

# War and Default

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Journal of Conflict Resolution  
2018, Vol. 62(9) 1876-1904  
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DOI: 10.1177/0022002717707239  
journals.sagepub.com/home/jcr



## Abstract

Sovereign borrowing is often used to cover the costs of war. This borrowing, coupled with war's economic disruptions, strains states' ability to honor debt promises. Contrary to conventional expectations, however, we find that default is not common after wars. To explain the relationship between war and sovereign default, this article lays out a selection effect argument: war participants are unlikely to default in the first place, while states likely to default are unable to acquire the financing necessary to fight a war. In sum, states that lack the financial means to adequately borrow avoid paths to war. After offering some examples of the selection mechanism at work, we present evidence that states unlikely to default will avoid entering the war sample. Our findings have implications for the inferences researchers make about war finance and war onset.

## Keywords

war, default, sovereign credit, finance

The costs of raising, arming, and mobilizing military forces often require sovereign borrowing. When coupled with war's economic disruptions and damage, additional borrowing should strain a state's ability to honor promises of debt repayment.

Default, however, is not common after wars. We show below that most war participants, win or lose, honor their debt promises. Given that war fighting is destructive and commonly requires accumulating a large amount of debt in a short

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period of time, what explains this tendency and what does it say about the type of states that fight wars?

We offer a selection-based argument: war participants are unlikely to default in the first place. Paying for military capabilities requires the ability to borrow.<sup>1</sup> States with the ability to attract financial capital and convert that financial capital to military power have the ability to fight a war. States with an inability to acquire the financing necessary to fight a war will take measures to avoid war, such as backing down during a crisis. As a result, states that are likely to default are less likely to be observed in the war sample.

We evaluate this claim using data on war participation, conflict behavior, and sovereign default. Through a variety of empirical tests, we find that a country's expected default behavior is a key predictor of participating in war. The more likely a state will default, the less likely the state will enter a war. We find similar empirical patterns for lower levels of conflict and interstate crises: the more likely a state will default, the less likely that state will find itself in a conflict or crisis, and the less likely that state will escalate a conflict or crisis.

Our argument and findings have implications for a range of research. First, by showing that war participants largely honor their debts, we are calling for deeper reflection upon the link between war and financial outcomes. There is an assumption in the literature that losing a war will lead to default. As Slantchev (2012, 788) writes, "defeat, with its attendant losses of income to payments of indemnities or tax bases from occupied or ceded territories, makes it far more likely that the sovereign borrower will not be able to meet his obligations." Similarly, Flandreau and Flores (2012, 235) argue that international financial intermediaries, such as the Rothschilds in the nineteenth century, did not "dislike wars—they disliked only losers, or more precisely the risk of being found in loser's company." In contrast, we show and explain that, win or lose, war fighters honor debts. War outcomes do not predetermine decisions to default. Instead, the likelihood of default predetermines the decision to avoid war.

Second, the empirical link between lower default rates and war participation suggests that a sovereign's financial activities may help reveal intentions and preferences for conflict. For instance, states with revisionist motivations that intend to use or threaten force in the future must begin to strength financial commitments in the present. Good credit could be a harbinger of bad intentions.

Third, our research is also consistent with the notion that we cannot predict with certainty, in any individual case, whether war will take place (Gartzke 1999). However, our findings suggest that we can identify when states will most likely choose to step off the path to war (Senese and Vasquez 2008). The expected default behavior of a country offers a means of identifying if a state is likely to accept a settlement short of war or instead engage in crisis bargaining that may result in war onset. Our findings support this expectation.

The remainder of this article is organized as follows. In the first section, we provide empirical evidence that, win or lose, war participants largely honor debts. We also show that in the few cases where a war loser did default, it is unlikely that the default decision was driven by the war outcome. In the second section, we present our selection argument that a state lacking financial wherewithal is likely to take measures that avoid war. In the third section, we evaluate this argument using data on war participation, militarized disputes, interstate crises, and our main indicator of a state's expected default behavior: previous default behavior. This measure is useful because it captures a state's economic ability and political willingness to repay. Similar findings are obtained with an alternative measure that uses the predicted probability of default. We conclude this article with a summary of our argument and findings as well as suggestions for future research.

## **The Default History of War Winners and Losers**

Before explaining the relationship between war and default, we consider the presumed link between war outcomes and default decisions. Does winning or losing a war matter for default decisions? We look at the link in three ways: (1) cross tabulations using data on war outcomes and default between 1823 and 2007, (2) causal process observation (CPO) of cases where a country lost a war and defaulted on its debt, and (3) examining interwar Germany, a case commonly associated with war losing and debt default. Overall, the evidence in this section suggests little relationship between war outcomes and default.

### *Cross Tabulations*

Our first evaluation examines a cross tabulation of war outcomes and debt default. The war data used to compile our cross tabulations come from a revised version of the Correlates of War (COW) data set on interstate wars, which covers wars from 1823 through 2007 (Reiter, Stam, and Horowitz 2015). Wars are classified as a conflict between two or more states resulting in at least 1,000 battle deaths. A participant is included in these data if they suffered at least 100 casualties or had 1,000 soldiers engaged in battle. The unit of observation is a state in a given war (i.e., the United States in the Mexican–American War is a single observation). World Wars I and II are separated into dyadic wars, which is consistent with other war outcome studies (Reiter and Stam 1998). This data set also codes the outcome of wars for each participant. The outcomes of war are divided into several categories, including win, loss, compromise/tied, war transformed into another type of war, ongoing, stalemate, ongoing but below war level, and changed sides. Most of the war debt literature focuses on the repercussions of defeat in war, so we focus on states that either won or lost their war and exclude ties and other outcomes for the moment.<sup>2</sup>

**Table 1.** War Outcomes and Default, Number of Cases.

	Lose	Win	Total
No default	68	125	193
%	91.9	95.4	94.1
Default	6	6	12
%	8.1	4.6	5.9
Total	74	131	205

Note: No statistical difference in default rates between war winners and losers.  $\chi^2 = 1.068$ ,  $p$  value = 0.301.

We next compile data on default. We draw our default data from Reinhart and Rogoff (2008). Reinhart and Rogoff provide default information on external debt for sixty-seven states from 1800 to 2008. While the data set is not complete for all country-years, it has 13,039 country-year observations.<sup>3</sup> We are interested in whether a particular war outcome is associated with external debt default in the years following the war.<sup>4</sup> We focus on external debt, as opposed to examining internal debt, given that domestic default information is more limited (Reinhart 2002) and may constitute forced lending.<sup>5</sup> We restrict our analysis to the last year of a war and the subsequent two years after the end of the war. If there are cases where the war outcome can be directly linked to default, it will be cases within a short time span following the war. After two years, it becomes more likely that factors other than the war's outcome contributed to default. We do, however, examine longer windows of time after a war and still find no difference in new default rates between winners and losers.<sup>6</sup> If a state defaults on its external debt during that time period, default is coded as 1 (and as 0 otherwise).<sup>7</sup> We expect that these are the cases that are most likely to reveal a relationship between war outcomes and default, if one exists. We are attempting to make what Levy (2008, 12) calls the "inverse Sinatra inference"—if we cannot make the case that war outcomes cause default in these cases, we cannot make that case anywhere.

