An Economic Theory of War

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Abstract

When does war occur for economic reasons? In an anarchic environment, stronger states may fear that their security will be undermined by the economic growth of weaker states, and may attempt to constrain it. Weaker states, even if they are rising, may prefer to declare war. The weaker are institutional constraints on stronger states, and the smaller are the spheres of influence of weaker states, then the greater are the risks of war. We illustrate our theory by analyzing the economic roots of the Second World War, and reflect on the general lessons of our argument.

Keywords: war, rationalist explanations for war, Second World War, economic interdependence

Supplementary material for this article is available in the appendix in the online edition.

When does war happen for economic reasons? Existing work focuses on the potential effect of trade and economic growth on conflict. Before trade and growth take place, however, states must allocate their resources to economic production. We show how international constraints on states' ability to invest their resource endowments efficiently can lead to war.

Powerful states can condition others' ability to access resources they need in order to invest their own resource endowments efficiently. They can also condition the terms under which others can trade their products and services internationally. When powerful states fear their security will be undermined by the economic growth of weaker states, they will be willing to impose such constraints, hamstringing the economic growth of weaker states. If this economic hold-up problem is sufficiently severe, the weaker state may opt for war. Although fighting is costly and the state's relative weakness makes victory less likely, winning would allow it to invest its resources efficiently, maximizing future growth. War happens when it is expected to produce a gain in economic efficiency large enough to make the expected outcome of fighting better than the continuation of an inefficient peace. Counter to the conventional wisdom, weaker states may prefer war even if they are rising powers.

Our theory highlights how war can be caused by a hitherto unspecified economic commitment problem: a powerful state's difficulty in committing not to exploit its dominant international economic position. Any factor that exacerbates this economic commitment problem is more likely to generate conflict. The smaller is the weaker state's sphere of influence, and the weaker are the institutional constraints on the powerful state, the more severe is the economic commitment problem, and the greater

is the likelihood of war.

We proceed as follows. We discuss the literature on economic growth and war, introduce our argument and game-theoretic analysis, and illustrate our theory in a study of the Second World War [WWII]. We conclude by outlining the general implications of our argument.

The International Economy and War

According to a common argument, trade increases the opportunity cost of war or otherwise obviates the need for territorial conquest, supporting peace (Polachek 1980; Rosecrance 1986; Crescenzi 2003). While intuitive, this idea has been questioned using three lines of criticism. First, this argument glosses over complex strategic effects. If one state is cautious about declaring war, due to the higher opportunity cost of fighting, then its enemy may be more willing to escalate a conflict. Thus, the net effect of trade on the likelihood of war could be indeterminate (Morrow 1999; Gartzke, Li and Boehmer 2001).[1] Second, the pacifying effect of trade may depend less on its level than on trade policy, and the interests of domestic actors to sustain it (McDonald 2009). Finally, economic exchanges may reinforce peace only when

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[1]Moving beyond a simple bilateral model of trade would further complicate the analysis of strategic interactions. See e.g. Martin, Mayer and Thoenig (2008); Chatagnier and Kavakli (2017).

states do not fear being cut off by their partners (Copeland 2015).[2] While insightful, these studies do not explain how expectations of trade can be traced to objective features of the international system, limiting their empirical purchase (Snyder 2016, 180).

Other arguments explore how economic growth may cause war in the shadow of power transitions. In particular, anticipated *large and rapid* shifts in power may produce war, by incentivizing powerful states to launch preventive conflicts in order to forestall their own decline (Fearon 1995; Powell 1999; Copeland 2000; Powell 2006; Copeland 2015). Such large and rapid economic shifts are exceedingly rare, however (Debs and Monteiro 2014, 4-5). Furthermore, as Organski (1968, 294-295) noted early in the study of power transitions, "[n]ations with preponderant power have indeed dominated their neighbors, but they have not been the ones to start the major wars that have marked recent [XXth Century] history. That role has fallen almost without exception to the weaker side."

What might lead a weaker state to start a war for economic reasons despite its disadvantage in relative power? A first argument extends the preventive logic laid out above to weaker states, which may decide to fight for fear that their status quo will deteriorate even further (Sagan 1988, 920; Paul 1994, 16-19, 30-31). Additionally, Van Evera (1999, 108-109) claims that when the offense-defense balance favors the offense, weak states may attack stronger peers in an attempt to conquer resource-rich territory; such was, Van Evera claims, the case with Germany and Japan in WWII.

[2]See also Waltz (1979, 142), on the potential for economic interdependence to generate conflict by bolstering state's sense of economic vulnerability.

3

Finally, Mearsheimer (1983) argues that a weaker state will resort to arms when it is able to identify a clever military strategy that would result in a quick victory; such was, Mearsheimer claims, the case with Germany in WWII.

While useful, these arguments fail to address the puzzle that war is costly, giving states an incentive to avoid it. Weak military capabilities affect both the prospects of war and peace. Why would weakness tilt a state in favor of one option versus the other? Why would a state expect a future deterioration of the status quo? If this deterioration entails the prospect of a future war, leading a state to anticipate it, what would explain this future war?

Compounding the problem, we see important cases of weak *and rising* states going to war, such as Germany and Japan in the Second World War, as discussed below.[3] The canonical models of Fearon (1995) and Powell (2006), which build on the idea that war is costly and destructive, predict that rising states would not go to war. Such states have a vested interest in maintaining peace, so as to allow their relative power to increase.

Other rationalist explanations for war have investigated the relationship between economic growth, power, and war, but none endogenizes growth in the international economic environment, and all produce war in limited circumstances (see, e.g., Kim and Morrow 1992; Powell 1996; Powell 1999, Chapter 4). Fearon (1996) and Powell (2013) allow states to bargain over objects that affect future military power, but

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[3]According to Kennedy (1989, 249-447), Germany and Japan were mired in the "crisis of the 'middle powers.'" They had risen in power but chose war against the more powerful American and Soviet juggernauts.

do not endogenize the economic stakes in dispute. They predict that peace will prevail, unless under limited circumstances: when states are risk-acceptant, there are bargaining indivisibilities, and discontinuous jumps in the effect of economic conditions on the balance of power (Fearon 1996); or when there are contingent spoils available after the elimination of another state (Powell 2013). Other models – e.g., Bas and Coe (2012), Debs and Monteiro (2014), and McCormack and Pascoe (2017) – allow states to take costly actions that affect the balance of power, but none endogenizes the aggregate wealth to be divided among them. Finally, Coe (2012) allows two parties to endogenize the value divided among themselves, but produces conflict under limited circumstances. If a colonial power commits to tax its subjects under a linear tax system, peace is inefficient and conflict may occur. By the same logic, if the colonial power commits to a lump-sum tax system, peace becomes efficient and conflict is avoided.

