Pick Yourself Up? Examining Extreme War Outcomes and the Phoenix Factor

Brian Crisher
University of West Florida

Abstract:

Do all states that suffer defeats in a war enjoy a renaissance? The idea that states manage to relatively quickly recover from war defeats is known as the phoenix effect and is broadly supported in the literature. Yet most studies focus on the economic recovery of these states as opposed to their military recovery. However, the economic recovery of combatants should not be conflated with regrowth in fighting strength. Here I argue that states suffering extreme war defeats, known as absolute war outcomes, are less likely to recover militarily than states suffering more limited outcomes. I present a unique test of this argument through the use of hazard models to explore how absolute versus limited war outcomes impact the recovery of military might for those suffering defeat.

"*Pick yourself up, take a deep breath*
Dust yourself off, and start over again."
-- Song Lyrics by Dorothy Fields and Jerome Kern

Why are some states better able to recover from war defeats? States that suffer a defeat in war face different consequences. The consequences can range from returning conquered territory, war reparations, military power limitations, and even long-term occupation. In the twenty-first century alone, we have seen a range of war outcomes from Afghanistan and Iraq's occupations, to the loss of territory for Georgia, to the negotiated settlement in the latest skirmish between Armenia and Azerbaijan. While it is undoubtedly worth understanding variation in war outcomes, we also need a better understanding of the impacts of war outcomes on post-war recovery.

One strand of research has, somewhat tangentially, addressed the question of war recovery. Power Transition Theory (PTT), as laid out by (Organski and Kugler 1980), discusses the Phoenix Factor (PF). In short, the PF is the idea that states suffering a war defeat can recover their pre-war strength relatively quickly (in roughly 20 years). In other words, these states are reborn like the mythical Phoenix. Because states can quickly recover their strength and even exceed their victorious opponents, war is a poor option for dealing with rivals.

However, a problem with the PF is a lack of consideration for appreciating the variation in war outcomes – particularly defeats. Germany suffered a devastating loss in 1918, yet their loss in 1945 was far worse. Not all losses are created equal, and this will have an impact on war recovery. I argue that states suffering extreme outcomes such as state death or foreign-imposed regime change, known as absolute outcomes, will be far less likely to recover than states not suffering such outcomes. That there is variation in defeat suggests that some qualification is necessary when we discuss the PF.

The contribution of this paper is to explore the role of extreme war outcomes on war recovery. We can gain greater insight into war recovery by focusing on wars that are more likely to lead to extreme outcomes. Additionally, the paper emphasizes that there are multiple aspects to war recovery and that we should not necessarily equate economic recovery as military recovery. By bringing extreme war outcomes to bear on the PF, we can gain a more nuanced understanding of how states pick themselves up after a war defeat.

The paper proceeds as follows. First, there is a more in-depth discussion of the Phoenix Factor and how extreme war outcomes impact it. Then I discuss the research design and present the empirical analysis. Third, there is some discussion of case studies. Finally, I offer up some conclusions.

War Outcomes and the Phoenix Factor

The PF argument is straightforward. After suffering a war defeat, the vanquished can recover and even exceed its pre-war strength in a relatively quick fashion. (Organski and Kugler 1977, 1980) show how those defeated in WWI and WWII were able to recover their strength within 20 years of their defeat. This observation implies that war serves as an inadequate means of dealing with one's rivals. Likewise, Koubi (2005) has shown that the aftermath of civil wars experiences similar effects. However, Rasler and Thompson (1985) raise doubts about the impact of war on economic growth. More recent work by Kugler et al. (2013) has shown that the PF may apply mostly to more developed states suffering a defeat while lesser developed states will struggle more with their recovery.

There are two significant shortcomings with the argument of the PF, however. One shortcoming is defining the recovery of a defeated state's strength based on economic factors. For Organski and Kugler (1977, 1980), they evaluate the PF by tracking a state's GNP recovery after a defeat. Koubi (2005) focuses on economic factors, as does Kugler et al. (2013). By and large, economic recovery has been the primary focus of most research on the PF.