The cross tabulation in Table 1 examines these data, and we find that 4.6 percent of victors defaulted on their debt obligations within two years of war's end. While this result suggests that victors are more likely than not to repay their debt obligations, repayment is not a certain occurrence. Additionally, only 8.1 percent of defeated participants default on their debt within the first two years of the war's end. While this shows that losers are more likely to default than winners, the difference is not statistically significant. Also, a high percentage of losers (91.9 percent) still repay their debt.

To gain confidence in this finding, we also examine default within five years of a war (instead of two) and only wars longer than one year and find no evidence that war outcomes affect default decisions. In addition, while we are ultimately interested in an average effect of war on default, we examine some conditional factors of war such as size, intensity, and duration of a war and still find no relationship.<sup>8</sup> These

results continue to call into question the assumption that losers are substantially more likely to default on their debt. Instead, these data suggest no apparent relationship between war outcomes and default onset.

### *Causal Process Observations*

According to the above tabulations, war losers mostly honor their debt obligations. Consider the example of France following the Franco-Prussian war. As a result of its defeat, France lost the Alsace–Lorraine territory and was saddled with war reparations on top of its own war debt. Nevertheless, France remained committed to repaying both its reparations and debt obligations.<sup>9</sup> French leaders realized that they were unprepared for war against Germany and knew that another war with this rival was likely. Access to future credit was tantamount to future war success. France's willingness to repay in difficult times allowed it to rely on the future "wholehearted support of the European capital market" (Ferguson 1999a, 205).

It is possible, however, that the general correlations mask an underlying causal link between losing a war and default. For instance, perhaps there is a complicated timing process that links decisions to end war and to enter default. Therefore, for the twelve cases of default in Table 1, we turn to the Causal Process Observations (CPO) approach, utilized by Haggard and Kaufman (2012), to reconstruct the empirical sequence of actors' decisions to default. Using this approach, we derive analytical reasons for each default after a war. To gain a deeper understanding of the role, if any, that is played by war outcomes on the decision to default, Table 2 summarizes our analysis of the cases in our data where a country defaulted within two years of a war's completion.<sup>10</sup>

The key inferences we can make from Table 2 is that war outcomes are generally not associated with default. We observe one case—Poland 1939—where losing directly leads to default. Otherwise, default is generally explained as a political device or a result of financial troubles that occurred during or before the war. To make this point clear, we briefly examine each of the six cases in Table 2 where a state loses a war and subsequently defaults.

*Spain 1824.* The Franco–Spanish War brought an end to the liberal revolution in Spain and restored the monarchy in 1823. Immediately after being restored to power, the king refused to honor the debts accrued by the ousted Cortes government (*Connecticut Courant* 1924). However, the king's refusal to pay its debt had less to do with a principled stand on "odious" debt and more to do with the declining finances of the Spain and its vanishing empire (Schroeder 1994, 607). Poor finances led Spain to sell Florida to the United States in 1819, led to the liberal revolution in 1821, and prevented Spain from addressing the cascade of declarations of independence across South and Central America. Further evidence of Spain's financial trouble was the king's inability to secure a loan from the Rothschild bank and Spain's default on a new 1824 loan (Flandreau and Flores 2009).<sup>11</sup>

**Table 2.** Wars and Default, 1816–2007.

Country	Year of default	War	Outcome of war	Reason for default
Spain	1824	Franco–Spanish War 1823	Spain loss	Financial troubles predating war
Germany	1850	Schleswig–Holstein 1848–1849	Prussia victory	Temporary administrative paralysis during international negotiations
Austria	1868	Seven Weeks War 1866	Austria loss	Financial troubles predating war
Guatemala	1876	First Central American War 1876	Guatemala victory	Domestic instability
Turkey	1915	First Balkan War	Turkey loss	Suspension of payments in London (as member of Entente powers during WWI). Continued payments in Germany. Default used as a political instrument of (another) war (WWI).
Russia <sup>a</sup>	1918	World War I (WWI)	Russia loss	Economic disruptions caused by the war induced regime change, the end of Russia involvement in WWI, and default
Poland	1940	World War II	Poland loss	Occupation and loss of sovereignty
Italy	1940	World War II (against France)	Italy victory	Suspended payments to allies (France and United Kingdom). Default used as a political instrument of war. Not related to war outcome itself.
Hungary	1941	World War II (against Yugoslavia)	Hungary victory	Suspended payments to allies (France and United Kingdom). Default used as a political instrument of war. Not related to war outcome itself.
India	1972	Bangladesh War	India victory	1972 marked the beginning of another round of debt relief/restructuring coordinated by the Paris Club that lasted until 1976. Debt relief demand was exacerbated by the increases in military expenditures brought about previous wars against China and Pakistan.
Argentina	1982	Falklands War	Argentina Loss	Inflation and credit crisis in 1981–1982 cause domestic unrest, prompting the military regime to gamble for resurrection by seizing Falkland Islands. The debt crisis a catalyst of conflict rather than a result of war.

<sup>a</sup>In the cross tabulation in Table 1, Russia's default in 1918 is counted twice because of its involvement in two separate wars. Russia ended its war against Germany in 1917 and its war against Romania in 1918.

*Austria 1866.* The Seven Weeks War pitted Austria against both Prussia and Italy over disputed control of German and Italian territories. Austria's decision to go to war in 1866 highlighted the perils associated with fighting a war when financing cannot be secured. After Austria's defeat to France and Sardinia in 1859, investors felt fortunate that France did not push its advantage against Austria and that Austria remained committed to repaying its debt (Ferguson 1999a). However, Nathan Rothschild, head of the Rothschild & Sons banking conglomerate, did not believe Austria's commitment would continue, especially if another war presented itself. As result, the Rothschilds spent considerable effort finding a diplomatic solution for Austria to avoid war. The bank proposed that Austria sell land to Prussia and Italy to help offset previous debt obligations. Austria was initially interested in these deals, but then became convinced that a deal would undermine its legitimacy to its own citizenry (Morgan 1990, 328–29).

When war with Prussia appeared inevitable, Austria attempted to secure a loan from the Rothschilds. The state was denied credit, despite the widespread belief that Austria would win the war (Kennedy 1987). This lack of financial support sent a signal to the other states involved in the conflict. In a diplomatic report, Bismarck underlined a quote from an Austrian official stating that “because of its lack of credit the Austrian government would temporarily have to give up its great power position” (Ferguson 1999a, 135).

Austria's subsequent default after the war was not a result of defeat, but rather the poor financial situation of Austria before the war. In other words, default was probably inevitable regardless of the outcome of the war. Austria was “forced to admit that the House of Rothschild, especially its eldest representative, James in Paris, had been proven right in their warnings against going to war” (Corti 1928, 375). Austrian Emperor Franz Joseph later called Austria's decision to go to war despite its poor finances “very honorable, but very stupid” (Ferguson 1999a, 138).

*Turkey 1915.* When the Treaty of London was signed in 1913, Turkey (then the Ottoman Empire) conceded defeat in the First Balkan War to Greece and its allies—the Balkan League—and agreed to cede large portions of its European territory to the Balkan allies. While embarrassing, this defeat was not the cause of Turkey's suspension of debt payments in 1915. Instead, debt payments were suspended on the London market on September 14, 1914, due to Turkey being an ally of Germany, which was at war with England (Moore and Kaluzny 2005, 254). Hence, the default was a coercive tool used in World War I, not an outcome of the First Balkan War itself.

*Russia 1918.* Perhaps the most complicated instance of war related to debt default in history is that of Russia following World War I. The complications arise due to the event lying in a nexus of military defeat, negotiated settlement, internal revolution, and alliance politics. With respect to alliance politics, at the onset of World War I in 1914, French investors held nearly 80 percent of external Russian government debt.

