

# A THEORY OF ECONOMIC INTERDEPENDENCE AND WAR

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## **Abstract**

What are the causes of hegemonic wars among interdependent great powers? We argue that an economically dependent challenger faces a hold-up problem, when deciding whether to engage a hegemon peacefully. The hegemon cannot commit to offer generous terms of peace, given its domination of the international political economy. War may be inevitable when the inefficiency of peace created by the hold-up problem is greater than the cost of war. The inefficiency of peace increases with the dependence of the challenger. This argument explains why a challenger may go to war, even if it expects its relative power to rise if peace prevails. It counters the long-held view that only declining states have incentives for fighting. We use our theory to provide a novel account of the deep causes of World War II in Europe and the Pacific.

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## **1. Introduction**

When does economic interdependence lead to war? The effect of interdependence on conflict has generated much debate (Keohane and Nye 1977; Barbieri and Schneider 1999; Mansfield and Pollins 2003). Yet, none of the existing arguments on how economic interdependence may undermine peace accounts for the puzzle that war is costly and therefore not a rational option when an available peaceful bargain would leave neither state worse off (Fearon 1995). To explain how economic interdependence may rationally lead to war, we need to understand how it may prevent states from finding an efficient peaceful settlement. Rationalist scholarship on causes of war, however, has thus far been unable to provide an account of how interdependence may produce war. This inability stems from its conceptualization of states as bargaining over a fixed, exogenously determined outcome. Since interdependence may increase the aggregate wealth at states' disposal, however, to capture its effect on conflict states must be conceptualized as bargaining over an outcome that depends on their own decisions about economic interaction. In short, to understand how interdependence may cause war we need a richer conceptualization of peace.

This paper introduces a novel framework aimed at understanding how economic interdependence produces war. By allowing states to bargain over the fruits of their economic interaction rather than over a fixed outcome, we provide an account of how two economically interdependent states may rationally end up at war. Specifically, our theory accounts for how a weaker, economically dependent state may resort to war against an economic hegemon in order to further its economic interests. Our argument starts from a simple premise: in the anarchic international environment, an economic hegemon has the wherewithal to extract much of the benefit of economic interactions for itself. This may prevent weaker states from using their available resources in an optimal way, undermining their economic growth. Although war is costly, victory might allow a weaker state to extend its control over (input and output) markets that would enable it to allocate its resources in a more efficient way, resulting in faster economic growth. The greater the gain in economic efficiency brought by victory in war, the higher the likelihood of conflict.

By providing an account of how an economically dependent challenger may launch a war over the ability to set the terms of the international economy, our argument also contributes to the literature on the causes of hegemonic wars (Gilpin 1981; Kugler and Organski 1989; Kugler and Lemke 1996; Copeland 2000). Specifically, we provide a rational explanation for why a rising state may go to war, something that is missing from this literature. Much of the existing work on the causes of hegemonic wars focuses on the potential of exogenous power shifts produced by differential rates of economic growth to generate military conflict. If a state expects its relative economic position to decline, preemptive war may be rational (Powell 2006). Recent work has also examined the war-producing potential of endogenous shifts in military power. When a state is unable to observe another's military investments, preventive war may make sense to forestall a suspected adverse shift in military power (Debs and Monteiro 2014). In both arguments, however, it is only the declining state that may have an incentive to launch a war.

In our framework, in contrast, a challenger may rationally prefer war even when it expects its power to continue to rise. War is rational depending on whether fighting is likely to result in faster growth. When the costs of war are lower than the gains in economic power the state expects to obtain by fighting, even a rising challenger may rationally declare war. As in the case of exogenous economic power shifts, war is caused by a commitment problem. In contrast with the existing literature, however, this problem stems not from the challenger's inability to commit to keep present bargains once its relative power rises, but from the hegemon's inability to commit not to exploit its dominant economic position.

We use our theory to shed new light on the causes of World War II [WWII]. In a detailed case study using recent historiography, we establish a hitherto underappreciated deep cause of the conflict. Both Germany and Japan depended on key resources (capital and oil, respectively) provided by the United States. Washington, however, set terms of international interaction that denied them these key resources, undermining their ability to grow peacefully. At a deep level, therefore, the war was caused by the incompatible economic policies of, on the one hand, the United States and, on the other Germany and Japan. Unable to

grow efficiently in the context of the U.S.-led international economy, Berlin and Tokyo decided for armed challenges to the *status quo*.

Summarizing, this article makes three contributions. First, we provide a novel understanding of how economic interdependence may produce war. Second, we lay out a rational explanation for why a rising state may go to war. Third, we provide a new reading of the causes of World War II.

The remainder of this article proceeds as follows. The next section covers the existing literature on the causes of hegemonic wars and lays out our theory. Section 3 formalizes the theory through a game-theoretic model. Section 4 applies our theory to the cases of WWII in Europe and the Pacific. We conclude by offering general predictions on the likelihood of war between major powers, extracting policy implications for the maintenance of peace between the United States and China. Proofs of the formal results are in the Appendix [*to be completed*].

## **2. Literature and Theory**

According to the conventional wisdom, economic interdependence increases the opportunity cost of war, making it a force for peace (Crescenzi 2003; Martin et al. 2008; Polachek and Xiang 2010). While intuitive, this idea has been called into question using three different lines of reasoning.

First, the opportunity-cost argument may gloss over some complex strategic effects in crises of resolve. As the opportunity cost of war increases, a given state may be less willing to declare war. Anticipating this effect, another state may be more willing to escalate a conflict. As a result, the net effect of interdependence on the likelihood of war may be indeterminate (Morrow 1999; Gartzke et al. 2001).

Second, as McDonald has pointed out, the pacifying effect of trade may depend not on its levels but on trade *policy*. To promote peace, trade must be free, *i.e.*, it must result from policies that enhance interdependence and, in doing so, decrease the domestic power of pro-war groups, limit a government's ability to build pro-war coalitions, and boost the influence of pro-trade groups in limiting aggressive foreign

policies (McDonald 2004, 2007, 2009, 2010). According to this line of reasoning, then, interdependence should reinforce peace only when it is the result of directed state policies such as deregulation, dismantling of barriers to trade and capital flows, etc.; rather than from advances in communication and transportation technology, which were, as McDonald shows, at the basis of the relatively interdependent pre-World War I [WWI] era (McDonald 2004, 569).

Finally, Copeland criticizes the conventional wisdom on how interdependence reinforces peace by incorporating the role of expectations about future levels of trade into state's decisions to cooperate or engage in military competition, in what he labels a "trade expectations theory" (Copeland 1996, 1999/2000, 2013). For Copeland, the state in a dyad that depends most on mutual trade is likely to launch a war when its expectations of future trade decrease. A state that is highly dependent on trade with another may worry that being "cut off" by its trading partner would result in its inevitable decline, leading it to strike preventively (Copeland 2013, 38-55).

By looking at the consequences of states' decisions rather than taking levels of trade as exogenously given, all these critics make important analytical moves. Still, none of these arguments explain when interdependence produces war rather than merely a different peaceful bargain. Since war is costly, states should be able to find a peaceful bargain that would result in neither being worse off. How does the impact of interdependence on states' resolve lead to war rather than concessions? How do protectionist, anti-trade policies produce conflict rather than a different settlement? How do changes in trade expectations result in fighting rather than a new agreement? These questions remain unanswered.

In a parallel debate, scholars have investigated the conditions under which peace between a hegemon and a challenger is likely to break down. Existing work identifies two mechanisms by which hegemonic wars may occur.

The first starts from exogenous shifts in latent, economic power (Fearon 1995; Powell 1999, 2006; Copeland 2000). When a state (typically labeled "rising" or "challenger") becomes more powerful relative

to another (typically labeled “declining” or “hegemon”), it has an incentive to renegotiate the international status quo in its favor. When this shift is anticipated, the challenger is unable to commit to maintaining current bargains in the future. This commitment problem provides the declining state with an incentive to strike preventively when the balance of power is still favorable to it, thereby having a better chance of prolonging a more beneficial status quo into the foreseeable future. This mechanism can produce war only when shifts in the balance of economic power are expected to be large and rapid.

More recently, scholars have developed a second mechanism capable of accounting for hegemonic wars, this time starting from endogenous shifts in military power. This argument builds on the observation that most large and rapid shifts in the balance of power are the result of militarization decisions, which should be treated as endogenous to state decisions (Debs and Monteiro 2014). When a military investment that would result in a large power shift is not perfectly observable, war may ensue. In this case, a state that would face a sharp decline if another decides to invest in additional military power may decide to strike preventively even in the absence of conclusive evidence about the suspected investment. This mechanism can produce war only in the presence of uncertainty about military investments.

Both these mechanisms generate empirically useful insights (Kugler and Lemke 1996; Monteiro and Debs 2013). Yet neither explains why rising states go to war.

In sum, the existing literature provides neither a causal mechanism connecting economic interdependence and war nor one accounting for why a rising challenger might launch a hegemonic war. Yet, the idea that rising states often act aggressively receives significant support in the classical power transitions literature (Organski 1968, 367-371; Organski and Kugler 1980, 27-28; Kugler and Organski 1989, 171-194; Gilpin 1981, 94-95 and 186-187). Furthermore, it seems intuitively plausible that war might be a rational option for an economically dependent state when it would likely result in faster economic growth. How, then, can we explain a challenger’s decision to turn from international cooperation to military competition and, ultimately, war even when peace would likely lead its power to increase?