We build a theory of economic war, shedding light on the relationship between economic growth, military power, and war, and laying out how the international economic environment affects the odds of war.

An Economic Theory of War

Consider an interaction between two states. One state, the challenger, must procure resources internationally. Another state, the hegemon, can affect the cost that the

5

challenger would pay for the resources it needs.[4] In the anarchic international environment, the hegemon faces an economic commitment problem: it cannot commit to refrain from using its economic power to extract the best possible terms it can from weaker states.[5] In turn, the hegemon's commitment problem may press the challenger to opt for war, believing that it could grow more quickly if it overturned the status quo by military means.

The hegemon's commitment problem is particularly severe when the hegemon is relatively unconstrained in limiting the challenger's growth. Such is the case when international economic interaction is weakly institutionalized, allowing the hegemon to single out the challenger's resource access; and when the challenger does not possess a large sphere of influence, which would limit the ability of the hegemon to constrain its growth. This economic commitment problem highlights how certain features of the international economic system make conflict more likely.

Empirically, our argument helps explain how the post-WWII global economic regime of institutionalized open trade supports peace, as has been argued in the literature (see, e.g., Gowa 1994; Mansfield 1994; Ikenberry 2001; Goldstein and Gowa 2002; Davis and Wilf 2015). Specifically, multilateral trade institutions – such as

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[4]We use the labels 'hegemon' and 'challenger' because of our focus on great-power dynamics. The framework can be applied to any other pair of states (or sub-state actors) as long as one actor can constrain the other's access to the resources it needs for economic growth.

[5]For a recent application in the international political economy literature, see Carnegie (2014).

the World Trade Organization – can mitigate the economic hold-up problem of the hegemon by increasing the cost it pays for imposing resource-access restrictions and punishing terms on trade on individual weaker member states. International economic institutions, therefore, decrease the odds of conflict even when they partially reflect the power distribution of their member states, as long as even the most powerful of them would pay a higher cost for discriminating vis-à-vis weaker states than would be the case if the institution were not to exist.[6]

This argument has implications for the relationship between power shifts and war. In our mechanism, what causes war is the imbalance of power favoring the hegemon, not a power shift. Weak states – regardless of their relative power trajectory – may need to fight in order to obtain favorable terms of economic interaction. Certainly, a weak challenger is less likely to prevail in war. By the same token, however, a weak challenger cannot use the threat of war effectively to obtain favorable terms of peace. Extending the logic, we conclude that conflict may be rational for the challenger even when it expects its power to rise in relative terms if peace prevails. Whenever the challenger expects fighting to result in less inefficiency than the maintenance of peace, it will declare war. If the challenger's power is rising, it will be able to extract better

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[6]If institutions instead enhance the power of the hegemon, making it easier to coordinate efforts in excluding individual states, then they would exacerbate the economic hold-up problem. Such an interpretation, it should be noted, would go against the consensus view in the literature mentioned above. We reserve for future work an investigation of the conditions under which institutions act as constraints on powerful states.

terms from the hegemon in the future, resulting in more efficient future investments in economic growth. Therefore, there is no case in which war would be rational *after* the challenger has greater relative power but does not presently make sense. Conflict will always occur before, not after, a challenger's rise in power. This explains why, counter to the conventional wisdom, even weaker rising challengers may rationally go to war.

Our argument also has implications for our understanding of the relationship between economic growth, military power, and war. In models where states bargain over objects that affect future military power, war occurs only in unique conditions (Fearon 1996; Powell 2013). These models assume that the pie divided between the two states is exogenous, and both states must consent to a peaceful change in the balance of power. Instead, we endogenize the pie divided between the two states, and model the economic commitment problem of the hegemon, allowing it to take a unilateral action that affects the division of economic spoils and the future balance of power.[7] We show that in this setting war can become a self-fulfilling prophecy. Fearing a link between the challenger's economic growth and its future military power, the hegemon may intervene; seeing its growth stunted, the challenger may go to war. While allowing for the challenger to grow peacefully may be efficient, it would also reduce the share of peaceful payoffs that the hegemon could obtain; and the hegemon may intervene before it is too late.

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[7]For a model where a state can unilaterally affect the balance of power through an investment in military capabilities, and war may occur even in repeated interactions, see Debs and Monteiro (2014).

We now present the argument in game-theoretic form.

Game-Theoretic Analysis

We model a multi-period game between two states: H, for 'hegemon,' and C, for 'challenger.'

In period t, C makes an investment I_t to create a pie $\pi(I_t)$. Production comes at a linear cost kI_t, and brings positive, increasing and concave returns, satisfying the Inada conditions: $\pi(I_t) \geq 0$, $\pi'(I_t) > 0$, $\pi''(I_t) < 0$, $\pi(0) = 0$, $lim_{I_t \to 0}\pi'(I_t) = \infty$, $lim_{I_t \to \infty}\pi'(I_t) = 0$.

H's influence on the international economy enables it to capture a share of the pie created by C, through tariffs and sanctions for example. Specifically, after the pie is created, H can make an offer x_t to C, proposing to keep $\pi(I_t) - x_t$, or it can declare war. Any $x_t \in \mathbb{R}$ is allowed; though they bargain 'over the pie,' states could offer concessions on other issues. C can accept or reject H's offer. If C rejects the offer, war ensues. If C accepts the offer, then it is implemented. C receives x_t and H receives $\pi(I_t) - x_t$. After the two states agree on a division of the pie, H can intervene and extract an additional transfer $\tau \in [0, \overline{\tau}]$ from C. The maximum transfer $\overline{\tau}$ depends on H's economic power. It is decreasing in the strength of institutional constraints on H and decreasing in C's economic sphere of influence.[8]

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[8]For simplicity, there is no cost for extracting a transfer, though the limit $\overline{\tau}$ implicitly captures the idea that draconian transfers would be prohibitively costly. Also, $\overline{\tau}$ is independent of $\pi(I_t)$, capturing the idea that C could have a stock of