This was largely due to the French government actively encouraging investment to its ally—as codified by the 1892 Franco–Russian alliance treaty (Moore and Kaluzny 2005, 246). Hence, so long as the Russian government stayed in the war and honored its alliance commitment to France, debt repudiation would not be an option. This began to change once the mounting human and economic costs of the war eroded support in Russia for the tsarist regime.

The tsar abdicated the throne during the February 1917 Revolution, but this did not lead directly to Russia ending its war effort. The Provisional Government continued to prosecute the war in the face of opposition from the Bolsheviks. When the Bolsheviks gained power following the October Revolution of November 1917, Lenin signed on November 8, 1917 the “Decree of Peace.” The Decree proposed immediate withdrawal from the war and for all of the other belligerents to pursue immediate peace negotiations. Within two months of gaining power, on February 3, 1918, Lenin issued the “Decree on the Annulment of State Debts,” whereby the government absolved itself of any obligation to honor the tsarist era debts: “All government loans concluded by the Government of the Russian landlords and the Russian bourgeoisie . . . are hereby repudiated” (Lienau 2014, 66). Hence, the Russian default was neither a direct result of the war defeat nor even a direct result of regime change. The war induced regime change, but the original perpetrators of regime change—the Provisional Government—intended to honor the tsarist era foreign commitments. It was only with the second regime change, that to the Soviets, that debt repudiation took place. Thus, war is neither a necessary nor sufficient explanation for default in this case. While war may have induced regime change in Russia, war outcomes did not, given that Russia’s regime change determined the war outcome, not the other way around.

*Poland 1939.* In September 1939, Poland was invaded on two fronts and was soon occupied by two major powers: Germany and the Soviet Union. Poland’s default also came on two fronts. First, the Axis occupying powers, represented by the Italian Foreign Bond Committee, announced that Poland would not be making payments on its foreign loans in 1939 (*New York Times* 1939). Second, the ousted Polish government, which had relocated to France, announced that it would make its next interest payment in the spring of 1940 but would not make payments thereafter (Council of Foreign Bondholders 1940).

*Argentina 1982.* The combination of falling commodity prices and scarce credit in Latin America set off a regional credit crisis in the early 1980s. Argentina, reliant on external credit sources to finance its budget, was besieged with high inflation and subsequent domestic unrest. Unable to solve its budgetary problems, Argentina sought to reclaim the Falklands Islands from Great Britain as a diversionary tactic to increase the popularity of the military government (Oakes 2006). Expecting Great Britain to concede the loss of the islands, Argentina moved forward with an invasion that was quickly rebuked. This resulted in the end of military rule in Argentina

(Lebow 1983). In short, the credit crisis predated the onset of the war and given the nature of the crisis, it is unlikely that Argentina would have avoided default if victorious.

We note that Germany following World War I is often given as a prominent example of a state defaulting after defeat (Slantchev 2012). This case is missing from our above analysis because Germany delayed its official default by more than a decade. Besides the temporal lag, this is a poor case to infer the relationship between war outcomes and default, given that both war winners and losers defaulted after World War I: Germany, a loser, defaulted in 1932, while Britain, on the “winning” side of the war, suspended repayments in 1934. And while repayment would have been difficult for Germany, it was by no means impossible. Examination of other World War I participants shows that Germany’s debt ratio was actually less than Great Britain’s and was comparable to France after the Franco–Prussian war (Ferguson 1999b). While Britain was on the right side of victory, this did not preclude it from economic difficulties, including inflation and high unemployment. Eventually, Britain would default on its external debt obligations and forcefully convert its domestic debt to lower interest rates.

In sum, we find only one case where war outcome independently affects the decision to default: Poland’s defeat and subsequent occupation by German and Soviet forces in 1939. Poland’s complete loss of sovereignty as a result of its military defeat prevented debt repayment. However, total occupation, while not rare, is not the usual outcome in interstate war. In addition, occupation is not a sufficient explanation for default. For example, after the United States’ invasion and occupation of Iraq in 2003, the United States continued to honor the ousted Hussein regime’s sovereign debts (Jayachandran and Kremer 2006). As a result of the limited evidence in support of the assertion that war outcomes cause default, we argue that war outcomes do not have a generalizable relationship with default over the sample of wars. We do, however, assert that default, and a state’s financial health in general, has a relationship with war. We explain that relationship in the next section.

## **Selection Processes of Strategic Finance**

Why do states, win or lose, have a tendency to honor their debts after wars? We argue in this section that war outcomes do not determine decisions to default. Instead, we think that the likelihood of default predetermines the decision to avoid war. A selection mechanism is at work. This mechanism does not explain why states enter war but instead explains why states pursue strategies that avoid war.

War is a financially risky proposition for lenders. Kirshner (2007) argued that the financial community opposes war in order to minimize risk and macroeconomic instability. While finance does not always oppose war, it is more cautious and reluctant to risk war than many other segments of society. Whether states lose or win, war generally disrupts finance, increases uncertainty about loan repayments, and raises the risks associated with sovereign lending. Highlighting the large-scale

destruction and immense cost of war, even for victors, Waltz (1959, 1) famously remarked, "Asking who won a given war is like asking who won the San Francisco earthquake." War is associated with leadership turnover, inflation, higher spending, and lower time horizons, which all should increase the propensity for default.<sup>12</sup> As a result, the financial community is cautious about war regardless of outcome (Kirshner 2007). This is consistent with previous research that shows conflict increasing borrowing costs and leading to volatility in the financial markets (Guidolin and La Ferrara 2010).

Therefore, with the possibility of war on the horizon, lenders should be more wary to lend. Even without considering war, lenders already face risks in the lending market because states have difficulty credibly committing to their debt obligations once they receive their loans. Lenders base lending decisions on the information available to them, typically in the form of key observables that are commonly associated with the ability and willingness to repay. These observables include a country's history of repayment (Tomz 2007), the tax base of a country (McDonald 2009; Scheve and Stasavage 2012), political institutions (Schultz and Weingast 2003), and the existence of a central bank (Poast 2015). A country expected to repay debt is more likely to receive favorable credit, however, the anxiety of investors over war means the importance of financial fundamentals is heightened during war. War exacerbates investors' wariness to allocate credit. James Rothschild, head of the Rothschild bank's operations in Paris for much of the nineteenth century, wrote "it is the principle of our house not to lend money for war; while it is not in our power to prevent war, we at least want to retain the conviction that we have not contributed to it" (Ferguson 1999a, 91).

Countries unable to obtain credit face two difficulties if they prepare for war. First, states without credit will find it difficult to finance their military capabilities. Militaries are expensive; troops must be equipped and weapons must be procured. States unable to credibly promise debt repayment will find it difficult to acquire a suitable standing army (Allen and DiGiuseppe 2013). This is the case even if a state plans to rely on its tax base to finance a war. The ability to quickly extract taxes from the populace is also a key indicator for whether a state can finance a military. This holds whether the tax revenues themselves pay directly for the military or are used to pay back the debt used to fund the military. This, in turn, will enable the government to spend more on all resources, especially a military (DiGiuseppe 2015b).