The first step in answering this question is to recognize a limitation of the standard bargaining model. The standard rationalist framework assumes that states bargain over the division of an object whose value is fixed and independent of their action (Fearon 1995; Powell 2006). This assumption may be appropriate for certain situations; for example when states negotiate over strategic assets, such as a territory or a weapons program. But the assumption of a fixed, exogenously determined object is not appropriate when states negotiate over the distribution of their aggregate wealth. States determine the value of their aggregate wealth by choosing their economic policy. The set of possible economic policies includes economy interaction through trade (of resources, finished products, and services) and capital flows, which may augment aggregate wealth while producing interdependence. In this context, the puzzle should not be why do states fail to achieve a peaceful bargain over a fixed, exogenously-determined amount of aggregate wealth. Rather, the puzzle is why do states fail to implement policies that encourage economic efficiency through economic interaction, thereby maximizing their aggregate wealth.

The key to understand this puzzle is to recognize that in the anarchic international environment, an economic hegemon faces a commitment problem: it cannot commit to offer favorable terms of economic interaction. But if the hegemon sets terms for states' economic interaction that enable it to capture a disproportionate share of the gains, other states will react by under-investing their available resources in tradable goods and services, thereby failing to maximize their own economic growth. An efficient allocation of resources to these tradable goods and services could maximize the benefits of peace, but the weaker state may reap too little of these benefits given the terms of economic interaction set by the hegemon. Consequently, when the basic structure of the international economy, as set by the hegemon, limits a state's ability to maximize economic growth, that state may prefer to launch a militarized challenge to the status

quo.<sup>1</sup> By going to war, the challenger could capture sufficient additional (input and output) markets that would enable it to invest its resources more efficiently and to bargain for a more favorable set of rules of the international economy.<sup>2</sup> War, in this sense, solves the problems created for weaker states by the hegemon's inability to commit to extending favorable terms of interaction.<sup>3</sup>

Our basic argument is that, all other things equal, the higher the growth inefficiency imposed on other states by the terms of economic interaction determined by the hegemon, the higher the likelihood of conflict. If the hegemon sets a basic structure of economic interaction -- terms of trade, capital flows, access to input and output markets, etc. -- that gives other states no incentive to invest their resources efficiently in tradable sectors, then a challenger may resort to war.

First, assume the case in which the distribution of power is stable over time. The likelihood of war depends on the following variables: the cost of war; the challenger's ability to convert economic resources into output, if peace prevails; the challenger's ability to convert economic resources into output, if it wins a hegemonic war; the challenger's probability of victory in war. Combining these four variables, we can extract general predictions for the likelihood of economic interdependence generating war. First, the higher the cost of fighting, the less likely war is. Second, the higher the challenger's ability to convert economic resources into output, if peace prevails, the more efficient peace is, and the less likely fighting is to occur.

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<sup>1</sup> For a similar idea -- the "hold up" problem -- in the economics literature, which forms the basis of a rational theory of the firm, see, *e.g.*: Coase (1937); Klein, Crawford, and Alchian (1978); Williamson (1985).

<sup>2</sup> This is not the first paper to assume that peace can be inefficient relative to war. Other papers argue that peace can be inefficient because of the cost of containing a military threat (Powell 1993, 1999, 2006; Fearon 2008; Coe 2011; Debs and Monteiro 2014). More closely related, Coe (2011) builds a model where one player can increase the size of the pie and the other player commits to a division of the pie, showing that peace can be inefficient under some payment schemes (proportional taxes) but not others (lump-sum transfers). None of these papers, however, endogenizes the value of the 'pie' that states divide between themselves, while recognizing the hegemon's commitment problem, and none of these papers explains war by rising challengers.

<sup>3</sup> This raises the issue of whether international institutions that help the hegemon solve this commitment problem -- such as, for example, the World Trade Organization -- would significantly impact the odds of economic interdependence producing conflict. We reserve this question for future research.



Third, the higher the challenger's ability to convert economic resources into output if it wins a hegemonic war, the more efficient war is, and the more likely it is that peace will break down. Fourth, and counterintuitively, war is possible only when the challenger's probability of victory is not too high -- *i.e.*, when the challenger is not too strong.

The higher is the probability that the challenger wins a hegemonic war, the greater is the threat that it represents to the hegemon, who will offer it more favorable terms of economic interaction. Thus, the higher is the probability that the challenger wins a hegemonic war, the better able it will be to invest efficiently in economic output, and, therefore, the lower is the inefficiency of peace. In short, when a challenger is sufficiently strong, the inefficiency of peace is small, and peace prevails.

Now, let's turn to the case in which the distribution of power is rising over time in favor of the challenger. Our framework shows that conflict may be a rational option for a challenger even if peace would allow for it to rise in relative terms, as long as war is expected to accelerate this rise. This basic framework helps explain why rising states go to war. Assume that a challenger becomes more powerful. Since it is rising, the challenger is currently weak (relative to its future power) and the efficiency of its current investment in economic growth is relatively low. It may then decide to launch a war, hoping to defeat the hegemon and better reap the rewards of its investments in economic growth. Certainly, the challenger cannot be *too* weak, because then the expected outcome of war would be low (given the low probability of victory), and so it would accept any terms of peace the hegemon offers it, so as to rise peacefully.

In sum, a challenger may launch a war against an economic hegemon for the purpose of improving the efficiency with which it can invest its resources in economic growth only when it is neither too weak nor too strong. A challenger that is too weak would not have a reasonable chance of winning a hegemonic war. One that is too strong would not need to fight in order to get a favorable offer.

### 3. Formal Model

This section formalizes our argument through a game-theoretic model.

#### 3.1. Basic Framework

We model a strategic interaction between two states,  $H$  (the ‘hegemon’) and  $C$  (the ‘challenger’).  $C$  possesses valuable resources that it can allocate to economic expansion.  $C$ ’s decision to allocate  $x_t$  resources to economic expansion creates a surplus  $S(x_t)$  to be divided amongst the two states. We assume that  $S(0) = 1$ ,  $S'(x_t) > 0$ ,  $S''(x_t) < 0$ .

After  $C$ ’s allocation decision, which is observed by  $H$ ,  $H$  decides whether to declare war ( $dw_t = 1$  if it declares war,  $dw_t = 0$  if it does not). The alternative to war is a peaceful division of the pie, where  $H$  offers  $z_t$  of the total surplus  $S(x_t)$  to  $C$ , keeping  $S(x_t) - z_t$  for itself.  $C$  then decides whether to accept  $H$ ’s offer  $z_t$  ( $a_t = 1$  if it accepts the offer,  $a_t = 0$  if it does not). If  $C$  accepts the offer  $z_t$ , it is implemented at  $t$ . If  $C$  rejects  $H$ ’s offer, war ensues. A war in period  $t$  is won by country  $C$  with probability  $p_t$  and imposes a cost  $c_i$  to country  $i \in \{C, H\}$ . We assume that  $p_t \in (0,1)$  for any  $t$  and  $c_C > 0$ ,  $c_H > 0$ . We call  $c_C + c_H$  the cost of war.

Call  $V$  the victor of the war and  $L$  the loser. Following the literature, we assume that  $V$  henceforth imposes its favorite outcome (Powell 1993, 1999; Fearon 1995). In our setting, this means that  $V$  gets the surplus in period  $t$ ,  $S(x_t)$ , takes control of the valuable economic resources in period  $t$ , and gains the right to make an offer  $z_t$  to  $L$ , keeping  $S(x_t) - z_t$  to itself, and would win with probability 1 a war fought in period  $t$ .

We assume that the cost of converting economic resources into a surplus is linear in the investment, *i.e.*, a state allocating  $x_t$  resources to economic expansion pays a cost  $k(\omega_t)x_t$ , where  $k(\omega_t) > 0$

is a cost parameter that depends on the state of the world  $\omega_t$ . This state of the world takes one of two values,  $\omega_t \in \{\omega^P, \omega^W\}$ , where  $\omega^P$  signifies that peace has prevailed until the beginning of period  $t$  and  $\omega^W$  signifies that war has occurred some time prior to  $t$ .

Throughout the interaction between  $C$  and  $H$ , we assume perfect and complete information. We assume that both countries discount the future (by factor  $\delta \in (0,1)$ ). We consider first a finite version of this game where states interact over two periods. (The Appendix includes a three-period version of the game.)

### 3.2. The Two-Period Game

#### 3.2.1. Timing and Solution Concept

In period 1, the play proceeds as follows:  $C$  decides how much resources  $x_t$  to allocate to economic expansion;  $H$  offers a division of the pie or decides to declare war;  $C$  decides to accept or reject  $H$ 's offer. The play continues in the same sequence in the next period as long as peace prevails. Now assume that war occurs in period  $t$ . In period  $t + 1$ ,  $V$  imposes its favorite outcome, meaning that it decides how much of the resources to allocate to economic expansion and keeps the full value of this surplus.<sup>4</sup> We solve for a subgame-perfect Nash equilibrium of this game.

