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Abstract

What makes some wars longer and more severe than others is an important question in international relations scholarship. One underexplored answer to this question is the role that third party joiners play in lengthening conflicts, especially those states that intervene militarily after a war's initial stages. This article argues that late joining complicates bargaining by adding new issues to the war and increases uncertainty about the relative balance of forces. Thus, more information will be needed to resolve the bargaining impasse. This means additional fighting and a longer war. This lengthening in turn increases the number of casualties. This is a distinct process from simply having more participants in a war from the outset as those participants would not add uncertainty in the same way that late joiners do, as questions about how those participants affect the relative balances of forces would be answered just as quickly as if there were only two participants at the outset. These claims are supported by a non-proportional hazards model regression, a Cox proportional hazards regression, and an ordinary least squares regression using the Correlates of War interstate war dataset.

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Why some wars are more severe and last longer than others has often been asked. While useful answers have been generated, part of the puzzle has been neglected: third party joining. Studies on joining have focused on which states join wars, why they join, and even when they join rather than on how joining wars affects the wars themselves. Using an informational approach, the article argues late joining is correlated with increased war duration independent of having more participants. This relationship is due to joining increasing duration rather than longer wars providing greater opportunity for joining to occur. Additionally, intervention on both sides of the conflict has a greater affect than states joining just one side. Finally, longer duration leads to greater severity.

Joining matters in the larger scheme of war research for several reasons. First, if joining affects not only which side will win, but also the length and severity of wars, then policy decisions should be made with these effects in mind. Prior to launching wars, decision-makers undoubtedly factor in the expected costs of wars. If joining increases those costs significantly, then leaders will have to weigh the probability that joining will occur and should be less likely to launch wars in which they expect joining to occur. This should partially censor such wars even if the odds of winning are not seriously altered. Thus, how joining affects war duration and war severity should have implications not only for potential interveners, but also for what sort of wars are likely to occur in the first place. Finally, if joining produces the most severe wars, then concerns about the destructive nature of war should focus not only on preventing the outbreak of war, but also on keeping wars from spreading. Many leaders appear to think in these terms.¹

Late joining, defined as joining after a war's first month, lengthens wars in a number of ways. First, joiners may have goals that differ significantly from those of the initial belligerents. This complicates bargaining and makes finding bargains which are acceptable to all sides more

¹ Such logic drove NATO's intervention in Kosovo (Steinberg, 1999).

difficult. Second, additional battles are required to resolve the increased uncertainty about the relative balance of forces.² The number of participants is not significantly correlated with longer wars, suggesting that it is joining and not simply the multilateral nature of the wars that lengthens them. This is true for wars where joining occurs on one or both sides. Joining, however, is not directly related to the number of deaths. Rather it is related to war severity indirectly through increased duration. Thus, joining affects the nature of the war being fought.

Existing Explanations of War Duration

Despite the field's tendency to focus on the causes of war, two main explanations of war duration have been generated that are consistent with the informational conception of war: that states' regime types and states' strategies affect the length of wars.

Regime Type

Mixed regimes—those regimes which are neither highly repressive nor democratic—tend to fight longer wars (Bennett & Stam, 1996). This is because publics have an incentive to punish leaders that perform badly during wars in order to discourage future leaders from engaging in wars which are either unduly costly or have very low probabilities of success (Downs & Roche, 1994). Due to asymmetric information, it is often difficult or impossible for publics to assess leaders' performances given the constraints they faced. Thus, in order to maintain a credible deterrent on reckless behavior, publics must punish all leaders associated with failed war policies. While this incentive to punish failed leaders exists across regime types, Bueno de Mesquita & Siverson (1995) find that the risk of being removed is greater for democratic regimes than authoritarian regimes. Goemans (2000) goes further, finding that leaders in different regime types face not only different odds of being punished but also significantly different punishments for failure. This affects the way leaders respond to

² Third parties could also introduce commitment problems into a war, but that is beyond the scope of this paper.

negative information revealed by a war. Additionally, Goemans incorporates Jagger & Gurr's (1995) argument that there are two types of authoritarian regimes: dictatorships and mixed regimes. Specifically, he argues that leaders in democracies and dictatorships will likely face severe punishment, such as incarceration, exile, or death, only if they lose a war very badly. Thus, such leaders are willing to end wars even if they are faced with a mild defeat. Leaders of mixed regimes, however, are often severely punished even after mild defeats. They, therefore, have an incentive to gamble for resurrection when faced with negative information in hopes the war will turn around even though the odds are slight and continued fighting will likely cause significant damage to their state. This is because such leaders' personal fates are equally grim in the face of both minor and major defeats; therefore, they have nothing to lose personally by continued fighting. Leaders of democracies and dictatorships may have some incentive to gamble for resurrection; however, it exists only to the extent that gambling will not greatly increase the severity of defeat and the scale of punishment they would receive from defeat. Hence, wars involving mixed regimes should last longer on average.

War Fighting Strategies

The strategies states employ also directly affect the duration of wars. Bennett & Stam (1996) argue there are three main types of war fighting strategies: maneuver; attrition; and punishment. Maneuver strategies attempt to win wars using speed and mobility to disrupt their opponents' ability to organize their forces. Attrition strategies attempt to wear down the opponent by destroying enemy forces. Finally, punishment strategies attempt to win wars not by defeating enemy forces in the field, but rather by inflicting sufficient pain on opponents to convince them to cease fighting. Bennett and Stam find that wars involving at least one side employing maneuver strategies should be have the shortest duration and that wars in which at

least one side employs a punishment strategy should be the longest.³ Thus, both regime type and war fighting strategies play roles in determining war duration. However, third party joining also plays an important role.

Late Joining and Duration

Like work on duration, previous work on joining has been limited. Existing scholarship has focused on which states join, why they join, and when they join. Little, however, has been said about how joining will change the course of wars beyond noting that it should alter the likelihoods of which side will win. The rest of the literature on the behavior of third parties has focused on alliance reliability, crisis bargaining, or the propensity of states to balance or bandwagon and offers little insight into the connections between third parties and duration.