Second, borrowing provides domestic political benefits when preparing for war. Since war taxation can erode popular support for wars (Flores-Macías and Kreps 2017), states that can borrow can stave off domestic discontent more so than states unable to borrow. Similarly, with credit access, leaders have more fiscal resources to either satisfy constituents' preferences or repress opposition (DiGiuseppe and Shea 2015; Clay and DiGiuseppe 2017; DiGiuseppe and Shea 2016). This is consistent with research that finds that creditworthy states are less likely to be domestically

constrained to initiate conflict (DiGiuseppe 2015a) and are more likely to fare well during wars (Shea 2014; Poast 2015; see also Zielinski 2016).

Without an ability to finance a standing army, it will be difficult for the country to fight a war. Even if leaders think it will be a “splendid little war,” as Secretary of State John Hay described the 1898 Spanish–American War, this is likely because the state already possesses the material and economic means to fight such a war. Indeed, the Spanish–American War illustrates how latent capacity can be quickly drawn upon to pay for a war. The active duty force of the United States quickly expanded, with the army increasing from 27,865 soldiers in 1897 to 209,714 soldiers in 1898 and the navy going from 11,985 sailors in 1897 to 22,492 sailors in 1898 (Rockoff 2012, 62–63). To help cover these costs, Congress, through the War Revenue Act, authorized the issuing of US\$50 million dollars (in 1898 prices) of debt.<sup>13</sup> The US government had little trouble financing the debt issuance, as subscriptions (offers to purchase the bonds) were seven times the amount of bonds put on sale (Rockoff 2012, 61).<sup>14</sup> The War Revenue Act increased consumption and banking taxes. The US Congress was able to acquire, largely through alcohol, stamp, and tobacco taxes, US\$100 million in tax revenue during the first year of the War Revenue Act and another US\$125 million during the second year (Rockoff 2012, 59). These revenues covered about 80 percent of the war’s costs and enabled the government to quickly retire the debt created by the war.

Given the economic and financial requirements of war, a country lacking credit resources should choose to avoid war. It may be difficult to observe all cases of states that lack financing also choosing to avoid war. This is because it is hard to distinguish states avoiding war from states not at risk of war. However, we can observe states conceding to the demands made by the adversary during a crisis. In this sense, the state will “select out” of war by backing down during crisis bargaining or avoiding crisis bargaining altogether. For example, France, due to fiscal and borrowing constraints, time and again allowed Germany to challenge the military and territorial status quo of interwar Europe. Kirshner (2007, 115) states how “the threat of capital flight reinforced the policy of appeasement.” A government critic observed:

Since many capital holders preferred to forget national priorities, and even national defense, for political reasons or out of self-interest, any government was condemned to a certain impotence. (Quoted in Kirshner 2007, 116)

France selected out of war with Germany in 1936 and 1937 in large part because it lacked the means to adequately finance its military.

All of the above leads us to expect that states likely to repay debt in the first place are *also* the states most likely to possess the means to fight a war. Relatedly, war abstainers should have a higher baseline likelihood of default: states with higher expected default rates will be more likely to avoid war because their financial health

will make it difficult to obtain the resources necessary to mobilize military forces. This discussion leads to our main hypothesis:

**Hypothesis 1:** States with higher (lower) expected default rates will be less (more) likely to enter a war.

This logic can also apply to conflict with lower levels of violence than war. On the one hand, if states do not have the financial capacity to sustain a war, then these states are more likely avoid low-level military engagements and crisis situations that may escalate to war. On the other hand, such states may make a demand in the hope of inducing concessions without actually seeing the crisis reach the point of war. In other words, states can bluff. Hence, a state facing financial constraints could enter a crisis but back down from its demands if concessions are not forthcoming from the target. From Germany's perspective during the 1936 Rhineland crisis, it too faced financial constraints that limited its military mobilization. However, Germany took advantage of European financial instability to press for its demands. Some believe that French resistance against Germany's remilitarization of the Rhineland in 1936 might have forced a German retreat (Ripsman and Levy 2007, 49). Hitler reportedly remarked that "[i]f France had marched into the Rhineland... we would have had to withdraw with our tails between our legs" (Quoted in Schmidt 1951, 320).

Even in the cases where states do begin fighting, financial constraints could induce an aggressor to sign a cease-fire before the fighting reaches the threshold of what scholars classify as a war. The Suez Crisis of 1956 illustrates that states can quickly exit a conflict, given financial insecurities. On October 31, 1956, Britain and France, in a joint operation, attacked Egypt in response to the nationalization of the Suez Canal. However, a run on the pound in the week following the start of the conflict jeopardized the solvency of the British financial system.<sup>15</sup> When Britain contacted the United States for financial assistance, the United States warned that Britain would receive no support from either the United States or the International Monetary Fund unless Britain withdrew its forces from Egypt. A senior British official noted that "[t]his was blackmail, but we were in no position to argue" (Quoted in Kirshner 1995, 69). On November 6, Britain withdrew its forces before it ran out of reserves. This military intervention failure was humiliating to Britain, revealing that Britain's military power was severely constrained by the vulnerabilities of the pound (Kennedy 1987).

States with higher expected default rates will be more likely to avoid conflict and crises, but may risk entering conflict in the hopes of inducing concessions through bluffs. However, if their bluffs are called, we expect that states with higher expected default rates will be less likely to escalate conflict. Poor financial health will make it difficult to obtain the resources necessary to carry out its threats. This leads to two additional hypotheses:

**Hypothesis 2:** States with higher (lower) expected default rates will be less (more) likely to enter militarized disputes and interstate crises.

**Hypothesis 3:** States with higher (lower) expected default rates will be less (more) likely to escalate militarized disputes and interstate crises.

States facing financial constraints may still enter a war or crisis anyhow. When this happens, such excursions should not be successful. Ferguson argues that the defeat of Austria (against Italy in 1859), France (against Germany in 1871), and the Southern Confederacy (against the United States in 1865) can be attributed to these governments being “less able to exploit new sources of finance.” However, if governments were losing wars because of a lack of cheap credit, it “did not prevent them from starting [wars]” (Ferguson 1999a, 89). States without the ability to attract finance do enter wars and crisis bargaining situations, but we expect that they will exit these wars and crises sooner than they otherwise would with credit access.

There are many reasons why states enter war and conflict, and it is not the aim of this article to examine these causes. But, all else equal, a state’s ability to acquire finance affects the probability of entering or avoiding war. In some respects, our explanation echoes the work of Chapman, McDonald, and Moser (2015). Seeking to explain major wars, they argue that governments, due to domestic distributional concerns, may have difficulty committing to the international status quo. For example, the Russian revolution of 1905 weakened the tsarist regime and forced it to share power (via the Duma) with the domestic opposition. Such power sharing, in turn, prevented the regime from acquiring the fiscal revenues necessary to arm. This was coupled with France restricting loans to Russia, thereby forcing Russia to seek a peaceful settlement to the Russo–Japanese war (Chapman, McDonald, and Moser 2015, 140). However, once fiscal stability returned to Russia in 1910 and access to French money markets reopened, Russia could not credibly commit to avoid selecting into a war, given its growing financial prowess. The fact that Germany and Austria–Hungary launched a preventive war before Russia could reach its full financial potential helps highlight our theoretical selection mechanism.<sup>16</sup> If states begin to reform their financial and fiscal policies for war finance purposes, then we may observe adversarial states pursuing preventive strategies to disrupt their enemies before they reach their full potential.

## **Empirical Analysis**

To explain the high rate by which war participants honor debts, we claim that states involved in wars are less likely to default in the first place. States must be perceived as likely to repay in order to obtain credit for war purposes, and only states with a low likelihood of default can accomplish this difficult task. To evaluate this claim, we examine whether default rates affect decisions to enter war. We then extend the empirical logic and examine default rates’ association with crisis onset and escalation.