Yet should we evaluate recovery based solely on economic factors? The question speaks to a broader debate within the international conflict literature. There are typically two camps when it comes to measuring power. One camp defines state power using the Correlates of War composite index (CINC scores), and the other camp defines state power with mostly economic proxies. Both camps have issues, however. The CINC scores give equal weight to military, economic, and demographic factors for measuring power. The equal weighting is biased in favor of large and developing countries, resulting in China emerging as the most powerful state in the twenty-first century (Beckley 2018). The economic measures suffer from assuming that economic power equates to military power. Both are measures of potential military power rather than realized military power (Crisher 2017). Sousa, Oneal, and Park (1997) note that how one

measures power (GNP vs. GDP vs. CINC scores) impacts the evidence in favor of the ideas from Power Transition Theory from where the PF emanates.

If we return to the vanquished of WWII, we can see the weakness of focusing on power as economic growth. In particular, we can focus on West Germany and Japan. Because of the Marshall Plan, the two states could recover their lost economic might relatively quickly. In fact, using an economic measure of power would rank Germany in the top five of the most powerful states in the twenty-first century . Yet a story focusing on military recovery would be vastly different. Germany certainly has not come close to recovering even a small portion of its pre-WWII military strength. While Japan has become more militarily powerful in the last few decades, they are still well behind their pre-WWII strength. Additionally, Japan began its recovery well after the end of WWII.

Ultimately, the question comes down to questions about the nature of military conflict. Bombs and bullets kill enemy combatants. Shells and torpedoes sink ships. In short, while a healthy bank account is necessary for war, boots on the ground occupy territory (Mearsheimer 2001).[1] If a state lacks the means to destroy the enemy, it will no longer have the ability to prosecute a war (Slantchev 2004). Additionally, Blainey (Blainey 1988) argues that war is the primary way to settle disagreements of power between rivals. Hence, if the purpose of a given war is to neuter a rival's military might rather economic might, then the current state of Germany's military suggests that not every phoenix will rise following a war defeat.

Examining post-WWII Germany and Japan suggests an additional problem with the PF as set out by Organski and Kugler (1977, 1980). Not all defeats are created equal. Reiter (2009) classifies certain war outcomes as absolute war outcomes. These are extreme war outcomes that result in state death or foreign-imposed regime change. For instance, both Japan and Germany had an imposed regime change due to their defeats in WWII. More recently, Afghanistan (2001) and Iraq (2003) suffered a similar outcome in their wars against the United States. Crisher (2020b) argues that absolute outcomes can occur outside of wars involving major powers, as witnessed by North Vietnam's annexation of South Vietnam.

As such, we should take into consideration the war outcome when attempting to evaluate the PF. Wars that end with an absolute outcome are fundamentally different from wars that avoid

[1] See Slantchev (2012), Poast (2015), or Kreps (2018) for interesting discussions of war debt financing.

extreme outcomes. In other words, rather than treating all defeats as if they were the same – even defeats in great power wars – we should disaggregate these outcomes into absolute and non-absolute defeats.

In sum, we need to make two alterations to the PF. We should define power through military might rather than economic might. Additionally, we need to consider that absolute outcomes will result in different recovery times than non-absolute outcomes. Those suffering an absolute outcome are much less likely to recover in the fashion suggested by the PF. As such, I hypothesize that:

> Hypothesis 1: States suffering an absolute defeat will take longer to recover their pre-war military might than states that suffer a non-absolute defeat.

Research Design

Post-defeat state-year serves as the unit of analysis for this paper. Case selection involves selecting war participants that suffered a war defeat in the previous year. Both war participants and war defeat come from the Reiter and Horowitz (2016) war list covering inter-state wars from 1824-2003. War losers remain in the data set until one of three conditions is met: either they regain their pre-war strength, they enter into a new war, or they suffer a state death. Should a state lose a subsequent war, they begin a new period of potential restrengthening. The data set includes 113 unique war losers. The min and max for the counter are zero and 63, respectively.

Because of the structure of the data set, I use a discrete-time hazard model. Using a hazard model, we can model the time it takes for a state to recapture their pre-war military strength. Hypothesis 1 posits that absolute defeats will decrease the likelihood of a state ever recapturing past military strength. Using a discrete-time hazard model is acceptable with a binary outcome as long as the model controls for the baseline hazard rate.

