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## A Modern Peace? Schumpeter, Conflict, and the Investment-War Tradeoff

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### **Abstract**

Drawing on the writings of Joseph Schumpeter, we develop and explore a new theory of international conflict. We outline a simple mechanism whereby industrialization fosters peace, suggesting that industrialized states are more peaceful because they can gain more by investing at home than by pursuing foreign military conquest. We borrow from Schumpeter to argue that our mechanism is distinct from traditional measures of liberalism. Empirically, we propose a measure of industrial development, based on a state's economic structure. Using World Bank sector-specific economic data, our exploratory analysis shows that a more industrialized economy significantly reduces the likelihood that a state will be involved in a fatal military conflict. We show that this result is robust across a number of model specifications and independent of both democracy and capitalism. We propose this as an interesting first step toward a broader research program on modernization and conflict.

“War is the business of barbarians.”  
— Napoleon Bonaparte

## Introduction

Recent decades have seen a precipitous decline in the onset of war ([Levy and Thompson 2011a](#); [Tertrais 2012](#); [Gleditsch and Pickering 2014](#); [Diehl 2016](#)). Some scholars have even declared that war—as it has been fought for centuries—no longer exist ([Smith 2007](#); [Mueller 2009](#)). This trend in armed conflict has prompted a debate among IR scholars on the causes of this decline ([Väyrynen 2013](#)): liberals attribute the drop in conflict to the spread of democracy, capitalism, and international organizations; constructivists argue that there has been a change in ideas and attitudes toward war in developed countries, particularly in the West; the realist camp is divided between those who claim that war has declined as a consequence of U.S. hegemony and traditional supporters of balance of power theory, who say that this trend in armed disputes is temporary and war will return as soon as a new challenger emerges.

In this paper, we address this phenomenon, arguing that the decline of interstate war over the last half-century is primarily due to the spread of economic modernization ([Gat 2006](#)). While the peaceful nature of modern societies has been stressed by numerous historical scholars (from Adam Smith to Saint Simon, from Auguste Comte to Herbert Spencer),<sup>1</sup> we focus on the writings of Joseph Schumpeter who most vividly stressed that the shift to a modern and industrialized mode of production would gradually eliminate interstate war ([Schumpeter 1955 \[1919\]](#)). To demonstrate the empirical plausibility of our argument, we examine the relationship between the likelihood of (violent) military disputes and one of the hallmarks of a modern society: its level of industrialization. Accordingly, we examine the size of nations’ industrial sectors, measuring the percentage of GDP from industrial endeavors during a given year. This allows us to distinguish, for example, between affluent primary commodity exporters and fully industrialized countries that generate wealth through manufacturing. Although we are not able to measure modernity directly, industrialization serves as a strong proxy for our concept of interest. In our analysis, across several models

and two units of observation, we find a robust, significant relationship between industrialization and peace.

The paper unfolds as follows. We begin by critically reviewing the scholarship on the decline of war, focusing on systemic, ideational, domestic, and economic explanations. Next, we outline our theoretical model, distinguishing it from previous research on domestic causes of peace, and propose a set of arguments that can shed light on the nexus between peace and industrialization. The next two sections are devoted to empirical analysis, which is conducted at both the monadic and dyadic levels. Finally, we draw conclusions and suggest some paths for future research.

## **The Decline of Interstate War: Competing Explanations**

The decline of interstate war has been hotly debated within the IR literature. Presently, there is significantly “more agreement on the phenomenon than on explanations” (Gleditsch et al. 2013, 399). Such explanations can be divided into roughly four approaches. First, systemic approaches tend to stress polarity, nuclear weapons, and international regimes. Neorealists argue that the Long Peace of Europe was due to the bipolar structure of the Cold War, reinforced by the presence of nuclear weapons (Gaddis 1986; Waltz 1993; Rauchhaus 2009). Some attribute the post-Cold War decline to American primacy (Wohlforth 1999; Thayer 2006; Baron 2014), while others claim that peace through unipolarity may simply be an illusion (Layne 1993) and that war will soon return (Grey 2005) with the rise of a new challenger (Mearsheimer 2001; Pfaff 2001). Liberal scholars, meanwhile, maintain that the presence of a benign hegemon shaped the post-World War II order by creating binding institutions (Ikenberry 2009) and that peace is attributable to the presence of collective security mechanisms (Kupchan and Kupchan 1991; Thakur 2006), the proliferation of multilateral institutions (Morgan 2006), or to increased peacekeeping operations (Fortna 2008; Goldstein 2011). However, none of these explanations is sufficient: institutions are not always effective (they did not prevent the United State from going to war with Iraq in 2003); polarity is neither sufficiently constant nor sufficiently variable to be an effective explanation; and the

nuclear peace cannot speak to dyads outside of the small subset of states belonging to the nuclear club (Holsti 2006).

A second group of normative and cultural views is more optimistic than its systemic counterpart. Building on Elias's (2000 [1939]) civilizing process, these authors stress that the waning of international conflict is part of a broader decline in violence (Pinker 2011; Muchembled 2012), reinforced by the horror of the two world wars (Mueller 1989). From this perspective, war is portrayed as a cultural phenomenon (Horgan 2012), an idea (Mueller 2009) that lost its attractiveness over time as a result of the proliferation of information (Payne 2004) and the spread of knowledge (Richards 2010). The current distaste for war—especially in the West—is undeniable, and these arguments convincingly stress that peace may be due to a change at the ideational level; however, they are unable to explain where these ideas, norms, and attitudes originate or how they relate to material factors (Levy and Thompson 2011b).