## Research Design

We begin our empirical assessment by examining the relationship between default and war from 1816 to 2007. Our unit of analysis is the country-year.

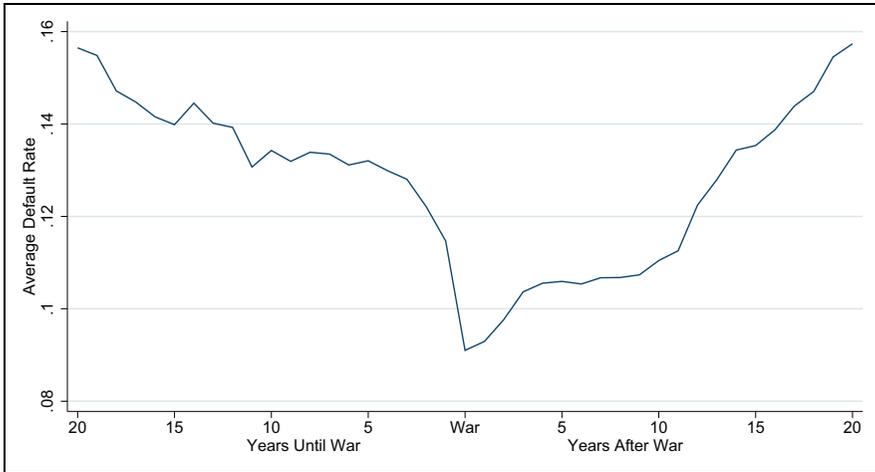
The dependent variable is *war participation*, a binary variable coded as 1 if a state is at war and 0 otherwise. War participation is identified using data from Reiter, Stam, and Horowitz (2015). We do not limit the analysis to war onset, given that our argument relates to states not only entering the war sample, but staying in the war sample as well.

Our main explanatory variable is a state's expected default behavior. Investors lend to states if investors believe states will repay debt obligations even in the face of war. While financial indicators may capture part of investors' calculations, those measures usually focus on a state's *ability* to repay, not necessarily a state's political *willingness* to repay. We expect that a state's previous default behavior will be indicative of its future willingness to repay debt. Default negatively affects a state's reputation in terms of its willingness to uphold future debt obligations (Tomz 2007). Indeed, states in default or recently in default face higher bond yields due to a higher perceived risk for future default (Tomz and Wright 2013). There are a number of ways to capture this concept. Previous research has used credit rating scores (DiGiuseppe 2015a), though these offer limited temporal coverage. Alternatively, bond-yield data partially capture default risk. However, bond markets often close during wars or a specific state's bonds are restricted from being traded during wars. This complicates the connection between bond yields and default risk during and after wars.

Given that our theoretical and empirical focus is on the relationship between war and default, we favor a measurement that is directly connected to default behavior. Thus, we measure our main explanatory variable using how much a state has defaulted in the past. We measure past default behavior by counting the number of years a state was in external default up until year  $t$ , and then dividing this number by the number of years the state has been in the sample up until year  $t$ . This measure should indicate how likely a state will default in the future and provide an observable signal to investors about the likelihood of default. We expect that higher rates of default will make it difficult for states to acquire credit, motivating these states to avoid entering war.

To provide an illustration, we plot, for the states in our sample that entered war, those states' average default rate as they approach war and after they leave war. Figure 1 shows that states nearing a war will have a lower default rate, with the most dramatic decrease starting at five years before the war.

While Figure 1 is suggestive, we want to provide a stringent, multivariate test of our argument. To that end, we include a series of covariates into a statistical model capturing the determinants of a state's default rate, and its proclivity of war. First, we include the state's *polity* measure to control for regime type (Marshall and Jaggers 2010). Some studies have identified regime type as an important indicator of war involvement (Goemans and Debs 2010) and there is a robust literature on the



**Figure 1.** Average external default rates for war states.

association between democracies and sovereign creditworthiness (Beaulieu, Cox, and Saiegh 2012). Polity is a 21-point variable, where a score of 10 indicates the highest level democracy and a score of  $-10$  indicates the most authoritarian autocracy. We rescale this measure by dividing by 10 (i.e., highest score is 1 and lowest score is  $-1$ ).

Next, we include a measure of military capacity, *capabilities*, which combines COW National Material Capabilities (version 4.0) data on energy, military troops, industrial production, military spending, and urban population. Given the left-skewed nature of this measure, we take its natural log. We expect that states with high levels of military capacity are better able to enter the war sample. It may also be the case that *capabilities*—given its components—are correlated with some latent economic development characteristic that explains a state's ability to repay debt.

We then include the *years since war* variable, which counts the number of years since a state's last war. Following Carter and Signorino (2010), we use the squared and cubed value of years since war to account for temporal dependence in our models (these coefficients are omitted from the results tables, as we treat them as nuisance parameters). A host of conflict research has shown that time since conflict is a consistent predictor for the probability of the next conflict. In addition, our theory leads us to expect that states constantly at war have incentives to avoid default.

Models including only *default rate*, *polity*, *capabilities*, and *years since war* represent our ideal specification, where we attempt to avoid overfitting (Achen 2006). However, given potential concerns about omitted variable bias, we identify additional control variables that account for a state's financial health and a state's baseline probability for war.

As part of our additional controls, we include an *inflation crisis* dummy variable indicating if a state experienced an inflation crisis in a given year. We code this variable using data from Reinhart and Rogoff's (2008).<sup>17</sup> We expect that an inflation crisis will make debt repayment more difficult, but it might offer states an alternative financing strategy with which to finance its war efforts, much like Nazi Germany in the 1930s.

We also include *urbanization* as a proxy measure for financial development, following Rousseau and Sylla (2005). To construct this measure, we divide a state's urban population by its total population, taking population data from COW. This variable also addresses the incentives some leaders have to default because of urban unrest and reliance on imported food (Ballard-Rosa 2016).

One additional financial indicator is the *global interest rate*, which is the bond yield on the lowest risk asset in the sovereign market. Following previous research, we use a combination of the British consol (1875–1913) and US ten-year bond yield (1914–2007) as the lowest risk asset (Shea 2014). We collected annual bond data from the *Global Financial Database* (*Global Financial Data* 2012). We expect that higher global interest rates will make debt repayment less likely, given the higher costs of credit, and also make war less likely, given the higher costs of borrowing.

We also identify covariates that tap into investors' risk assessment of the likelihood of war. Following Kirshner (2007), we expect that investors will be wary to lend to states with higher risk of entering a war. If investors withhold credit for this reason, it may make it difficult for states to service old debt obligations with new borrowing, resulting in default. We include a state's number of *rivals* (data taken from Klein, Goertz, and Diehl 2006). We also include the number of *territorial disputes* in which a state is currently involved, according to the ICOW dataset (Hensel et al. 2008). We expect that the more rivals and disputes a state has, the more likely it will enter war. Additionally, we include a systemic variable indicating the number of major powers in the system in year  $t$ . We expect that more major powers in the system increases the likelihood of global wars, which increases the likelihood that individual states get drawn into these major power wars.

