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Peace Settlements, Systemic Events, and Postwar Military Power

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by

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Report

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Abstract

Peace Settlements, Systemic Events, and Postwar Military Power

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Why do some states increase their military capability following war, while others return to prewar levels, or decline? Existing research has examined postwar economic recovery, but little scholarship is devoted to the parallel recovery of military capacity. This paper argues that postwar military power depends on the credibility of the commitment to enforce the terms of a peace settlement by each party. This credibility can be affected by other events in the international system not directly related to a given settlement, including regime change, or a later war, both civil and international. The implications of this theory are evaluated using a fixed-effects linear model and Correlates of War National Material Capability data in a sample of both victorious and defeated states from 1823 - 1913. The empirical model suggests limited support for the theory, as changes in the military capability of former coalition partners exerts strong effects of a state's military capability, but the effects of other international events are mixed.

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Introduction

The American experience in the international system following World War II is one of sustained military superiority, as the US has been the most powerful state in absolute terms since 1945, and left without close rivals since the collapse of the Soviet Union. However, in comparison to the postwar experiences of other states in the modern international system, the American experience is entirely unique. Rarely do great power conflicts even occur, and even more rarely does one great power achieve a substantial and sustained disparity in military power between itself and potential rivals. As Gowa and Ramsay (2017) note, the rarity of the US experience continued after the collapse of the Soviet Union, as no “single country nor any coalition of states has attempted to match US power in the quarter century since the Soviet Union collapsed.” Considerable variation exists in trends of state military power following interstate war. Returning to the example of World War II, the United Kingdom counted itself among the victors that suffered relatively little damage to its mainland (like the US), but experienced a vast decline in military power in the years following the war.

Sizable changes in military capability following war abound in the history of the international system. Yet, these changes do not always accord with intuitive expectations: defeat does not necessarily lead to diminished state military capability, even when defeat entails substantial losses of territory or leadership change (e.g. Mexico in 1846, Uganda in 1979, or Pakistan’s return to prewar levels of military capability within five years of losing Bangladesh). Additionally, the conclusion of a conflict does not necessarily lead to a reduction in state military capability, as states reallocate resources that are no longer needed for the war effort. These include, but are not limited to, Chile after the War of the Pacific, India and China following the Assam War in 1962, and Israel’s series of conflicts with surrounding states throughout the mid and late-twentieth century. As Gibler (2017) shows, substantial changes in military capability are associated with participation in an interstate war, as states generally increase their military capabilities during the early and middle periods of war duration, and decrease them at the conclusion. However, given the examples just provided, this prompts the question; what explains variation in state military

capability that exists following interstate wars?

This paper provides a theory of postwar military capability grounded in the framework of the bargaining model of war. Given some issue over which two or more states fight, conflict outcomes and settlement offers should indicate the relative distribution of power between the belligerents, and thus the settlement of the issue should reflect this distribution (Fearon 1995; Filson and Werner 2002; Powell 2004). The maintenance of a peace settlement is dependent on the threat or credible commitment to repeat the violent bargaining process that created it (Wagner 2007; Werner and Yuen 2005). The credibility of this commitment is a function of the military capabilities and preferences of the states party to a settlement. Therefore, changes to these capabilities and preferences in one state that is party to a peace settlement alter the incentives faced by other states in the settlement. This can motivate subsequent changes in state military capabilities, as states seek to preserve the peace settlement status quo, or alter the settlement of the issue over which the previous war was fought in their favor. Events like participation in another interstate war, regime change, or civil war can substantially reshape the military capability a state can credibly commit to the maintenance of a peace settlement or a state's preferences over the terms of said settlement. If a state that is party to a peace settlement experiences one of these events, the military capabilities of that state's former coalition partners (if any) and the opposing state(s) will change as a consequence.

This theory is formalized in a two-player game with two stages. In the first, the two states simultaneously choose their armament level from an available pool of resources. In second, the two states simultaneously choose whether or not to fight a war over a given issue in dispute. The outcome of a potential war is affected by the military capability of both states' coalition partners, which shapes the states' decisions about their own armament levels. The model suggests that a state's military capability should increase as the value of the issue at stake increases, and decrease as the military capability of former coalition partners increases. This variation in military capability available for a potential conflict can include changes in the armament levels of former coalition partners, but also events external to the peace settlement like participation in another interstate war, regime change, or civil war. Therefore, variation in postwar military capability should reflect

not only changes in the military capabilities of states party to the peace settlement, but also whether or not former coalition partners experience these external events. The implications of this theory are evaluated using a sample of thirty-one states that fought an interstate war from 1823-1913, finding evidence that increases in the military capabilities of a state's former coalition partners are associated with decreases in that state's military capabilities. However, mixed evidence is found in support of the prediction that involvement by a former coalition partner that is party to a peace agreement in an interstate war, civil war, and regime change are associated with increases in state military capability.