#### 3.2.2. Solving the Game

The solution in period 2 is straightforward. First, peace prevails since war is costly. Second, the terms that any state can extract are commensurate with its military capabilities. If war occurred in period 1,  $V$  extracts

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<sup>4</sup> This is a standard assumption (Powell 1993, 1999; Fearon 1995). We could interpret it as saying that the interaction between the two states continues, with the victor  $V$  offers a division of the pie to the loser  $L$ , but the loser no longer has any war-fighting capability, and would lose any conflict with the victor (so that it accepts that the victor keeps the entire surplus).

the whole surplus, and thus allocates its resources efficiently, maximizing its own economic expansion. If peace prevailed in period 1, however,  $H$ 's dominant position in the international economy allows it to offer  $C$  just enough of the surplus to leave it indifferent between war and peace. Since it expects to benefit only from part of the economic surplus,  $C$  is lesser able to invest its resources efficiently. This means that  $C$  faces a 'hold-up' problem.  $C$  has no incentive to allocate its own resources to economic expansion at the level that would maximize it if it were able to set the terms of economic interaction with  $H$ .  $C$  therefore ends up under-investing in its own economic expansion and generating a sub-optimal level of economic surplus.  $C$ 's economic growth is limited by  $H$ 's dominant position in the international economy. In short, strategies are as follows:

**Proposition 1.** In period 2, there is always peace. If peace prevailed in previous periods,  $C$  chooses  $x_2^*(\omega^P)$  to maximize  $-k(\omega^P)x_2 + p_2S(x_2)$ ;  $H$  offers  $z_2^* = p_2S(x_2) - c_C$  and  $C$  accepts any  $z_2 \geq p_2S(x_2) - c_C$ . If war happened in period  $t = 1$ , then  $V$  chooses  $x_2^*(\omega^W)$  to maximize  $-k(\omega^W)x_2 + S(x_2)$ .

**Proof.** Straightforward.

This proposition means that war allows for the aggregate resources of both countries to be invested efficiently. After war,  $V$  internalizes the benefit of investing its resources in economic expansion and maximizes aggregate payoffs under the existing structure. As a result, aggregate payoffs are greater after war (as long as the cost of investing resources in economic expansion does not rise significantly after war; see Claim 1 in the Appendix).

Intuitively, there are three consequences to war. First, it gives the victor control over the current-period surplus. However, it is costly, in resources and human lives. Finally, it may change the allocation of power and resources in the next period: if a country wins, it could impose its favorite policy in the next period, after it has eliminated the military threat from the enemy.

Peace will prevail only if two constraints are met: call them the ‘feasibility’ constraint and the ‘compatibility’ constraint. The feasibility constraint requires that the minimum demand and maximum offer are feasible, or that neither demands more than the current value of the economic surplus to accept peace, i.e.  $\underline{z}_1 < S(x_1)$  and  $\overline{z}_1 > 0$ . The compatibility constraint requires that the minimum demand of the challenger is less than the maximum offer of the hegemon, i.e.  $\underline{z}_1 < \overline{z}_1$ .

If the surplus is fixed and exogenously-determined, as is the case in the standard rationalist framework, then the compatibility constraint is always met, given that war is costly (see Claim 3 in the Appendix). War occurs only if the feasibility constraint fails, and it may fail only for the declining state. If a state is rising, it wants to rise peacefully, and may even accept none of the current surplus in order to let the favorable shift in power occur and extract a greater share of aggregate wealth in the future. It is the declining state that may want to strike preventively. Even if it receives the full surplus in the current period, if the shift in power is sufficiently large, the declining state may prefer war in order to prevent its enemy’s rise (Fearon 1995, Powell 2006). Also, the declining state will declare war only if it is currently strong.

If the surplus is endogenous, however, the compatibility constraint may fail, because peace in period 1 may lead to aggregate inefficiency in period 2, due to the hold-up problem described above. Intuitively, the compatibility constraint holds if the cost of war is greater than the inefficiency of peace, due to the suboptimal level of growth, i.e.  $\underline{z}_1 \leq \overline{z}_1$  if and only if

$$c_C + c_H \geq \delta \left[ \left( -k(\omega^W)x_2^*(\omega^W) + S(x_2^*(\omega^W)) \right) - \left( -k(\omega^P)x_2^*(\omega^P) + S(x_2^*(\omega^P)) \right) \right] \quad (3)$$

We then conclude that peace prevails if and only if a bargaining range exists and is feasible. Anticipating the outcome of bargaining,  $C$  will choose its optimal allocation of resources to economic growth. In sum, equilibrium strategies are as follows:

**Proposition 2.** In period 1, peace prevails if and only if the cost of war is greater than the inefficiency of peace (3 holds) and the feasibility constraint is met ( $\underline{z}_1 < S(x_1)$  and  $\bar{z}_1 > 0$ ).  $C$  chooses  $x_1^*$  to maximize  $-k(\omega^P)x_1 + p_1S(x_1)$ ;  $H$  offers  $z_1^* = \underline{z}_1$  if (3) prevails and the bargaining range is feasible and otherwise  $H$  declares war or offers  $z_1^* < \underline{z}_1$ ;  $C$  accepts  $z_1$  if and only if  $z_1 \geq \underline{z}_1$ .

**Proof.** Follows from the above discussion.

Assuming that the only impediment for peace is the compatibility constraint, we can now make predictions about the likelihood of war. It is clear that war obtains whenever its cost is lower than the inefficiency of peace. The inefficiency of peace increases with the inefficiency of investing in economic growth in peacetime, and decreases with the inefficiency of this investment after war. The greater is the inefficiency of economic growth in peacetime, the more constrained is the challenger in its efforts to convert economic resources into output, and the farther is its investment to the efficient level. By the same token, the lower is the inefficiency of economic growth after war, the greater would be the victor's ability to convert resources into output after defeating its enemy, and the greater is the relative inefficiency of peace. Finally, the weaker is the challenger, the less able it is to use the threat of war to extract favorable terms of peace from the hegemon. As it receives a smaller share of its investment in peace, the challenger is less able to grow efficiently in peacetime under the system dominated by the hegemon, and the more tempted it is to declare war. In sum:

**Result 1.** War is more likely to break out, everything else equal,

- a) the lower is the cost of war ( $C_C + C_H$ );
- b) the higher is the cost of investing resources in economic growth if war did not break out ( $k(\omega^P)$ );
- c) the lower is the cost of investing resources in economic growth after war ( $k(\omega^W)$ ).
- d) the lower is the probability that the challenger wins a conflict in period 2 ( $p_2$ ).

**Proof.** See the Appendix.

### 3.3. An Explanation of War by Rising Powers

This framework can also be used to explain why a rising state would declare war, something that at first glance seems puzzling, and for which there is no existing rationalist argument. The standard rationalist framework suggests that only declining states may have an incentive in going to war; rising challengers benefit from peace and may accept any peaceful bargain. Similarly, the conventional wisdom from the informal literature on power transitions suggests that a rising state should wait until its power increases before declaring war, thereby enjoying a higher likelihood of victory.

Technically, our framework encompasses the possibility that the rising challenger be sufficiently weak in period 1 that it accepts any peaceful bargain ( $\underline{z}_1 < S(x_1)$ ) and never goes to war (*to be completed*). But while a challenger that is too weak benefits from peace, it is not clear why it should go to war after it has risen. Once a country has risen peacefully, it can simply *threaten* war to extract more favorable terms, so it has no need to actually fight. Per our analysis above, peace always prevails in period 2. Therefore, a rising state never waits for greater power in order to declare war.

We test the robustness of this conclusion to the length of the interaction, by adding a period 0 preceding 1 and 2, with power rising between each period. We find, counter to what the existing literature would lead us to expect, that if a state would declare war in period 1, then it strictly prefers to declare war in period 0, *before* its rise in power.

The intuition follows from Result 1. d) above. Deciding to go to war allows  $V$  to choose the efficient allocation of resources in the next period. The stronger  $C$  is, the greater its ability to obtain favorable terms of economic interaction by simply threatening to go to war. Anticipating relatively favorable terms of economic interaction,  $C$  can then convert economic resources into output relatively efficiently. The inefficiency of peace is smaller, and peace may prevail. If  $C$  would opt for war in period 1, this is because it

believes that in period 2 it would not be able to extract sufficiently favorable terms if peace prevailed. Given that  $C$  is rising between each period, it anticipates that the inefficiency of peace would be even larger in period 1 than in period 2. Therefore, if the inefficiency of peace was sufficiently large in period 2 to warrant war in period 1, it will also be sufficiently large in period 1, so that  $C$  would prefer to go to war in period 0, before its rise in power. In sum, as soon as a rising challenger has sufficient power to expect that victory in war will, even despite its relatively low probability, lead to faster economic growth, it will launch war without waiting for an additional increase in its relative power.

#### **4. Empirical Illustration**

We now use our theory to put forth a novel account of the deep causes of WWII in Europe and the Pacific. We detail how Germany, a relatively weak country dependent on U.S. capital, concluded that it was not possible to grow in the U.S. dominated international economic system. Japan, heavily dependent on U.S. or U.S.-dominated markets for raw resources, especially oil, reached the same conclusion. Both Germany and Japan were weak relative to the United States, and could not obtain sufficiently generous terms of trade to allow for efficient growth. Both countries perceived that the cost of converting economic resources into output would be significantly lower if they could defeat their hegemon and control nearby markets for primary resources and industrial goods.