The third set of approaches relies on domestic politics explanations, arguing that regime type explains the decline of interstate conflict. The relationship between liberalism and peace—initially based on the so-called “Kantian tripod” (see Doyle 1983a,b)—has been at the core of the international relations research agenda for the last three decades, and has produced hundreds of studies, often supported by robust quantitative analyses (Hayes 2012). These works have resulted in a consensus that democratic countries do not fight each other (e.g., Maoz and Russett 1992; Bennett 2006) because they are constrained at a structural level by domestic costs (Gelpi and GelpiGriesdorf2001 2001), institutional checks and balances (Morgan and Campbell 1991), and the presence of veto-players (Choi 2011). However, proponents of peace through democracy tend to overlook the dangers of democratization (Ward and Gleditsch 1998; Mansfield and Snyder 2002). More importantly, they are unable to explain why Latin America and East Asia experienced a long period of peace in the second half of the twentieth century despite the presence of many hybrid and authoritarian regimes.

Only recently, due in part to the renewal of interest in the link between democracy and markets (Gleditsch 2008), has a fourth group of researchers shifted its focus away from politi-

cal liberalism and toward economics. These authors have stressed that both external openness and internal freedom can be important forces for peace (Schneider 2013). To some extent, this mirrors Rosecrance's (1986) "trading states" hypothesis, in that conflict among democracies can be impeded by free trade and globalization. Although the commercial peace (Souva and Prins 2006; McDonald 2007) has not been accepted uncritically (see Rasler and Thompson 2005), it has provided important results in terms of both explanations and dyadic effects. Relatedly, proponents of the so-called capitalist peace (Gartzke 2007) have stressed that countries with strong connectiveness among market actors have a normative tendency toward contractual exchange, giving them distinct preferences for cooperation over conflict (Mousseau 2009), and that states with less free markets tend to pursue more aggressive foreign policies (McDonald 2010). However, it is common for democracies to adopt capitalist economies (Choi 2011), which makes it difficult to disentangle the effects of regime type from those of the structure of the economy. Most importantly, if capitalism rests on private property in liberal societies, the peaceful behavior of state-led economies (like China) would remain unexplained. We argue that, while this final school of thought has made important strides, its focus on capitalism is too narrow, and that economic modernization can better explain the trend toward peace.

## **A Modern Peace**

In the early nineteenth century, philosophers and sociologists, including Saint Simon, Comte, Mill, and Tocqueville, were struck by the rise of the industrial society. According to Aron (1958, 4), these thinkers envisaged in their writings an era of "prosperity and peace" that would stem from the breakthrough of modernity. Limiting our observation to that century, these thinkers would have been correct: the 1800s saw the longest (1871–1914) and the second longest (1815–1854) periods of peace experienced in European history to that point (Gat 2006, 595). Then came 1914 and the First World War. Shortly after the slaughter of that war, Joseph Schumpeter (1955 [1919]) revisited this hypothesis, providing an explanation: European countries were industrializing, and this was

changing the material structure of the economy, leaving no more room for war. He claimed that this material change would also be reinforced by a broader transformation in cultural attitudes toward the very idea of war.

For this reason, Schumpeter explains the decline of war since 1945 particularly well. While other authors (e.g., [Angell 1909 \[2010\]](#); [Rosecrance 1986](#)) have advanced similar arguments,<sup>2</sup> Schumpeter alone provides a domestic, process-oriented explanation for the way in which industrialization would render war unprofitable (which is precisely what happened after the end of the Second World War), caused by a change in both material and cultural attitudes toward war, with the latter brought about by the former.<sup>3</sup> Indeed, adopting an economic interpretation of history, Schumpeter claims (like Marx) that the industrial mode of production determines the cultural superstructure; contrary to Marx, he argues that values do not adjust immediately to the new environment ([Schumpeter 1955 \[1919\]](#), 65, footnote 172). For this reason, war may still occur as an atavistic remnant of the past economic structure. However, as Schumpeter later wrote, “a purely capitalist world [...] can offer no fertile soil to imperialist impulses” ([Schumpeter 1955 \[1919\]](#), 69).<sup>4</sup> But why should industrial modernity promote peace?

The change envisioned by Schumpeter is, first and foremost, a socioeconomic, material change. He assumes that the shift to an industry-based mode of production changes people’s everyday lives, as they become “inevitably democratized, individualized, and rationalized”([Schumpeter 1955 \[1919\]](#), 68). This creates a new, economically-oriented leadership, whose interests and impulses tend to be profit-seeking and strongly anti-imperialist ([Schumpeter 1955 \[1919\]](#), 69-73). These rational attitudes filter down to the working masses, whose energies are fully absorbed by the new system of production, leaving little energy for war. According to Schumpeter, these socioeconomic changes have several important implications for foreign policy.

First, the government realizes that waging war is no longer profitable because industrialization alters its calculus ([Kaysen 1990](#)). Although war is profitable in agrarian societies, where land and resources are necessary for economic growth, industrialized societies grow by improving upon resources. In other words, the shift to industry would leave fewer states with a “concrete interest”

in waging war (Schumpeter 1955 [1919], 4). This tends to be particularly intense in modern societies, since industrialization may enhance the destructiveness of war (Biddle 2004), rendering it even less useful. Writing some years earlier, Norman Angell (1909 [2010]) noted this point, but failed to account for the broader cultural change that amplifies the distaste for war in the modern world.

Second, the government must gain support from these new, economically-oriented, politically-relevant, and nearly-pacifist social strata: an increase in the demand for labor raises “the economic level and social power of the workers, until this class [is] able to assert itself in a political sense,” while the new elite “compel[s] state policy to adapt itself to their needs” and “[fights] the former ruling circles for a share in state control, for leadership in the state” (Schumpeter 1955 [1919], 67).

