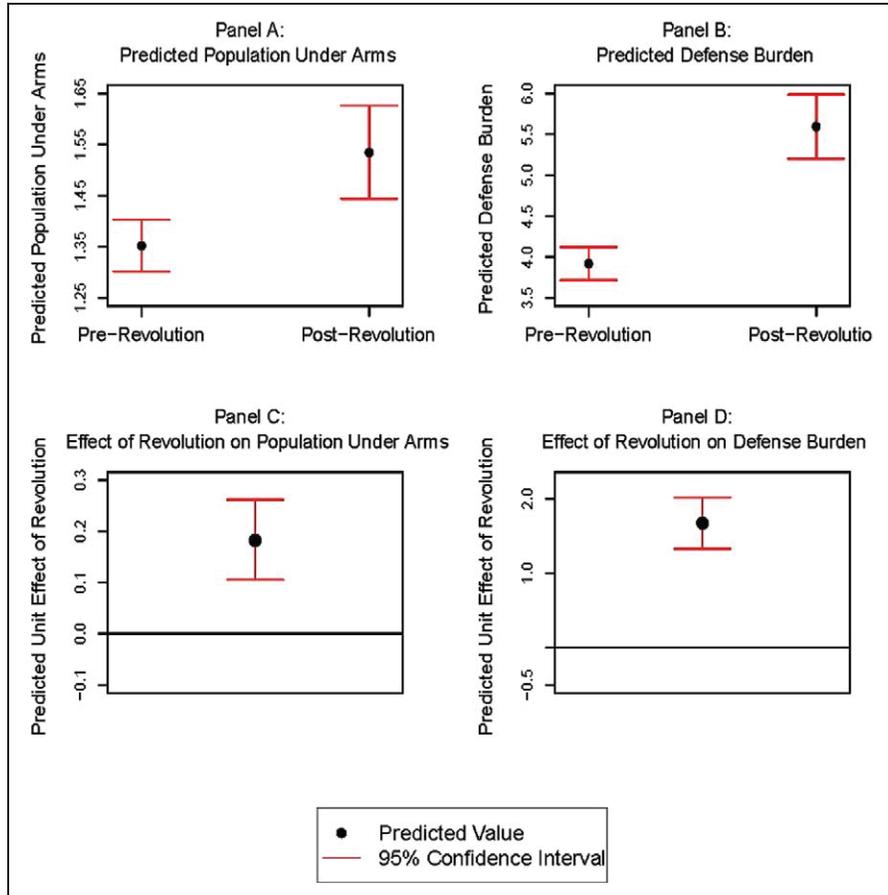
The results in Table 1 also support our expectation that social revolutions lead states to allocate more of their economic resources to the military. Accounting for a state's involvement in an interstate war, model 3 indicates that, on average, post-revolutionary states spent 0.60 percentage points more of their GDP on the military while the post-Soviet countries saw their defense burdens decrease by 1.1 percentage points of their GDP. After accounting for all of our control variables, postrevolutionary regimes are estimated to allocate 0.36 of a percentage point more of their GDP to the military while post-Soviet countries decreased their defense burdens, on average, by 0.49 of a percentage point. Note that the expected decrease in the defense burdens of post-Soviet states is statistically insignificant in model 4.<sup>15</sup> Consistent with previous research, we find that interstate war is associated with significantly higher defense burdens (Goldsmith 2003) and that a state's military spending is decreasing in its level of democracy (Fordham and Walker 2005), its level of economic development, and the number of years since it last fought a war (Bueno de Mesquita et al. 2004).

The results reported in Table 1 lend strong statistical support to our argument that traditional social revolutions lead to an increase in a state's war-making capabilities. To demonstrate how these relationships translate to a postrevolutionary advantage on the battlefield, Figure 1 presents the predicted *Population under Arms* and *Defense Burden* of nonrevolutionary and postrevolutionary states during an interstate war based on postestimation simulations of models 2 and 4, respectively.<sup>16</sup>

Figure 1 makes clear that, compared to states that have not experienced a social revolution, postrevolutionary states send proportionally larger and better funded militaries to war. Focusing on panels A and B, respectively, we see that postrevolutionary regimes are expected to place approximately 13.5 percent more of their population under arms (1.53 percent vs. 1.35 percent) and allocate approximately 42.7 percent more of their GDP to military spending (5.60 percent vs. 3.92 percent) than did nonrevolutionary, nondemocracies during interstate wars. Looking at the second row in Figure 1, we see that these substantive differences in the wartime population under arms (Panel C) and defense burdens (Panel D) of postrevolutionary and prerevolutionary regimes are statistically significant. In sum, our analyses strongly support our claims that social revolutions are associated with a subsequent increase in war-making capabilities.<sup>17</sup> We now examine whether postrevolutionary regimes were able to translate these capability advantages into successful interstate war outcomes.