##### **4.1 The Causes of World War II in Europe**

Existing rationalist explanations for WWII focus on Western Europe's decision to declare war on Germany, given the latter's commitment problem (Powell 2006, 174-176). Having established that Hitler could not be satisfied with concessions, London decided to declare war on Germany -- responding to Berlin's invasion of Poland on September 1, 1939 -- before it grew too powerful. This explanation of the war is incomplete,



however, in that it does not account for Germany's policy aims. Why did Germany adopt an aggressive foreign policy that ultimately led to war with Western Europe?

Understanding Germany's confrontational foreign policy may even be the most important element in an account of WWII. Indeed, it is not clear that, had London and Paris acquiesced to Germany's conquest of Poland, peace would have prevailed. London and Paris had repeatedly tried to appease Hitler, after the reinstatement of military conscription in 1935, the March 1936 remilitarization of the Rhineland, the Austrian Anschluss of 1937–38, and the 1938 Sudeten crisis. Each of these crises could have led to war even sooner than 1939 were the Western powers decided to stop German gains even earlier (Ripsman and Levy 2007). This policy of appeasement was ultimately discredited when it became clear that peace with Hitler was impossible. In this lens, understanding Western Europe's decision to declare war on Germany – after it became clear that it could not be appeased, but before it grew too powerful – may explain the timing of WWII, but not necessarily the initiation of the war itself. At the very least, understanding Germany's confrontational foreign policy is an important element in understanding the causes of WWII.

We make two central points. First, Germany's adoption of a bellicose challenge to the international status quo was a response to the 1929 stock-market crash, and the ensuing U.S. foreign policy. Given the almost complete dependency of the German economy on U.S. capital during the late 1920s, the contractionist character of the post-1929 international economy foreclosed any avenue for peaceful growth for a relatively small economy such as Germany, fating the country to a secondary power status vis-à-vis the United States. This, in turn, boosted popular support for Hitler's revisionist agenda, which would lead Germany towards an armed challenge to the status quo. Hitler's views, calling for the overthrow of Versailles if necessary by force in order to guarantee Germany's growth, went from a fringe position by 1928 to a widely held creed in Germany by 1933.

Second, we establish the central role played by the United States in Hitler's strategic vision. Hitler's ultimate strategic goal was to reorganize -- through morally abhorrent means -- the economic space of

continental Europe under German leadership, in order to be able to compete with the United States, which he considered, rightly, to be the world's foremost economic powerhouse. In this view, Germany would be able to grow faster by launching an armed challenge to the status quo than from continuing to operate in the highly disadvantageous international economic order set by the U.S. hegemon.

The literature on the causes of WWII typically focuses on the Western's power shift from appeasement to war, assuming the irrationality of Hitler's strategy, and in our view missing the deep economic causes of the war (Taliaferro et al. 2013). That Hitler's strategy was morally repugnant does not mean it was entirely irrational. The goal of obtaining conditions that would enable Germany to compete with or even surpass the United States as the world's foremost economic power was key to Nazi grand-strategic aims.

The first section of this case, therefore, is devoted to understand the economic reasons behind the collapse of the Weimar Republic and the rise of the Nazi Third Reich. The basic strategic dilemma faced by Germany since the inception of the Weimar Republic in 1919 was straightforward. It could try to grow peaceful or it could attempt yet another militarized challenge to the international order. These two positions were based on different understandings of Germany's role in the world economic order. The first position dominated German politics until 1933. Gustav Stresemann -- Berlin's Foreign Minister between 1923 and 1929 -- was the foremost proponent of this view, labeled "politics of the possible" (*Politik des Moeglichen*), which sought to boost Germany's economy by establishing closer ties with Washington, and endorsed a model of international competition "softened by his understanding of the mutual interconnectedness of the world economy and above all by the importance he attached to the United States" (Tooze 2006, 8). The second position -- personalized by Nazi leader Adolf Hitler -- required Germany to challenge the international order by military means, as it had done in 1914-18. In this view, German economic competitiveness required a domestic market of commensurable size to the U.S.'s, populated by inhabitants

as productive as the immigrants Washington had managed to attract. This, in Hitler's view, required both the military conquest of most of continental Europe and its repopulation with Aryan peoples.

Given Germany's strategic situation, as a relatively weak country with limited market for inputs and outputs, the peaceful growth strategy was very risky. After the 1929 crash, Stresemann's strategy was discredited. Specifically, the shift in German policy was partly a consequence of contractionist and protectionist U.S. policies and insufficient U.S. political engagement in Europe (Leffler 1979; Burke 1994; Clavin 1996; Cohrs 2006; Tooze 2006). As Tooze (2006, 13) writes, "[o]ne key factor contributing to destabilization of the Weimar Republic after 1929 was the disappointment of the hopes invested in America's 'new order' by Germany's pro-Republican forces." Once the peaceful-growth strategy was discredited by international developments, the military-challenge strategy quickly gained traction.

The history of the post-WWI period is well known. The 1919 Versailles Treaty required Germany to pay substantial reparations to Allied powers for causing WWI (Trachtenberg 1980; Kent 1984; Schuker 1988; Boemeke et al. 1998; Cohrs 2006). After initial resistance, the Berlin government agreed to payments starting in 1921, and initially pursued a strategy of seeking eventual revision of its obligations through the fulfillment of its payment requirements (Trachtenberg 1980; Webb 1989; Ferguson 1996).

Soon thereafter, however, Germany defaulted on reparation payments, prompting French and Belgian troops to occupy the Ruhr region in 1923. The Ruhr occupation would prove to be a turning point in interwar politics. The German currency collapsed and hyperinflation followed, leading Weimar leaders to focus on the economy (Schuker, 1988; Ferguson, 1996). Like Hitler, Stresemann believed that the rise of the United States meant that the future "balance of power would be defined ... by the relationship of the competing interests in Europe to the United States" (Tooze 2006, 4). This dictated the need for a rapprochement between Berlin and Washington.

At the same time, the Ruhr crisis led to U.S. entanglement in continental affairs in an attempt to create a more stable "reparations regime" (Costigliola 1984, 119-123; Cohrs 2006, 137). The resulting

Dawes Plan of 1924, suspended immediate German reparation payments and lowering them for 1924-27. Crucially, the plan included a large U.S. private loan to the German government, which triggered a boom in U.S. private loans to Germany, entailing significant political risk and marking the beginning of German dependency on American capital (Marks 1978, 245-249; Schuker, 1988). U.S. private lending to Germany created a circular system of payments in which all participants had a stake: Germany obtained credit from the United States, enabling it to make reparation payments to Britain and France, which could then repay their inter-allied war debts to the United States. For Berlin, this meant financial dependency on Washington. As Tooze writes:

This merry-go-round in which Germans borrowed money from the Americans to pay the British and French who then paid the Americans raised anxiety on all sides. However, it served its purpose. ... The new American lenders to Germany were making handsome profits. And the Weimar Republic enjoyed a standard of living considerably higher than would have been possible if it had been constrained to pay reparations out of an export surplus. (Tooze 2006, 6)

Recognizing that an economic crisis in Germany would put U.S. private creditors at risk, Washington tried to tame Berlin's financial appetite but ultimately allowed U.S. banks to continue unrestricted lending (Schuker 1988; McNeil 1986, 176-193; Cohrs 2006, 484). As McNeil (1986, 161) noted, by 1927 "German dependence on American capital seemed to be an inevitable fact of life." The rise in standards of living had a clear political effect. In the May 1928 federal election for the German Reichstag the Nazis achieved no more than 2.5 percent of the votes in their stronghold, Bavaria (Tooze 2006, 12-13). As late as 1928, the Weimar Republic continued working as a political system focused on achieving economic growth through cooperation with the United States.

After 1928, however, things changed quickly. Starting late that year, the U.S. credit market tightened and interest rates rose, ending long-term loans to Germany (McNeil 1986, 217-19; Tooze 2006, 14).

Unable to access U.S. capital in favorable terms, Germany demanded another revision of reparation payments. The resulting Young Plan of June 1929 cut down the total value of reparations and extended their payment period until 1988. Crucially, each annual payment would be divided into a one-third unconditional component and a two-thirds postponable component, to be financed by private U.S. banks (Leffler 1979, 195, 202-216, 228-9; Enssle 1980, 182; Costigliola 1984, 210-217). Given the assumptions on which it was based, particularly about the functioning of the international economy, the Young Plan was fated to fail. As Leffler wrote:

The plan was based on a set of interrelated assumptions that the German economy would continue to grow, foreign loans would stimulate German productivity, German exports would eventually exceed imports, German budgetary problems would be resolved, and the relatively large payments demanded after ten years would be paid. Although the stock market crash and the onset of the Depression lay only a few months ahead, almost no one foresaw that these assumptions would be so quickly discredited. (Leffler 1979, 211-12)

In fact, even before the Plan would come into effect in January 1930, however, the U.S. economy suffered the October 24, 1929 “Black Thursday” stock market crash (Leffler 1979, 215-216; Kindleberger 1986, 118). The near-collapse of the U.S. financial system meant that German access to private U.S. capital was further reduced. As Carl von Schubert, the state secretary at the German foreign ministry said at the time, “A direct demand on the foreign market by the Reich government for either long- or short-term loans is no longer a possibility” (quoted in McNeil 1986, 269).