Third, and relatedly, once industrialized, continuous investment is necessary to sustain economic growth. This is achieved through Schumpeter’s process of “creative destruction” (Schumpeter 1942), by which the state is further removed from the previous economic order. To sustain growth (a basic requirement for every industrialized economy), governments and entrepreneurs must reinvest profits in innovation. Political leaders also benefit, as they can extract more revenue from a richer society. Within industrialized economies, war threatens this virtuous mechanism of investment, innovation, profits, and taxes, rendering it materially unprofitable. Indeed, as North, Wallis and Weingast (2009, 23) have suggested, wealth creation in natural states usually comes from rent (exploitation of land, labor, and natural resources). Since the Industrial Revolution, however, with the shift to open-access societies, traditional sources of rent have gradually eroded and innovation itself has become a source of rent. Taken together, these changes suggest that there exists an investment-war tradeoff for industrialized countries: each dollar spent engaging in militarized conflict—regardless of the money devoted to overall military *spending*, which tends to increase as a state modernizes—is one dollar less to spend on the necessary activities of innovation and economic growth.

We would suggest that our Schumpeterian theory may explain diverse findings by realist scholars (e.g., Mearsheimer 2001, 63), “conquest pays” authors (Lieberman 1998),<sup>5</sup> and lateral pressure theorists (Choucri and North 1975), who claimed that industrialization may *increase* the likelihood



of war. We posit that their findings need not imply a link between industrialization and aggressive foreign behavior. While realists make the point that industrialized states are more capable of taking what they want, we note that highly-capable status quo powers can more easily signal their commitment to fight when challenged, deterring conflict. With respect to the cumulativeness argument, we would point out that the very nature of industrialization has changed as the shift “from smokestack to knowledge-based, high-technology production [...] has reduced the cumulativeness of industrial base” (Van Evera 1999, 115). Finally, we observe empirically that no developed country has seized another during the last sixty years, and we would argue that this is because industrial domestic resources (such as heavy industrial assets, industrial outputs, and machinery) have become less lootable and reusable. Therefore, contrary to the Leninist thesis, imperialist attitudes are simply the result of atavistic ideologies, which can remain powerful factors that fan the flames of conflict, even within relatively modern societies. For this reason, imperialist or expansionist ideologies may still emerge within modern states (Schumpeter 1955 [1919], 98). Indeed, such outdated ideologies were the primary motivations for the Second World War.

With the spread of industrialization throughout the world, we contend that the move away from profit-seeking warfare is due precisely to the effects of industrialization, which make the acquisition of additional territory unnecessary, changing the calculus of war and rendering it virtually obsolete from a material perspective (Gilpin 1981; Kaysen 1990; Gat 2006).<sup>6</sup> From this viewpoint, stressing industrialization, rather than capitalism or democracy, as a path for peace has several advantages. Contrary to the capitalist peace arguments, we do not explain peace through liberalism (e.g., the amount of private property or the level economic freedom). Rather, by focusing on industrialization, ownership of the means of production, be it by private entrepreneurs or the state itself, becomes irrelevant. Moreover, our explanation does not exclude either non-democratic states or states with centrally planned economies, so long as the economy is properly structured. In our view, this can explain important variations in conflict behavior across both liberal and illiberal regimes. Thus, we primarily advance a country-level explanation for the decline of war in the second half of the twentieth century: as a state develops its industrial capabilities, it becomes

less likely to involve itself in violent international conflict. Our first hypothesis is, therefore, a monadic one.

**Hypothesis 1.** *A state's level of industrialization will be negatively related to the probability that it participates in a violent international conflict.*

However, the most powerful explanations for international peace (the democratic and capitalist peace theories) operate at the dyadic level. In order to ensure that our results are not somehow driven by one of these mechanisms, it is necessary to analyze dyadic-level data as well. In so doing, we can account for the effects of joint democracy and joint capitalism in determining the role played by industrialization. It should be noted that, while dyadic theories employ a “weak link” argument, concerning themselves primarily with the lower of the two scores, an explanation that is grounded in monadic effects should focus on the greater of the two. In other words, dyadic explanations are effectively necessary conditions—both states must be democratic for democratic peace theory to hold—while monadic explanations are sufficient conditions—if either state has industrialized, then a modern peace should hold.

**Hypothesis 2.** *The level of industrialization of the more-heavily-industrialized state within a dyad will be negatively related to the probability that the dyad enters into violent conflict.*

## **Research Design**

We examine our hypotheses with two different units of analysis. As our first hypothesis is monadic, we look at all countries within the international system. Our second hypothesis requires a dyadic approach, and so we examine all politically relevant dyads.<sup>7</sup> After removing incomplete observations, our baseline datasets range from 1960–2007 and 1960–2002, respectively. While this is a fairly short period, relative to similar work, there are advantages to using a more compact era. In particular, when examining several centuries, an analyst must specify a single theoretical mechanism and set of empirical proxies for the entire period. Given the changing nature of the world and of international conflict, this can be difficult. By confining the analysis to a shorter era,

we increase the likelihood that our theory and measures are applicable across the entire period (see [Rosenbaum 1999](#)). We see this as an important advantage for our analysis.

For both the monadic and dyadic components of our study, we are interested in whether there is a relationship between industrialization and violent conflict. For this reason, our dependent variable takes a value of 1 if, during the year in question, the state or dyad becomes involved in a new dispute that results in at least one fatality, and 0 otherwise. We choose to restrict our analysis to fatal MIDs because our theoretical mechanism says nothing about the origins of disputes. Rather, it suggests that industrialization should reduce the likelihood of *violent* conflict. This operationalization is consistent with recent work on liberalism and peace (e.g., [Hegre 2000](#); [Mousseau, Hegre and Oneal 2003](#); [Gartzke and Weisiger N.d.](#)), and averts the problems associated with the reporting of many non-fatal disputes (see [Weeks and Cohen 2006](#)). Our measure of fatal MID onset comes from the Militarized Interstate Disputes dataset (v4.01) ([Palmer and Lane Forthcoming](#)).