Still, the literature has provided some building blocks for a theory of how joining affects duration. Several studies argue the process of joining alters the nature of those wars which experience it either by changing the issues over which it is fought or by increasing the odds of further intervention (Kim, 1991; Shirkey, 2009; Yamamoto & Bremer, 1980). More directly, Regan (2002) finds that outside intervention in intrastate conflicts tends to increase the duration of those disputes by complicating the bargaining process and introducing additional issues into the conflict. This should lead to greater uncertainty and Slantchev (2004) argues increased uncertainty increases war duration. This complicating of the bargaining process should lead to longer and more costly wars. Wars are in part rational bargaining processes (Fearon, 1995). This suggests states will not leave wars until there is sufficient information available to resolve the bargaining impasse. This is because wars continue until there is a change in the calculations of one of the actors (Fox, 1970). In other

³ In the analysis maneuver and punishment strategies are never used in the same war.

words, in rational war, war termination is endogenous (Slantchev, 2004). The decision to continue fighting is a political decision, just like the decision to initiate or join a war (Bennett & Stam, 1996). Changes in such calculations should come about only if new information becomes available (Filson & Werner, 2002). States learn from new information and react to the new probable outcome of the war by changing both their strategy within the war and their proposals for settlement. Only changes to states' demands can lead to the termination of the war as the benefits of war are endogenous and cannot change; only states' demands can change (Goemans, 2000). Demands will likely change as states' perceptions about the course of the war and their estimates about their probable costs and likelihood of victory change. These changes in perception and estimates rationally should be tied to new information. New information supersedes information that was available antebellum and causes belligerents to change their demands and how they pursue their goals (Goemans, 2000). Thus, it is this new information that leads to war termination.

This is related to joining in several ways. Joining complicates the bargaining environment (Valeriano & Vasquez, 2010). The more complex the bargaining environment, the more difficult it will be to disentangle, and thus likely more information will be required to end the war. The more information that is needed the longer the war should last (Slantchev, 2004). Joining can logically complicate the bargaining environment in one of two ways. First, it is possible that simply having more participants should increase the complexity of the bargaining (Valeriano & Vasquez, 2010). For example, Cunningham (2006) argues that more belligerents in civil wars lengthen those wars due to more information asymmetries and more potential veto players resulting in fewer possible acceptable agreements. Additionally, Cunningham finds external intervention can produce these same affects. Thus,

for Cunningham, it matters little if the additional participants are original belligerents or if they are joiners. Of course, Cunningham's findings require that belligerents be able to continue the war unilaterally; thus a large number of minor powers in a war with a single great power may be less lengthy holding all else equal than a war with many states of relatively equal power. If this logic is correct, more participants should be correlated with longer wars, though this would run counter to Vuchinich & Teachman (1993).

Second, joining can introduce new goals and issues into the war. Allied initial belligerents often share very similar goals and may essentially share a bargaining position. If so, the overall bargaining is not much more complex than it would have been in a bilateral conflict. However, joiners may bring additional issues into the war—issues which their allies have little interest in, but which are points of contention between the new belligerent and their foes. This is consistent with Yamamoto & Bremer (1980) who find great power intervention increases the likelihood of further intervention because the scope of issues over which the war is being fought has been widened. For example, Bismarck sought to avoid even pro-Prussian intervention in the Franco-Prussian War out of concern that allies would introduce new issues and prevent the war from being fought solely for German aims (Shirkey, 2009). Such new issues are more likely to be introduced by late joiners rather than early joiners as early joiners should share more goals in common with the initial belligerents on their side—at least as they relate to the war—than would late joiners. Early joiners will tend to join to honor pre-war alliances—alliances which were likely formed to advance the initial belligerents' goals as they relate to the war in question. Late joiners on the other hand will enter the war because of issues which have arisen over the course of the war. Otherwise they would have joined sooner.

In addition to complicating bargaining by adding new issues, joining may make it more difficult to determine which side is going to win and by how much. This is because while prior battles in the war may have given a good indication of which side was going to win and by how much, the military capabilities of the new belligerents and how they will interact with those of the other belligerents will be less well known. Of course, there will be some estimate as to the strength and effectiveness of the new forces, but they will not be as precise as those made after battles. Most notably, if there is joining on both sides, it may become quite unclear which side has benefited the most from the entry of the new belligerents. Similarly, the losing side may receive reinforcements making them more likely to win than before, but whether the added strength will be enough to turn the tide may be unclear.⁴ Thus, additional battles, and therefore, time will be needed to sort out the new relative balance of power. This should not apply to early joiners as their effect on the balance of forces will be learned at the same time as the balance of forces between the original belligerents is discovered—in the initial battles.

Relatedly, Balch-Lindsay, Enterline, & Joyce (2008) find that one-sided outside involvement shortens civil wars, though two-sided intervention can lengthen it. This suggests increased duration is due in part to a balancing of the belligerents' forces rather than solely due to introducing additional issues or demands. Thus, both one- and two-sided joining should lengthen wars due to the addition of new demands, but two-sided joining should have a greater effect overall as it should also increase uncertainty about the balance of relative forces in more cases than one-sided joining.

⁴ Even if only the stronger side gained allies uncertainty will exist as to how much the stronger side can increase its demands (Wittman, 1979).

Admittedly, these effects partially depend on the initial belligerents not anticipating intervention. Obviously, this is not always the case. However, states which antebellum are expected and have strong motives to intervene likely will join early and often will be allied with one of the initial belligerents. Notably, alliances are only a reliable predictor of intervention in the first month of a war (Shirkey, 2009). Also, to the extent joining is driven by reputational concerns, states will honor their commitments quickly or not at all. Such expected joiners would have little incentive to delay entry, but if they did delay it would create uncertainty about whether they would actually join. Thus, initial belligerents should have difficulty anticipating late joining, though they may be able to anticipate early joining.