### Selection Issues

One implication of our argument is that states that do not expect to enter war have less demand to borrow, do not accumulate debt, and thus may not appear in our default data sample. In other words, states that do not expect war may not bother to attempt to secure a loan and thus never have the opportunity to default. For these states, we cannot analyze their war participation behavior because these observations are omitted from the sample. Normally, selection bias related to the explanatory variable does not threaten statistical inference at least for the sample in question (Signorino 2002). The concern for our design is that the missingness of default data could be a function of states anticipating the outcome variable. Thus, the selection mechanism may be correlated with the dependent variable, which introduces bias.

Specifically, this selection bias may depress our estimates. We expect that the reason why certain states do not have debt and default data are that the investors deem these states to have too high of a default risk. According to our theory, if these same states do not expect to participate in a war, then they will not attempt to convince investors otherwise. Therefore, the states missing from our analysis have a high risk of default and low expectations of being involved in war. Not accounting for these states in the analysis would lower our estimates.

To address this problem, we use a two-step Heckman selection model (Heckman 1979).<sup>18</sup> We first model the probability of being in the default data sample: in this stage, states are coded 1 if they are found in the Reinhart and Rogoff's (2008) data (regardless of whether they are in default or not) and coded 0 otherwise. We then use the information from the first step to derive the Mill's inverse ratio, which is included in the second-step, or outcome, equation. In order to condition the selection effects in the outcome stage, the selection stage must include an instrument that predicts the selection stage dependent variable but is unrelated to the outcome stage. This ensures that the error term of the selection model is uncorrelated with the error in the outcome model (Greene 2002). We include *regional default* as our instrument, which measures the percentage of states in a state's region that have debt default data (according to Reinhart and Rogoff's [2008] data). We expect that a higher percentage of neighboring states that have default data increases a state's propensity to enter the debt market because of the neighborhood effects found by Brooks, Cunha, and Mosley (2015), but does not directly affect default behavior or war participation.<sup>19</sup>

To model the selection stage of the Heckman model, we include, in addition to our instrument, the following covariates from the outcome stage: Polity, urbanization, global interest rate, and years since war. We also include the COW measure for per capita iron and steel production—to proxy development—and iron and steel production changes—to proxy economic growth. We expect that higher values of these variables will make default less likely.<sup>20</sup> We present the selection stage results in the Supplemental Online Appendix.

### War Participation Results

Table 3 shows the results of our war models. Model 1 presents a sparse model with limited covariates and no Mill's inverse ratio to condition selection effects. The purpose of this base model is to demonstrate that our results are consistent with our theoretical expectations even without addressing selection effects. As expected, lower levels of default rates are associated with a higher probability of being at war. Model 2 shows that when our derived Mill's inverse ratio variable is included, the estimated negative effect of default rate increases. This change in the coefficient not only raises our confidence that selection effects are underlying our empirical model, but that these selection dynamics are consistent with our theoretical expectations.

Model 3 examines the robustness of our results with more controls that may affect both a state's default behavior and the probability of war. Including the additional

**Table 3.** Probit Regressions Examining War Participation.

	(1)	(2)	(3)	(4)	(5)
	Base model	Base model	All controls	Alternative default #1	Alternative default #2
	(no selection)	(selection)	(selection)	(selection)	(selection)
Default rate	-0.354* (0.174)	-0.585* (0.202)	-0.679* (0.208)		
Pr(default)				-0.305* (0.152)	
Pr(default onset)					-3.476* (1.534)
Polity	-0.027 (0.048)	-0.160* (0.053)	-0.101 (0.064)	-0.095 (0.055)	-0.110 (0.056)
Capabilities	0.114* (0.035)	0.099* (0.035)	-0.002 (0.036)	0.055 (0.040)	0.041 (0.041)
Time since last war	-0.110* (0.007)	-0.111* (0.007)	-0.104* (0.007)	-0.104* (0.009)	-0.104* (0.009)
Inflation crisis			0.062 (0.123)	0.065 (0.104)	0.067 (0.104)
ln(urban population)			0.470 (0.332)	0.601* (0.271)	0.508 (0.277)
Global interest rate			-0.153* (0.024)	-0.163* (0.033)	-0.144* (0.034)
Rivals			0.038* (0.011)	0.030* (0.011)	0.030* (0.011)
Disputes			0.001 (0.003)	0.002 (0.004)	0.002 (0.004)
Number of major powers			0.073* (0.025)	0.064* (0.027)	0.068* (0.027)
Mill's inverse ratio		-0.616* (0.129)	-0.123 (0.137)	-0.034 (0.143)	-0.052 (0.148)
Constant	-0.115 (0.093)	0.274* (0.139)	-0.457* (0.178)	-0.269 (0.255)	-0.351 (0.259)
Log likelihood	-1,237.7	-1,202.5	-1,130.5	-1,109.1	-1,108.5
Akaike information criterion	2,489.4	2,421.0	2,289.1	2,246.2	2,245.1
N	7,561	7,422	6,929	6,837	6,837

Note: Dependent variable is whether a state is in war in a given year (1) or not (0). Standard errors, clustered on country, are given in parentheses. For Heckman selection models (2–5), selection equation not shown (see Supplemental Online Appendix). Time spline coefficients are not presented in the table.  
\* $p < .05$ .

covariates does not change our inferences and even suggests a higher substantive importance for default behavior.<sup>21</sup> As expected, lower levels of past default rates are associated with a higher probability of being at war. Substantively, a change in the

default rate from the minimum value (0) to the maximum value (1) decreases the likelihood of war more than fourfold.<sup>22</sup>

Models 1–3 in Table 3 examine the effect of observable default behavior, such as default rates, on the likelihood of war participation. Alternatively, we can directly model a state's likelihood of default. We leverage the ability to use nonlinear models, such as probit regression, to generate predicted probabilities of an outcome. More precisely, we first estimate a model of default using a host of variables that the literature identifies as important for explaining default. Next, we can regress this model, acquire the coefficients on each of these variables, and use the coefficients to compute the latent likelihood of default. We can then plug this latent value into a probit function to acquire predicted probabilities of default for each observation, which we do for models 4 and 5 in Table 3.

To model the probability of default, we include several of the same variables discussed above: Polity, *iron and steel production per capita and growth*, urbanization, global interest rate, and years since war. We also add the variable *years since default* (and its squared and cubic values) and regional fixed effects. The dependent variable equals 1 if the state is in external default in year  $t$  and 0 otherwise. The values of the coefficients (and their level of statistical significance) are not of particular interest and so we report these results in the Supplemental Online Appendix. However, it is worth highlighting that all the coefficients in the outcome stage are in the expected direction and most attain the standard level of statistical significance. As explained above, the purpose of estimating the predicted probability is not to identify the relationship between default and any particular covariate, but to instead use the results from the model to acquire predicted probabilities of default for each country. Before doing so we evaluate the general fit of our model. We calculate that our model correctly predicts 91 percent of default outcomes. While this appears to be a reasonably high prediction rate, we also use Greenhill, Ward, and Sacks's (2011) proposed approach, the separation plot. We find that positive outcomes (i.e., states in default) are highly associated with higher predicted probabilities. A more detailed discussion of our separation plot and the corresponding figure can be found in the Supplemental Online Appendix.