Our primary variable of interest is the structure of a state's economy. This goes beyond development. Rather, we are interested in the types of endeavors in which the state is involved. In particular, we want to distinguish states who invest heavily in manufacturing and industry from wealthy "resource-rich states," who gain primarily from selling raw materials (and thus cannot profitably trade for them). We expect the behavior of these types of states to be significantly different. We operationalize this difference by looking at the contribution to each state's GDP by its industrial sector in a given year ([World Bank 2013](#)). Focusing on the value added by industry is important as industrialization is not only the purest measure of the level of modernization (generally considered the hallmark of every modern society), but also the most comprehensive (all modern societies—regardless of the presence of free markets or private property—have an industrial base).<sup>8</sup> While we concentrate on industrialization, we also include a measure of the size of the service sector, as this represents another facet of economic structure. In our monadic analysis, we use the appropriate measure for each country-year; in the dyadic section, because we theorize that the effect operates at the country level, we use the greater of the two states'

industrialization levels. With respect to the service sector, we use the size of the service sector for the state with the higher level of industrialization.<sup>9</sup>

At both the monadic and dyadic levels, we control for democracy, using Polity scores (Marshall and Jaggers 2002), and capitalism. In the dyadic case, we include both the lower score, measuring joint democracy (Dixon 1993), and the higher, which measures regime dissimilarity (Oneal and Ray 1997). There is much less of a consensus, however, about what constitutes capitalism. Scholars have offered a number of possible measures. Gartzke (2007) primarily defines capitalism in terms of market openness, as measured by the International Monetary Fund (IMF), which proxies for the degree to which the government engages in *laissez-faire* policies. McDonald (2010) takes a more direct approach to government involvement, examining the distribution of property ownership within a state, using IMF data on levels of governmental nontax revenue. Finally, Mousseau (2012) proxies for capitalist norms, using World Bank data on per capita life insurance contracts in force in each state. These measures all have their own merits as proxies for capitalism, and so we examine a number of different models, controlling for each measure in turn. This allows us to assess the robustness of our results, with respect to various operationalizations of a key concept. Studies of the capitalist peace, like those of the democratic peace before it, suggest that the theoretical mechanism is dyadic in nature. Therefore, we adopt the “weak link” approach here, as with democracy, using the lower dyadic capitalism score for each measure.<sup>10</sup>

In addition to economic structure, democracy, and capitalism, there are a number of other variables that potentially affect the likelihood of conflict onset. At the monadic level, we control for the size of the state’s service sector,<sup>11</sup> the state’s development (logged GDP per capita), military power,<sup>12</sup> major power status, total trade (in logged millions of U.S. dollars) in a given year, and whether the state was a nuclear power. At the dyadic level, in addition to controlling for the service sector size of the state with the larger industrial sector, we account for dyadic economic development, using the smaller (logged) GDP per capita for the dyad; the stronger state’s share of dyadic power; whether either state was a major power; whether the two states are contiguous (up to 25 miles of water); whether the two states were involved in an alliance; the total trade (in

logged millions of U.S. dollars) between the two states in a given year; and Gartzke's measure of UN voting similarity, using [Signorino and Ritter's \(1999\)](#) S-scores. Our trade measures come from the Correlates of War (COW) dyadic trade dataset ([Barbieri, Keshk and Pollins 2009](#)),<sup>13</sup> GDP comes from the Maddison project ([Bolt and van Zanden 2013](#)), and the remaining variables (unless otherwise specified) come from the Correlates of War project.

The second issue is one of temporal dependence: as peacetime progresses, states may become more or less predisposed toward peace, irrespective of the covariates included in the model. One method for treating temporal dependence is to use natural cubic splines to create a smooth function of time ([Beck, Katz and Tucker 1998](#)). This approach has two disadvantages. First, splines are unintuitive and are difficult to interpret. For this reason, the substantive effect of time is often unclear to the reader. Second, an appropriate implementation of the natural cubic spline requires the selection of an appropriate number and placement of knots, which is a challenging task, and one for which there is little clear guidance. The improper use of time splines can have a significant confounding effect upon statistical inference (see [Dafoe 2011](#)). For these reasons, we opt instead to use [Carter and Signorino's \(2010\)](#) cubic polynomial approach, which has been shown to provide results that are similar to optimally-implemented splines, while at the same time requiring fewer additional assumptions and being relatively easy to interpret.<sup>14</sup> We use  $t$  (time since the last fatal conflict),  $t^2$ , and  $t^3$  in all of the models below.

## Analysis

We are interested in determining both the monadic- and dyadic-level effects of industrialization. To this end, we examine a series of models at two different levels of analysis. We begin by looking at how economic structure affects the probability of fatal MID onset at the country-year level, and then move to an analysis at the dyad-year level.

[Table 1 about here.]

Table 1 provides the results from the state-level analysis. There are three sets of variables of

interest: industrialization, democracy, and capitalism. We note, first, that all three are correctly signed across the four models. Democracy, though correctly signed, attains statistical significance ( $p < .10$ ) in only one model. By contrast, both capitalism and industrialization show robust effects on the likelihood of conflict across our models. Industrialization does fail to reach significance when capital openness is included. However, the magnitude of the coefficient is consistent with the other models. Standard errors are larger, given the reduced time frame and number of observations.<sup>15</sup> We also see a significant and negative result for service sector, suggesting that, at the monadic level, shifts away from an agricultural economy generally reduce the probability of fatal conflict onset. Our results provide substantial support for our hypothesis, suggesting that the modernization of a state's economy is associated with peaceful behavior.

[Figure 1 about here.]