This project demonstrates the influence that the composition of peace settlements play long after the conclusion of a war, and the importance of understanding international conflict through a systemic lens. If one accepts that changes in military power play a crucial causal role in explaining war, then identifying the sources of these changes is necessary. A state's conflict history is essential to understanding this role, but analysis must go beyond measures such as past conflict frequency. States remain party to a peace agreement long after the conclusion of the war, and the behavior of other states party to the settlement act as a strong predictor of state military policy in the years following war. As such, even seemingly unrelated events influence state military policy consistently effect state military policy. This paper's contribution and place among existing research is further elaborated in the following section.

Literature Review

Military capability is the primary component of system structure to Waltz (1979), is essential to explaining self-enforcing agreements between states (Wagner 2007), and defines differing international systems through its distribution (Gilpin 1983). Moreover, through the lens of the bargaining theory of war, commitment problems driven by rapid changes in relative capability are viewed as one of the primary causes of interstate conflict (Powell 2005; Fearon 1995). Additionally, in the postwar setting, peace is more likely to collapse if there are changes in relative military capability between belligerents (Werner, 1998), or if a third-party imposes a settlement that does not reflect the relative capability distribution between belligerents (Werner and Yuen, 2005). These indicate that the expectations of continued fighting are inconsistent with the existing peace settlement, thus incentivizing one party to attempt to forcefully renegotiate the existing settlement.

As shown, changes in state military capability can have significant consequences for relations between states and the likelihood of interstate conflict. Rightfully so, substantial academic work has been devoted to explicating these consequences. However, much less attention has been paid to the short- and long-term repercussions interstate conflict itself may have for state military capability, or to patterns of change in postwar military capability. Previous work in this vein has been limited in scope to the effects of great power war on great power military capability (Thompson and Rasler 1988). A notable exception is Gibler's (2017) analysis of the relationship between parity and conflict, in which he shows that substantial changes in military capability tend to coincide with interstate wars. Indeed, while great power conflict has monumental consequences for any international system, the vast majority of interstate wars involve smaller states. Though not as far-reaching, these non-great power conflicts can have substantial consequences both regionally, and by drawing in states outside of the conflict (see Israel since 1948, or the Korean Peninsula). Furthermore, violent conflict between non-great powers can still result in high costs to human life, military and civilian, as in the Iran-Iraq War and Bangladesh War. This theory expands the study of the effects of interstate war on state military capability by both broadening the scope of analysis beyond great powers and by elucidating the mechanisms through which military capability is

shaped by participation in an interstate war, even long after the war's settlement.

While not directly answering the question at hand, other research programs within political science have addressed the consequences of war for state military power. Chief among these is work on the relationship between war and territorial settlements. Territory contains the fundamental components that comprise conventional military capability; population and material resources. Therefore, this body of research can potentially provide insight into the effect of war on military capabilities. Generally, interstate disputes over territory can derive from the power potential of territory, possibly causing long-term changes in the distribution of power if the dispute is resolved (Rider and Owsiak, 2015). In particular, changes of territory following decisive victories significantly reduce the likelihood of future conflict (Tir, 2003). From a systemic perspective, territorial redistribution is one element of the process of reordering the international system following war between great powers, meant to both reflect and reinforce the new distribution of relative military capabilities (Ikenberry, 2001; Slantchev, 2005; McDonald, 2015). This project builds on these findings by showing how the utilization of new resources from acquired territory for military purposes is conditioned by the behavior of other states party to a peace agreement.

In contrast to the effects of war on state military capability, substantial theoretical and empirical labor has been devoted to evaluating postwar economic performance, i.e. the impact of war on a state's economy. Given the overlap between factors affecting economic performance and those underpinning conventional military capability (e.g. material resources, infrastructure, manpower, and so on), much could be gleaned regarding postwar military capabilities from research on postwar economic performance. However, since the earliest work on the topic, the literature has yielded a series of contradictory findings. A.F.K. Organski and Jacek Kugler find that the occurrence and outcome of war has little impact on GNP, beyond the short term. Within twenty years, states achieved GNP levels commensurate with projections derived from pre-war data (Organski and Kugler, 1977). However, they make impactful selection choices that cause one to cast doubts on their conclusions, focusing on the two world wars, excluding Austria-Hungary and contained territories, and only measuring Germany by its 1975 borders. As a consequence, the states most