War Severity

Factors that affect war severity differ from those that affect duration. First, the longer a war lasts, the more opportunities there are for casualties. Second, factors which reduce the intensity of combat should reduce severity. Given that punishment strategies often take the form of guerilla insurgencies, they should result in fewer battles per time period and thus be less severe per unit of time. Of course, such a strategy may lengthen the war and thus ultimately increase the war's severity. Once duration is controlled for, however, punishment strategies should reduce severity since they lower the number of deaths for any given time period. Third, the presence of great powers may increase severity as they have the resources to both inflict and absorb high levels of casualties. Additionally, great power wars may be fought over major issues such as the structure of the international system and become exceptionally costly. Such effects should be clearest with great powers on both sides, but may also exist even if great powers are only on one side.

Finally, it is worth considering whether joining plays a role in war severity. That wars which experience joining have more deaths is readily apparent. The average war in COW has 45,849 deaths, while those that experienced joining averaged 1,700,977 deaths. Those experiencing late joining were even more severe, averaging 2,875,976 deaths. Thus, exploring the relationship between casualties and joining is natural. It is unlikely, however, that there will be a direct relationship between joining and severity. Why not? This can be discerned from those variables suggested to have a direct effect. The presence of great powers on both sides creates an ability to inflict and incur large numbers of casualties. Similarly, duration indicates the amount of time over which casualties can be inflicted. Punishment strategies lower intensity. Late joining does none of these. Late joining can complicate bargaining, thereby lengthening wars as more information will have to be revealed to find an acceptable settlement, but it cannot directly make it more costly once time is taken into consideration. It can, of course, increase severity indirectly by increasing duration but it should not directly increase severity.

Methodology and Results

There are a number of concrete hypotheses which can be derived from the above discussion. First, late joining should increase the duration of wars. Two-sided late joining should increase duration more than one-sided late joining. Early joining should not be associated with longer duration as early joiners will likely have been antebellum allies with the initial belligerents and have bargaining positions similar to the initial belligerents. Additionally, how early joiners affect the balance of forces will be learned in the initial battles at the same time how the original belligerents affect the balance of forces is being learned. This effect should be the result of joining rather than simply increasing the number of belligerents. Of course, holding all else equal, longer wars should have more deaths as there

will have been more time for states to inflict damage on each other though wars involving punishment strategies should be less severe.

To these hypotheses must be added the previous theories about the roles that strategy and regime type play in war duration. First, maneuver strategies should shorten conflicts, while attrition and punishment strategies should lengthen them. Second, incentives to gamble for resurrection should make wars involving mixed regimes longer, but they should not directly make wars more severe.

Finally, several control variables need to be added to any analysis as it is possible that other factors may affect duration or severity. First, difficult terrain may increase duration or reduce severity (Bennett & Stam, 1996; DeRouen & Sobek, 2004). Second, the presence of great powers may increase the duration and severity of the war. Third, the relative balance of capabilities may affect the length of the war. Previous findings suggest that wars with balanced relative capabilities may be longer than those with imbalanced capabilities; however, no connection between population size and either the duration of a war or the number of casualties has been found (Bennett & Stam, 1996). Fourth, the number of belligerents may affect war duration though Vuchinich & Teachman (1993) have found otherwise. Fifth, wars fought over more contentious issues such as territory or a state's regime may be longer and more severe than wars fought over other issues such trade disputes or a desire to punish an opposing regime without attempt to seize territory or overthrow the regime.⁵ Last, it is possible that wars involving enduring rivalries may be longer or more severe than other wars.

Data Sources and Variable Descriptions

The wars included in this analysis were taken from the Correlates of War (COW) dataset on interstate wars, i.e., those conflicts with over 1,000 battle deaths that were fought between

⁵ The 1987 Sino-Vietnamese War is an example of this latter type of war.

territorial states which qualified as members of the international state system.⁶ The dataset includes 79 wars fought between 1816 and 1997. Two datasets were created, one where each case represents a war-day in a given war and another where each war is a single case. The dependent variables, duration in days and battle deaths, were taken directly from COW. Duration is the number of days from the onset of the war to its conclusion.⁷

Many of the control variables were taken from COW as well. States were determined to be belligerents if they suffered at least 100 battle deaths or had at least 1,000 troops engaged in active combat. The number of belligerents equals the maximum number of states involved at a given time for the war as a single case dataset and equals the number of states involved on a given date for the war-day dataset. States were considered to be joiners if they became belligerents after the first day of combat according to COW. COW determines dates of participation based on formal declarations of war unless that state's first combat preceded the declaration. If so, the date of initial combat is used. Joining was further broken down into several variables. States which entered in the first 31 days of a war were considered early joiners; late joiners entered after day 31. While this, or any other cutoff, is inherently somewhat arbitrary, the results below hold if a two, three, or six month cutoff is used instead.⁸ In the war-days dataset, the joining variable was depreciated over time in a linear fashion. On the day joining occurred, the variable has a value of one, but it depreciates in a linear fashion to zero after a quarter of a year.⁹ In the war as a single case dataset variables for one- and two-sided

⁶ Sarkees (2000). State system membership required a population of at least 500,000 and diplomatic recognition by two great powers or membership in either the United Nations or League of Nations. The Falklands War is included in the COW dataset and this analysis even though COW only records 910 battle deaths. Version 3.0 was used.

⁷ COW dates duration by when combat ends.

⁸ No states joined in the second month of a war, so a two month cutoff produces identical results.

⁹ The variable loses 1/91.25 of its value each day until it reaches zero which with rounding takes 92 days. Different rates of depreciation were tested (23, 46, 182, 365, and 730 days) and produced comparable results. All rates were significant for major joiners and the 23 and 46 day rates were significant for all joiners. Slower rates of decay were

joining were created. One-sided joining indicates that all interveners joined one side of the war. Two-sided joining indicates that at least one state joined on each side of the war. These variables were included only in the war as a single case dataset, because whether joining was one- or two-sided does not say anything about a particular state's entry, but rather the sum of entries. Thus, calling a particular state's entry two-sided or one-sided does not make sense, but it is logical to talk about if a war experienced joining on both sides or only on one side.