### *Social Revolutions and Interstate War Outcomes*

Table 2 presents our estimates of the relationship between social revolutions and interstate war outcomes. One note regarding interpretation is worth making before



**Figure I.** Social revolutions and wartime capabilities

we discuss our results. While coefficients on variables associated with characteristics of state A in a dyad (e.g.,  $Postrevolutionary_A$ ) are interpreted in the standard way, a positive coefficient on a variable corresponding to a characteristic of state B (e.g.,  $Postrevolutionary_B$ ) indicates higher values of that variable are associated with *less* positive war outcomes for the target. This is because higher values of *War Outcome* correspond to more positive outcomes for the initiating side and less positive outcomes for the targeted side in an interstate war.

Model 5 in Table 2 reports the results of our ordered probit analysis of interstate war outcomes. The statistically significant coefficients on  $Postrevolutionary_A$  and  $Postrevolutionary_B$ , positive and negative, respectively, indicate that postrevolutionary regimes were more likely to achieve positive interstate war outcomes than nonrevolutionary regimes regardless of their role in the war. Regarding the control variables in

**Table 2.** Social Revolutions and Interstate War Outcomes, 1900–2001

	Model 5	Model 6
	(z statistic) $\beta$	(z statistic) $\beta$
DV: War Outcome		
Postrevolutionary <sub>A</sub>	0.70 <sup>†</sup> (2.80)	0.71 <sup>†</sup> (2.68)
Postrevolutionary <sub>B</sub>	-0.68 <sup>†</sup> (-2.17)	-0.66 <sup>†</sup> (-1.92)
Democracy <sub>A</sub>	0.07 <sup>†</sup> (5.14)	0.07 <sup>†</sup> (4.80)
Democracy <sub>B</sub>	-0.06 <sup>†</sup> (-4.81)	-0.06 <sup>†</sup> (-4.81)
Relative capabilities	-0.23 (-0.79)	-0.22 (-0.69)
Inverse Mill's ratio ( $\lambda$ )		0.30 (0.97)
DV: War Initiation		
Postrevolutionary <sub>A</sub>		0.11 <sup>†</sup> (1.97)
Postrevolutionary <sub>B</sub>		0.005 (0.07)
Democracy <sub>A</sub>		0.002 (0.65)
Democracy <sub>B</sub>		-0.001 (-0.28)
Relative Capabilities		-0.09 (-0.71)
Contiguity		0.15 <sup>†</sup> (15.66)
Time		-1.35E-04 (-0.02)
Time <sup>2</sup>		2.00E-04 (0.67)
Time <sup>3</sup>		-3.75E-06 (-1.26)
Constant		3.55 <sup>†</sup> (-56.58)
Cutpoint ( $\alpha_1$ )	-0.90 <sup>†</sup> (-5.53)	0.19 (0.17)
Cutpoint ( $\alpha_2$ )	-0.13 <sup>†</sup> (-0.87)	0.97 (0.84)
War Outcome		
Observations	245	245
Log Likelihood	-215.99	-215.23
$\chi^2$	63.25	57.51
Probability > $\chi^2$	<0.01	<0.01
War Initiation		
Observations		1,014,524
Log-psuedolikelihood		-2,163.90
$\chi^2$		301.04
Probability > $\chi^2$		<0.01

Two-tailed significance: <sup>†</sup> $p < .01$ .

Model 5: robust standard errors clustered on directed dyad.

Model 6: robust standard errors clustered on directed dyad in *War Initiation* equation and bootstrapped standard errors (1,000 replications) in *War Outcome* equation.

the model, we find that, compared to relatively authoritarian regimes, more democratic initiators and targets are more likely to achieve positive interstate war outcomes than are nondemocratic initiators and targets, a result consistent with previous scholarship (Reiter and Stam 2002). We find a negative, but insignificant, relationship between state A's share of the total capabilities in the dyad and successful war outcomes.