War is a costly lottery (Fearon 1995; Powell 2006). The victor enjoys the current and future flow of payoffs. Specifically, if war occurs in period t, then the victor consumes the pie in period t, and in any future period, it invests in the creation of a pie and keeps its full value. To fight a war in period t, country i pay a cost $c_i > 0$ in each period, from period t onward. Let $p(m_t)$ be the probability that C wins a war, where m_t measures C's military capabilities in period t. We first assume that they are exogenous, and then endogenize them as a function of C's economic activity. Write $m_t = f(m_{t,o}, u_{t-1,c})$, where $m_{t,o}$ are C's exogenous capabilities in period t; $u_{t-1,c}$ is C's consumption in period $t-1$, i.e. $u_{t-1,c} = x_{t-1} - \tau$; and f is a function that is an increasing and concave in both arguments, $f_1 > 0$, $f_{11} < 0$, $f_2 \geq 0$, $f_{22} \leq 0$, where f_j and f_{jj} are, respectively, the first and second derivative with respect to the jth argument, $f_2 = f_{22} = 0$ if power is exogenous and $f_2 > 0$, $f_{22} < 0$ is power is endogenous. Finally, we assume that C's power is bounded, i.e. $p(m_t) \in [\underline{p}, \overline{p}] \subset (0, 1)$.

In sum, as long as peace prevails, a period is played as follows:

1. C chooses the level of investment I_t;

2. H decides whether to offer x_t or declare war;

3. C decides whether to accept or reject H's offer;

4. H decides whether to intervene and extract a transfer τ_t;

5. Payoffs are accrued.

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resources vulnerable to H's capture.

If war occurred in period t, then from period $t+1$ onwards, the victor chooses a level of investment and enjoys the value of the pie. Countries discount the future by factor δ.

We solve for a subgame-perfect Nash equilibrium of this game of complete and perfect information. Proofs are in the online appendix.

Two-Period Game, with Exogenous Military Power

First, we solve a simple two-period game, where C's military capabilities are exogenous, proceeding by backward induction.

Consider period 2, assuming war obtained in period 1. The victor, anticipating that it would reap the full value of the pie it creates, equates the marginal cost of the investment (k) to its social marginal return $(\pi'(I_2))$:[9]

Lemma 1. *If war obtained in period 1, then in period 2, the victor chooses the 'first-best' level of investment I^{fb}, such that $\pi'\left(I^{fb}\right) = k$.*

Now assume that peace prevailed in period 1. H will extract the maximum transfer from C, $\tau_2^* = \overline{\tau}$. Moving up, C is willing to accept an offer x_2 if and only if it is at least as good as its war payoff, i.e. $x_2 - \overline{\tau} \geq p(m_2)\pi(I_2) - c_C$, or $x_2 \geq \underline{x_2}$, where $\underline{x_2}$ is such that the previous condition holds with equality. H is willing to make an offer x_2 that is at least as good as its war payoff, i.e. $\pi(I_2) - x_2 + \overline{\tau} \geq (1 - p(m_2))\pi(I_2) - c_H$,

[9]The analysis below applies, in a model where the marginal cost of investment decreases with a country's access to resources, as long as victory in war (weakly) increases a state's access to resources.

or $x_2 \leq \overline{x_2}$, where $\overline{x_2}$ is such that the previous condition holds with equality. Given that war is costly ($c_i > 0 \; \forall i \in \{C, H\}$), there are offers that both countries prefer to war. Peace prevails, with H offering $x_2^* = \underline{x_2}$.

Moving up, C understands that it would reap a fraction of the benefit of its investment commensurate with its military power. As such, C's optimal investment equates the marginal cost of the investment (k) to its private marginal return ($p(m_2)\pi'(I_2)$):

Lemma 2. *If peace obtained in period 1, then in period 2, C chooses a suboptimal level of investment I_2^* such that $p(m_2)\pi'(I_2^*) = k$, and peace prevails.*

Comparing the outcome of the game (Lemmas 1 and 2), we see that peace can lead to inefficiencies. If peace prevails in period 1, then C is vulnerable to H's economic influence in period 2. The greater are C's military capabilities (m_2), then the less vulnerable is C, and the closer is its investment to the first-best level (see Figure 1).

Write $V_i(\omega_2)$ for the continuation value of country i as a function of the state variable ω_2 at the beginning of period 2. We have $\omega_2 \in \{(P, m_2), (W, C), (W, H)\}$, where the first dimension records whether peace (P) or war (W) prevailed in period 1. The second dimension records C's capabilities at the start of period 2, if peace prevailed, or the identity of the victor, if war obtained. By the above, we have $V_C(W, C) = V_H(W, H) = -kI^{fb} + \pi(I^{fb})$ and $V_C(W, H) = V_H(W, C) = 0$. The country winning a war in period 1 achieves the first-best level of investment, and the other country gets a payoff of zero.

12

Now let us analyze period 1. Again, H will impose the maximum transfer possible, $\tau_1^* = \bar{\tau}$. Moving up, C is willing to accept an offer x_1 if and only if $x_1 - \bar{\tau} + \delta V_C(P, m_2) \geq p(m_1)(\pi(I_1) + \delta V_C(W, C)) - (1 + \delta)c_C$, or $x_1 \geq \underline{x_1}$. Similarly, H would prefer to see an offer x_1 accepted if and only if $\pi(I_1) - x_1 + \bar{\tau} + \delta V_H(P, m_2) \geq (1 - p(m_1))(\pi(I_1) + \delta V_H(W, H)) - (1 + \delta)c_H$, or $x_1 \leq \overline{x_1}$. Peace prevails if and only if a bargaining range exists or

$$\delta[(V_C(W, C) + V_H(W, C)) - (V_C(P, m_2) + V_H(P, m_2))] \leq (1 + \delta)(c_C + c_H) \qquad (1)$$

Put differently, peace prevails if the inefficiency of peace is smaller than the cost of war. Though war is costly, peace creates its own inefficiency, as H's economic influence hampers C's growth. If the inefficiency of peace is greater than the cost of war, then war is inevitable, and it could be declared by H or by C, after H makes an unacceptable offer. Otherwise, H offers $x_1^* = \underline{x_1}$, leaving C indifferent between war and peace.