In addition to the statistical results, it is useful to examine substantive results. After all, statistical inference is a function of precision as well as importance. Thus, it is appropriate to look at the estimated effects of changes in industrialization, democracy, and the three capitalism variables, across our four models. Figure 1 displays the predicted probability of fatal conflict onset, as each of the variables changes from their (empirical) minimum to maximum values. The lines provide predicted values, while the shaded regions give 95% confidence intervals. In each case, we use [Hanmer and Kalkan's \(2013\)](#) method for calculating average variable effects.<sup>16</sup> Across each of the models, we see a clear decrease in the likelihood of conflict, as the level of industrialization varies.

In three of the four models, the estimated probability of conflict, with no industrial sector is around 0.1–0.15. In each case, the effect is convex, falling rapidly in the early phases of industrialization, and becoming less effective as it progresses. At very high levels of industrialization, we see average conflict probabilities around 0.005–0.015. The strong substantive effect of industrialization holds even in the capital openness model, where the variable failed to attain statistical significance. Capitalism shows similar effects, as we vary each of the indicators across its respective empirical

range, though the effect is never quite as strong as that of industrialization.<sup>17</sup> By contrast, the slope for democracy is relatively flat in each case, indicating especially small effects.

Our analysis at the monadic level provides significant support for our first hypothesis, and gives us confidence in the workings of our theory. It suggests that industrialization can play a key role in international relations. However, the democratic and capitalist peace theories are generally dyadic in nature. If our mechanism is at play on the international stage, then our results should be robust to a dyadic level of analysis, if we operationalize the variable appropriately.

[Table 2 about here.]

Table 2 displays the results from our dyadic analysis. Unsurprisingly, dyadic democracy fares better than monadic democracy. It is correctly signed across the four models, reaching significance in all but one. With respect to the capitalism variables, only one of the three—capital openness—attains significance at conventional levels ( $p \approx 0.096$ ), though all are signed correctly. Industrialization, meanwhile, is correctly signed and attains significance in all four models. This supports Hypothesis 2, and provides us with greater confidence in our theory, as it demonstrates that industrialization operates at both the monadic and dyadic levels.<sup>18</sup>

Our statistical results suggest that industrialization has a clear and robust effect on the likelihood of fatal conflict. We see fairly consistent effects for democracy, and little to no effect for capitalism. It is important, however, to examine not only the direction and precision of our estimates, but also their substantive magnitudes. We turn now to an analysis of the substantive results of Table 2.

[Figure 2 about here.]

The dyad-level substantive results are depicted in Figure 2.<sup>19</sup> A caveat to the substantive picture at the dyadic level is that we have relatively low probabilities and large confidence intervals. There is significant overlap across the three variables; however, we find relatively flat effects for both democracy and capitalism, with stronger effects for industrialization. For especially high values of

industrialization, we see near-zero predicted probabilities of conflict. This is consistent with the powerful effect of modernization theorized above.

Both the statistical and substantive results provide support for our hypotheses, demonstrating the impact that industrialization can have on the likelihood of fatal conflict onset. For democracy and capitalism, our results are split: only capitalism seem to affect on the probability of war at the monadic level, while democracy plays a larger role at the dyadic level. Industrialization, meanwhile, has a robust dampening effect at both levels of analysis, even when we control for various measures of liberalism. Taken together, this suggests that economic structure plays a critical role in explaining the conflict behavior of states.

## Conclusion

This paper began by proposing an explanation for the decline of war, rooted in the writings of Joseph Schumpeter. We argued that modernization can have a pacifying effect upon a state's foreign policy, providing an initial exploration of this concept, using industrialization to proxy for modernity. Our analysis demonstrates that this argument is consistent with the historical record. Over the period analyzed here, states with higher levels of industrialization were less likely to become involved in fatal militarized disputes than were their less-heavily-industrialized counterparts. These results suggest that the “conquest pays” argument (applied to industrialized societies) does not hold, at least over the last fifty years. More importantly, our hypotheses are borne out at both the monadic and dyadic levels, even when controlling for political and financial liberalism. This suggests that industrialization has an effect independent of liberalism (in both its democratic and capitalist variants), and may explain recent shifts to more peaceful foreign policy by authoritarian powers, such as China (see [Kurlantzick 2007](#)). Furthermore, unlike democratization, from which it is easy to backslide into authoritarianism (as has occurred repeatedly throughout Pakistan's history, for example), states that have industrialized tend not to revert to pre-modern, agrarian societies (see [Huntington 1971](#), 290).



Although our results are robust, they come with some important caveats. First, our Schumpeterian argument is not that development will lead inevitably to a complete cessation of international conflict. Rather, the shift to industrialization produces both material and immaterial changes that, in turn, reduce the *incentive* to wage war. From a material point of view, the spread of industrialization—especially high-tech, knowledge-based industrialization—has rendered war unprofitable in more general, rational terms. From an ideational point of view, the permanent shift to a more modern economy, according to Schumpeter, brings a persistent change in attitudes toward war. What is important is that culture does not adjust immediately to the new socioeconomic environment. Atavistic ideologies—reflecting the old agrarian structure—can remain powerful factors that fan the flames of conflict, even within relatively modern societies. Nonetheless, modernization should reduce the prevalence of conflict, and given that nearly every state on earth has at least begun the process in the last half-century ([Inglehart 1997](#), 18), the decline of war would not have surprised Schumpeter.

Although examining the causes of the two world wars is beyond the scope of this paper, the lack of peace in early-twentieth-century Europe initially seems puzzling. However, we suspect that nationalist ideologies that pushed countries to arms in the Great War, and especially the Axis Powers and Bolshevik Russia in the Second World War, can be characterized precisely as atavistic remnants of a pre-industrial past ([Taylor 1951](#), 550).<sup>20</sup> In his discussion of the rise of modernity, Raymond Aron shares this view, claiming that industrialization can explain the course (i.e., destructiveness) and results of “the Thirty Years’ War” (1914-1945), but not its causes ([Aron 2009](#), 471).