Dependent Variable

The dependent variable for the analysis is a binary measure of whether a state recaptures their pre-war military strength following a war defeat. Here, a state's number of military personnel

divided by their total population defines military strength. The data for military strength and total population comes from the Correlates of War National Material Capabilities data (Singer, Bremer, and Stuckey 1972).

Admittedly, the measure of military strength is rather crude, yet it does capture a state's overall militarization level. Potential alternative measures suffer from more severe shortcomings. The Correlates of War CINC scores, a more traditional measure of power, is rife with problems and is better seen as a measure of military potential rather than actual military strength. Additionally, there are issues with the CINC scores' construction as it gives too much weight to demographic factors (Beckley 2018). Gross-domestic product is another alternative measure. Yet, as discussed above, the measure does not capture military power, and there would be data coverage issues for the 19th-century wars. One could use military expenditures as part of a potential measure, yet data coverage issues would again be problematic.

As such, *Reborn* is a binary measure that equals one when a state recaptures its pre-defeat military strength and zero otherwise. Organski and Kugler (1977, 1980) never officially defined the PF as complete restrengthening. However, their discussions imply that states can recapture and even exceed their pre-war strength. Hence, defining a state as reborn only after they rearm entirely makes sense.

Independent Variables

This analysis's primary independent variable is whether or not the defeat a state suffers is an absolute defeat. As Crisher (2020b) argues, absolute defeats are qualitatively different from non-absolute defeats, and it is necessary to gain a better understanding of the impacts of these war outcomes. Here, I use Reiter's definition of absolute defeats (Reiter 2009). *Absolute Defeat* is a binary measure that equals one if a state suffers as a state death or a foreign-imposed regime change in the previous war and zero otherwise.

In addition to the defeat's nature, the model includes control variables covering other aspects of the previous war. *Bilateral* is a binary variable that equals one for binary wars and zero for multilateral wars. Because an absolute defeat is unlikely for states fighting overseas (Crisher 2020), *Contiguous Fight* is a binary measure that equals one if a state is fighting at home (or in a neighboring state) and zero otherwise.

Two other controls capture the war loser's regime type and whether they suffered their defeat in WWII. *Democracy* is a binary measure that equals one if a state suffered their defeat while a democratic regime and zero otherwise. One could also argue that WWII's unique nature (greater emphasis on absolute outcomes) could impact any findings on war recoveries. As such, *WWII* is a binary measure that equals one if a state suffered their defeat in WWII and zero otherwise.[2]

While I am arguing that economic measures should not be the primary focus of a better understanding of the phoenix factor, we cannot ignore economics. Yet historical economic data is spotty at best. The National Material Capabilities measures contain data on energy consumption going back to 1816.[3] In the post-WWII era where economic data is much more plentiful, there is a strong correlation between GDP and energy consumption. Because of the high correlation with GDP, *Energy Consumption* will serve as the primary economic measure in the model.[4]

Lastly, because of the nature of the discrete-time hazard model, we must control the baseline hazard function. We add the time measures to account for the duration dependency. Assuming a constant hazard rate is problematic as observations per case in the data set is likely to lead to time dependencies (Box-Steffensmeier and Jones 2004, 74). Here, we deal with the duration dependency through two means. First, the model includes a series of time-period dummies.[5] Second, I create a more continuous measure of time by taking the natural log of the number of years since a state's last war defeat. Regardless of the baseline hazard function, the primary findings of the analysis remain unchanged.

Empirical Analysis

From H1, we would expect to see a negative and statistically significant coefficient for an absolute outcome in the models. In all models, we see that this is the case.[6] Regardless of the

[2] Here, I define WWII as beginning in 1939 and ending in 1945.
[3] While there are indeed missing data issues, this is less problematic here as war participants typically have better data coverage. See the appendix for discussions of missing data.
[4] Readers should note that Energy Consumption is the one time-variant variable in the model.
[5] There cannot be a dummy variable for each post-war year as the model cannot include time dummies for years where the dependent variable only equals zero.
[6] Note that in model 3, the coefficient on absolute outcome is significant at the 90% level.

functional form of the model or duration dependence form, the coefficient remains statistically significant.