Dummy variables record whether a great power was in the war and if great powers were on each side of the conflict. Whether a belligerent was considered a major power was taken from the COW state membership dataset.¹⁰ Dummy variables, taken from COW's militarized interstate dispute dataset, also indicate if the war was fought over territorial issues or a belligerent's regime because wars fought over territory or a state's regime may last longer than wars fought over less salient matters.¹¹ A dispute was judged to be territorial in nature if a state attempted to revise the status quo by making claims on or attempts to permanently seize territory. A dispute was deemed to be about a state's regime if another state made an attempt to overthrow or change its opponent's government. Finally, the relative capabilities of the belligerents were taken from the COW National Material Capabilities dataset.¹² The relative capabilities were derived by taking the sum of the COW Composite Index of National Capability (CINC) scores for the stronger side and dividing it by the sum of both sides' capabilities. Thus, it always has a value between 0.5 and one. This results in a reasonably normally distributed variable. CINC

significant for all joiners at the 0.05 or 0.10 level except for the 182 date when the strategy variables were omitted and the 365 day rate.

¹⁰ Correlates of War Project (2008). Great powers were determined by a general consensus in scholarly works and among COW coders (Singer & Small, 1980).

¹¹ Ghosn, Palmer, & Bremer (2004); Jones, Bremer, & Singer (1996). The data was taken from MIDA 3.10, which is the dispute level dataset. A value of zero for both variables indicated the war was fought over some other issue, such as a trade dispute.

¹² Singer (1987); Singer, Bremer, & Stuckey (1972). Version 3.02 was used. The scores indicate the percentage of the world's total capabilities from an aggregate of military expenditures, military personnel, total and urban population, energy consumption, and iron and steel production.

scores were taken from the first year of the war for regressions which treated wars as a single case.¹³ In regressions where wars were broken down into days, the CINC scores vary as states enter and leave and as belligerents' CINC scores change.

The other control variables were taken from non-COW sources. States were classified as democracies, mixed regimes, or dictatorships using classification based on the Polity IV dataset (Marshall & Jaggers, 2007). The regime type was derived using a twenty-one point scale created by subtracting the autocracy index from the democracy index in the Polity IV database. Regimes with a score of seventeen or greater are democracies, while regimes with a score of six or less are dictatorships. Regimes scoring from seven to sixteen are coded as mixed regimes.¹⁴ This resulted in two dummy variables: one for mixed regimes and one for democracies. Whether or not an enduring rivalry was present in the war was taken from Diehl & Goertz (2000). States were considered to be rivals if they engaged in a series of militarized interstate disputes within 10 to 15 years of each other. The terrain and strategy variables were taken directly from Bennett & Stam (1996). Strategy is captured by a series of dummy variables pairing the offensive side's and defensive side's strategies (maneuver, attrition, or punishment). Maneuver strategies were those which involved blitzkrieg strategies or attempts to divide the enemy forces. Attrition strategies were those where meeting engagements were fought. Punishment strategies were those wars that were primarily guerilla in nature or where civilians were the main target. This framework results in potentially nine combinations, but only five occur in their dataset: offense attrition-defense maneuver (OADM); offense attrition-defense attrition (OADA); offense attrition-defense punishment (OADP); offense punishment-defense attrition (OPDA); and offense maneuver-defense attrition (OMDA). The last variable was excluded from the analyses

¹³ Using CINC scores from a mid-war year does not change the results.

¹⁴ France was coded as a dictatorship during the Franco-Mexican war based on Goemans' (2000) research.

as Bennett and Stam argue it should lead to the quickest wars and of course one dummy variable must be excluded. The terrain variable ranges from zero to one with zero being open or rolling terrain and one being impassible.¹⁵ See Tables Ia through Id for the summary statistics.¹⁶

[Tables Ia to Id here]

Results for Duration

To determine whether joining lengthens wars, a Cox proportional hazards model would seem a natural fit.¹⁷ However, Cox models assume that variables affect the hazard rate proportionately over the course of time. In other words, it assumes variables affect only the scale and not the shape of the hazard function. This may not be true and can be checked using Schoenfeld residuals (Box-Steffensmeier, Reiter, & Zorn, 2003). This procedure reveals late joining and several of the strategy variables potentially violate the proportional hazards assumption. For this reason, a non-proportional hazards model with a Weibull distribution was used allowing the variables which violated the proportional hazards assumption to also affect the shape of the hazard function. Only variables which affected the shape parameter in a statistically significant way were included in the final models to prevent such variables from obscuring affects they have on the scale of the hazard function (Cleves, et al, 2008). Late joining is the only such variable. Since the hazard rate is not proportional, coefficients rather than standard hazard ratios are reported.

Additionally, to ensure the findings are not being driven by the entries of minor states into ongoing wars additional models were included where only major belligerents were counted as joiners, belligerents, democracies, mixed regimes, or enduring rivals. For other variables such

¹⁵ Bennett & Stam (1996) used the *New York Times World Atlas* (1983) and Dupuy (1979) to determine terrain type.

¹⁶ Correlations between the independent variables are all below 0.4, except for some correlations between the great power, participants, OADA, and democracy variables with range between 0.50 and 0.74. In practice, no terrain was coded higher than 0.75.

¹⁷ There are no censored cases.

as relative capabilities and battle deaths, the contributions of minor belligerents were included. The list of major belligerents was taken from the War Initiation and Termination Coding Instrument and Data Set (WIT) (Fazal, et al, 2009). WIT codes major belligerents as those states which are principal decision makers in the war, i.e., states which can make decisions about war and peace for the war as a whole or states whose troop contributions are large enough to make them independent decision-makers. To these states the great powers as listed in COW were added. Also, as data on the strategy and terrain variables were only available for 63 of the 79 wars, regressions were run both with those variables included and excluded. This treatment results in four models for both datasets for a total of eight models.