Finally, we acknowledge that this study is a first investigation into a new theory, using a single variable to proxy for a much broader concept. While our analysis demonstrates plausibility, much remains to be done. For example, that the shift to an industrial-based mode of production is often accompanied by other socio-economic processes that may confound its effect: industrial states trade more with each other, and industrialization requires an increase in literacy and education levels, which in turn may give rise to stronger democratic institutions. All of these factors may

simultaneously work to produce peaceful attitudes among nations. Most importantly, we should seek a measure to capture modernity more broadly. While industrialization is, in fact, a key component of a modern society, it is far from the only one. In order to assess our theory more clearly, it is necessary to find a variable that takes into account all aspects of modernity. Indeed, the material roads to peace fostered by industrialization may give way to immaterial causes. Some preliminary evidence for such a shift is that, although both material and immaterial factors remain important today, the most common motivations for fighting have changed considerably since the Industrial Revolution: material issues (territorial and economic reasons) have waned, while immaterial issues (ideological, human sympathy) have waxed (Holsti 1991; Freedman 2005). Testing this hypothesis is an important next step in this research program.

As a plausibility probe, the analysis in this paper inspires confidence in our research program. There appears to be a strong potential relationship between modernity and peaceful international behavior. We implore scholars to explore this concept more broadly, as we believe it offers a number of potential benefits. If, indeed, it is the case that modernization is related to peace, then our theory provides policymakers with an attractive and useful option for engaging hostile, pre-modern states. By fostering development in these regions, policymakers can provide otherwise-hostile nations with an investment-war tradeoff, in which they can profit most by choosing economic development.

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## Notes

<sup>1</sup>Aron (2009) provides an excellent discussion of these works.

<sup>2</sup>Contrary to Angell, Schumpeter argues that war should also disappear for immaterial (cultural) reasons. Contrary to Rosecrance, he identifies domestic causes for peace, which can have both dyadic and systemic effects.

<sup>3</sup>There are strong parallels between Schumpeter and Kant (1970 [1795]), who stated that the war would disappear as soon as the constitution of *every* country became republican.

<sup>4</sup>Following the interpretation by Aron (2009) and Blokland (2006), we argue that Schumpeter's concept of modernity was particularly concerned with industrialization, rather than private capitalism.

<sup>5</sup>Brooks (1999) argues that Liberman's evidences may be influenced by selection bias.

<sup>6</sup>A similar phenomenon has been observed by civil war scholars, who argue that a country's level of economic development (Fearon and Laitin 2003; Jakobsen, de Soysa and Jakobsen 2013) and growth, along with the presence of (lootable) natural resources (Collier and Hoeffler 2004; Boix 2008; Ross 2012) plays an important role in the likelihood of civil war onset.

<sup>7</sup>The rationale for restricting the sample only to politically relevant dyads has been discussed in depth within the literature (see, e.g., Maoz and Russett 1993; Choi 2011).

<sup>8</sup>Kohli (2004), for example, argues that, since 1945, most emerging economies have been state-driven, and that state-directed development follows at least three paths: neopatrimonial, cohesive-capitalist and fragmented-multiclass.

<sup>9</sup>Within our data, a state's industrial, service, and agricultural variables will always sum to 100. The agricultural sector serves as the omitted category. Thus, the marginal effect of either variable, holding the other (and total GDP) constant, suggests a redistribution of GDP away from agriculture and toward the category in question. This helps us to examine modernization and economic structure directly.

<sup>10</sup>Our three measures of capitalism come from the three authors' datasets, and their inclusion reduces our time ranges to 1977–2000, 1969–2001, and 1960–2005, respectively.

<sup>11</sup>We omit the agricultural sector because it would be perfectly collinear with the sum of the industry and service sector sizes.

<sup>12</sup>Because the conventional indicators of material capabilities (composite CINC scores) are likely strongly related to industrialization, we opt to use Phil Arena's (2016) M-score measure, which uses some of the CINC components but avoids the connection to industrialization, and possesses greater face validity. Arena computes the scores using the formula  $M = \ln(\text{milper}_{it}) \left( \frac{\ln(\text{qual}_{it})}{\delta_t} \right)$ , where *milper* is the military personnel component for country *i* in year *t*, *qual* is the ratio of military expenditures to personnel for country *i* in year *t*, and  $\delta_t = 2.2^{((\text{year}-1700)/100)}$  is a time-varying discount factor. The data were retrieved from <http://filarena.weebly.com/data.html>.

<sup>13</sup>The COW trade data contain a significant number of missing values (in our baseline dyadic data, 57% of otherwise-complete cases are missing). Following Gleditsch (2002) and others, we replace missing values with zeros. Our results are robust to employing multiple imputation instead.

<sup>14</sup>Our results are robust to the use of splines.

<sup>15</sup>Gartzke provides capitalism data only through 1992.

<sup>16</sup>Hanmer and Kalkan suggest averaging across all values in the data, which provides the average effect in the population, rather than the effect for a particular case.

<sup>17</sup>Confidence intervals, of course, overlap. However, the predicted slope is steeper for industrialization in each case.

<sup>18</sup>Significant effects for the service sector are notably absent. Interestingly, this is not because the variable is conditional on the more industrialized of the two states. Models using the service and industrial sectors of the more service-oriented state showed no effect for the size of the former and weak effects for the latter.

<sup>19</sup>Although our analysis uses all dyads, we plot average effects across politically relevant dyads, given the already-low likelihood of conflict.

<sup>20</sup>The same can be said for Maoist China, whose attitude toward war has changed since Deng Xiaoping's reforms.