While model 5 appears to support our claim that postrevolutionary states are more likely to succeed in interstate wars, the nonrandom, strategically censored population of war participants potentially represents a barrier to making valid substantive inferences from our initial analysis of war outcomes. To check for this possibility, model 6 reports the results of our analysis of interstate war outcomes using a two-step selection model with an ordered probit outcome equation. Two things in particular are worth highlighting about model 6. First, and most importantly, the coefficient on  $\lambda$  (the Inverse Mills' Ratio) is statistically insignificant. This indicates that the selection (i.e., *War Initiation*) and outcome (i.e., *War Outcome*) equations are statistically unrelated to one another and inferences drawn from the parameters estimated in model 5 are not tainted by selection bias. We therefore use model 5 to calculate the substantive effect of social revolutions on interstate war outcomes below. The second point worth highlighting about is that the parameter estimates yielded by our selection model are almost identical to those estimated by our standard ordered probit, with differences across the two models of 0.01 and 0.02 on the coefficients for *Postrevolutionary<sub>A</sub>* and *Postrevolutionary<sub>B</sub>*. Thus, even after accounting for the selection process, our analysis indicates that states that have undergone a social revolution are more likely to achieve positive interstate war outcomes than are states that have not experienced a revolution.

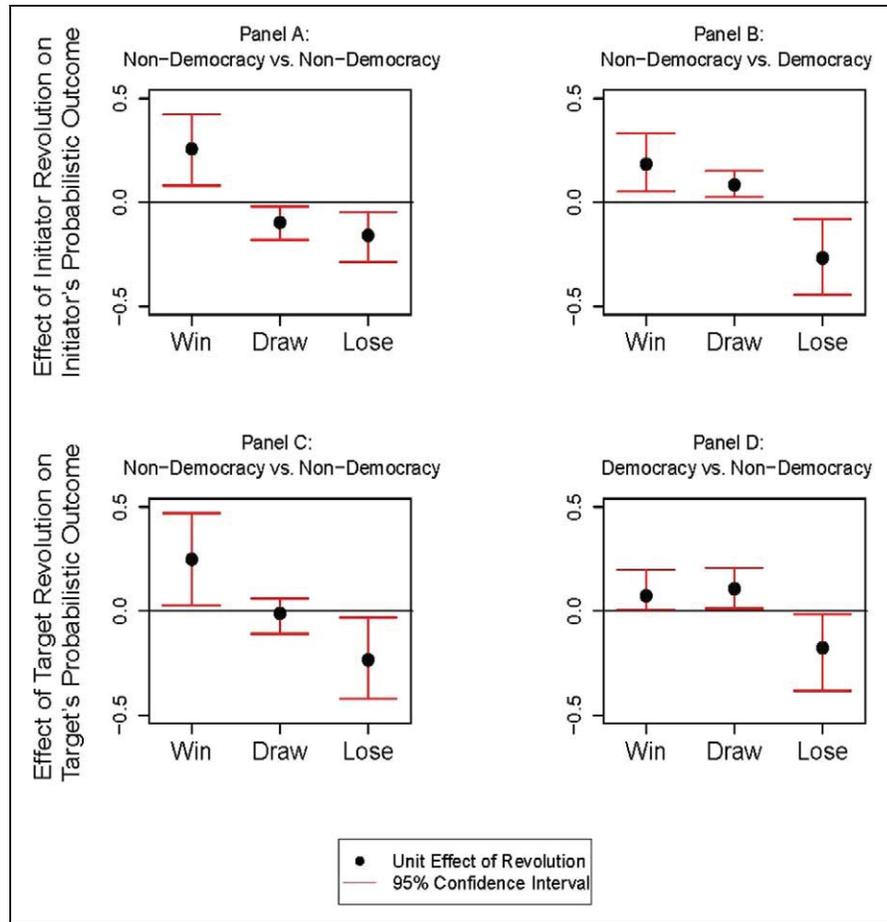
With respect to the results of the war initiation equation of model 6, we find that postrevolutionary states are no more or less likely to be targeted in an interstate war than are nonrevolutionary states, but they are, on average, more likely to initiate an interstate war. This finding would seem to run counter to the idea derived from the bargaining literature that the stronger military yielded by social revolutions would allow postrevolutionary regimes to avoid wars by intimidating potential adversaries. We also find that, compared to nondemocracies, democratic states are no more or less likely to initiate or be targeted in interstate wars.<sup>18</sup> Our results indicate that the relative distribution of capabilities between a pair of countries is not significantly related to the probability of war initiation.<sup>19</sup> In that *Relative Capabilities* controls for differences in military strength, our analysis indicates that the success of revolutionary states on the battlefield go beyond their enhanced capabilities to mobilize personnel and resources. We also find that there is a positive relationship between contiguity and the probability of war. Additionally, the statistically insignificant coefficients on our cubic polynomials of the number of years since a dyad has been at war suggest that the other explanatory variables account for any duration dependence present in the data.