The results for all four models using the war-day dataset are reported in Table II. Late joining is significantly correlated with a large increase in duration. This is not immediately obvious, as the affects of late joining on the scale and shape parameters run in opposite directions. Thus, is it necessary to calculate predicted values for when late joining occurs holding all other variables at their medians. This shows late joining increases the average duration of wars substantially. In the four models late joining increases duration by 603, 543, 44, and 229 days respectively. In percentage terms these are increases of 164%, 155%, 8%, and 68% respectively. The greater increases are when all joiners are included. The results hold even if the Vietnam War, a clear outlier at 3,735 days, is excluded.

In all four models early joining is significantly correlated with shorter wars—340 days shorter on average. Why this happens can be seen by examining the eight wars which had only early joining. All of them had joining only on one side. Three wars involved great powers joining the side that was stronger militarily (Roman Republic, Six Weeks, and Sinai). Another involved minor powers joining to bandwagon after the issue had been decided (Second Balkans)

and finally one involves minor powers trying to bandwagon, albeit unsuccessfully (Yom Kippur).¹⁸ Thus, in many of these wars the balance of forces was made even more unbalanced by joining, and yet the joiners did not have either the power or desire to significantly increase war demands.¹⁹ In several of the wars the entries had been worked out antebellum.²⁰ Thus, they added no issues and did not in any way alter their side's calculations as their entries were expected by their allies.

The number of belligerents is not significantly correlated with duration. This suggests that simply increasing the number of belligerents does not complicate the bargaining process in the way late joining does. As was argued above, many initial belligerents likely share or nearly share preferred goals and outcomes. Late joiners, however, introduce additional goals into the war. Indeed if they closely shared the goals of the initial belligerents, they likely would have joined the war at its outset or at least in the first month.

[Table II here]

The findings for the control variables are interesting as well. Having a mixed regime in the war increased duration by an average of about 291 days between the four models. OADA strategies lengthened wars on average by over a year when compared to the base strategy. Punishment strategies, when employed by either side, had the potential to increase the duration of the conflict by over a decade. OADM strategies were not consistently significant. Less balanced relative capabilities were correlated with shorter wars. Increasing the imbalance of capabilities by one standard deviation from the median shortened wars when the strategy

¹⁸ The other wars are the Austro-Sardinian, Italian Unification, and Pacific.

¹⁹ Modena, Tuscany, and France shared Sardinia's goals of expelling Austria from the Italian peninsula. France shared Austria's goal of destroying the Roman Republic. Romania and Turkey shared Greece's and Serbia's goal of taking territory from Bulgaria. Britain and France shared Israel's goal of restoring international control of the Suez Canal. Finally, Saudi Arabia and Jordan shared the rest of the Arab states' goal of destroying Israel. Italy had substantially divergent goals from Prussia in the Six Weeks War, but was unable to continue the conflict on its own.

²⁰ French participation in the War of Italian Unification, Italian participation in the Six Weeks War, and British and French participation in the Sinai War were all prearranged.

variables were included by roughly 139 and 229 days respectively. The presence of democracies, enduring rivals, and great powers in the war and whether the war was fought over territory or a target state's regime were all insignificant. The presence of difficult terrain was significant, but in the opposite direction from what was predicted. Strangely, difficult terrain is correlated with shorter wars. Why this should be is unclear. Even if rougher terrain results in states employing attrition or punishment strategies and the lengthening effect terrain has on war is captured by these variables, this should just reduce the impact of the terrain variable, not make it significant in the opposite direction.²¹

A potential objection to the findings is that there is a selection effect at work for one of two reasons. First, it is possible that long wars simply have more time for joining, especially late joining, to occur and thus the causation is potentially backwards. As can be seen in Table III, this is unlikely the case. Wars experiencing late joining last 935 days longer on average after late joining has occurred than wars which experienced no joining do for their entire duration. Thus, it is not the length of wars that allows late joining to occur as vast majority of those wars' duration comes after late joining has already occurred. Therefore, if there is a causal relationship between late joining and duration, it is far more likely late joining increases duration rather than vice versa. Second, it is possible that the relationship could be spurious and that some other variable both makes wars longer and more likely to experience joining. While possible, it is not clear what this variable would be. Late joining is poorly correlated with the strategy and regime type variables which have been found to increase duration.²² Also, as longer wars are more

²¹ OADP, great powers on both sides, and regime issue all have correlations with other variables above 0.6. Dropping them slightly changes the results. In model one, early joining and relative capabilities cease to be significant. Using the log of duration has no affect on significance beyond making OADM statistically insignificant in model 3.

²² The correlation is 0.093 or lower for these variables. Including variables for previous wars or UN involvement has little effect. Early joining is not strongly correlated with the models' error terms. Late joining has correlations of -0.45, -0.46, -0.21, and -0.22 in models 1 to 4 respectively.

costly (see Table V), it is not clear why such wars should be more attractive, rather than less attractive, to join. The most logical possibility is that wars fought over the nature of the system will attract joiners and have a tendency to be lengthy in their own right; however, late joining remains correlated with increased duration even if the world wars, those wars which were most clearly fought over the rules of the system, are excluded. Thus, while a selection effect is possible, it is an unlikely explanation of the connection between late joining and duration.

[Table III here]

Of course, while simply knowing late joining may lengthen wars is interesting, looking at how different types of late joining are related to duration is important as well. In particular, two-sided joining should be associated with greater increases in uncertainty about the relative balance of forces than one-sided joining. However, both late one-sided and late two-sided joining should be associated with increases in the complexity of bargaining not related to the relative balance of forces. Thus, comparing the effects of these two types of late joining may say something about how it lengthens wars. For these models, the strategy variables were collapsed into three dichotomous variables: one indicating if either side used a maneuver strategy; one indicating if either side used a punishment strategy; and one indicating if both sides used an attrition strategy. This was done as breaking the strategies down further resulted in dummy variables that were positive in only one or two instances which led to convergence issues. A Cox proportional hazard model was used as the Schoenfeld residuals indicated that the data were consistent with the proportional hazard assumption. The results are displayed in Table IV.