that were most radically altered as a part of the peace settlements are either not included in their analysis, or only partially included, in the case of West Germany. In later work, Organski and Kugler acknowledge that policies pursued by victors can prevent, or significantly inhibit, recovery, including occupation and material exploitation (Organski and Kugler, 1980). Focusing on great powers, Rasler and Thompson (1985) find that limited interstate wars exert no significant economic effects, while global wars exert sizeable short-term effects, which can be either positive or negative, depending on the state's position within the system. In a qualitative overview that broadens beyond great powers, Van Raemdonck and Diehl (1989) argue that while clear, short-term negative effect on a state's economy is evident, the long-term economic effects of war are uncertain, and likely conditioned on government policy in the years following conflict. Most recently, Koubi (2005) finds a similar, negative, short-term effect of war, but also that long-term effects are dependent on war duration: the longer the war, the higher the subsequent rate of postwar economic growth. While not equivalent, many of the consequences of war that effect postwar economies likely also effect state military capability. Namely, the consumption of material resources and manpower, and damage to infrastructure, suggesting that one might expect a similar short-term negative effect on military capability. Regardless, there is little consensus beyond the short-term, leaving long-term patterns of postwar military capability unclear.

Various pieces of the puzzle of postwar military capabilities can be found throughout past and current political science work. However, due to the dearth of direct research on the subject, and the long stretches of time between works, little consensus has developed with regard to a theory of postwar military power. Nor is there direct empirical work on the effects of interstate war on military capability, beyond great power states. While great power conflict is undeniably important, it is rare, and a vast majority of interstate conflict does not take place between two or more great powers. This project is intended to fill both of the gaps in the literature described above, with a particular focus on the interaction between the characteristics of a given peace settlement, the conditional nature of state military policy, and the effects of major events external to the peace settlement.

Determinants of Postwar Military Capability:

State military policy is, at least in part, formed in reaction to the external international security environment that states face. This includes existing tensions with potential foes, the military capability of potential allies, the state's conflict history, civil war within a state's region, etc. (Nordhaus, et al, 2012). Many of these factors can exist and change independently of a particular war and peace settlement, but many are also affected by the characteristics and outcome of a preceding war and settlement. This theory and formal model build on preceding research that explores the relationship between changes in military power and the likelihood of interstate conflict, and applies their findings to explain variation in postwar military capability. Powell (2005) demonstrates how rapid changes in the military power of one state can cause a preventative war, as an opponent fears potentially losing a future war and, even in the absence of war, its diminished bargaining power in the future. In the postwar setting, Werner (1998) and Werner and Yuen (2005) demonstrate how changes in the military capability of states party to a peace settlement can undermine that settlement, as the newly powerful state fights to make the settlement reflect the new distribution of power. Additionally, as Morrow et al (2006) show, victorious states face a commitment problem, in that the defeated state may choose not to comply with the terms of a peace settlement (excluding cases of territorial transfer, which likely requires the renewal of conflict to recapture, but can also alter the distribution of power in a manner that greatly limits this option). States can attempt to solve this commitment problem by continuing the war until they are capable of imposing regime change on the defeated state, thus ensuring that the defeated state has a foreign policy matching the victorious state's preferences. Lo, Hashimoto and Reiter (2008) provide evidence that foreign-imposed regime change ensures greater postwar peace duration in line with this logic. Absent foreign-imposed regime change and/or territorial transfer, the defeated state only has incentive to abide by the terms of this agreement so long as a credible threat to punish deviation remains.

This theory takes the final sentence of the preceding paragraph as its foundational premise. The credibility of the commitment to repeat the violent bargaining process that lead to the creation of a peace settlement is a function of the military capabilities and preferences of the states party