In either case, C anticipates its payoff to be commensurate with its war payoff. C's investment equates its marginal cost (k) to its private marginal return $(p(m_1)\pi'(I_1))$:

Lemma 3. *In period 1, C chooses a suboptimal level of investment I_1^* such that $p(m_1)\pi'(I_1^*) = k$. If condition (1) holds, then peace prevails; otherwise war is inevitable and it may be declared by C or by H.*

Taking stock, we conclude that the condition for war is easier to satisfy, the lower are C's military capabilities (m_2). The lower they are, the smaller is the share of the pie that C obtains, and the greater is the inefficiency of peace:

13

Claim 1. *The condition for war is easier to satisfy, everything else equal, as C's military capabilities (m_2) decrease.*

Two-Period Game, with Endogenous Power

Now, we consider a two-period game where C's military capabilities are endogenous, depending both on some exogenous capabilities as well as past economic activity.

Again, period 2 proceeds as described in Lemmas 1 and 2. Moving up to period 1, the endogeneity of C's future military power presents an opportunity for H. By accepting an increase in C's military capabilities, H can increase aggregate payoffs. On the other hand, condoning an increase in C's military capabilities depresses H's share of aggregate payoffs. Under some assumptions, the latter effect dominates. Specifically, assume that the production function follows a standard functional form, i.e. $\pi(I_2) = AI_2^\alpha$, where $A > 0$, $\alpha \in (0,1)$. Then H's payoff in period 2 decreases with C's military capabilities in period 2 if C's military power is not too low (or $\underline{p} > \alpha$), so that the effect of C's increased capabilities on aggregate payoffs is not too large. Thus, H would extract the maximum transfer $\overline{\tau}$ and would consent at most to an offer $\overline{x_1}$, as defined above. Similarly, C would demand at least some offer $\underline{x_1}$, as defined above. For C, a generous offer not only boosts current consumption, it also increases the value of future aggregate payoffs and the share of such payoffs that C can consume. Thus, peace prevails if and only if there is a bargaining range. In that case, H offers C its minimum demand $x_1^* = \underline{x_1}$. In sum, the equivalent of Lemma 3 holds:

Lemma 3'. *In period 1, C chooses a suboptimal level of investment I_1^* such that*

$p(m_1)\pi'(I_1^*) = k$. *If condition (1) holds at* $x_1 = \underline{x_1}$, $\tau_1 = \overline{\tau}$, *then peace prevails; otherwise war is inevitable and it may be declared by* C *or by* H.

Consequently, the comparative statics continue to hold:

Claim 1'. *The condition for war is easier to satisfy, everything else equal, as* C*'s exogenous military* $(m_{2,o})$ *decrease.*

Infinite-Horizon Game

We now turn our attention to the infinite-horizon game. We first solve for a Markov Perfect Equilibrium, where strategies depend on the history of the game only through the state variable ω_t. We then solve for a subgame-perfect Nash equilibrium, where current strategies can depend on the history of the game. In this exercise, we continue to assume that $\pi(I_t) = AI_t^\alpha$, where $A > 0$, $\alpha \in (0, 1)$, and $\underline{p} > \alpha$.

We conclude that in a Markov Perfect Equilibrium, war may be inevitable:

Lemma 4. *There is a Markov Perfect Equilibrium where war happens in every period if* C*'s military power is not too high, so that the following condition holds:*

$$\delta[(-kI^{fb} + \pi(I^{fb})) - (-k\overline{I^*} + \pi(\overline{I^*}))] > (c_C + c_H) \tag{2}$$

where $\overline{I^*}$ *is such that* $\overline{p}\pi'(\overline{I^*}) = k$.

This Lemma states that war can become a self-fulfilling prophecy. Anticipating a future war, H would capture as much of the surplus as possible, and C's investment

would be suboptimal, making peace inefficient. When the inefficiency of peace is greater than the cost of war, war is inevitable.

Next, we ask whether we can build an efficient equilibrium when we allow for a richer set of strategies. We anticipate that there is a broad range of subgame-perfect equilibria, as long as each state receives its reservation value (see, e.g., Fudenberg and Maskin 1986, 537). The problem is that the states' reservation values are non-stationary, due to the effect of growth on military capabilities. Each state could declare war, so that its reservation value is at least equal to its war payoff, which is commensurate with its military capabilities. Since military capabilities depend on economic activity, they can be manipulated by H. Instead of letting C grow, and increase its military capabilities, H could extract some of the pie and tilt the balance of power in its favor. We conclude:

Lemma 5. *If players are sufficiently patient (or δ is close to one), there is an efficient subgame-perfect equilibrium, where C chooses the first-best level of investment, H offers x_t^* in period t, and peace prevails, only if for every t,*

$$[p(f(m_{t+1,o}, x_t^*)) - p(f(m_{t+1,o}, x_t^* - \overline{\tau}))](-kI^{fb} + \pi(I^{fb})) \leq c_C + c_H \qquad (3)$$

Put differently, peace prevails only if the effect of H's intervention on military power is small. Everything else equal, this condition is harder to satisfy, the greater is H's economic power (or the greater is $\overline{\tau}$). Moreover, if exogenous and endogenous resources are substitutes in the production of military power (i.e. if $f_{12} < 0$), then the smaller are C's exogenous military capabilities, the greater is the effect of H's

intervention on military power, and the harder it is to satisfy the above and ensure peace. Thus, the conclusion of the two-period game carries through to an infinite-horizon game under a broad set of assumptions.

Discussion: On Rising Power and War

We now reflect on the relationship between power shifts and war, using the two-period game with exogenous power, which facilitates comparison with the canonical model. We conclude:

Claim 2. *A rising challenger may declare war before its rise in power.*

This result follows from Lemma 3 and Claim 1. War occurs in period 1 when the challenger is so weak in period 2 that the hegemon's commitment problem is too severe. Since there is no bargaining range in period 1, any country could declare war. Even if the challenger is rising, it may declare war, hoping to remove the hegemon's commitment problem and enjoy faster economic growth.

The idea that a challenger would declare war before a rise in power appears counter-intuitive at first glance. According to the conventional wisdom, a rising state would prefer to grow stronger before going to war, just as a declining state would prefer to go to war before its decline. Yet it is important to separate questions about the timing of the war from questions about its causes. It is not sufficient to explain war in period 1 by assuming that it would occur in period 2. Why would a state declare war after it has risen? Why would it not use its increased power to obtain a more favorable peaceful bargain? As we show, when a state is weak it may

be constrained in its economic growth by a more powerful state. When this happens, the weak state will opt for war whenever fighting offers better prospects for future economic growth than peace. The decision to go to war for economic reasons is based on whether peace or war offer better prospects for future growth; not on whether the state is rising or declining.