[Table IV here]

Both types of late joining were significant. Late one-sided joining reduced the odds the war would end at any given point by between 87.2% and 93.1% depending on the model, while

late two-sided joining reduced the odds by between 96.8% and 99.0%. Thus, the effect for two-sided joining is quite a bit larger than the effect for one-sided joining suggesting that increases in the uncertainty about the balance of forces is an important cause of duration. Neither type of early joining was statistically significant. Again the results hold even if the Vietnam and world wars are excluded.

For the most part, the results for the control variables remain unchanged. Punishment strategies continue to be correlated with longer wars and maneuver strategies to a lesser extent with shorter wars. The presence of mixed regimes is still associated with longer wars; however, this is only true for the models where only major belligerents are considered. These are all consistent with the predicted effects. One change is that having more belligerents is now correlated with shorter wars if only major belligerents are considered. This result is puzzling. Rough terrain is not correlated with duration. Territorial disputes are significant in the first model, but given that it is significant in only one model, the result should be given limited weight.²³

Results for Severity

How joining affects war severity was also examined. The variables are the same as before, except that the log of battle deaths is now the dependent variable and duration has become an independent variable. As the dependent variable is now a positive continuous variable, ordinary least squares is an appropriate model. The log of battle deaths is used as otherwise the data have a right tailed skew and exhibit kurtosis because several wars have millions of battle deaths while most have a few thousand. Using the log of deaths results in a

²³ Dropping the belligerents variable due to collinearity results in mixed regimes not being significant in models 7 and 8. Early one-sided joining becomes significant in model 8. Using the log of duration does not change the statistical significant of any of the variables. Stratifying the Cox model based on if states fought a war with each other in the previous 25 years had very little effect on the analysis. Two sided late joining has correlations with the error term of 0.31 in all four models. One sided late joining has correlations of 0.58, 0.52, 0.39, and 0.35.

dependent variable that is far more normally distributed, therefore, meeting the assumptions of ordinary least squares regression.²⁴ The results can be seen in Table V.²⁵

[Table V here]

Duration and punishment strategies are statistically significant. Of these, duration has the largest potential effect as it ranges from 5 to 3,735 days, while the strategy variables are dichotomous. These findings were expected. The results hold even if the world wars are excluded. As anticipated, joining is not significant. Joining, however, still plays a key role in explaining duration albeit indirectly. Since late joining increases duration and duration increases the number of deaths, late joining indirectly increases severity. None of the other variables is significant. This is surprising as far as the presence of great powers on both sides is concerned as that should suggest a war in which each side can inflict and incur significant punishment. The issue over which the war was fought did not affect casualties nor did terrain. Neither did the presence of an enduring rivalry, though this makes sense as the enduring rivalry hypothesis is that dyads will have a series of conflict with each other, not that any one of those conflicts individually will be more severe than the average war. Regime type was also not significant. This is not surprising. There is no compelling reason to think that regime type would directly affect the number of casualties, though of course to the extent that regime type affects duration, it indirectly affects severity. Both the presence of a great power on one side and relative capabilities variable also were not significant.²⁶

²⁴ Taking the log of battle deaths reduced the skew from 6.765 to 1.061 and the kurtosis from 49.817 to 3.826.

²⁵ Variance inflation factors for the variables are all low except for the OADA variable which has factors of 5.57 and 5.83. These exceed the strict cut off of five potentially raising concerns about colinearity, but are well below the more lenient cutoff of ten. See Kutner, Nachtsheim, & Neter (2004).

²⁶ If the log of per capita deaths is used (see Lacina, 2006), great power status becomes negatively correlated with the dependent variable because death totals are a smaller proportion of their total population than they are for less populous states. Dropping the belligerents variable results in OADA being significant in column 3. Using the log of duration results in rivalry being significantly correlated with shorter wars in all four models and early joining with shorter wars in column 3. Punishment strategies cease to be significant.

Conclusions

The findings suggest that factors which complicate bargaining and increase uncertainty lengthen wars and that factors which increase duration and the rate of casualties increase severity. Of these, the most important is that factors which complicate bargaining are correlated with longer wars. Specifically, late joining lengthens wars by introducing new goals and additional uncertainty about the relative balance of forces. Simply adding more players does not. Also, while longer wars are correlated with both one- and two-sided joining, the relationship with two-sided joining is stronger suggesting that uncertainty about the new relative balance of forces plays an important role in lengthening wars. Additionally, early joining was not linked to longer wars. Thus, not only does joining matter, but the type of joining also matters. Finally, previous findings that mixed regimes and attrition and punishment strategies are correlated with longer wars were confirmed.

More complicated bargaining, however, does not directly translate to bloodier bargaining. Late joining was not directly related to the number of battlefield deaths. Rather duration was correlated with higher casualties, while punishment strategies were correlated with lower casualties. This is because these variables are indicators of each side's ability to inflict and incur casualties due to more time or the strategy employed. However, by increasing a war's duration, late joining indirectly increases the number of casualties.

These findings show that joining is important and deserves more far more attention than it has received. Though a few scholars have worked on war expansion, most have ignored it to focus on war initiation, severity, or termination. This study shows war termination and severity cannot be understood without understanding war expansion and other studies have shown war initiation cannot be understood without examining war expansion (Gartner & Siverson, 1996;

Shirkey, 2009; Smith, 1995). Thus, in order to understand conflict in the international realm, we must study how those conflicts are fought and how initial non-belligerents respond to them, not just their onset and termination. These sorts of connections too often are not drawn leading to a poorer understanding of why and how states fight. The findings herein suggest that joining alters the nature and costs of wars. For this reason, states will likely factor the odds that joining will occur into consideration when deciding if they should initiate a war. For the same reason, the possibility of joining should affect the way states fight wars. Belligerents may well try to prevent states from joining their wars, not only to maximize their odds of winning, but also to keep the costs of the war lower. Therefore, states may limit their demands, engage in war fighting strategies that would otherwise appear to be suboptimal, and even terminate the war all to avoid potential joining. Thus, it is important to study joining even though it is a somewhat rare phenomenon as its possibility as well as its actual occurrence influences how wars are fought and even if they are fought at all. While this has been done in regards to extended deterrence and alliance reliability, more work in this area could and should be done.