In Germany, therefore, the onset of the U.S. Great Depression discredited the peaceful-growth strategy. Over the next three years, the U.S. banking system, under great strain, had to limit its exposure

in Germany, precluding the loans presupposed by the Young Plan, and drastically curtailing the availability of capital to the German economy.<sup>5</sup> As Burke (1994, 128) writes,

it was American policy that established the system of international exchange. The cycle of reparations and war debts payments was financially dependent on American loans. When the outflow of capital from the United States dried up, the system was bound to founder.

Germany experienced a sharp drop in national income and industrial production. Furthermore, unemployment “rose dramatically, from 1.3 million in September 1929 to over 3 million in September 1930, 4.3 million in September 1929 and 5.1 million in September 1932” (Kolb 1988, 111). By the time Hitler would be appointed Chancellor in early 1933, a third of the labor force was unemployed (Kolb 1988, 111). The Nazis actively portrayed this situation “as a consequence of the ‘system,’ and ruthlessly mobilized open and latent resentment of parliamentary democracy” (Kolb 1988, 112).

In sum, the onset of the Great Depression produced “political and economic circumstances combined with the public mood to create a situation especially favorable to National Socialist agitation and action” (Kolb 1988, 108). Over the following three years, the Nazis went from an obscure fringe political group to Germany’s main political party. This evolution was facilitated by a combination of two factors. First, controversy around the Young Plan gave the Nazis an issue to exploit, opposing the still substantial annuities and the prospect of six further decades of reparation payments (Kolb 1995, 108-109). Second, Germany was particularly hard-hit by the Great Depression because “her economic development was based largely on short-term foreign credits which were now called in” (Kolb 1988, 111).

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<sup>5</sup> Many claim that the German economic trouble was compounded by the protectionist Smoot-Hawley Tariff Act trade of June 1930 (Costigliola 1984, 231; Tooze 2006, 14). But, as Irwin (2012, 15-16), shows, this measure had a limited impact. Dutiable imports amounted to only 1.4% of U.S. GDP. Furthermore, tariff increases were not particularly high: from about 38% to 45%. This resulted in a 15% decrease in dutiable imports. Since only 6% of Europe’s exports were destined for U.S. markets, the Tariff cannot account for the collapse of the German economy that ensued.

The political consequences of this economic downturn were visible already in the September 1930 election, in which the Nazis, which two years before had elected only 12 of 491 parliamentary seats, now elected 107 out of 577 seats, becoming the second largest party. Responding to the electoral gains of the Nazis, Chancellor Brüning demanded further reparation revisions (Clavin 1996, 10). This further shook international financial markets, raising “the danger of the repudiation of debts and other contractual obligations,” and accelerating the flight of U.S. capital (Burke 1994, 83).

When in May 11, 1931, an Austrian banking crisis broke out, “the withdrawal of German short-term credit became a flood” (Clavin 1996, 12). The credit shortage triggered a German financial crisis (Costigliola 1984, 235), which prompted Brüning on June 6 to issue “an aggressive demand for an end to reparations” (Tooze 2006, 18). The quickly deepening crisis led to the June 20, 1931 Hoover moratorium, which froze German reparation payments (Marks 1978, 253; Clavin 1996, 14). This failed to stop the banking crisis in Germany and stem the flight of foreign capital, however. Despite the moratorium, “[m]oney continued to flood out of Germany at a faster rate than before” (Clavin 1996, 16). Weeks later, a German banking crisis broke out with the collapse of the DANAT bank, prompting a general bank run (Costigliola 1984, 238) and leading the Berlin cabinet to close down the entire German financial system, abandon the free gold standard, and nationalize all private holdings of foreign currency (Tooze 2006, 20).

In an attempt to stop the damage, an international financial conference was held in London on July 20-3, 1931, including the United States. Delegates agreed “that the central bank credit of \$100 million [to the Reichsbank] should be renewed, [that] a standstill of existing credits should be implemented, and [that] a committee to study Germany’s long-term needs should be established” (Leffler 1979, 255). This meant further U.S. involvement in European affairs (Leffler 1979, 256). The Standstill agreement was put in place in August-September 1931 and “Weimar’s foreign creditors voluntarily agreed to freeze their credits inside Germany” (Clavin 1996, 16).

Having left the gold standard, the German mark could quickly lose value. As German debts were mostly denominated in foreign currency, any devaluation would have the effect of putting at stake Germany's ability to service its foreign debt. Washington therefore leaned on the Berlin government to impose exchange controls (Irwin 2012). Berlin complied in a last-ditch attempt to cling to its Atlanticist, peaceful-growth strategy: "Chancellor Brüning's government gambled that, sooner rather than later, American action on war debts would enable Britain and France to accept the end of reparations. This ... would open the door to the normalization of both political and economic relations in Europe" (Tooze 2006, 22). Alas, any discussion of the end to reparation payments and inter-Allied war debts would have to wait for another year, until the July 1932 Lausanne Conference. In the meantime, the German economy continued its downward spiral -- dragging with it the peaceful-growth strategy that defined Weimar foreign policy.

By late 1931, as Brüning continued to impose deflationary austerity measures by decree amid a widespread financial and economic crisis, his government's political support basis collapsed. The deep transformation of the international economy over the previous two years had played a prominent role in the ongoing political shift in Germany:

The collapse of the American economy and the British decision to abandon gold shattered the fundamental assumption on which Stresemann's conception had been based. Far from being a self-evident historical necessity, the unity and mutual interdependence of the world economy was now profoundly in question ... [I]t appeared to many that international economic dependence itself was actually the problem. Nationalist visions, visions of a future in which global financial connections were not the determining influence in a nation's fate, now had a far greater plausibility. (Tooze 2006, 23-24)

The Hoover administration made its last attempt to solve the crisis at the Lausanne Conference of July 1932, which discussed German reparation payments and inter-Allied war debts (Clavin 1996, 31). Representatives of Britain, France, and Germany recognized Germany's inability to restart reparation payments



and agreed to prolong their suspension and, more importantly, cancel about 90% of German reparations (Costigliola 1984, 257; Marks 1978, 253-254). This agreement had a glitch, however. It depended on U.S. pardon of most British war debts (Cohrs 2006, 44), which would be rejected by the U.S. Congress in December 1932.

By then it was too late to save the Weimar Republic. In the March 1932 German presidential elections, President Hindenburg had been reelected but required a runoff to defeat Hitler by 54%-37% (Burke 1994, 190-192). Then, in the parliamentary election of November that year, the Nazis retained 196 seats, consolidating their position as the first political force in Germany. On January 30, 1933, Hindenburg appointed Hitler as Chancellor. His government would repudiate both reparations and war debts, making no further payments. Instead, Hitler led Germany in a crash militarization program aimed at challenging the U.S.-led global order.

In sum, the German economy, once the hyperinflation of the early 1920s had been contained, worked relatively well until the U.S. stock-market crash of 1929. This relatively smooth period was the result of U.S. efforts towards “building a secure world open to trade, investment, and peaceful change” (Costigliola 1984, 112). German economic growth therefore depended largely on abundant U.S. private loans. As Schuker puts it, the flow of American capital into Weimar Germany was “one of the greatest proportional transfers of wealth in modern history” (Schuker, 1988, 120). Germany received more funds as loans from U.S. private banks (27 billion marks) than the totality of the reparations it had to pay (19.1 billion marks) in 1921-1931 (Marks 1987, 254; Ferguson 1998, 417). U.S. efforts abruptly collapsed with the onset of the Great Depression, which led to the rapid withdrawal of U.S. private loans. From 1929 on, Washington repeatedly refused German requests for loans, a manifest “failure in leadership” (Kindleberger 1986, 133; see also: Leffler 1979, 194-5, 228-9; Clavin 1996, 16). Since Germany was largely dependent on these loans both to pay reparations to Britain and France and to finance its own economic activity, the

rapid collapse of the credit markets led to the collapse of the German economy.<sup>6</sup> The peaceful-growth strategy was crippled, opening the door to the rise of Hitler, who propounded a strategy of challenging the Versailles order militarily in order to acquire control over the resources necessary to compete with the United States in the global market.

Once the United States set the precedent for supporting financial-cum-political agreements with the Dawes Plan, and once Washington allowed the establishment of a system of financial transfers backed by private U.S. loans, the Weimar political system and, more broadly, the maintenance of peaceful relations in Europe required continued U.S. engagement both in terms of sustaining any further agreements that proved necessary as conditions changed and, crucially, of providing the financial backing for these agreements (Cohrs 2006). When Washington, under the strain of rapidly worsening domestic economic conditions, failed to provide this leadership, the European system collapsed. The United States, acting in its capacity of an economic hegemon, failed to commit itself to ensuring the conditions for the peaceful growth of Germany.

Having shown the role of changing international economic conditions in constraining Germany's economic growth and contributing to the fall of the Weimar Republic and the rise of Hitler, we now turn to demonstrating how the ability to compete with the United States was Hitler's ultimate strategic goal.