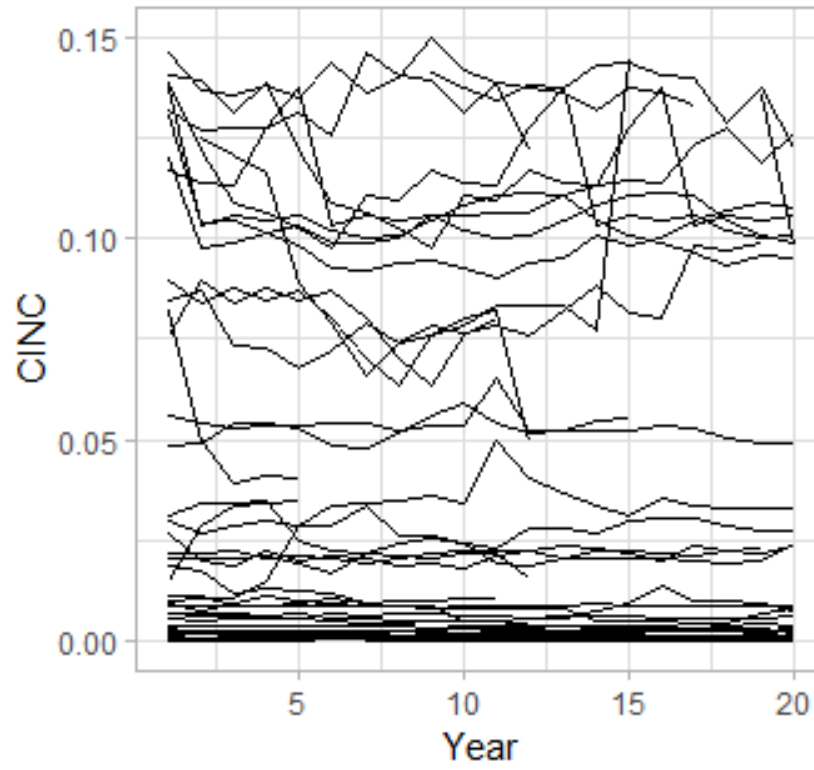
to a settlement. Therefore, changes to these capabilities and preferences in one state that is party to a peace settlement alter the incentives faced by other states in the settlement. Subsequently, this can motivate changes in state military capabilities, as states seek to preserve the peace settlement status quo, or alter the settlement of the issue over which the previous war was fought in their favor. Importantly, it is the military capability that a state can devote to fighting a future war to preserve or alter a given settlement that matters for this theory. This will at least partially reflect a state's total military capability, but is also a function of a state's preferences and other domestic and international commitments at a given moment. A state can experience no changes in its military capability, but if it is involved in another conflict that requires the state's military resources, it may be unable to credibly commit these same resources to the hypothetical future conflict that underpins a peace settlement. As such, events like participation in another interstate war, regime change, or civil war can substantially reshape the military capability a state can credibly commit to the maintenance of a peace settlement or a state's preferences over the terms of said settlement. If a state that is party to a peace settlement experiences one of these events, the military capabilities of other states party to the settlement will change as a consequence.

An example may better illustrate the logic behind this theory: the Crimean War demonstrated the resolve of the English, French, and Ottoman governments to block further Russian southward expansion, particularly into the Black Sea and surrounding regions. Given this commitment, the Russian government devoted little material resources to the recovery of military capability in the years following the Crimean War, despite general internal consensus over the need to modernize and expand the Russian military. One essential clause of the Treaty of Paris following Russia's defeat prohibited Russian battleships and fortifications in the Black Sea, previously a primary goal of the Russian government with the two-pronged purpose of expanding into the Ottoman frontier and strengthening the Russian navy. However, in 1871 Russia resumed its policy of southward expansion and began reconstructing fortifications on the Black Sea, and deploying battleships therein. France's commitment to enforcement of these terms was undermined by its involvement and defeat in the Franco-Prussian war, and subsequent regime change. This allowed Russia to resume

its policy of southward expansion and, as part of this expansion, substantially increase its material military resources. In 1877 Russia again went to war against the Ottomans, but without the involvement of the Ottoman's former coalition partners, successfully capturing the Kars and Batum Oblasts, and only stopping its advance after threat of British intervention against the Russian advance.

As Gibler (2017) notes, substantial changes in military capability are associated with major interstate wars. The timing of these changes vary: most positive changes occur at the onset of war, as states build up military capacity for the conflict. In some cases, this increase occurs in the middle of a war's duration, likely due to the a state's lack of preparedness or military infrastructure at the beginning of the war. Most decreases occur at the end of a war, as states reallocate resources away from the military. This pattern accords with intuitive expectations about the relationship between military capability and war. Yet, Gibler focuses on changes occurring in a single year, leaving almost all of the variation in military capability following wars out of the picture. Substantial change, in Gibler's case, means a Correlates of War CINC score change greater than 0.02 within a year, which is unlikely outside of the largest and most powerful states. The COW Composite Index of National Capability is a standard measure in international relations research. CINC is a composite of state's military personnel, military expenditure, total population, urban population, iron and steel consumption, and energy consumption, represented as a percentage of the world's total (Singer, et al, 1972). The measure is useful as it contains components of military capability that are common across time periods, allowing for comparison between different eras of military technology. Figure 1 shows the variation in the postwar CINC scores from a sample of 45 states between 1823 and 1913. There are many cases of the reallocation of resources away from the military as described by Gibler, but this reallocation does not always last, and in several cases does not occur at all. To explain this variation, the theory described informally in previous paragraphs is formalized into a two-player model. This better clarifies the assumptions of the theory, and allows for clearer empirical predictions. The model presented here is similar in structure to that of Fearon (2018), but instead of focusing on factors like state "greediness" (value for captured territory, or

Figure 1: State CINC scores in years 1-20 following an interstate war.



the offense-defense balance, this model emphasized the capabilities of coalition partners in a potential interstate war.