Returning to our analysis of war outcomes, the results presented in Table 2 tell us relatively little about whether postrevolutionary states are more likely to achieve successful war outcomes in any particular situation. This is because the statistical significance of a parameter estimated via maximum likelihood is contingent on the values taken on by each of the other explanatory variables in the

statistical model (e.g., Cameron and Trivedi 2005). Following King, Tomz, and Wittenberg (2000), we tested Hypothesis 3 by setting the explanatory variables in Model 5 to represent substantively interesting situations and calculating the unit effect of *Postrevolutionary<sub>A</sub>* and *Postrevolutionary<sub>B</sub>* on *War Outcome* using post-estimation simulations.<sup>20</sup> As discussed earlier, twentieth-century social revolutions were exclusively a nondemocratic phenomenon until the revolutions of 1989. We therefore calculated the probability of a nondemocratic state winning, losing, or drawing in an interstate war before and after a social revolution. Among initiators, this was done in the context of a jointly nondemocratic dyad and a nondemocratic state starting a war against a democracy. Assessing Hypothesis 3 among targeted states was done by simulating a jointly nondemocratic dyad and a situation in which a democratic state targeted a nondemocracy. The analyses reported here are based on an equal distribution of capabilities among adversaries.<sup>21</sup> The results of these simulations are presented graphically in Figure 2, with panels A and B reporting the results for initiators and panels C and D reporting the results for targets.<sup>22</sup>

An initiator or target is more (less) likely to obtain a particular war outcome after a social revolution if the unit effect is above (below) the zero line in the four panels of Figure 2. The unit effect is statistically significant at the 95 percent level if the confidence interval does not contain the zero line. Our expectation is that states should be more likely to win and less likely lose an interstate war after experiencing a social revolution. This expectation is borne out for both initiators and targets. In a jointly nondemocratic dyad (Panel A), a postrevolutionary initiator has a 0.26 higher probability of winning and a 0.16 lower probability of losing an interstate war than does a nonrevolutionary initiator. As the confidence interval about both of these predictions does not include the zero line, the differences in the probabilities are statistically significant. Panel B indicates that, compared to a nonrevolutionary initiator, a nondemocratic, postrevolutionary government has a 0.18 higher probability of winning and, equally important, a 0.27 lower probability of losing an interstate war against a democracy. Both of these relationships are statistically significant.

A similar pattern emerges when we consider states that are targeted in interstate wars. Panel C indicates that in a jointly autocratic dyad postrevolutionary targets have a 0.25 higher probability of winning and a 0.23 lower probability of losing a war than do nonrevolutionary targets. The differences in these respective probabilities are statistically significant. Finally, Panel D reports the unit effect of a social revolution on a target's probabilistic war outcome when a democracy initiates an interstate war against a nondemocracy. Under these circumstances, a postrevolutionary target has a 0.07 higher probability of winning and a 0.18 lower probability of losing an interstate war compared to a nonrevolutionary target. Again, both of these relationships are statistically significant. In sum, the results reported in Figure 2 strongly support our claim that postrevolutionary regimes should fare better in interstate wars than states that have not experienced a social revolution.