Germany's strategy since 1933 was one of militarized challenge to the *status quo*. This challenge was predicated on a strategic vision that, because of the unspeakable devastation it caused and of the morally abhorrent decisions it entailed, is usually cast in irrational terms. Without in any way questioning the

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<sup>6</sup> Note that our argument is not that war reparations were so vast that they crippled the German economy. As Ferguson and others have shown, this was not the case. (Nor could it explain the timing of the German economic collapse.) German reparation payments were manageable. Even the initial reparation annuities imposed in the London 1921 conference represented only 4-7% of German national product (Ferguson 1998, 414). This was at most a third of what France was forced to pay in war reparations to Germany in the aftermath of its defeat in the 1870 Franco-Prussian war (Ferguson 1998, 415). For a dissenting opinion, claiming that the failure of the interwar system lies primarily with the reparations system itself, since Germany could not possibly meet its reparations, see Kent (1989).

profoundly immoral nature of Hitler's actions, we show how Hitler's strategic thinking was centered on a means-ends calculation about how best to ensure Germany's position among the great powers. Specifically, Hitler's strategy of territorial conquest in Eastern Europe and the concomitant replacement of its Jewish and Slav with "Aryan" population was, in his eyes, a necessary condition for competition with the country he saw as the greatest threat to Germany's future: the United States.

The notion that the United States would be the ultimate adversary in a German bid for world domination was indeed correct. Whereas by 1870, the United States and Germany controlled 16% of world wealth each, by 1920 Washington controlled 62% of world wealth compared with Berlin's 14%. By 1940, the last year before war broke out between the two countries, the relative shares are 49% and 17% respectively (Mearsheimer 2001, 220).

Among Hitler's writings and speeches, *Mein Kampf*, produced while in jail and published in 1925-26, is usually acknowledged as containing the most comprehensive statement of his strategic vision. Certainly, Hitler's idea that Germany needed to acquire *Lebensraum* in the East, his hatred for what he called "the world's twin evils" of Bolshevism and Judaism, and his paranoid notion that Germany was the victim of an international Jewish conspiracy are already there. In contrast, Hitler's *Zweites Buch*, written in 1928, remained unpublished until 1958, and has been largely ignored as merely rehashing the arguments already made in *Mein Kampf*.<sup>7</sup> But although the *Zweites Buch* does rehearse many of the same arguments as *Mein Kampf*, it also contains a difference of crucial importance in understanding the strategic vision Hitler had formed by the time he came to power in 1933: its discussion of the role of the United States in Hitler's worldview (Fischer 2011).

In *Mein Kampf*, Hitler's vision for Germany's strategic trajectory started with the need to rearm the nation, followed by a military conflict aimed at acquiring sufficient *Lebensraum* for the German people, a goal that required the destruction of the Soviet Union and the annihilation of its population. In the *Zweites Buch*,

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<sup>7</sup> For exceptions, see: Hillgruber (1981); Fischer (2011).

however, this is merely a means to an end. By 1928, Hitler added a new, final stage to his vision of Germany's strategy: a struggle for world domination between a German-controlled Europe and the United States.

As historian Richard Evans states:

The core of Hitler's foreign policy aim was to invade and conquer eastern Europe, to expel or eliminate the vast majority of the Slavs who lived there. To create in eastern Europe what he thought of as the equivalent of the American West -- a kind of bread basket for Germany. Somewhere where industrial resources, agricultural resources, would make Germany into a world power capable of standing head-to-head with America in the longer run. (Evans n.d.)

Specifically, Hitler projected a final military showdown with the United States. As he wrote, "it is thoughtless to believe that the conflict between Europe and America would always be of a peaceful economic nature" (Hitler 2003, 116). America's role in Hitler's strategic vision also helps account for what is perhaps the most catastrophic strategic decision of the twentieth century. Anticipating the need to fight the United States, Hitler responded to the U.S. declaration of war on Japan in December 1941 with his own declaration of war on the United States, which Berlin's treaty obligations towards Tokyo did not require. With German forces at the gates of Moscow, by late 1941 Hitler expected to finish off the Soviet Union in the very near future. At the same time, once Washington declared war on Japan in the aftermath of Pearl Harbor, he expected U.S. forces to be mostly devoted to fighting in the Asia-Pacific region. By declaring war on the United States, Hitler expected not only to bring Britain to the negotiating table but, more importantly, to anticipate the last stage of his strategy: a fight for global hegemony against the United States. This decision proved to be a fateful mistake. Seen through the prism of Hitler's strategic vision, however, it was hardly an inexplicable blunder.

To summarize, in Hitler's strategic vision, "Fordist" America -- his preferred term for the industrialized economy of the United States -- was both Germany's ultimate competitor and its greatest role

model. Aspiring European great powers required an equally vast domestic market. Without the scale of America's natural and human resources, Hitler thought, Europe would be destined to have the status of "Holland or Switzerland or Denmark" (Hitler 2003, 128). The size of America's domestic market permitted high wages and standards of living while underselling foreign competitors, which were therefore doomed in their quest to compete with the United States (Hitler 2003, 106-7). As Tooze (2006, 10) put it, "Fordism ... required *Lebensraum*." Or, at greater length:

America should provide the pivot for our understanding of the Third Reich. In seeking to explain the urgency of Hitler's aggression, historians have underestimated his acute awareness of the threat posed to Germany, along with the rest of European powers, by the emergence of the United States as the dominant global superpower. On the basis of contemporary economic trends, Hitler predicted already in the 1920s that the European powers had only a few more years to organize themselves against this inevitability. Furthermore, Hitler understood the overwhelming attraction already exerted on Europeans by America's affluent consumer lifestyle, and attraction whose force we can appreciate more vividly, given our sharpened awareness of the more generally transitional status of the European economies in the inter-war period. ... The originality of National Socialism was that, rather than meekly accepting a place for Germany within the global economic order dominated by the affluent English-speaking countries, Hitler sought to mobilize the pent-up frustrations of his population to mount an epic challenge to this order. ... Germany would carve out its own imperial hinterland; by one last great land grab in the East it would create a self-sufficient basis both for domestic affluence and the platform necessary to prevail in the coming superpower competition with the United States. (Tooze 2006, xxiv)

## **4.2 The Causes of World War II in the Pacific**

Our framework also sheds light on the Pacific War. At a deep level, war between Japan and the United States resulted from their incompatible economic policies. The cornerstone of Japan's foreign policy was to create a sphere of influence in East Asia. The underlying principle of American economic policy was to defend the Open Door policy in China, and prevent Japan from imposing an economic empire. These policies were irreconcilable and ultimately lead to war.

Japan's foreign policy aimed at creating a sphere of influence in East Asia. Japan was highly dependent on foreign markets for raw materials and exports, and ventured on the Asian continent to gain control of additional resources and markets. It acquired control over Taiwan after the first Sino-Japanese War (1894-5) the Liaotung peninsula, after the Russo-Japanese war (1904-5); and resource-rich Manchuria, in March 1932 (Barnhart 1987, 27-33). In July 1937, the long and costly second Sino-Japanese war erupted (1937-45).

Japanese leaders articulated the equivalent of a "Monroe Doctrine" for East Asia. In 1934, the Japanese Foreign Ministry claimed that Japan had the right to supervise all of China's economic development (see, *e.g.*, Iriye 1973, 108; Barnhart 1987, 116; LaFeber 1997, 177). Four years later, Japanese Prime Minister Konoe Fumimaro pronounced his famous address for a "New Order in East Asia," claiming that Japan should control the destiny Japan-China-Manchukuo bloc (see, *e.g.* Iriye 1987, 67-8; Barnhart 1987, 131; LaFeber 1997, 189). Shortly afterwards, Japan's foreign minister Arita Hachiro explained in a note to U.S. Secretary of State Cordell Hull that "the principles of Open Door should not apply to China alone when they were not observed elsewhere in the world. The United States and Britain could demand the Open Door only because they were self-sufficient and militarily secure already" (Barnhart 1987, 131-2). Two years later, on August 1<sup>st</sup>, 1940, Japanese foreign minister Matsuoka Yosuke issued a press release expanding the projected sphere of influence, now called the "Greater East Asia Co-Prosperity Sphere," to

include Australia, Borneo, Burma, India, Indochina, Malaya, New Zealand, the Dutch East Indies, and Thailand (see, *e.g.*, LaFeber 1997, 192-3; Iriye 1987, 131).

The United States consistently opposed these Japanese attempts to establish a sphere of influence in Asia. Washington had a long-standing commitment to defend the Open Door policy in China. In fact, according to historian Walter LaFeber (1997, 193), “[e]verything [U.S. Secretary of State Cordell] Hull had tried to achieve since he had entered the State Department was aimed precisely at destroying such regional blocs and Japan’s (or any non-American) ‘Monroe Doctrine.’ Roosevelt, with less passion, agreed.” Indeed, after the escalation of hostilities in the second Sino-Japanese war in 1937, Roosevelt made a famous “Quarantine Speech,” calling for “peace-loving nations” to contain the spread of war (see, *e.g.*, Barnhart 1987, 123; Uitley 2005, 16). Furthermore, the United States imposed a series of moral embargoes on Japanese trade. When Japan occupied southern French Indochina, the United States responded with a complete embargo on oil in July 1941. This put enormous pressure on Japanese decision-makers, since the country imported so much of its oil from the United States. They were convinced that they faced two undesirable choices: war against a much stronger economy or economic collapse (see *e.g.* Wohlschetter 1962, 356-7). Over long and protracted debates, Japanese decision-makers chose war, and on December 7<sup>th</sup>, 1941, Japan attacked the U.S. Pacific Fleet at Pearl Harbor.