The Model:

Two states, 1 and 2, interact in a two-stage game. There exists a division of some issue $x > 0$ over which the previous war was fought. Each state has a divisible pool of resources normalized to 1, which can either be consumed or converted to arms. In the first round of play, states simultaneously choose an armament level a_i , where $a_i \in [0, 1]$. At the end of the game, states consume $1 - a_i$. a_i is observed by both states after the first stage. In the second round of play, states simultaneously choose whether or not to fight a war, which is modeled as a costly lottery, winning with probability

$$p = \frac{a_i + \gamma_i}{a_i + \gamma_i + a_j + \gamma_j}$$

and capturing all of x if victorious. γ_i represents the military capability of allies/coalition partners in a settlement ($\gamma_i \geq 0$), while γ_j represents the military capability of the opposing state's allies/coalition partners. If war occurs, states pay a cost of war $c_i > 0$. If no war occurs, the division of x reflects relative armament levels, or $x * p$. Payoffs are shown below:

$$u_i = \begin{cases} x * p + 1 - a_i & \text{if no war} \\ x * p + 1 - a_i - c_i & \text{if war} \end{cases}$$

One equilibrium of the model is analyzed here, in which there is some level of arming by States 1 and 2, but no war. The analysis begins with each state's maximized payoff function with respect to its own armament level:

$$u_1 = \frac{\partial(x * p + 1 - a_1)}{\partial a_1} = \frac{\partial(x(\frac{a_1 + \gamma_1}{a_1 + \gamma_1 + a_2 + \gamma_2}) + 1 - a_1)}{\partial a_1} = \frac{x(a_2 + \gamma_2)}{(a_1 + \gamma_1 + a_2 + \gamma_2)^2} - 1$$

$$u_2 = \frac{\partial(x * p + 1 - a_2)}{\partial a_2} = \frac{\partial(x(\frac{a_2 + \gamma_2}{a_1 + \gamma_1 + a_2 + \gamma_2}) + 1 - a_2)}{\partial a_2} = \frac{x(a_1 + \gamma_1)}{(a_1 + \gamma_1 + a_2 + \gamma_2)^2} - 1$$

$$\frac{x(a_1 + \gamma_1)}{(a_1 + \gamma_1 + a_2 + \gamma_2)^2} - 1 = \frac{x(a_2 + \gamma_2)}{(a_1 + \gamma_1 + a_2 + \gamma_2)^2} - 1 = 0$$

$$a_1 = \frac{x}{4} - \gamma_1$$

$$a_2 = \frac{x}{4} - \gamma_2$$

For both states, the equilibrium armament level is increasing in the value of the issue at stake, x , but decreasing in the armament level of their coalition partners, γ_i . For this equilibrium to exist, choosing this armament level in the first stage and not opting for war in the second stage must be preferable to choosing this armament level and opting for war in the second stage. For this condition to hold:

$$x\left(\frac{a_1 + \gamma_1}{a_1 + \gamma_1 + a_2 + \gamma_2}\right) + 1 - a_1 > x\left(\frac{a_1 + \gamma_1}{a_1 + \gamma_1 + a_2 + \gamma_2}\right) + 1 - a_1 - c_1$$

and

$$x\left(\frac{a_2 + \gamma_2}{a_1 + \gamma_1 + a_2 + \gamma_2}\right) + 1 - a_2 > x\left(\frac{a_2 + \gamma_2}{a_1 + \gamma_1 + a_2 + \gamma_2}\right) + 1 - a_2 - c_2$$

Substituting the values for a_1 and a_2 derived earlier, we find:

$$c_1 > \frac{2\gamma_1 + x\gamma_1 - \frac{x^2}{4} - \frac{x}{2} - \frac{x}{4} + 1}{x}$$

and

$$c_2 > \frac{2\gamma_2 + x\gamma_2 - \frac{x^2}{4} - \frac{x}{2} - \frac{x}{4} + 1}{x}$$

Consistent with the theoretical framework of the bargaining model of war, opting for war must entail a minimum level of cost for both players for peace to be preferable.