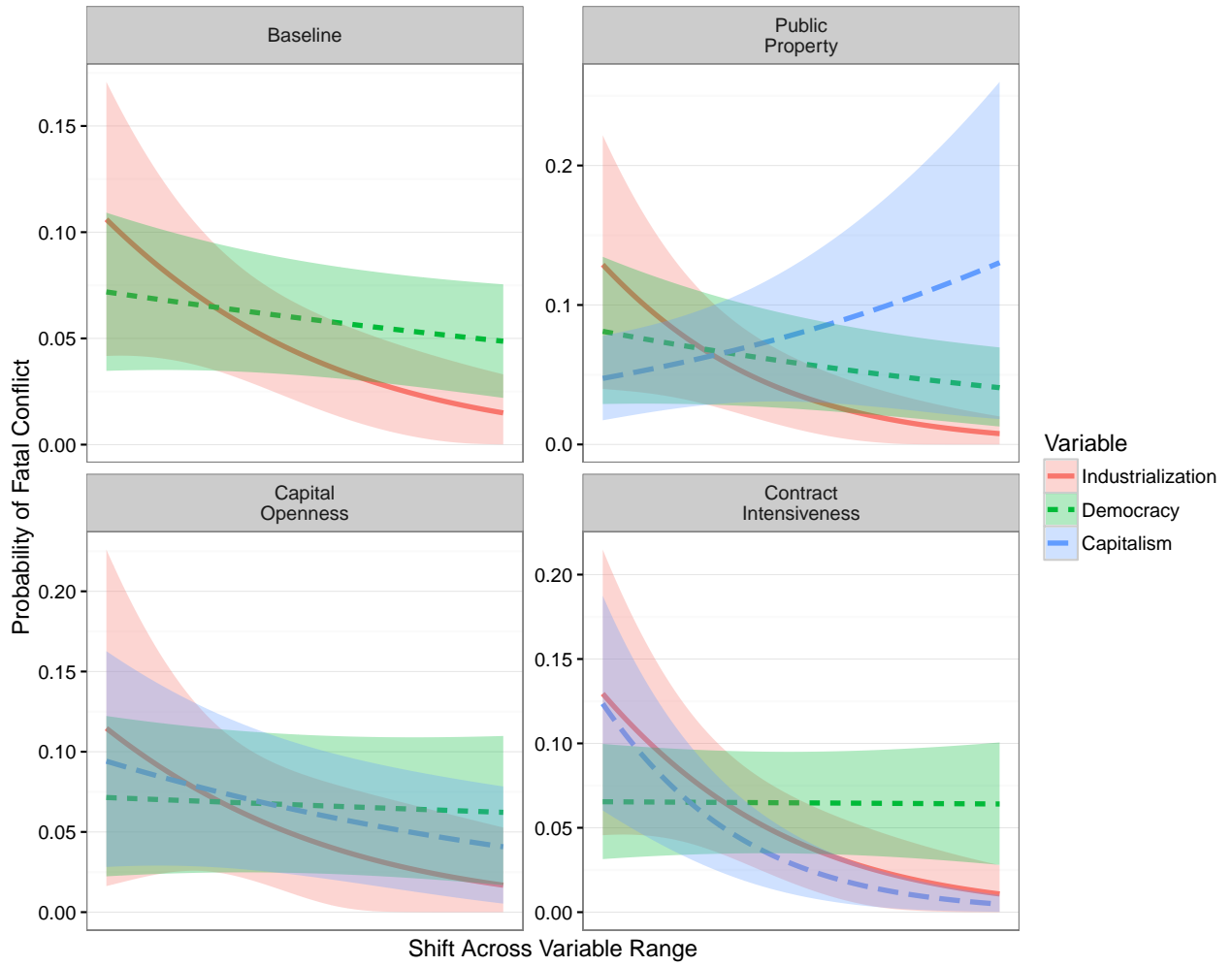


Figure 1: Monadic effects of industrialization, democracy, and capitalism

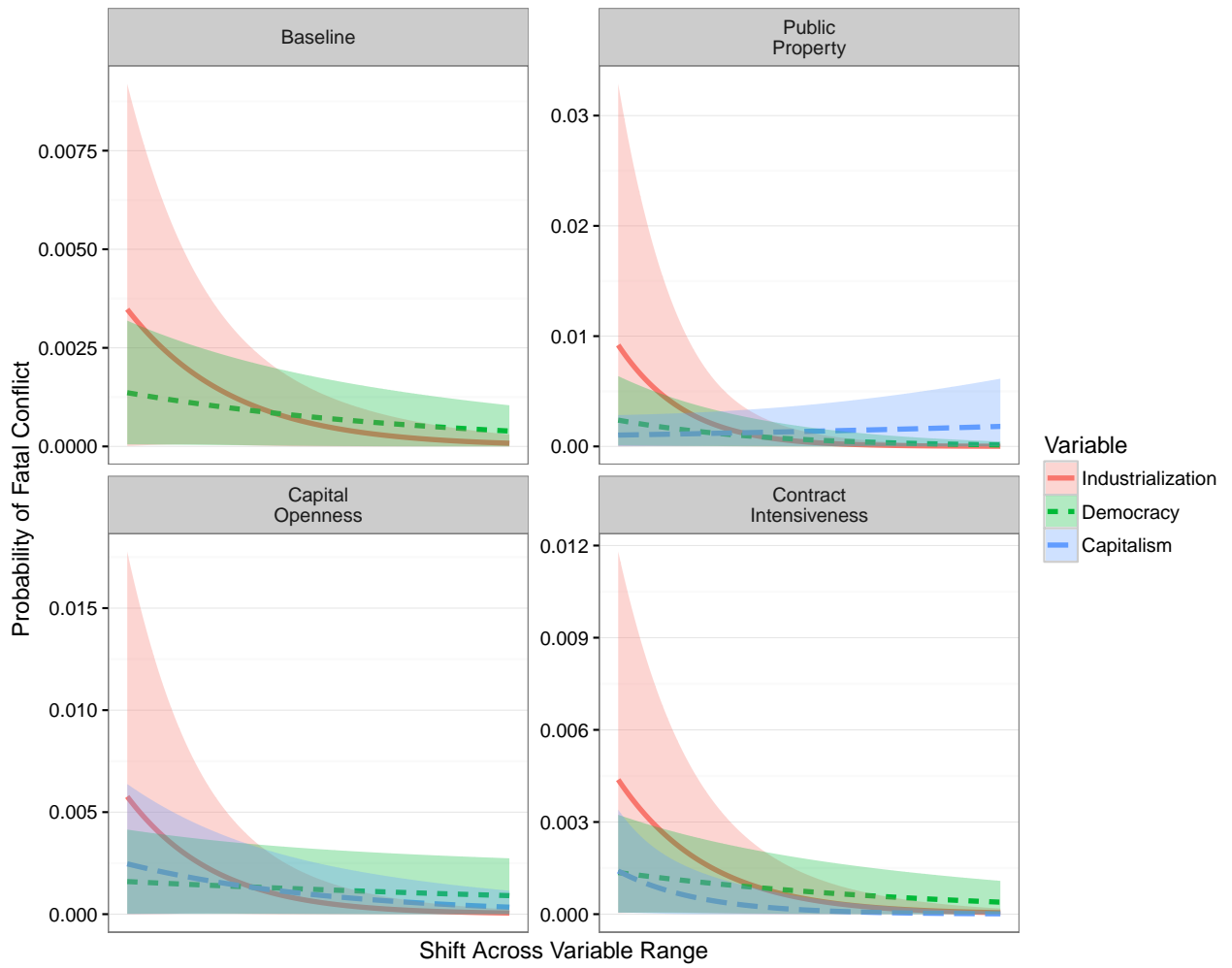


Figure 2: Dyadic effects of industrialization, democracy, and capitalism

	Model 1 (Baseline)	Model 2 (McDonald)	Model 3 (Gartzke)	Model 4 (Mousseau)
Industry	-0.03** (0.01)	-0.04*** (0.01)	-0.03 (0.02)	-0.04*** (0.01)
Service	-0.04*** (0.01)	-0.03** (0.01)	-0.02 (0.02)	-0.02** (0.01)
Polity Score	-0.02 (0.02)	-0.04* (0.03)	-0.01 (0.02)	-0.00 (0.02)
GDPpc (logged)	-0.23 (0.18)	-0.09 (0.29)	-0.37 (0.34)	0.18 (0.20)
M-Score	0.26*** (0.09)	0.28** (0.12)	0.34*** (0.12)	0.33*** (0.09)
Major Power	-0.11*** (0.03)	-0.12*** (0.04)	-0.03 (0.04)	-0.07*** (0.03)
Trade (logged)	0.14* (0.09)	0.11 (0.14)	0.16 (0.15)	0.16* (0.09)
Nuclear Power	0.12*** (0.04)	0.16*** (0.04)	0.09* (0.05)	0.10*** (0.03)
Public Property		0.01* (0.01)		
Capital Openness			-0.15** (0.07)	
Contract Intensiveness				-0.46*** (0.09)
Constant	0.62 (0.86)	-0.49 (1.46)	1.10 (1.33)	-2.30** (1.04)
Number of observations	3853	1919	1845	2875
Log-likelihood	-756.73	-330.55	-373.72	-573.25

Robust standard errors, clustered on state in parentheses.  $t$ ,  $t^2$ ,  $t^3$  not shown.

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ . All tests are two-tailed tests.

Table 1: Results of monadic analysis