Given the general fit and performance of the default model, we use the coefficients to generate the predicted probability of being in default for a given country-year. To verify our results, we also derive an indicator of the probability of default onset, rather than just being in default.<sup>23</sup> We include  $Pr(\text{default})$  and  $Pr(\text{default onset})$  in models 4 and 5 respectively in Table 3. We find that higher likelihoods of default and default onset are associated with a lower likelihood of war.<sup>24</sup> This is consistent with the central claim of the article that a selection mechanism is at play in war finance: states unlikely to default are more likely to select themselves into the war sample. To further demonstrate this finding, we compare the predicted probability of default across three groups of states: all country-years, country-years for states that never entered a war (which we designate as war abstainers), and the default rate for states the year before they entered war.<sup>25</sup> The results are reported

**Table 4.** Predicted Probabilities Default and Default Onset.

Sample	Predicted probability of default	N	Predicted probability of default onset	N
Full sample	.186	7,433	.037	7,433
War abstainers	.214	1,717	.054	1,717
War participants <sub>(t - 1)</sub>	.142	159	.022	159

Note: Difference between war participants and war abstainers is significant at  $p < .05$ . War abstainer is a state that has never entered war.

in Table 4. The predicted probability of being in default for the entire sample is .186. The predicted probability for default for war participants prior to war (measured in the year before a war began) is .141, which is noticeably lower than the predicted probability for war abstainers (.214).

The results in Tables 3 and 4 support our empirical expectations that states more (less) likely to default in the first place will be less (more) likely to enter a war. This finding has implications on the inferences we can make in war finance research, as our results demonstrate that the war sample is comprised of states who can credibly demonstrate their creditworthiness. States that cannot demonstrate creditworthiness, measured here through a state's default rate, avoid war and thus do not appear in the war finance sample.

### *Crisis Onset and Escalation Results*

If states likely to default avoid war, we expect that such states will also avoid crises and low levels of militarized disputes. If crises and militarized disputes cannot be avoided, we expect that these states will be less likely to escalate the crisis. To examine these expectations, we extend our analysis to alternative dependent variables, specifically to crisis onset and escalation. Since we expect that states' expectations of the probability of escalation affect their initial decision to enter a crisis (Reed 2000), we use a two-step Heckman model to address the potential selection effects.

To operationalize these dependent variables at each stage of the selection model, we use militarized interstate dispute (MID) data (Ghosn, Palmer, and Bremer 2004) and International Crisis Behavior (ICB) data (Brecher et al. 2016). For the MID data, the selection stage examines the likelihood a state enters a militarized dispute. The outcome stage examines the likelihood that the MID escalates to a fatal dispute, defined as at least twenty-five battle deaths, conditioned on the selection information from the first stage. For the ICB data, the selection stage examines the likelihood a state finds itself in a crisis. In the outcome stage, we model the proclivity for a state to use violence in response to the crisis, conditioned on the selection information from the first stage. Following Shea (2014), we use years since a crisis/MID as the

instrument, as this variable is associated with conflict/crisis onset, but not necessarily escalation outcomes. To ensure that the selection results are not dependent on peace years as an instrument, we use number of rivals, number of territorial disputes, and number of major powers in the international system as additional instruments.

We expect that (1) higher default rates will motivate states to avoid crises and low-level MIDs, and (2) if found in a crisis or MID, states with higher default rates will pursue strategies that avoid the use of fatal force. The results in Table 5 are consistent with our expectations. States with higher default rates are less likely to find themselves in crises and MIDs. Within the crisis and MID samples, states with higher default rates are more likely to avoid escalatory outcomes.

These results, coupled with the war participation results above, show a clear and consistent association between default behavior and conflict behavior. States likely to default will pursue strategies that avoid war. We observe that states likely to default are less likely to find themselves in militarized disputes and crises, are less likely to escalate or respond with violence if in a conflict, and thus are less likely to be at war. As a result, the states that we do observe at war, or in crises and militarized disputes, are a special sample of states. These states are less likely to default to begin with. This masks the true effect that war and conflict can have on a state's creditworthiness and default behavior.

This article focused on the monadic dynamics of default and conflict in an attempt to explain the puzzling fact that default is not common after wars. After demonstrating the importance of financial capacity to war, and given that states that are likely to default have incentives to avoid war, we can look to extend our logic to the dyadic, k-adic, or system level (Poast 2010). For example, states likely to default may be attractive targets to other, more creditworthy states.<sup>26</sup> However, these potential targets should realize their vulnerability is a function of financial capacity and either amend their strategy to avoid confrontation, begin to build up financial wherewithal, or pursue some type of security substitute, such as alliances (Allen and DiGiuseppe 2013). Alternatively, states that begin to build up their financial capacity to improve their creditworthiness may also become targets. Adversarial states have incentives to use preventive action against these credit improving regimes before the credit can be used for a military advantage. Consistent with this idea, Shea (2016) argues that military regimes are more likely to use sovereign credit toward military spending, prompting other states to use preventive military action to undermine the credit market's confidence in the military regime's creditworthiness. In sum, default dynamics have a number of strategic implications on international relations that should be examined in future research.

## **Conclusion**

A sovereign's credibility problem is no more apparent than when that sovereign promises to repay debt after a war. Evaluating default rates of war participants, we consistently find that war winners and losers, by and large, honor their debt. We argue that

**Table 5.** Selection Probit Model Examining Crises and MIDs.

	MIDs		ICB crises	
	Selection stage	Outcome stage	Selection stage	Outcome stage
	DV = In crisis	DV = Escalation	DV = In MID	DV = Escalation
	(1)	(2)	(3)	(4)
Default rate	-0.270*	-0.847*	-0.409*	-0.749*
	(0.08)	(0.25)	(0.20)	(0.38)
Polity	0.010	-0.141	-0.105	-0.218*
	(0.03)	(0.08)	(0.06)	(0.11)
Military capabilities	0.116*	-0.102	0.204*	0.154
	(0.03)	(0.08)	(0.05)	(0.14)
Inflation crisis	0.167*	-0.120	0.119	-0.228
	(0.05)	(0.13)	(0.08)	(0.18)
In(urban population)	0.092	-0.314	-0.213	-0.068
	(0.15)	(0.71)	(0.35)	(0.60)
Global interest rate	0.010	-0.200*	-0.021	0.069*
	(0.01)	(0.04)	(0.01)	(0.03)
Rivals	0.192*		0.040	
	(0.01)		(0.02)	
Disputes	-0.002		0.006	
	(0.00)		(0.01)	
Number of major powers	0.048*		-0.057	
	(0.02)		(0.03)	
Years since MID	-0.098*			
	(0.00)			
Years since ICB crisis			-0.086*	
			(0.01)	
Constant	-0.104	0.360	0.346	0.296
	(0.15)	(0.26)	(0.26)	(0.36)
Log likelihood	-3,607.0*	-1,244.4*	-1,216.2*	-266.5*
Akaike information criterion	7,240.0	2,504.8	2,458.4	548.9
N	6,981	2,518	4,650	405

Note: Standard errors, clustered on country, are given in parentheses. Mill's inverse ratio and time splines coefficients are not presented in the table. MID = militarized interstate dispute; ICB = International Crisis Behavior.

\* $p < 0.05$ .

this high rate of repayment compliance is due to a selection effect: states that lack the financial means to adequately borrow will avoid war. After offering some examples of the selection mechanism at work, we find that states entering war were, on average, substantively and significantly less likely to default compared to states that avoid war.

This article focused on a general relationship between war and default, treating war as a homogenous event. We suggest, however, that future research consider important conditional factors such as the costs of war, the issues related to the war, and the presence of rivals, major powers, democracies, and so on, in wars. Doing so will leverage the heterogeneity in the war sample. Alternatively, researcher may want to examine the relationship between sovereign default and other types of conflict events, such as civil wars (see DiGiuseppe, Barry, and Frank 2012, for related research).