Recall, each state's armament level increases as the value of the issue at stake increases, and

decreases as the military capability of its allies increases. However, this latter effect rests on the assumption that these capabilities will be brought to bear in a war between States 1 and 2. In the model, variation in γ_1 and γ_2 reflect changes in the ally's military capabilities. However, γ_1 and γ_2 represent the military capability of an ally committed to support of a state in a given peace settlement. In the international system, the military capability a potential ally's can commit to a given peace settlement may be undermined by changes in the ally's other commitments, or in the ally's preferences, effectively causing γ_1^t or γ_2^t to reduce substantially. However, substantial changes in military capability from year to year are rare. For that reason, considerable changes in the values of γ_1 and γ_2 are equally likely to reflect variation in an ally's ability and desire to support a state in a peace settlement. Changes in this ability and desire are likely to occur if an ally is engaged in an international conflict, a civil conflict, or experiences a regime change. Just as States 1 and 2 in this model have a limited pool of resources from which to draw, potential allies too must decide how to allocate their resources, and are more likely to devote resources to issues of higher value to them. International and civil conflict indicate the presence of an issue that an ally values more highly than x , and thus indicate a reduction in the military capability an ally can commit in support of a given peace settlement. Similarly, a regime change in an ally can indicate a change in that ally's desire to commit military capability in support.

Research Design:

The implications of this theory are tested using Correlates of War National Material Capability time-series cross-sectional data. A sample of 31 states from 17 different peace settlements was constructed, ranging from 1823-1913. Observations begin in the year of a war's end and continue for thirty years following, unless any of the states on opposing sides of the peace settlement fight another war against one another, in which case, observations from those states in that settlement end (i.e. the observations are censored from the data set). The outcome variable is the previously-discussed CINC score (a composite index of state's military personnel, military expenditure, total population, urban population, iron and steel consumption, and energy consumption, represented as a percentage of the world's total). The measure is continuous, and bound between 0 and 1, but reaching its maximum in this sample at 0.296 (the United Kingdom in 1856). The mean CINC score in this sample is 0.048, but this mean is highly influenced by a few very powerful states (United Kingdom, France, Germany, Russia), and the median CINC score of 0.019 reflects this distribution. CINC scores are recorded yearly, so observations in this sample are year-state in peace settlement.

The military power of a state's coalition partners is also measured using CINC score. The variable is a sum of the CINC scores from all former coalition partners. There are four other primary explanatory variables: first, participation in an interstate war. The variable records the number of interstate wars a state's former coalition partners are involved in during an observation year. The definition of interstate war follows the Correlates of War guidelines: the war must take place between two or more states and "must involve sustained combat, involving organized armed forces, resulting in a minimum of 1,000 battle-related combatant fatalities within a twelve month period." (Sarkees and Wayman 2010) Second, participation in a civil war. This variable records the number of civil conflicts that reach the COW's definition of a civil war that take place within a state during an observation year. This definition is identical to that of the interstate war definition, save that the war takes place within a state, rather than between states (Sarkees and Wayman 2010). In the data set, there is only a single observation year that includes more than one civil war for a single

state. Again, the civil war variable includes the total of all members of a state's former coalition. Third, the extra-state war variable records the number of wars "by a state system member outside its borders against the armed forces of an entity that is not a member of the interstate system." All other definitional requirements remain the same. (Sarkees and Wayman 2010). The extra-state war variable too includes the total of all members of a state's former coalition.

Fourth and finally, regime change measured using the Polity IV Annual Time-Series data. The Polity IV measures a state's regime type using an index of several interdependent measures; competitiveness of executive recruitment, openness of executive recruitment, constraints on the chief executive, the regulation of political participation, and the competitiveness of political participation. The scores from each of these components are weighted and compiled to create an overall regime score, with 10 being the most democratic score possible, and -10 being the most authoritarian score possible (Marshall, et al 2018). In the data set used here, a regime change is recorded in a state if a shift of more than three points occurs. This is a binary measure when applied to a single state (as in the control variables), but if a state has several coalition partners, this variable includes the total number of regime changes within an observation year. For a single state, this variable is coded as 0 if no regime change occurs, and 1 if a shift of three or more points occurs. Importantly, this shift only matters in relation to the state's regime score at the time of settlement, so a shift from 10 to 7 will be coded as a 1, but any further negative shifts will still be recorded as a 1. In this case, if a state returns to 8, the variable will again be coded as a 0. To account for the effect of foreign-imposed regime change on military policy (a la Morrow et al 2006, and Lo, Hashimoto and Reiter 2008), observations for a state begin with the regime imposed. In other words, the imposed regime is the government that is party to the peace settlement, such as the restoration of King Ferdinand VII of Spain by France in 1823. If a restoration of the government that controlled a state prior to a foreign-imposed regime change occurs, this is recorded as a regime change in the data set.

CINC scores from the nineteenth century are not all recorded on a consistent date in an observation year. Therefore, it is possible that any one of the four preceding variables could occur

after the components of CINC have been recorded. For this reason, all four variables are lagged, to ensure certainty that the CINC score is recorded after the occurrence of the interstate war, civil war, extra-state war, or regime change.