The findings show that an absolute defeat decreases the likelihood of a war loser from experiencing a rebirth. By exponentiating the coefficient from model 1 to get the odd rations for the coefficient, we see that an absolute defeat decreases the likelihood of rebirth by a factor of about 0.4. However, interpreting an odds ratio that is less than one is difficult. By reversing the coding on the absolute outcome variable we can get an odds ratio greater than one. Reversing the codings shows that there is about a 55% higher risk of rearming when losers avoid an absolute outcome.[7] In other words, the impact of an absolute defeat on rebirth is statistically and substantively significant.

Figure 1 presents the results of Model 4 visually. Here we see how an absolute defeat impacts the likelihood of a rebirth as time passes after a war defeat.[8] One result to note is the decreasing likelihood of a rebirth as time increases for either type of war defeat. The negative and statistically significant finding of *Ln Time* would suggest. In other words, states that suffer a war defeat are likely to rearm relatively quickly and as time passes they are less likely to do so.

From the figure we can also see how an absolute defeat decreases the likelihood of a rebirth. Immediately after a defeat, a state avoiding an absolute outcome has about a 32% chance of immediately rearming. However, an absolute defeat decreases this likelihood to about 16%. Yet, overtime, the likelihood of a rebirth in either case decreases. Given enough time, whether a state suffers an absolute defeat or not has no significant impact on the likelihood of a rebirth.

In terms of the control variables, the only finding of note is energy consumption. In models 1 and 2, we see that energy consumption is having a negative and statistically significant impact on the likelihood of rebirth. As a state's energy consumption increases, they are less likely to rearm. The finidning is noteworthy as we would expect a positive relationship. Because of the expense of rearming, as a state's economic conditions improved they should be more likely to experience a rebirth. Yet models 1 and 2 show this is not the case. Note, however, that in models 3 and 4 the finding is insignificant when the baseline hazard is measured differently. As such, the finding is not robust.

[7] In other words, an absolute outcome would equal 1 and zero otherwise.
[8] Note that model 4 uses the natural log of time. So, in Figure 1, the x-axis is the log of time.

Discussion of Cases

Examining the fates of the primary losers of WWII helps to highlight the findings from Table 1. The Allies pursued unconditional surrender against Nazi Germany, and on September 2nd, 1945, this came to fruition. Germany's absolute defeat included occupation and the imposition of a new governing regime – in both East and West Germany. While West Germany benefited from the Marshall Plan for economic growth, its military growth was not as impressive. The Bundeswehr grew throughout the Cold War as the Americans hoped to bolster a more robust defense against any Soviet aggression emanating from East Germany. Yet West German never was able to regain the strength of pre-WWII Germany. Moreover, following the unification of Germany, the strength of the German military has steadily declined.

In comparison, the defeat of Imperial Germany in WWI, while devastating, did not reach the level of unconditional surrender seen at the end of WWII. Indeed, the Treaty of Versailles significantly limited the size of the Weimar Republic's military forces. Yet Nazi Germany under Hitler was able to begin rearming in defiance of the treaty in the 1930s. While Germany is not wholly reborn by Poland's invasion in 1939, they were able to recapture nearly 90% of their pre-WWI power and plunge the European continent into another catastrophe.

Japan suffered an absolute defeat in WWII as well, and much like Germany fell under Allied occupation. Economically, as the PF would predict, Japan could recover in short order in part due to the Marshall Plan. Their rapid recovery ensured that Japan would serve as a bulwark against communist expansion in Asia. The post-war occupation and peace amendment in the new constitution ensured that military recovery would be different.

Militarily, Japan has been strengthening since at least the 1960s. Crisher (2020a), in particular, argues that the size of Japan's navy has grown a great deal. Yet the overall size of the Japanese military has not grown significantly. In other words, while the quality of the Japanese military has increased, the overall militarization of Japan remains far short of the heydays of Imperial Japan. Additionally, while there is an increasing call for abolishing the peace amendment, it is still in place at this time. Even if Japan were to recapture their pre-WWII strength, the journey to do so would be well beyond that predicted by the PF.