**Figure 2.** Social revolutions and the outcome of interstate wars.

## Discussion and Conclusion

Motivated by insights drawn from a stream of the comparative politics literature on regimes and regime change, we examined the relationship between postrevolutionary states and war-making capacity and the outcome of interstate wars. Our quantitative analyses, performed on a sample of all states in the international system during the twentieth century, yield three novel findings. First, states that have undergone a social revolution enjoy an advantage in war-making capabilities over nonrevolutionary states. This is true both of the defense burden and population under arms. Second, the post-Soviet revolutions had a qualitatively different effect on a country's war-making capabilities than did previous, more traditional social

revolutions. Specifically, post-Soviet regimes are associated with significantly smaller militaries and lower defense burdens than either nonrevolutionary or Soviet states. Third, we find that postrevolutionary regimes are significantly more successful in interstate wars than are countries that have not experienced a social revolution.

These results hold at least two larger implications. First, this study highlights the utility of using insights from literatures whose epistemology and methods are radically different. Understandably, researchers are most familiar with scholarship closely related to their own research agenda. While work on social revolutions has stimulated streams of research within comparative politics, sociology, and institutional economics (see Goldstone 2003), it has had less impact in qualitative and quantitative international relations.

The application of comparative historical theories of social revolution to issues typically associated with the empirical study of conflict represents an attempt to overcome such disciplinary barriers to knowledge. While in this case a comparative politics literature provided the means to a new finding in the international conflict literature, the flow should not be one way. Comparative historical analysis can benefit mightily from literatures—like contemporary conflict studies—that approach research from a higher level of abstraction, utilize large cross-sectional time-series, and sophisticated quantitative methods.<sup>23</sup>

Second, the analysis presented here identifies a domestic source of international behavior independent of democratic political institutions. As discussed in the introduction, two of the more enduring findings in contemporary political science (the democratic peace and democratic success in interstate war) owe their discovery to scholars of international relations who identified the cause of interstate outcomes with a domestic level variable, regime type. The research on the relationship between regime type and interstate behavior, however, has focused perhaps too exclusively on the role of democracy. Focusing on an unexamined type of nondemocratic regime and regime change, we find that states that have undergone social revolutions exhibit their own unique pattern of interstate conflict behavior. Along with other recent research on the relationship between nondemocracies and conflict (e.g., Peceny, Beer, and Sanchez-Terry 2002; Weeks 2008), our findings demonstrate the utility of looking beyond democracy for domestic sources of interstate behavior.

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## Appendix

### Revolutionary States

State	Year of Revolution
Mexico	1910
Russia	1917
Yugoslavia	1945
Vietnam	1945
China	1949
Bolivia	1952
Cuba	1959
Algeria	1962
Ethiopia	1974
Angola	1975
Mozambique	1975
Cambodia	1975
Nicaragua	1979
Iran	1979
<i>Poland</i>	1989
<i>Hungary</i>	1989
<i>Albania</i>	1989
<i>Bulgaria</i>	1989
<i>Romania</i>	1989
<i>Czech Republic</i>	1993
<i>Slovakia</i>	1993

### Notes

1. Throughout the article we make comparisons between postrevolutionary and nonrevolutionary regimes and states. Postrevolutionary states are those that have experienced social revolutions. Nonrevolutionary states can exist in one of two varieties. They can either be states that have never experienced a revolution or they can be the part of the time series that precede a revolution in states that experience revolution.
2. See Clark and Reed (2000) for a review of these arguments.
3. The military personnel and defense spending statistics in this and the subsequent paragraph are based on data from Singer, Bremer, and Stuckey (1972). Current dollars were

converted into constant dollars using the GDP deflator from Johnston and Williamson (2009).