In sum, Japan’s perception that it could not grow peacefully in the world economic system dominated by the United States prompted its desire to impose an economic sphere of influence and formed the deep cause of the Pacific War. This in our view is the essence of a rationalist explanation of the Pacific War. Understanding the Pacific War has challenged IR theorists ever since. By declaring war on the United States, Japan took on a much stronger enemy, which had eight times as much latent power and ultimately imposed severe damage and obtained unconditional surrender. How could such a decision be understood?

Initial observers, and many IR scholars since, have described Japan's decision as irrational.<sup>8</sup> The first rationalist explanation for the war arguably came from Russett (1967). According to him, the archival evidence clearly shows that Japanese decision-makers chose war because the alternative was undesirable, given adverse U.S. trade policy. Such an argument provides the foundation of any rationalist explanation for the war, but it does not fully explain the puzzle of war. Given that war is costly and destructive, how could states decide that war is preferable to peace?

One way to rationalize the war is to posit that the preferences of Japanese decision-makers made war a better option than peace. War offered the prospect, however slim, of a sphere of influence in East Asia and a brighter economic future. If Japanese decision-makers weighed prospective gains sufficiently heavily, they may favor war over peace (Taliaferro 2004, chapter 4). Perhaps there was some element of wishful thinking in exaggerating the odds of victory, hoping that American public opinion would turn against a costly war and pressure their government to sue for peace (Russett 1967, 99). Alternatively, war may have been irrational for the country as a whole but rational for Japanese decision-makers (Snyder 1991, chapter 4). Members of the Army and Navy may have excessively benefited from expansionary policies, and successfully sold the "myth" of imperialism to the rest of the country.

Finally, it is possible that the war was not a conscious decision of either Japan or the United States. Japan's decision to attack Pearl Harbor, rather than British or Dutch targets in Southeast Asia, was apparently never debated in cabinet meetings. Instead, this decision was taken by Navy, who treated it exclusively as a tactical decision, without analyzing the strategic consequences of a direct attack on the United States on U.S. public opinion (Russett 1967, 99; Sagan 1988, 916). On the American side, the oil embargo of July 1941, which heightened Japanese concerns about the consequences of peace, may have resulted from bureaucratic overreach (Utley 2005 [1985], Sagan 1988). When Roosevelt announced a freeze on Japanese assets, he asked for a review of requests

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<sup>8</sup> For a recent compendium of views on the irrationality of Japan's decision, see Record (2009, 1-5).



for oil before issuing any license. Members of the bureaucracy, especially U.S. Assistant Secretary of State Dean Acheson, took great discretion in interpreting this policy, the argument goes, deciding to issue no license at all and imposing a de facto embargo on oil sales to Japan. When Roosevelt was made aware of this development, after returning from his visit with Winston Churchill in Argentina, it was too late to reverse the policy.

These perspectives together provide a rich account of the war. However, it is not clear that the war was caused by the unintended consequences of high-level policies. Japanese decision-makers hoped to avoid a war with the United States, proposing a summit conference between Prime Minister Konoye and President Roosevelt and postponing the deadline for peace negotiations. Yet they became increasingly convinced that war with the United States was inevitable. At the Imperial Conference of July 2<sup>nd</sup>, the cabinet decided to proceed with the Southern Advance, “no matter what obstacles may be encountered” (Ike 1967, 78). As Prime Minister Konoye clarified: “In carrying out the plans outlined ... we will not be deterred by the possibility of being involved in a war with England and America,” noting that “all plans, especially the use of armed forces, will be carried out in such a way as to place no serious obstacles in the path of our basic military preparations for a war with England and America” (cited in Wohlstetter 1962, 345-6). The Japanese government eventually reached the conclusion that it could not separate the United States from its allies in the region.<sup>9</sup> At the imperial conference of September 6<sup>th</sup>, Japan concluded that its policies were “mutually incompatible” with those of the United States, so that the conflict “will ultimately lead to war” (Ike 1967. 152). In its missive to Washington D.C., on December 8<sup>th</sup>, the emperor declared war “on the United States of America and the British Empire.”<sup>10</sup> Whether or not the cabinet debated the strategic consequences of a direct attack on the United States, it had endorsed a war with the United States. The

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<sup>9</sup> For different views on the exact moment at which Japanese decision-makers reached this conclusion, which could be as early as Spring 1941 or as late as November 1, see Wohlstetter (1962, 347-8), Russett (1967, 96), Barnhart (1987, 199-200), and Sagan (1994, 77).

<sup>10</sup> See “Imperial Rescript, December 8, 1941.” Available at <http://www.ioc.u-tokyo.ac.jp/~worldjpn/documents/texts/docs/19411208.O1E.html>

failure to anticipate the effect of an attack on Pearl Harbor may help explain the outcome of the conflict, but not the initiation of war itself.

On the American side, the claim that FDR had lost control of policy is disputed by recent scholarship (Heinrichs 1988, 141-2; Heinrichs 1990, 165; Schuessler 2010, 159; Trachtenberg 2006, 99-100). It appears that Acheson was instructed by under-Secretary Sumner Welles to deny requests for oil while Roosevelt was meeting with Churchill (Heinrichs 1990, 165). There is good reason to believe that Welles was conveying Roosevelt's preferences. Roosevelt knew that the oil embargo may drive Japan to aggressive action, and he certainly considered the possibility of relaxing the embargo if necessary (see e.g. Trachtenberg 2006, 96, 98). A tough policy towards Japan would have made sense for FDR as a way to deter an attack on the USSR (Heinrichs 1988, 1990) or provoke the Japanese as a back-door entry into World War II and a conflict with Nazi Germany (Trachtenberg 2006, Schuessler 2010, Copeland 2013).

Yet if war was the result of deliberate actions, we would still want to understand why peace was not possible, given the cost and destruction of war. Perhaps civilian decisionmakers in Japan were fooled to buy into the "myth" of imperialism, and perhaps they suffered from psychological biases and exaggerated the benefit of war, but it would be good to understand if there were structural conditions that made war particularly attractive, even if it was costly and destructive.

Our analysis is a first step in answering these questions. International conditions made Tokyo's decision to go to war compelling. Japan was relatively weak and dependent on foreign trade. The economic system imposed by the United States in East Asia did not allow the country to grow peacefully. Japan needed access to markets, and the nearby markets would be relatively inexpensive to exploit, if the United States were defeated or coerced to disengage. War could be attractive even if it was costly, because victory would allow Japan to better convert its economic resources into output.<sup>11</sup>

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<sup>11</sup> Certainly, an explanation of the war in the Pacific would be incomplete without a proper understanding of the situation in Europe, since the United States perceived its main strategic threat to come from Nazi

## 5. Conclusion

This paper presents a new framework for understanding the relationship between economic interdependence and war, shedding new light on the causes of World War II in Europe and Pacific. In short, Germany and Japan were highly dependent on the United States and concluded that they could significantly improve their prospects for growth by challenging the United States militarily.

We can use this framework to elucidate the general relationship between economic interdependence and war, placing the case of World War II in comparative perspective. We look at three important cases that differ from the case of Germany and Japan in the 1930s in terms of the degree of economic dependence of the challenger and the cost of war (see Table 1 below).

|  |      | Cost of War       |                                      |
|--|------|-------------------|--------------------------------------|
|  |      | High              | Low                                  |
| Economic<br>Dependence<br>Of the<br>Challenger | High | China-US, now     | Germany-US, 1930s<br>Japan-US, 1930s |
|  | Low  | USSR-US, Cold War | US – UK, late 19th c.                |

Table 1: The Relationship between Economic Interdependence, the Cost of War, and the Likelihood of War: An Application to Historical Cases

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Germany. The two theatres were related and, we argue, war ultimately relied on the same fundamental friction: incompatible economic development paths.

Consider first the interaction between the United States and the United Kingdom in the 19th century (bottom right cell). These two countries found themselves in a strategic situation that was more conducive to peace than the cases of Germany and Japan in the 1930s. Both the United States and the United Kingdom possessed significant markets for goods and resources, given their sizable home markets and the foreign markets (colonial or not) over which they extended their influence. As a result, defeating the enemy would bring little difference in the cost of converting resources into economic output and peace prevailed.

Now consider the strategic interaction between the United States and the Soviet Union during the Cold War (bottom left cell). Both countries controlled significant markets for goods and resources. Fighting over additional markets would bring little difference in the cost of converting resources into economic output. In addition, the nuclear revolution significantly increased the costs of war between the two countries, further undermining the possibility that war would break down. Despite the intense rivalry and competing ideologies, we conclude that structural conditions were not very conducive to war.

Finally, consider the current interaction between China and the United States (top left cell). China enjoys a large and growing domestic market but it is relatively more dependent the hegemon for its growth than were the United States in the 19<sup>th</sup> century and the Soviet Union during the Cold War. This could present a problem for peace. However, the United States has so far opted for maintaining an international order that facilitates the economic growth of any potential challenger, including China. Moreover, given the U.S.'s assured retaliatory nuclear capability against any other state, the costs of mounting a military challenge to the current international order are particularly high. As a result, we believe that relations between China and the United States are likely to remain peaceful in the foreseeable future (Monteiro 2014). The challenge for the United States would be to nurture an open international economic order that allows for the peaceful growth of China and, at the same time, maintain nuclear retaliatory capabilities that would make war with the United States prohibitively costly.