Examining WWII's main losers seems like the low-hanging fruit for illustrating the impact of extreme war outcomes on war recovery. Yet other cases are illustrative as well. For

instance, compare the fate of Austria-Hungary in 1866 versus 1918. The Prussians decisively defeated the Austro-Hungarian Empire in the Seven-Weeks War in 1866. Yet Bismarck deliberately chose to avoid imposing an even harsher outcome in the war (Sturmer 2007, 22). Because they avoided an absolute outcome, the Austro-Hungarian Empire military might was reborn by 1875. Conversely, the end of WWI did not go as well for the Austro-Hungarian Empire as it suffered a state death and subsequently split-apart. Austria, the successor state to the empire, was unable to recover anything close to their previous military power and suffered an annexation at the hands of Nazi Germany with the Anschluss in 1938.

While it is easy to primarily focus on major powers (as the original PF did), we should remember that extreme war outcomes can occur when minor powers are involved (Crisher 2020b). For instance, in the War of the Triple Alliance of 1870, Paraguay suffered a devastating defeat at the hands of Brazil, Argentina, and Uruguay. As a result of the war, Paraguayan losses are estimated to be as high as 60% of the pre-war population (Izecksohn 2019). Additionally, they lost territory to Argentina and Brazil and fell under occupation. Paraguay's absolute defeat prevented the rebirth of its military strength for over 50 years when Paraguay emerged victorious in the 1930 Chaco War.

Egypt serves as another example of a minor power suffering differing fates dependent upon war outcome. In 1882, British forces intervened in Egypt during the Anglo-Egyptian War of 1882. The war resulted in an absolute defeat for the Egyptians as they came under British occupation for over fifty years. Because of the long-term occupation, Egypt could not regain its pre-war military strength - another phoenix that did not rise (or was at least considerably delayed).

Compare Egypt's failure to rise after the Anglo-Egyptian War to its fate after the various post-WWII wars. From 1949 to 1973, Egypt fought in no less than five wars. Egypt suffered defeats in the Arab-Israeli War (1949), the Suez Crisis (1956), Six-Day War (1967), War of Attrition (1970), and the Yom Kippur War (1973). Despite the impressive string of defeats, the Egyptians were reborn either immediately or in a few years. Here, again, we see how avoiding an extreme outcome gives states a better chance of recovering from a war defeat.

Of course, not all absolute defeats prevent states from quickly rising from the ashes. For instance, Iraq suffered an absolute defeat at the Americans' hands in the 2003 Iraq War. Yet the Americans helped the resulting regime recovery militarily in short order to help deal with the

rising Islamic insurgency in the region.[9] As another example, Cambodia suffered an absolute defeat at the hands of Vietnam in 1979 as the Khmer Rouge's reign came to an abrupt end. Nevertheless, Cambodia regained strength in relatively short order as fighting continued for another decade.

Discussions and Conclusions

Here, I have argued that we gain more perspective on a defeated state's war recovery by examining the nature of their defeat. States that suffer an absolute defeat are less likely to fully recover as opposed to state's avoiding such an outcome. There are implications here for how we imagine the Phoenix Factor. Rather than thinking of the PF in terms of economic recovery, we should focus on military recovery. Examining the PF through the lens of military recovery shows that not all phoenix's rise.

Going forward, the findings shown here suggest scholars should invest more time examining state's recovery trajectories after suffering a war defeat. There are multiple elements to recovery and we need to put more effort into linking variation in defeats to variations in recovery trajectories. Future research should begin to incorporate more microlevel analysis into the discussions to gain a more complete understanding of war recovery.

[9] Note that I am not necessarily arguing the quality of the Iraqi military is the same. However, the overall militarization of Iraq has recaptured pre-2003 levels.

Bibliography

Beckley, Michael. 2018. "The Power of Nations: Measuring What Matters." *International Security* 43(2): 7–44.

Blainey, Geoffrey. 1988. *The Causes of War*. New York: Free Press.

Box-Steffensmeier, Janet M., and Bradford S. Jones. 2004. *Event History Modeling: A Guide for Social Scientists*. Cambridge University Press.

Crisher, Brian. 2017. "Power and National Capability." *Oxford Research Encyclopedia of Politics*. https://oxfordre.com/politics/view/10.1093/acrefore/9780190228637.001.0001/acrefore-9780190228637-e-468 (November 10, 2020).