Ten other variables are included that may correlate with these explanatory variables, and with the outcome variable. First and second, the number of interstate wars and extra-state wars a state is involved in during a given year (measured in separate variables), which likely have a positive correlation with military expenditure and military personnel, and therefore CINC. Third, the number of civil wars occurring within a state during a given year. While civil conflict will likely weaken a state's ability to project military power, it is still likely to positively correlate with CINC, as government increase their military capabilities to deal with violent internal resistance. Fourth, an indicator variable for regime change for the observation state is included. Regime change is expected to negatively correlate with CINC, as the preferences of the state with regard to the issue at stake in a given settlement may change substantially. Fifth, all five of the primary explanatory variables discussed earlier (CINC, interstate war, civil war, and regime change) are included, but measuring these variables for the opposing coalition in the previous war. All of these variables are measured in the same manner as previously discussed. These are included to account for the possibility that both a state's military capability and that of its former coalition partners are changing in response to changes in the military capability of the former opposing coalition. Finally, time effects may be present here. Diehl and Goertz (1985) note that standing armies and military expenditure experienced a general upward trend in the nineteenth century, which may influence the outcome variable in this sample. Conversely, the general downward trend in military capability following wars may exert a countervailing effect within this specific sample. A time variable is included to account for these trends.

A final element of the theoretical model has not yet been discussed; the value of the issue at stake to a state. In the theoretical model, the value of the issue in dispute is assumed constant for both states. Strictly speaking, the value of the issue at stake is unobservable, but it remains an important explanatory factor. Including no measure of this factor leaves any empirical model

vulnerable to omitted variable bias. This problem motivates the choice of empirical model used in this paper; a linear fixed-effects model. If it assumed (*ceteris paribus*) that the value of the issue in dispute varies between states in the sample, but remains relatively constant over time, a fixed-effects model is preferable. A fixed-effects linear model includes a constant term that captures all unobserved, time-constant factors that affect the outcome variable for each state in a peace agreement, which captures the value of the disputed issue (Wooldridge 2009). It is unlikely that each state in the sample will value the issue over which a war was fought equally. This assumption is unlikely to hold even within a single interstate war: Russian southward expansion was much more pressing to the Ottoman government than to the government of Sardinia-Piedmont, though they were both belligerents in the Crimean War. However, it seems reasonable that, barring regime change during the postwar period, the issue over which the preceding war was fought will retain its salience to the belligerents. Returning to the example of the Crimean War, Southward expansion and military modernization remained important goals of the Russian government during the roughly fifteen year period before the Franco-Prussian War, as did the opposing coalition's goal of preventing these actions. For this reason, a fixed-effects linear model should best capture the between-state variation without concern for variance in the salience of a given issue over time.

Empirical Results:

The results of the estimated linear fixed-effects model are shown in Table 1, with mixed implications for the theoretical model. The estimated model suggests that increases in the military

Table 1: Results of Fixed-Effects Linear Model

<i>Variable</i>	Coefficient (Standard Error)
Coalition CINC	- 0.135(0.048)***
Coalition War	- 0.002 (0.001)
Coalition Civil War	0.003 (0.002)*
Coalition Extra-state War	0.000 (0.000)
Coalition Regime Change	- 0.011 (0.002)***
Opposing Coalition CINC	0.000 (0.000)*
Opposing Coalition War	0.002 (0.001)
Opposing Coalition Civil War	- 0.002 (0.000)**
Opposing Coalition Extra-state War	0.002 (0.000)***
Opposing Coalition Regime Change	- 0.001 (0.001)
War	0.003 (0.001)**
Civil War	0.006 (0.000)***
Extraterritorial War	0.002 (0.000)***
Regime Change	0.002 (0.001)
Time	0.000 (0.000)

p < 0.1 = *, p < 0.05 = **, p < 0.01 = *** N = 779 F = 8.333 R² = 0.086

capabilities of a state’s former coalition partners are associated with decreases in that state’s military capabilities. This accords with the expectations of the theoretical model. One standard deviation change in the CINC score of a state’s former coalition partners (0.107) is associated with an 0.135 decrease in a state’s CINC. This is a substantial effect, considering that the median CINC score in the sample is 0.019. However, given this median value, a change in military capability of this magnitude would likely not occur from year to year, except in cases with numerous former coalition partners and in the rarest of cases within the international system’s most powerful states.