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## 6. Appendix: Extensions and Proofs of the Formal Results

This Appendix has two sections. The first proves the formal statements in the main text and introduces, and proves, claims 1, 2, 3 announced in the text. It proceeds in the order in which the results are mentioned in the text. The second introduces an extension to the game-theoretic model presented in section 3 of the article.

### 6.1. The Two-Period Game

**Proof of Proposition 1.** Straightforward.

**Claim 1:** Formally, there exists  $\bar{k} > k(\omega^P)$  such that  $\forall k(\omega^W) \in (0, \bar{k})$ ,  $-k(\omega^W)x_2^*(\omega^W) + S(x_2^*(\omega^W)) > -k(\omega^P)x_2^*(\omega^P) + S(x_2^*(\omega^P))$ .

**Proof:** By definition,  $x_2^*(\omega^W)$  maximizes  $-k(\omega^W)x_2(\omega^W) + S(x_2(\omega^W))$  and this optimum is unique, given the strict concavity of  $S(x_t)$ , so that the claim follows by continuity of the objective function with respect to  $k(\omega_t)$ .

**Claim 2:** The minimum demand by the challenger  $\underline{z}_1$  and the maximum offer  $\overline{z}_1$  by the hegemon are as follows:

$$\begin{aligned}
\underline{z}_1 &= p_1 S(x_1) - c_C \\
&+ \delta [p_1 U_{C,2}(\omega^W, V) + (1 - p_1) U_{C,2}(\omega^W, L) \\
&- U_{C,2}(\omega^P)]
\end{aligned} \tag{1}$$

$$\begin{aligned}
\overline{z}_1 &= p_1 S(x_1) + c_H \\
&- \delta [p_1 U_{H,2}(\omega^W, L) + (1 - p_1) U_{H,2}(\omega^W, V) \\
&- U_{H,2}(\omega^P)]
\end{aligned} \tag{2}$$

where  $U_{i,t}(\omega^P)$  for the expected utility of country  $i \in \{C, H\}$  at the start of period  $t$  in state-of-the-world  $\omega = \omega^P$  and  $U_{i,t}(\omega^W, s)$  for the expected utility of country  $i \in \{C, H\}$  at the start of period  $t$  in state-of-the-world  $\omega = \omega^W$  and status  $s \in \{V, L\}$ . Spelling out the value of these expressions, we have that

$$\begin{aligned}
U_{C,2}(\omega^P) &= -k(\omega^P)x_2^*(\omega^P) + p_2 S(x_2^*(\omega^P)) - c_C, & U_{H,2}(\omega^P) &= (1 - p_2)S(x_2^*(\omega^P)) + c_C, \\
U_{i,2}(\omega^W, V) &= -k(\omega^W)x_2^*(\omega^W) + S(x_2^*(\omega^W)), & U_{i,2}(\omega^W, L) &= 0.
\end{aligned}$$

**Proof:** Straightforward.

**Claim 3:** Assume that  $S(x_t) = \bar{S}$  for any  $x_t$ , then we have that  $\underline{z}_1 < \overline{z}_1$  since  $c_C, c_H > 0$ .

**Proof:** Using the values of  $\underline{z}_1$  and  $\overline{z}_1$  in (1) and (2), we have that the second expression is the same for the challenger and the hegemon,

$$\begin{aligned}
U_{C,2}(\omega^P) &= -k(\omega^P)x_2^*(\omega^P) + p_2 S(x_2^*(\omega^P)) - c_C, & U_{H,2}(\omega^P) &= (1 - p_2)S(x_2^*(\omega^P)) + c_C, \\
U_{i,2}(\omega^W, V) &= -k(\omega^W)x_2^*(\omega^W) + S(x_2^*(\omega^W)), & U_{i,2}(\omega^W, L) &= 0. \\
&\omega^W, V - U_{H,2}(\omega^P) = \\
&\delta [(p_1 - p_2)\bar{S} + c_C]
\end{aligned}$$

The conclusion follows.

**Proof of Proposition 2:** Follows from the above discussion.

**Proof of Result 1.** Given inequality 3, a) is straightforward; b) and c) follow from the envelope theorem.

d) follows from  $\frac{\partial -k(\omega^P)x_2^*(\omega^P) + S(x_2^*(\omega^P))}{\partial p_2} = [-k(\omega^P) + S'(x_2^*(\omega^P))] \frac{\partial x_2^*(\omega^P)}{\partial p_2} > 0$  using the first-

order condition  $-k(\omega^P) + p_2 S'(x_2^*(\omega^P)) = 0$  (and  $S'(x_2) > 0$ ,  $S''(x_2) < 0$  and the implicit function theorem).

## 6.2 Extension: The Three-Period Game

Taking the two-period game laid out in section 3.2, add a period 0, where each period follows the timing above and the power of  $C$  rises between each period, *i.e.*,  $p_0 < p_1 < p_2$ . Write  $\underline{z}_0$  for the minimum demands that  $C$  is willing to accept and  $\overline{z}_0$  for the minimum demands that  $H$  is willing to offer. We conclude that:

$$\begin{aligned} \underline{z}_0 = & p_0 S(x_0) - c_C \\ & + \delta [p_0 U_{C,1}(\omega^W, V) + (1 - p_0) U_{C,1}(\omega^W, L) \\ & - U_{C,1}(\omega^P)] \end{aligned} \quad (4)$$

$$\begin{aligned} \overline{z}_0 = & p_0 S(x_0) + c_H \\ & - \delta [p_0 U_{H,1}(\omega^W, L) + (1 - p_0) U_{H,1}(\omega^W, V) \\ & - U_{H,1}(\omega^P)] \end{aligned} \quad (5)$$

so that a bargaining range exists if and only if  $\underline{z}_0 \leq \overline{z}_0$  or

$$\begin{aligned} c_C + c_H \geq & \delta [\{U_{C,1}(\omega^W, V) + U_{H,1}(\omega^W, L)\} \\ & - \{U_{C,1}(\omega^P) + U_{H,1}(\omega^P)\}] \end{aligned} \quad (6)$$

using  $U_{i,1}(\omega^W, V) = (1 + \delta)[-k(\omega^W)x^*(\omega^W) + S(x^*(\omega^W))]$ ,  $U_{i,2}(\omega^W, L) = 0$ . Note that the optimal value of investment after war is the same if chosen in periods 1 or 2, and hence we drop the time subscript ( $x_2^*(\omega^W) = x_1^*(\omega^W) = x^*(\omega^W)$ ).

We ask whether we can build an equilibrium where peace prevails in period 0 even though war is inevitable in period 1, when the compatibility constraint fails. If war is expected in period 1, we conclude that  $U_{C,1}(\omega^P) + U_{H,1}(\omega^P) = -k(\omega^P)x_1^*(\omega^P) + S(x_1^*(\omega^P)) - (c_C + c_H) + \delta[U_{C,2}(\omega^W, V) + U_{H,2}(\omega^W, L)]$ , so that (6) becomes

$$\begin{aligned} & (1 - \delta)[c_C + c_H] \\ & \geq \delta \left[ \left( -k(\omega^W)x^*(\omega^W) + S(x^*(\omega^W)) \right) \right. \\ & \quad \left. - \left( -k(\omega^P)x_1^*(\omega^P) + S(x_1^*(\omega^P)) \right) \right] \end{aligned} \quad (7)$$

Inspecting this condition, we conclude that it must fail if (3) also fails, *i.e.*, if the compatibility constraint fails in period 1, then it also fails in period 0. In fact, there are two additional benefits of fighting war in period 0 that make it even more attractive than fighting in period 1. First, the efficiency gain of war is strictly greater in period 1 than in period 2. Indeed, the greater is  $p_t$ , the greater is the share of the surplus that  $C$  expects to receive and the closer is the allocation of resources in peace to the optimal allocation. Therefore,  $p_0 < p_1$  implies that the efficiency gain of defeating the enemy is greater in period 0 than in period 1. Since the inefficiency of peace decreases as  $C$ 's power increases, the efficiency gain yielded by war reaches its greatest value before  $C$ 's power rises.<sup>12</sup> Second, a war in period 0 allows the states to avoid a

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<sup>12</sup>It is also easy to verify that we can construct an equilibrium where peace prevails in period 1 and war is inevitable in period 0. If peace is expected in period 1, we conclude that  $U_{C,1}(\omega^P) + U_{H,1}(\omega^P) = -k(\omega^P)x_1^*(\omega^P) + S(x_1^*(\omega^P)) + \delta[U_{C,2}(\omega^P) + U_{H,2}(\omega^P)]$ , so that (6) becomes

$$\begin{aligned} c_C + c_H & \geq \delta \{ (1 + \delta) \left( -k(\omega^W)x^*(\omega^W) + S(x^*(\omega^W)) \right) \right. \\ & \quad \left. - \left[ -k(\omega^P)x_1^*(\omega^P) + S(x_1^*(\omega^P)) \right] \right. \\ & \quad \left. + \delta \left( -k(\omega^P)x_2^*(\omega^P) + S(x_2^*(\omega^P)) \right) \right\} \end{aligned} \quad (8)$$

Clearly condition (8) is more difficult to satisfy than condition (3). A war in period 0 would allow the victor to internalize the full benefit of its allocation of economic resources for two periods, not just one.

future war. Therefore, the cost of war may be strictly greater and the compatibility constraint could still fail (this explains why the cost of war  $c_C + c_H$  is multiplied by  $1 - \delta$ ).