Certainly, weak capabilities make both peace *and war* less attractive for the challenger. Yet when the pie to be divided between the two states is endogenous, the challenger's weak capabilities exacerbate the consequences of the hegemon's commitment problem if peace prevails, making war more attractive relative to peace. Unable to use the threat of war to secure peacefully a large share of the pie it would create, the challenger decides to declare war, hoping to enjoy the fruits of faster economic growth. This happens even if the challenger's odds of victory in war, given its relatively low power, are not great. As long as its expected payoff of war (which includes the prospect of more efficient economic growth) are higher than its expected payoff from peace (which is diminished by the hegemon's economic commitment problem), the challenger will resort to fighting.

This conclusion runs counter to the expectations of the canonical model, where a rising state always prefers to bide its time, and war can only be declared by a declining state. Yet, as we have shown, the conclusions of the canonical model rely on the fact that the pie to be divided between the two states is exogenous. Indeed, assuming that the pie is exogenous ensures that peace is always efficient and a bargaining range always exists, given that war is costly.[10] Without any constraint

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[10]If $V_C(W, C) = V_H(W, H) = V_C(P, m_2) + V_H(P, m_2)$, then condition (1) is satisfied.

on the set of possible offers, peace should prevail under complete information. In the canonical model, war could happen because no country can get 'more than the pie' in the current period. If there are large and rapid shifts in the balance of power, then the declining state may reject even the most favorable peace, preferring instead to declare war and prevent the rise of the challenger.

Assuming that there is a 'budget constraint' in the set of possible offers, as the canonical model does, may be useful when the pie divided between the two states is truly exogenous. If countries disagree over their influence on key decisions or theaters, we may aggregate all these issues in the definition of the pie, and normalize the value of the pie to one. Yet, if states can affect the value of the pie that they bargain over, then we may want to endogenize the creation of the pie. In turn, we may want to drop any budget constraint on the set of possible offers, so as to allow for 'side payments' extending beyond the value of the pie created by the two parties – akin to concessions on other issue areas.

In sum, our argument explains how weak states may declare war even if they are rising. As we now document, our theory captures important strategic dynamics in the lead-up to WWII.

Illustration: The Second World War

We now apply our framework to shed new light on the causes of WWII, more specifically, Japan's decision to attack the United States at Pearl Harbor on December 7, 1941 and Germany's decision to declare war on the United States four days later.

To be clear, like other major conflicts, WWII resulted from a conjunction of causes. Our claim is *not* that economic factors were solely responsible for the conflict. Rather, we claim that economic motivations were important factors that can ultimately help place these cases in comparative perspective.

In the run-up to the war, Germany and Japan depended on the United States for access to vital resources they needed for economic growth. Neither country controlled spheres of influence that ensured unconstrained access to the resources it needed for growth. Furthermore, international economic interactions at the time were weakly institutionalized. Aware of how German and Japanese access to key economic resources would further their ability to endanger world order and put them within reach of regional hegemony in, respectively, Europe and East Asia – the United States sought to constrain their growth. This decision created serious hold-up problems in the German and Japanese economies, contributing to Berlin's and Tokyo's decision for war.

Both countries were considerably weaker than the United States. In 1938, its last year at peace, the German economy represented a mere 43% of the U.S. economy, at the time the largest in the world. Japan was even weaker. By 1940, the year prior to the onset of hostilities with the United States, its economy represented 23% of the U.S.'s. Furthermore, both countries were rising, from, respectively, 31% and 15% of the U.S. economy in 1929 (Bolt and van Zanden 2014). As such, WWII was launched by rising weaker powers which were motivated, at least partially, by the economic hold-up reasons captured by our mechanism.

The Pacific Theater

There is a vast debate on the causes of WWII in the Pacific. Some scholars question the usefulness of a rationalist approach to the conflict, claiming that it was due to excessive optimism on the part of the Japanese (Snyder 1991, chapter 4; Taliaferro 2004, chapter 4; Record 2009, 1-5). Others accept a rationalist account, arguing that, when compared to the decline to which peace fated Japan, war was the lesser of two evils (see, e.g., Russett 1967; Sagan 1988; Paul 1994; Copeland 2015; McCormack and Pascoe 2017).[11] Yet to complete a rationalist account, we need to endogenize economic growth and analyze the effect of Japan's weakness on the severity of the U.S.'s economic commitment problems. In short, Japan's military weakness undermined hopes for rapid, efficient economic growth in a system dominated by the United States.

Economic motivations were paramount in Japan's foreign policy and in its ultimate decision to attack Pearl Harbor. With limited resources of its own, Japan was highly dependent on foreign markets for raw materials, including energy. In a series of endeavors since the late 19th century, Japan gradually acquired access to additional economic resources by conquering territory in East Asia: Taiwan after the

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[11]Some assign a role to bureaucratic overreach in Tokyo (see Russett 1967, 99; Sagan 1988, 916) or in Washington (see Utley 2005; Sagan 1988). Finally, there is a debate on whether FDR adopted a tough policy toward Tokyo in order to deter a Japanese attack on the USSR (Heinrichs 1990) or provoke the Japanese as a backdoor entry into a war with Nazi Germany (see Trachtenberg 2006; Schuessler 2010; Copeland 2015 and the debate in Reiter and Schuessler 2010).

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). Continuing Japan's drive to control additional resources, the long and costly second Sino-Japanese war erupted in 1937. Three years later, in August 1940, Japanese foreign minister Matsuoka Yosuke expanded 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 (Iriye 1987, 131; LaFeber 1997, 192-193).

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 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." 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 (Barnhart 1987, 123; Utley 2005, 16). Furthermore, the United States imposed a series of "moral embargoes" on Japanese trade.

Germany's invasion of the Soviet Union in June 1941 presented Japan with a window of opportunity to grab the territories it needed to control the resources necessary for economic expansion (see, e.g., Heinrichs 1990; LaFeber 1997; Paul 1994; Copeland 2015). Foreign Minister Matsuoka favored an immediate attack on the Soviet Union (Ike 1967, 60). Well aware of this strategic situation, Washington

worried that Tokyo would open a second front against the USSR, which was already overwhelmed by the German attack – Operation Barbarossa (see, e.g. Wohlstetter 1962, 107, 126). Such a development would endanger the survival of the Soviet Union, making it possible for the entire Eurasian landmass to fall under the control of the Axis powers.