	Model 1 (Baseline)	Model 2 (McDonald)	Model 3 (Gartzke)	Model 4 (Mousseau)
Industry <sub>H</sub>	-0.05** (0.02)	-0.09* (0.05)	-0.06** (0.03)	-0.06** (0.02)
Service <sub>IndH</sub>	-0.01 (0.02)	-0.00 (0.03)	0.00 (0.02)	-0.00 (0.02)
GDPpc <sub>L</sub> (logged)	-0.00** (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
M Ratio	-0.93 (1.40)	-3.14 (2.02)	-1.12 (1.82)	-0.69 (1.49)
Major Power	0.80 (0.56)	1.96* (1.14)	1.92** (0.88)	0.92 (0.65)
Polity Score <sub>L</sub>	-0.06** (0.03)	-0.15*** (0.03)	-0.03 (0.04)	-0.06* (0.04)
Polity Score <sub>H</sub>	0.03 (0.04)	0.08 (0.08)	0.02 (0.05)	0.02 (0.04)
Contiguity	2.81*** (0.64)	2.42** (1.04)	1.87** (0.91)	2.69*** (0.65)
Alliance	0.38 (0.41)	0.69 (0.53)	0.75 (0.47)	0.34 (0.44)
Dyadic Trade (logged)	0.14 (0.11)	0.05 (0.12)	0.11 (0.12)	0.16* (0.09)
Affinity	-1.02 (1.51)	-0.79 (2.82)	1.55 (2.83)	0.22 (1.57)
Public Property <sub>H</sub>		0.01 (0.01)		
Capital Openness <sub>L</sub>			-0.26* (0.15)	
Contract Intensiveness <sub>L</sub>				-0.60 (0.40)
Constant	-2.37 (2.72)	-0.44 (5.13)	-3.04 (4.82)	-3.56 (3.01)
Number of observations	272682	121349	125638	230129
Log-likelihood	-332.24	-108.19	-162.78	-279.50

Robust standard errors, clustered on dyad in parentheses.  $t$ ,  $t^2$ ,  $t^3$  not shown.

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ . All tests are two-tailed tests.

Table 2: Results of dyadic analysis