As to further work directly related to the issues studied here, the findings could be extended to civil wars. Additionally, lesser forms of intervention, especially armed mediation, could be looked at to see if they affect war duration in similar ways. It would be discouraging for the prospects of certain types of humanitarian and peace keeping operations (such as UN Chapter Seven missions), though such possible negative effects have been suggested before (Luttwak, 1999). Finally, a few case studies may prove useful to ensure the dynamic processes associated with joining affect war duration in the manner suggested by the correlations found herein. Large n studies are necessary to ensure a relationship is general, but have important limitations in tracing causal mechanisms. Cases, of course, have the opposite strengths and

weaknesses. For this reason, the exploration of several cases would help flesh out the processes explored, though cases alone cannot substitute for the broader findings. Thus, our understanding of how joining affects the course of wars is far from complete, but obtaining that understanding is important if we are to fully understand how and why wars are fought.

Replication data

The dataset, codebook, and do-files for the empirical analysis in this article can be found at <http://www.prio.no/jpr/datasets>.

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Table Ia: Wars by War-Day: Non-Dummy Variables

	Mean	Median	Standard Deviation	Min Value	Max Value
Duration	894.026	635	843.815	1	3735
Late Joining All Belligerents	0.051	0	0.182	0	1
Late Joining Major Belligerents	0.019	0	0.113	0	1
Early Joining All Belligerents	0.012	0	0.093	0	1
Early Joining Major Belligerents	0.009	0	0.082	0	1
Relative Capabilities	0.765	0.780	0.154	0.501	0.993
Terrain	0.303	0.259	0.220	0	0.75
Belligerents (all Belligerents)	4.585	2	3.880	2	16
Belligerents (major Belligerents)	2.848	2	1.365	2	8

Table Ib: Wars by War-Day: Dummy Variables

	All Belligerents		Major Belligerents	
	Zero	One	Zero	One
Great Power in the War	13,523	17,300	13,523	17,300
Great Power Both Sides	22,904	7,919	22,904	7,919
Democracy	18,489	12,334	18,489	12,334
Mixed Regime	3,100	27,723	5,171	25,652
Enduring Rivalry	12,367	18,456	15,686	15,137
Territorial Issue	12,377	18,446	12,377	18,446
Regime Issue	24,996	5,827	24,996	5,827
OADM	30,285	538	30,285	538
OADA	9,085	21,738	9,085	21,738
OADP	26,105	4,718	26,105	4,718
OPDA	27,088	3,735	27,088	3,735

Table Ic: Wars as a Single Case: Non-Dummy Variables

	Mean	Median	Standard Deviation	Min Value	Max Value
Duration	442.835	141	738.189	5	3735
Log of Deaths	9.410	8.987	2.230	6.813	16.627
Relative Capabilities	0.782	0.787	0.145	0.514	0.987
Terrain	0.321	0.350	0.212	0	0.75
Belligerents (all Belligerents)	3.481	2	3.170	2	16
Belligerents (major Belligerents)	2.608	2	1.203	2	8

Table Id: Wars as a Single Case: Dummy Variables

	All Belligerents		Major Belligerents	
	Zero	One	Zero	One
Early One-sided Joining	70	9	71	8
Early Two-sided Joining	78	1	78	1
Late One-sided Joining	72	7	74	5
Late Two-sided Joining	76	3	76	3
Great Power in the War	41	38	41	38
Great Power Both Sides	68	11	68	11
Democracy	45	34	45	34
Mixed Regime	35	44	35	44
Enduring Rivalry	40	39	40	39
Territorial Issue	36	43	36	43
Regime Issue	70	9	70	9
One Side uses Maneuver	56	7	56	7
All Sides use Attrition	10	53	10	53
One Side uses Punishment	60	3	60	3

Table II: Duration—Late and Early Joining

	All Joiners		Major Joiners	
	Model 1 N=30,823 chi ² = --	Model 2 N=34,984 chi ² =59.99	Model 3 N=30,823 chi ² = --	Model 4 N=34,984 chi ² =104.46
_t (scale effects)				
Late Joining	-31.542*** (6.298)	-21.338*** (4.123)	-21.338*** (3.900)	-16.482*** (2.335)
Early Joining	1.418* (0.657)	1.230* (0.520)	2.258*** (0.588)	1.527** (0.486)
Belligerents	-0.100 (0.068)	-0.033 (0.075)	-0.146 (0.194)	0.065 (0.208)
Great Power in the War	-0.292 (0.444)	-0.066 (0.268)	-0.475 (0.449)	-0.118 (0.270)
Great Power Both Sides	0.289 (0.556)	-0.203 (0.600)	-0.173 (0.614)	-0.842 (0.696)
Democracy	0.174 (0.361)	0.297 (0.223)	-0.142 (0.366)	0.058 (0.253)
Mixed Regime	-0.784* (0.326)	-0.830*** (0.259)	-0.717* (0.334)	-0.835** (0.275)
Relative Capabilities	3.163* (1.443)	1.165 (1.116)	3.264* (1.414)	1.424 (1.096)
Enduring Rivalry	0.299 (0.310)	-0.080 (0.230)	0.465 (0.315)	0.092 (0.255)
Territorial Issue	-0.386 (0.345)	-0.097 (0.274)	-0.458 (0.351)	-0.098 (0.272)
Regime Issue	-0.114 (0.798)	-0.825 (0.510)	0.024 (0.809)	-0.838 (0.512)
OADM	-1.555 (0.936)	-----	-1.641* (0.795)	-----
OADA	-2.280** (0.885)	-----	-2.784*** (0.805)	-----
OADP	-4.400*** (0.983)	-----	-4.903*** (0.997)	-----
OPDA	-5.543*** (1.200)	-----	-5.948*** (1.060)	-----
Terrain	2.498** (0.802)	-----	2.593*** (0.806)	-----
Constant	-5.870 (1.526)	-4.991 (1.170)	-5.262 (1.416)	-5.235 (1.158)
ln_p (shape effects)				
Late Joining	1.677*** (0.138)	1.537*** (0.147)	1.455*** (0.123)	1.424*** (0.107)
Constant	0.021 (0.081)	-0.188 (0.085)	-0.005 (0.080)	-0.218 (0.082)