At the Imperial Conference of July 2nd, the Japanese cabinet decided instead to proceed with a Southern Advance – aimed at accessing resources in Southeast Asia, particularly oil – "no matter what obstacles may be encountered" (Ike 1967, 78). Japanese leaders became increasingly convinced that war with the United States might prove necessary. 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" (quoted in Wohlstetter 1962, 345-346).

On July 24th Japan launched the Southern Advance. The next day – aware of how Japanese access to additional resources would endanger the Soviet Union and place twin regional hegemonies within reach of Germany and Japan – the United States responded with a complete embargo on sales of oil to Japan. Importing so much of its oil from the United States, Japan faced two undesirable choices: war against a much stronger economy or a hold-up problem severe enough to bring about relative economic decline (Wohlstetter 1962, 356-357). The Japanese government eventually reached the conclusion that its policies were "mutually incompatible" with

those of the United States: Japanese attempts to acquire control over the territories necessary to access the resources it needed to maximize its economic growth would no doubt lead Washington to restrain Japanese access to resources controlled by the United States, so that this conflict between the strategies of the two countries "will ultimately lead to war" (Ike 1967, 152).

After months of tense negotiations, Japanese decision-makers chose war, and on December 7th, 1941, attacked the U.S. Pacific Fleet at Pearl Harbor. Whether or not the cabinet debated the strategic consequences of a direct attack – the topic of a lively debate in the historiography – it endorsed a war with the United States. In retrospect, the failure to anticipate the effect of an attack on Pearl Harbor may help explain why Japan opted for this risky opening gambit, which may in turn help account for the outcome of the conflict. But it does not explain the initiation of war itself.

To account for the deep causes of the war one has to understand why Tokyo decided to attack a far more powerful country despite rising Japanese economic power. The answer lies in part in Washington's hegemonic position in the international economy – and, more specifically, its ability to constrain Japanese access to vital resources. This position made possible the U.S. decision of the summer of 1941 to restrain Tokyo's access to oil. To understand this decision by the FDR Administration, in turn, we need to focus on the negative consequences for U.S. interests that Washington anticipated would result from Japanese access to key economic resources such as oil once Operation Barbarossa started. Tokyo no longer faced a Soviet threat in mainland Asia, giving it a freer hand in continuing Japanese territorial expansion;

and, worse, Tokyo might well decide to attack the Soviet Union directly, furthering its demise and opening the door to a dual regional hegemony of Germany and Japan over the Eurasian landmass. The essence of these dynamics is captured by the theoretical mechanism introduced in this article.

Many have argued that Japan's dependence on U.S. oil, and the fear of decline it produced in Tokyo, were a cause of conflict (Waltz 1979, 142; Copeland 2015). Since Japan lacked the resources to become self-sufficient, it needed an empire of adequate size to become so. In this way fear combined with ambition. For example, Paine (2012, 25) argues that "[i]f the West would not trade, then Japan would turn to the alternate economic model of the time, autarky, or economic self-sufficiency." This perspective is incomplete as an account of Japan's decision for war, however. Given that war is costly and destructive, it is not clear why expectations of lower economic growth would lead to the breakout of hostilities (Fearon 1996). The same weakness that made Japan dependent on resources controlled by the United States also made it unlikely to prevail in a war against U.S. forces. We explain why war was the least unpalatable option, by endogenizing economic growth, and exploring the role that Japanese relative weakness played in magnifying the U.S.'s economic commitment problem.

In sum, Japan's inability to access the necessary resources for economic growth in the U.S.-dominated international economic system contributed to Tokyo's decision to launch a war. Japan was relatively weak and dependent on access to foreign resources that were to a great extent controlled by the United States. When the expected consequences of Japanese access to key resources – namely, oil – for U.S. interests

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worsened, Washington restricted Japanese access to these resources it needed for efficient growth. Facing a severe economic hold-up problem, Japan initiated the Pacific War. War could be attractive even if it was expected to be costly and the odds of winning were low, because peace was so inefficient and victory would allow Japan to solve its economic hold-up problem and grow efficiently.

The European Theater

The day after the Japanese attack on Pearl Harbor of December 7, 1941, the U.S. Congress declared war on Japan. Three days later, on December 11, 1941, Germany declared war on the United States. Yet, Berlin was not obliged to assist Tokyo in its war against the United States, since Japan had not been attacked, and Germany was already entangled in a massive war with the Soviet Union. What explains Hitler's decision, one of the most puzzling of the WWII (Kershaw 2007, 382)?

Part of the answer, we argue, is that Hitler, who had always seen the United States as the world's most formidable power, and who was fully aware of the key role played by American capital in economic development of Germany during the Weimar period, had come to realize that Washington was determined to thwart German economic growth and territorial expansion, concerned about its consequences for U.S. strategic goals. This U.S. position had been evidenced in President Roosevelt's speeches from the late 1930s as well as U.S. policies supporting Britain in the war against Germany starting in 1939, ultimately leading Hitler to believe that war with the United States was the best path forward for Germany.

Since at least the late 1920s, Hitler had begun to appreciate the magnitude of

U.S. power, seeing in the United States both a model to emulate and a competitor to vanquish. U.S. power had been in unequivocal display given the key role that American capital had played in the development and ultimate collapse of Weimar Germany's economy. The 1919 Versailles Treaty required Germany to pay substantial reparations to Allied powers for causing WWI (Trachtenberg 1980; Schuker 1988; Kent 1989; Boemeke, Feldman and Glaser 1998; Cohrs 2006). When it proved difficult for Germany to pay, Washington attempted to create a more stable "reparations regime" in order to ensure European stability (Costigliola 1984, 119-123; Cohrs 2006, 137). The resulting Dawes Plan of 1924 led to a boom in U.S. private loans to Germany (Marks 1978, 245-249; Schuker 1988). Over the second half of the 1920s, U.S. lending to Germany created a financial "merry-go-round" 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 (Tooze 2006, 6). For Berlin, the economic benefits were substantial. 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 far more funds in U.S. private loans (27 billion marks) than the totality of the reparations it had to pay (19.1 billion marks) in 1921-1931 (Marks 1978, 254). Yet this also meant that by 1927 "German dependence on American capital seemed to be an inevitable fact of life" (McNeil 1986, 161). Germany depended on access to U.S.-controlled resources – capital – for its growth.