4. We thank an anonymous reviewer for pointing this out to us.
5. The correlation between the explanatory variables and unit effects in our models varied from approximately 0.54 to 0.58. Further, the results of a Hausman test rejected the use of random effects models.
6. The results presented below were substantively unchanged when we estimated an ordered logit.
7. Previous studies of interstate war outcomes that explicitly modeled the selection process used a censored probit estimator (Reed and Clark 2000; Clark and Reed 2003). While this approach accounts for the nonrandom nature of wars, a censored probit estimator forces interstate war outcomes to be modeled dichotomously.
8. Specifically, *War Outcome* is based on the *cwoutcm* variable produced by EUGene (Bennett and Stam 2000, version 3.201), which is in turn based on the variable *Outcome* in the MID data set (Ghosn, Palmer, and Bremer 2004). We code *War Outcome* as a win for State A if *cwoutcm* is equal to 1; a draw if *cwoutcm* is equal to 3, 4, 5, 6, 7, 8, or 9; and a loss for State A if *cwoutcm* is equal to 2. While the various outcomes that represent the “draw” value of our dependent variable differ in how relatively “good” they are for state A or state B, we feel confident in asserting that a state A would prefer higher values of *War Outcome* to lower values and that state B would prefer lower values to higher values.
9. The two states in a dyad were considered to be at war with one another if each state achieved a hostility level of five in the MID data set (Ghosn, Palmer, and Bremer 2004), a designation given to states that suffered at least 100 fatalities or contributed at least 1,000 troops to the war effort (Singer and Small 1982). As a robustness check, we reestimated our model on those dyads in which both states had a hostility level of five and suffered at least 500 fatalities. The results of this model were qualitatively similar to those presented here. Additionally, our results were substantively unchanged when we used the COW interstate war data (Sarkees 2000) instead of the MID data. The results of these robustness checks are provided in the supplementary appendix.
10. We treat one of Goodwin’s revolutionary countries as nonrevolutionary. The French revolution of 1789 is over one hundred years removed from our sample and is separated from France in 1900 by five separate nineteenth-century regimes (the Napoleonic Empire, monarchy under two different royal houses, the imperfect democracy of the Second Republic, modern dictatorship under Louis Napoleon, and the stable democracy of the Third Republic).
11. We estimated a set of models using dichotomous measures of democracy (coded 1 in a given year if a country had a value of +7 or higher on the *Polity2* scale) instead of the twenty-one-point scalar measure (see Bayer and Bernhard 2010). The results of these analyses led to the same substantive conclusions as the analyses reported here.
12. A country’s CINC score identifies its share of the global sum of the following six items: total population, urban population, military personnel, military expenditures, energy consumption, and iron and steel production.
13. As noted in note 1, our theoretical reference category includes both nonrevolutionary states that have not and will not experience a social revolution in our data set and

prerevolutionary states whose social revolution has yet to occur. Because the fixed effects estimator uses only within-panel variation for its parameter estimates, our multivariate analysis of war-making capabilities cannot make statistical comparisons between the *Population Under Arms* and *Defense Burden* of nonrevolutionary states and postrevolutionary states. However, *t* tests of the annual values of *Population Under Arms* and *Defense Burden* for nonrevolutionary states and postrevolutionary states indicate that, compared to nonrevolutionary regimes, states that have undergone a social revolution, on average, have a significantly larger portion of their citizens in the military (0.72 vs. 0.90;  $p < .0001$ ) and allocate significantly more of their economic resources to military spending (2.29 vs. 4.07;  $p < .0001$ ).

14. We estimated a number of other models with other combinations of control variables. Adding or subtracting variables did not lead to any substantive changes in our results.
15. This appears to be due to a relationship with our measure of democracy, as our indicator for *Post-Soviet Revolution* is negative and insignificant in models that include *Democracy* and negative and significant in models without *Democracy*. It is likely due to a lack of identifying information in the data set, as there is little variation in *Democracy* when *Post-Soviet Revolution* is equal to 1.
16. Technical details about the postestimation simulations are available in the supplementary appendix.
17. Because we do not observe cases in which post-Soviet countries participated in interstate wars, we have no data on which to base a prediction of their wartime capabilities and, therefore, do not estimate the wartime capabilities of post-Soviet regimes.
18. Analysis that included a variable identifying jointly democratic dyads found support for the dyadic but not the monadic democratic peace (Maoz and Russett 1993).
19. This finding is at odds with both balance-of-power and power preponderance theories of war (Morgenthau 1957; Organski and Kugler 1980). It is consistent, however, with formal research that concludes capabilities can have opposite effects on conflict initiation and escalation (Fearon 1994) and Reed's (2000) empirical finding that power parity is more likely to lead to conflict onset and less likely to lead to an escalation to war.
20. Technical details about the postestimation simulations are available in the supplementary appendix.
21. The qualitative nature of the results is the same at other values of *Relative Capabilities*.
22. Tables reporting the predicted probabilities of each war outcome are located in the Supplementary Appendix.
23. For those with doubts on this score, it is important to remember that Rueschemeyer, Stephens, and Stephens (1992) *Capitalist Development and Democracy* begins by trying to make sense of ubiquitous statistical findings of the strong correlation between economic development and democracy.

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