Non-proportional hazard coefficients using a Weibull distribution reported for both the scale (_t) and shape (ln_p) parameters with robust standard errors in parentheses. * denotes significance at 0.05, ** at 0.01, and *** at 0.001.

Table III: War Duration in Days

All Wars	Wars w/ Joining	Wars w/ Late Joining	After Joining	After Late Joining
442.82	991.29	1647.80	851.06	1378.1

Table IV: Duration--One vs. Two-sided joining

	All Belligerents		Major Belligerents	
	Model 5 N=63 chi ² =77.39	Model 6 N=79 chi ² =86.14	Model 7 N=63 chi ² =84.60	Model 8 N=79 chi ² =86.08
Early One-sided Joining	1.341 (0.803)	2.201 (0.982)	1.697 (0.922)	1.930 (0.847)
Early Two-sided Joining	0.591 (0.520)	1.703 (0.965)	0.346 (0.364)	0.746 (0.511)
Late One-sided Joining	0.069*** (0.057)	0.099*** (0.050)	0.089** (0.084)	0.128*** (0.060)
Late Two-sided Joining	0.010*** (0.010)	0.029*** (0.022)	0.012*** (0.009)	0.032*** (0.020)
Belligerents	1.176 (0.107)	1.113 (0.086)	1.624** (0.293)	1.558*** (0.214)
Great Power in the War	0.538 (0.351)	0.829 (0.247)	0.511 (0.339)	0.818 (0.237)
Great Power Both Sides	3.077 (1.968)	1.167 (0.513)	3.385 (2.292)	1.126 (0.500)
Democracy	1.585 (0.631)	1.317 (0.357)	1.280 (0.522)	1.053 (0.286)
Mixed Regime	0.557 (0.200)	0.722 (0.197)	0.440* (0.150)	0.554* (0.152)
Relative Capabilities	11.343 (20.408)	1.266 (1.513)	6.545 (11.836)	0.876 (1.025)
Enduring Rivalry	0.556 (0.211)	0.680 (0.199)	0.555 (0.214)	0.593 (0.172)
Territorial Issue	0.374* (0.173)	0.651 (0.177)	0.451 (0.214)	0.809 (0.207)
Regime Issue	0.684 (0.532)	0.422 (0.242)	0.683 (0.576)	0.330 (0.209)
Maneuver Strategy	2.257 (1.027)	-----	2.778* (1.271)	-----
Punishment Strategy	0.041* (0.050)	-----	0.026** (0.035)	-----
Terrain	2.257 (1.878)	-----	2.807 (2.246)	-----

Cox proportional hazard ratios reported with robust standard errors in parentheses. * denotes significance at 0.05, ** at 0.01, and *** at 0.001.

Table V: War Severity

	All Joiners		Major Joiners	
	With Strategy and Terrain (N=63) R ² = 0.786	Without Strategy and Terrain (N=79) R ² = 0.687	With Strategy and Terrain (N=63) R ² = 0.784	Without Strategy and Terrain (N=79) R ² = 0.689
Duration	0.003*** (0.000)	0.002*** (0.000)	0.003*** (0.000)	0.002*** (0.000)
Early Joining	0.376 (0.729)	0.738 (0.608)	0.813 (0.799)	0.765 (0.766)
Late Joining	-0.943 (0.920)	-0.201 (0.773)	0.055 (1.069)	0.289 (0.854)
Belligerents	0.135 (0.097)	0.119 (0.080)	0.136 (0.271)	0.244 (0.262)
Great Power in the War	0.264 (0.506)	0.194 (0.363)	0.385 (0.486)	0.334 (0.355)
Great Power Both Sides	1.491 (0.817)	1.199 (0.673)	1.338 (0.832)	1.136 (0.730)
Democracy	0.064 (0.632)	-0.282 (0.450)	0.006 (0.648)	-0.314 (0.463)
Mixed Regime	0.244 (0.406)	0.183 (0.349)	0.223 (0.360)	0.110 (0.344)
Relative Capabilities	1.328 (1.456)	0.243 (1.252)	0.804 (1.455)	-0.032 (1.255)
Enduring Rivalry	0.659 (0.592)	0.771 (0.443)	0.794 (0.565)	0.764 (0.433)
Territorial Issue	-0.067 (0.422)	-0.069 (0.363)	0.147 (0.427)	0.120 (0.354)
Regime Issue	0.412 (0.567)	-0.576 (0.510)	0.573 (0.604)	-0.373 (0.489)
OADM	0.325 (1.227)	-----	0.592 (1.197)	-----
OADA	-0.629 (1.137)	-----	-0.602 (1.180)	-----
OADP	-4.558* (1.551)	-----	-4.097** (1.480)	-----
OPDA	-7.380** (2.188)	-----	-5.960** 1.925	-----
Terrain	1.339 (0.928)	-----	1.434 (0.947)	-----
Constant	6.181 (1.454)	7.478 (0.962)	6.320 (1.609)	7.302 (1.070)

OLS coefficients reported with robust standard errors in parentheses. * denotes significance at 0.05, ** at 0.01, and *** at 0.001.