This favorable international environment soon came to a grinding halt. Starting in late 1928, the U.S. credit market tightened and interest rates rose, ending long-

term loans to Germany (McNeil 1986, 217-219; Tooze 2006, 14). Then 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 U.S. capital had ended. Berlin's economic woes were compounded by U.S. protectionist legislation, namely the Smoot-Hawley Tariff Act trade of June 1930 (Costigliola 1984, 231; Tooze 2006, 14). As Burke 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" (Burke 1994, 128). Germany found itself not only unable to make reparations payment but also on the verge of economic collapse. National income and industrial production dropped sharply; unemployment rose dramatically (Kolb 2004, 111).

The catastrophic hold-up problems generated by German dependency on U.S. capital were not lost on Hitler. When he was appointed Chancellor in early 1933, a third of the labor force was unemployed (Kolb 2004, 111). The Nazis actively portrayed this situation "as a consequence of the 'system,' and ruthlessly mobilized open and latent resentment of parliamentary democracy" (Kolb 2004, 112). The deep transformation of the international economy over the previous four years had played a prominent role in the rise of the Nazi Party, who argued for military expansion as a way of ensuring German economic autonomy and prosperity. The Nazis rose in the polls in part because "it 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 clearest articulation of Hitler's views on the United States can be found in his *Zweites Buch* of 1928 (Hitler 2003). There, Hitler repeats his well-rehearsed arguments on the need to rearm the nation, followed by a military conflict in Eastern Europe aimed at acquiring sufficient *Lebensraum* for the German people – a goal that in his morally warped view required the destruction of the Soviet Union and the annihilation of its population. But, in the *Zweites Buch*, these arguments are presented as merely a means to an end: a struggle for world domination between a German-controlled Europe and the United States. Without the scale of America's natural and human resources, Hitler wrote, Germany would be destined to have the status of "Holland or Switzerland or Denmark" (Hitler 2003, 128). Even before coming to power in 1933, therefore Hitler considered the United States to be Germany's "toughest rival possible" in economic terms (quoted in Kershaw 2007, 387).

In part, Nazi strategy is driven by the need to free Germany from the U.S.'s economic influence and establish it as an equal power. The core of Hitler's foreign policy was 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.). Or, as Adam Tooze puts it:

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 ... by the emergence of the United States as the dominant global superpower. ... 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 super-power competition with the United States (Tooze 2006, xxiv).[12]

In this early period, however, Hitler remained ambivalent on whether competition with the United States would result in war. On occasion, Hitler did project a military showdown with the United States, writing that "it is thoughtless to believe that the conflict between Europe and America would always be of a peaceful economic nature" (Hitler 2003, 116). But whether or not Hitler intended all along to use the resources acquired through military conquest in Eurasia as a springboard to defeat the United States – as argued by Schweller (1998, 93-120) and Goda (1998) – remains unclear.

Instead, Hitler focused on liberating Germany from its severe economic hold-up problem by preparing for a military challenge to the European status quo. Capture of

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[12]See also Tooze (2006, 656-671).

land in Eastern Europe alleviated Germany's vulnerability to U.S. decisions to withhold resources or intervene in the markets by giving Berlin a sizable economic base and control over vital natural resources. This would boost German economic power, and therefore ameliorate the U.S.'s economic commitment problem highlighted in our theory.[13]

From Washington's perspective, however, German expansion entailed considerable risks. Washington did not want Berlin to acquire a sphere of influence, because greater economic German power meant lessened German dependency on the United States and greater German military power. Berlin might become a regional hegemon in Europe and exercise greater global influence. Nazi Germany's expansionary designs, therefore, were met with U.S. opposition even before Hitler's armed conquest of Poland in September 1939.

U.S. pressure became apparent as early as FDR's speech of Oct. 5, 1937, in which the U.S. president called for the "quarantining" – i.e., the isolation, with dire economic consequences – of any country that invades the territory of others (Kershaw 2007, 391). While this economic quarantine was never implemented, it nevertheless had an important effect on Hitler's perception of U.S. goals and U.S.

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[13]Our argument is thus distinct from Taylor (1966)'s infamous view that Hitler was a security-seeker. To the contrary, Hitler's strategy was deeply revisionist in that he wanted to overturn the status quo if necessary by force in order to make Germany a first-rate power, capable of competing with the United States. That required a vast economic basis, which in turn required the conquest and domination of large swaths of territory in Eurasia.

economic policy toward Germany. From this point onward, Hitler was convinced of FDR's willingness to wage economic warfare on Germany (Kershaw 2007, 391). Hitler's experience during the late Weimar years made clear the tremendous hold-up problems such a policy would produce.

Eighteen months later, on April 14, 1939, FDR sent a message to Hitler asking him to renounce attacking any of a list of over thirty countries in Europe and the Middle East; and committing to consider arms control and free trade in exchange (Kershaw 2007, 392-393). Again, this led Hitler to reinforce his view that Washington would impose heavy economic costs on Germany if Berlin decided to pursue territorial expansion by military means (Kershaw 2007, 393-394). As Hitler told the Reichstag in a speech delivered on April 28, 1939, "so-called democratic statesmen ... believe they have won an eminent political success when they manage to prevent a people from making sales, for example, by boycotting its markets, in order to starve them out, I presume. I need not tell you that, in accordance with my convictions, a people will not starve because of this, but it will be all the more willing to fight under such circumstances" (quoted in Domarus 1997, 1576).

Certainly, FDR appeared to be willing to remove any trade barriers with Germany on condition that Berlin renounce using its military power to conquer additional territory. But, given its preponderant position in the international economy, it was impossible for the United States to make an irreversible commitment to this generous policy. Nothing ensured that Washington would treat Berlin with generous terms if Germany were to remain a comparatively weaker middle power.

U.S. pressure intensified once WWII started in Europe on September 1, 1939; and,

particularly, after the German invasion of the Soviet Union on June 22, 1941. Already in June 1940, during the swift German invasion of France, FDR "publicly avowed to 'extend to the opponents of force' [i.e., those invaded by Germany] the material resources of the United States" (Kershaw 2007, 396). On July 19, after France had capitulated, FDR made clear his intention to extend continued support to Britain (Kershaw 2007, 396). Before the year was over, the Administration proposed the Lend-Lease program providing military aid to Germany's adversaries in the war and FDR declared the United States to be "the arsenal of democracy" (Kershaw 2007, 397). The German army's high command interpreted these measures as coming close to "a declaration of war on Germany" (quoted in Kershaw 2007, 399). Hitler concurred, reacting to the Lend Lease Act by saying that "it will come to war with the United States one way or another" (quoted in Kershaw 2007, 399).