Interestingly, the involvement of a former coalition partner in an interstate war has a negative coefficient, rather than the expected positive coefficient. This variable does not reach a sufficient level of significance to infer an effect with reasonable confidence. Still, the direction of the coefficient and the lack of an effect is puzzling. Potentially, involvement in an interstate war may signal a former coalition partner’s continued willingness to project force outside of its boundaries, thereby motivating a decrease in a state’s military capability. Yet, if this were a strong signal in

all cases, one would expect the effect to be significant here. Another potential explanation for this finding is the nature of the measure used in the empirical model: the variable indicates the number of interstate wars a state participated in during a given year, but provides no information about the scope of each war. There is likely variation in the scope of interstate wars that affects the ability of participants to maintain other military commitments. As all interstate wars are collapsed into a single category here. This may hide a potential effect of wars that are large in scope. More detailed data on the characteristics of each interstate war is needed to explore this potential explanation.

The occurrence of a civil war within a former coalition partner is associated with a minor increase in state CINC score, as implied by the theoretical model. The relatively small size of this effect may be a product of the sample used: in only one instance, the US Civil War, did an internal conflict truly threaten the continued existence of a state as it had formerly been constituted. This civil war appears in the case of the Mexican American War, in which neither side had coalition partners. The remaining instances of civil war, while severe enough to reach the thousand-death threshold of the COW typology, did not represent a strong chance of overthrow that would undermine a coalition partner's external military commitments, and therefore likely exerted only minor effects on a state's CINC score.

The extra-state war variable shows the expected positive coefficient for former coalition partners, but does not reach a sufficient level of statistical significance to infer an effect. This may be the result of a selection effect in this sample: the most powerful states in the data set are the most likely to engage in an extra-state war (correlation of 0.486 between a state's CINC score and participation in an extra-state war). From 1823-1913, the vast majority of extra-state wars took place between the most powerful European states and their colonies or former colonies. As such, the military commitment/resources required from these European states to conduct these wars was only a small portion of their overall resources, and the effect of participation in these wars likely had only a small impact on their ability to maintain credible military commitments elsewhere. Additionally, the lack of effect could result from the collapse of all extra-state wars into a single measure, regardless of scope, as was with the interstate war variable.

The effect of a regime change within a former coalition partner is unexpected its direction. This may reflect the crudeness of the measure itself: the indicator variable changes from 0 to 1 when a regime change occurs, but does not measure the new government's position toward its former coalition partners, nor the issue over which the previous war was fought. Yet, to produce this effect through the logic of the theoretical model, the new regimes in the data set would need to consistently possess strong preferences in support of their former coalition partners. This data cannot speak to that possibility. To further explore the effect of regime change in this context, data on regime preferences with regard to specific international issues is required, though the existence of consistent data of this nature during the nineteenth century is unlikely.

The support for the theoretical model provided by the fixed-effects linear model is mixed. The effect of changes in the military capability of former coalition partners is substantial. Yet, effects of international events that likely influence a state's ability to credibly commit to the maintenance of a peace settlement only partially accord with the expectations of the theoretical model. In particular, it is unclear why interstate and extra-state wars do not exert significant and stronger effects in the anticipated direction. Additionally, it is difficult to draw conclusions about the effect of regime change among states party to a peace settlement on state military capability, as the coefficients only half-correspond to the expectations of the theoretical model.

Conclusion:

What explains variation in postwar military capability? This paper has shown that changes in state military capability in the years following a war are shaped by the maintenance of a credible commitment to recreate the violent bargaining process that first established the settlement. The credibility of this commitment is a product of the capabilities and preferences of the states party to the settlement. As such, a state's military capability is conditioned by that of the state's former coalition partners: as the capability of former partners increases, the settlement can still be maintained if a state reduces its own capability. This paper has also shown that events external to the settlement can affect the commitment of former coalition partners to maintain the settlement, thereby incentivizing changes in state military capability in the postwar setting. However, the empirical model only finds an effect of involvement in a civil war, rather than interstate or extra-state wars. Finally, the empirical model in this paper has shown that changes in the preferences of former coalition partners motivates changes in state military capability, though not in accordance with the expectations of the theoretical model. Further exploration of how regime changes affect the preferences of coalition partners with regard to existing international commitments is needed to address this inconsistency.

In addition to the size and scope of an interstate war, and the territorial changes that result, this paper demonstrates the importance of integrating the configuration of states in a peace settlement to explain patterns of military capability in the postwar setting. The composition of peace settlements play an important role in state military policy long after the conclusion of the war. States remain party to a peace agreement long after the conclusion of the war, and the behavior of other states party to the settlement act as a strong predictor of state military policy in the years following war. This paper also indicates the importance of viewing international conflict through a systemic lens. Seemingly unrelated events, such as civil conflict and regime change in a former coalition, consistently effect state military policy long after the war partnership ends. As shifts in military power play a crucial role in the explaining war, identifying the sources of these changes is required, and this paper has furthered that cause.

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