Another aspect of our results that may warrant future consideration is explaining why some war winners and losers still default. We conjecture that a leader's discount factor explains the cases where postwar default does occur (either for winners or losers). Building from the claim in Tomz (2007) that sovereign default is largely compelled by considerations of reputation, if leaders no longer care about maintaining their reputation, then this increases their incentive to default. If the leader suspects that he or she will be removed from office after the war, then his or her incentive to maintain the sovereign borrowing reputation of the country is reduced. Similarly, new leadership may desire establishing an alternative reputation (as was the case after the Soviet takeover and subsequent repudiation of Western loans during World War I). Also, a leader's discount factor might be impacted by changes in domestic distributions of wealth after a war. Scheve and Stasavage (2012) argue that war can redistribute wealth throughout society, which may change leaders' political calculations on whether to default. Thus, wider distribution of wealth may make more people in society sensitive to the effects of default. Conversely, a wider distribution of wealth may make it harder to lobby the government to abstain from default.

### **Authors' Note**

Data and replication files are available online at <http://patrickshea.weebly.com/>. Please direct questions regarding replication to [pshea@uh.edu](mailto:pshea@uh.edu).

### **Acknowledgments**

The authors thank the participants of the ISA Annual Convention in Atlanta, GA; the Texas Triangle IR Conference in Austin, TX; the Michigan University Political Economic Workshop; and the Costs and Consequences of War Workshop at Cornell University. The authors also thank Sarah Nelson Bakhtiari, Jeff Carter, Terry Chapman, Matt DiGiuseppe, Mark Dinuccio, John Jackson, Sabrina Karim, Sara Kreps, Pat McDonald, James Morrow, Iain Osgood, Dan Reiter, Rachel Wellhausen, Scott Wolford, Alton Worthington, Paul Huth, and two anonymous reviewers for their helpful comments and suggestions.

### **Declaration of Conflicting Interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## Supplemental Material

Supplemental material is available for this article online.

## Notes

1. See DiGiuseppe (2015b) for more on the relationship between credit and military spending.
2. In the Supplemental Online Appendix and replication files, we also examine default in ties and other war outcomes, and this analysis does not change of our main conclusions.
3. An alternative source of data on default comes from Tomz and Wright (2010). However, this data set covers fewer countries and years as Reinhart and Rogoff (2008), leading us to lose about fifty or so war observations.
4. We are interested in general default, not just default on war loans.
5. Our results are robust to including both domestic default and inflation crisis events as defined by Reinhart and Rogoff (2008). These results are included in our Supplemental Online Appendix.
6. For example, we examine five years after the end of a war (see Supplemental Online Appendix). In addition, our qualitative analysis does not impose temporal restrictions on our coding and we still find that war outcomes are largely unrelated to default. Post–World War I Germany does not make our sample of cases in Tables 1 and 2 because Germany did not officially default on its external debt until 1932, thirteen years after the end of the war (Reinhart and Rogoff 2008).
7. We excluded defaults that started during a war or before the war. Theoretically, we are interested in how war outcomes affect default decisions; therefore, we do not code ongoing defaults.
8. For size of the war, we examine wars with more than two states involved. For intensity, we examine states with more than 10,000 battle deaths (data drawn from Sarkees and Wayman 2010), and for duration, we examine wars longer than two years. We also examine war initiators and war targets and find no differences in defaults. These results are found in the Supplemental Online Appendix.
9. Reparations payments were forced, as Germany did not end its occupation of parts of France until reparations were received. Debt repayments, on the other hand, were voluntary.
10. Russia in 1917 and 1918 are counted as two unique cases in Table 1, because it was involved in two separate wars.
11. This case presents an interesting counterfactual. If the liberal government had won the war and maintained control, it would have been geopolitically isolated in both trade and capital from Britain, France, and the Holy Alliance. It is difficult to infer how victory in this war would increase the likelihood of repayment compared to defeat.

12. The characteristics of the war, such as size, intensity, and duration, may affect risk, but these characteristics, along with war outcomes, may be difficult for investors to predict with high certainty.
13. This was passed on June 13, 1898, fifty days after the United States declared war on Spain on April 25.
14. Indeed, this enabled the US government to borrow US\$200 million, four times more than the requested US\$50 million.
15. The British claimed that this run was orchestrated by the United States (Kirshner 2007). While there was pressure on the pound immediately after the start of the war, the Federal Reserve Bank of New York exacerbated the pressure when it began to sell its reserves of pounds on November 5 (Kirshner 1995).
16. Given that much of the Russian war effort and prewar preparations, as they existed, were financed by loans backed by its French ally, it is not unfounded to argue that, absent the Franco–Russian alliance, Germany would have had less preventive motivation to attack Russia.
17. Reinhart and Rogoff (2008) define an inflation crisis as when a state experiences inflation over 20 percent.
18. We also estimate the models using the maximum likelihood Heckman technique and find similar results (see Supplemental Online Appendix).
19. We note that our instrument is a variant of an instrument used in DiGiuseppe and Shea (2016). As a robustness check, we use Tomz’s (2007) indicator of borrowing in the selection stage and limit our outcome stage to only states that Tomz has coded as active in the credit market. These results are similar to our main results and can be found in the replication materials. An alternative selection problem is states’ selection into the treatment (default). In this article, we address this problem by including confounders that we expect affect both default and the decision to enter war. We also directly model this selection process using a two-step Heckman selection model in the Online Appendix.
20. For robustness, we replicate our results, but restrict the covariates in the outcome stage to be exactly the same of the selection stage, except for the instrument and default rates. Often, Heckman selection models have the same set of covariates in both the selection and outcome stage except for the instrument. We deviate from this specification given that (1) default rates cannot logically explain selection into the default data sample, and (2) we want to include variables in the outcome stage that block other potential confounding factors (not just selection factors). While theoretically justified, if we mistakenly include or exclude the wrong variables from the selection stage, this can lead to inconsistent estimates (Wooldridge 2015). Our main inferences, however, do not change with this alternative specification (see Online Appendix). In addition, we use the Correlates of War measure of energy and The Maddison Project’s (2013) Gross domestic product measure and find similar results (see Supplemental Online Appendix). However, the use of these measures results in pairwise deletion of 10 and 20 percent of our data, respectively. Thus, we prefer iron and steel production.

21. We suspect that these additional covariates also help address the selection issues discussed above. The coefficient of interest in model 3 ( $-0.679$ ) and the coefficient in the same model omitting the Mill's inverse ratio ( $-0.649$ ) are similar.
22. We also examine alternative measures of our main explanatory variable, default rate. First, we measure the default rate as the number of years, limited to twenty, in default up until year  $t$ , divided by the previous twenty years (or shorter if the state has not been in the sample for twenty years). Next, we use the measure *Years since default*. There are no substantive differences in our results using these alternative measures. Results can be found in the Supplemental Online Appendix.
23. The dependent variable equals 1 if the state starts a default in year  $t$  and 0 otherwise. For years where default endures, we code these years as missing to avoid estimation bias (McGrath 2015).
24. Because these measures are estimates from another model, we bootstrap the standard errors in both models (Murphy and Topel 2002; Bernheim, Skinner, and Weinberg 2001) by conducting 500 with replacement replications of the two-step procedure to produce the standard errors.
25. We code a state as never entering a war if they never participated in any of the wars in Reiter, Stam, and Horowitz's (2015) war data set.
26. We thank an anonymous reviewer for pointing out this extension.

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