Washington was reaching the same conclusion that war was highly likely. The U.S. military stated in its "Victory Program" of September 11, 1941, that if Nazi Germany were triumphant in Europe, it would prepare for "the eventual conquest of South America and the military defeat of the United States" (quoted in Trachtenberg 2006, 118). That same day, FDR announced that the U.S. Navy would shoot any German warships in the West Atlantic "on-sight" – an order that was interpreted in Berlin as another step toward what seemed by then to have become a largely unavoidable war (Kershaw 2007, 409).

Japan's attack on the U.S. fleet at Pearl Harbor opened a window of opportunity – U.S. land forces were not yet prepared to open a second front in Europe and German forces were at the gates of Moscow. As such, the Japanese attack helps account for

the timing of Hitler's decision: Germany decided to fight the United States when it thought Washington would concentrate its efforts in the Pacific theater, containing Japan. If, as Hitler expected, German forces would soon be able to finish off the war in Russia, this strategic outlook might permit Germany to cut off U.S. supplies to Britain, bringing it to a negotiated peace and thereby removing Washington's remaining allied in Europe, which in turn might lead Washington to settle for an agreement with Berlin that left Germany in control of continental Europe.

While this logic may help account for the timing of Hitler's decision to declare war on the United States, it does not account for the deep causes behind this decision. As Hitler commented to Nazi party leaders the day after his declaration of war, "even if Japan had not joined the war, [Germany] would have had to declare war on the Americans sooner or later" (quoted in Kershaw 2007, 382). The deeper cause of Germany's decision to declare war on the United States lies in the structure of the international economy and in the U.S.'s perceived intention to curtail German economic growth. Hitler saw U.S. escalatory measures short of war as signs that a future war was highly likely. The United States had a privileged position in the international economy that allowed it to constrain other states' access to resources and markets. Germany was fighting to create a sphere of influence that would limit U.S. ability to constrain it and feared that the United States would curtail its territorial expansion, which it saw was vital for efficient future economic growth. This expectation contributed to Germany's decision to declare war on the United States, despite the fact that Germany was, at the time, rising relative to America.

It is noteworthy that, in his December 11, 1941, speech declaring war on the

United States, Hitler refers back to FDR's quarantine speech of four years earlier as part of his justification for war, arguing that Washington was intent in interrupting Germany's development path: "In public he [FDR] hypocritically claimed to be interested in peace while at the same time he threatened every country that was ready to pursue a policy of peaceful understanding by blocking credits, economic reprisals, calling in loans, and so forth" (quoted in Weber 1988, 406). Furthermore, Hitler complained, FDR's policy aimed "to deny the German, Italian and Japanese nations the prerequisites for their vital natural existence" (quoted in Weber 1988, 412).

In sum, although the cost of war with America was expected to be vast, Berlin thought that the expected outcome of fighting was superior to the expected outcome of avoiding war with the United States. Faced with Washington's determination to constrain German economic and territorial expansion, Berlin opted for war. Our contribution is to explain why Hitler thought war with the United States was ultimately preferable to the maintenance of peace. To account for this belief, we highlight the serious economic commitment problem of the United States; a problem that was intensified by German relative weakness, combined with the absence of a sizable German sphere of influence and the weak institutionalization of the international economy. Washington tried to constrain German expansion because of the negative security consequences it associated with further economic growth. War against the United States became, from Berlin's perspective, preferable to remaining at peace with America.

Conclusion

This article introduces an economic theory of war, explaining how a weaker state's need to access the resources necessary for efficient economic growth – when conjoined with a powerful state's incentives to constrain its access to those resources for fear of the consequences of the weaker state's economic growth – may produce incentives for conflict. We illustrate how this mechanism contributed to Japan's decision to attack the United States in 1941 and Germany's decision to declare war on the United States days later.

More generally, our argument provides a framework for assessing the risks of war due to economic motivations, shedding light on the historical pattern and providing lessons for future scenarios. In comparison with the U.S. interactions with Germany and Japan that we examined, America's rise in the late 19th century was more likely to remain peaceful. Since the United States already possessed a sphere of economic influence on the American continent, bolstered by the Monroe Doctrine, it was less likely that Britain would restrain U.S. access to resources; this in turn made it less likely that Washington would challenge Britain militarily.

With the end of WWII, two factors have reduced the odds of great power conflict, consistent with our theory. First, nuclear weapons have raised the cost of war. Second, the institutionalization of trade has increased the cost the United States would pay to constrain another country's economic growth.[14]

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[14]Understanding the sources of this institutionalization is an important question for future work.

Applying these lessons to the U.S.-Soviet rivalry, we see that there was little economic incentive for a direct confrontation. Both countries controlled significant markets for goods and resources. Furthermore, the two blocs traded little between them, limiting their ability to restrict each other's access to the resources they needed for economic growth. In light of the potential destruction that nuclear war would bring about, fighting over additional markets would be highly unlikely to result in faster growth for either superpower. Despite the intense rivalry between the two, competition between them never broke into direct military conflict.

The explanation for war we introduce is also able to account for smaller conflicts. For example, the United States decided to use force to expel Iraq from Kuwait in 1991 in part out of concern that, were Iraq to launch an offensive over Saudi oil fields in close proximity to Kuwait, it would impact U.S. access to oil – and its cost – putting Saddam Hussein in a position that allowed him to constrain U.S. economic growth. Going back in history, our mechanism may also account for the dynamics at play in wars of colonial conquest. A stronger state may want to launch a war so as to gain control over a weaker territory's resources, which it can then invest more efficiently. This dynamic may have contributed to European states scrambling to acquire territory overseas.

Looking ahead, we can use our framework to analyze the odds that U.S.-China relations will remain peaceful. Given both countries' nuclear status, the costs of war remain particularly high. Furthermore, and although China possesses a large and growing domestic market, Beijing is relatively dependent on access to international markets for its economic growth. This could present a problem for peace. At the same

time, Washington would pay a high cost to attempt to restrict Chinese access to these markets particularly given China's membership in the World Trade Organization. As long as these fundamental features of U.S.-China economic interactions remain, the economic dimension of U.S.-China relations will continue to be a force for peace.

Acknowledgements

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Figure 1: The Inefficiency of Peace

Pie π

$p(m_2)\pi'(I_2)=k$

$\pi(I_2)$

$\pi'(I_2)=k$

$I^*(m_2)$

I^{fb}

Investment I_2