Crisher, Brian B. 2020a. "Ships Over Troubled Waters: Examining Naval Development in Asia." *Working Paper*.

———. 2020b. "Symphony of Destruction: Understanding Absolute War Outcomes." *Working Paper*.

Izecksohn, Vitor. 2019. "State Formation and Identity: Historiographical Trends Concerning South America's War of the Triple Alliance." *History Compass* 17(9): e12589.

Koubi, Vally. 2005. "War and Economic Performance." *Journal of Peace Research* 42(1): 67–82.

Kreps, Sarah. 2018. *Taxing Wars: The American Way of War Finance and the Decline of Democracy*. Oxford University Press.

Kugler, Tadeusz et al. 2013. "Demographic and Economic Consequences of Conflict." *International Studies Quarterly* 57(1): 1–12.

Mearsheimer, John J. 2001. *The Tragedy of Great Power Politics*. WW Norton & Company.

Organski, A. F. K., and Jacek Kugler. 1977. "The Costs of Major Wars: The Phoenix Factor." *The American Political Science Review* 71(4): 1347–66.

Organski, A.F.K., and Jacek Kugler. 1980. *The War Ledger*. Chicago: University of Chicago Press.

Poast, Paul. 2015. "Central Banks at War." *International Organization* 69(1): 63–95.

Rasler, Karen, and William R. Thompson. 1985. "War and the Economic Growth of Major Powers." *American Journal of Political Science* 29(3): 513–38.

Reiter, Allan C., Dan, Stam, and Michael C. Horowitz. 2016. "A Revised Look at Interstate

Wars, 1816-2007." *Journal of Conflict Resolution* 60(5): 956–976.

Reiter, Dan. 2009. *How Wars End*. Princeton: Princeton University Press.

Singer, J. David, Stuart Bremer, and John Stuckey. 1972. "Capability Distribution, Uncertainty, and Major Power War, 1820-1965." In *Peace, War, and Numbers*, ed. Bruce M. Russett. Beverly Hills: Sage, 19–48.

Slantchev, Branislav L. 2004. "How Initiators End Their Wars: The Duration of Warfare and the Terms of Peace." *American Journal of Political Science* 48(4): 813–829.

———. 2012. "Borrowed Power: Debt Finance and the Resort to Arms." *The American Political Science Review* 106(4): 787–809.

de Soysa, Indra, John R. Oneal, and Yong-Hee Park. 1997. "Testing Power-Transition Theory Using Alternative Measures of National Capabilities." *Journal of Conflict Resolution* 41(4): 509–28.

Sturmer, Michael. 2007. *The German Empire: A Short History*. Random House Publishing Group.

Tables and Figures

Table 1: Model Results

	Model 1	Model 2	Model 3	Model 4
	logit	cloglog	logit	cloglog
	period dummies	period dummies	ln(time)	ln(time)
Absolute Outcome	-0.936*	-0.879*	-0.876	-0.841*
	(0.443)	(0.413)	(0.451)	(0.412)
Democracy	0.123	0.067	0.138	0.128
	(0.613)	(0.524)	(0.562)	(0.500)
WW2 Dummy	-0.633	-0.588	-0.453	-0.450
	(0.554)	(0.512)	(0.567)	(0.515)
Bilateral	-0.357	-0.315	-0.355	-0.281
	(0.285)	(0.259)	(0.282)	(0.253)
Contiguous Fight	0.470	0.417	0.392	0.366
	(0.372)	(0.340)	(0.391)	(0.344)
Energy Consumption	-0.000*	-0.000*	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Period 1	-1.369***	-1.480***		
	(0.331)	(0.307)		
Period 2	-3.394***	-3.396***		
	(0.545)	(0.525)		
Period 3	-4.690***	-4.672***		
	(1.049)	(1.041)		
Period 4	-4.368***	-4.357***		
	(1.042)	(1.034)		

Period 5	-3.979***	-3.978***		
	(1.043)	(1.035)		
Period 6	-4.166***	-4.170***		
	(0.691)	(0.678)		
Ln Time			-1.213***	-1.142***
			(0.157)	(0.143)
Constant			-0.662	-0.865**
			(0.359)	(0.313)
N	1045	1045	1045	1045

Figure 1: Likelihood of being Reborn based on Model 4