Why Not Fight and Trade?
Dissecting the Logic of the Opportunity Cost Mechanism

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ABSTRACT

The opportunity cost mechanism – the idea that the costs of forgoing trade during war cause states to instead choose peace – is the foremost reason trade is thought to cause peace. But, if trade is so valuable to states that it can prevent war, why do they so often choose to forgo it during war? The twin assumptions that trade ceases during war and that states greatly value trade both seem plausible on their own, but they are surprisingly difficult to reconcile with each other. This article explores what happens to the opportunity cost mechanism when states are given the option to fight and trade. It brings to light a set of related problems with the logic of the opportunity cost mechanism and tries to remedy them. It explains the surprising and perhaps improbable conditions necessary for the opportunity cost mechanism to be tenable.

If trade is valued so highly that it can prevent wars, why do states choose not to trade while they fight? The hypothesis that trade causes peace is among the most venerated theoretical claims in International Relations. The most prevalent reason given is the opportunity cost mechanism: states decide against war in order to continue trading with would-be adversaries.¹

other words, the opportunity costs of forgoing trade during war cause peace. In taking the impossibility of trade during war for granted, however, the literature on the opportunity cost mechanism has overlooked perhaps the gravest challenge to it.\(^2\) This paper tries to square two assumptions of the opportunity cost mechanism, namely a) that trade is greatly valued by states and b) that states do not trade during war. Although each assumption seems plausible on its own, the two are surprisingly difficult to reconcile with each other.

Embargoing trade during war is a policy choice, not an inherent consequence of war. If the option – not the reality, but just the option – to trade during war is added to the existing theory without any further changes, the opportunity cost incentive vanishes. For the opportunity cost mechanism to have logical coherence under any circumstances, a new variable that is largely absent from the literature is necessary: the costs of trading during war. Even after introducing this variable to salvage it, I show that the opportunity cost mechanism is subject to two as yet unrecognized constraints that limit its plausibility and explanatory power. The central issue behind these is the need to explain the rarity of trade during war while still assuming that trade is valuable enough to states that they would choose it over war.

This exercise leads to three plausible conclusions, each of which resolves the contradiction between the value of trade and the rarity of wartime trade in its own way. First, trade with would-be adversaries may simply not be as valuable to states as the theory assumes.

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\(^2\) Three notable exceptions are Levy (2003), Levy and Barbieri (2004), and Barbieri and Levy (1999), all of which emphasize the problematic nature of the normally taken-for-granted assumption that trade stops during war despite the ostensibly strong incentives to continue it. Beyond this initial insight, however, these articles proceed in a different direction from this paper, as I will touch on below.
On reflection, this conclusion should not necessarily be surprising. Although the opportunity cost mechanism would seem to represent a straightforward application of international political economy insights to international security, the literature on trade policy may suggest the opposite conclusion. Far from placing unfettered trade among their foremost priorities, states have routinely restricted it for a wide variety of reasons. I will argue that this is the most compelling of the three possible conclusions, but I cannot rule out the other two through deduction alone. Second, a powerful but currently unstudied social norm against wartime trade could underlie the opportunity cost mechanism by providing a constraint against wartime trade. Third, relative gains concerns may become elevated in wartime, making wartime trade more costly than peacetime trade. However, as I will explain, the potential of this third explanation is more circumscribed than it seems at first glance. In none of these three cases does the opportunity cost mechanism retain both its liberal-rational essence and its explanatory power. If it does in fact provide a significant deterrent to war, it does so due in large part to a constructivist or realist motive.

This paper proceeds deductively through a step-by-step exploration of the logic of the opportunity cost mechanism. I begin by reviewing the theoretical literature. I then establish the window of cases in which trade causes peace through the opportunity cost mechanism, and show how opening up the option to trade and fight eliminates this window if no other changes are made. I next introduce the costs of trading during war and the two additional constraints on the opportunity cost mechanism that center on these costs. This leads to an assessment of the size and nature of the costs of trading during war geared towards the question of whether they can be large enough to meet these two conditions. Because this analysis casts doubt on the assumption that states value trade enough to choose it over war, I then discuss the question of how much
states value trade. Finally, I point to the importance of deriving and testing additional observable implications of theories of trade and conflict, starting with explaining the rarity of wartime trade despite its assumed value.

**Literature Review**

This section reviews the four causal mechanisms through which trade may cause peace and the most prominent theoretical critiques of trade as a cause of peace. The focus here is on the theoretical side of the trade-conflict debate rather than its more extensive empirical counterpart. I defer discussion of the smaller literature on wartime trade and existing critiques of the opportunity cost mechanism (Levy 2003; Barbieri and Levy 1999; Levy and Barbieri 2004) until the appropriate points in later sections.

There are four main mechanisms through which trade is thought to cause peace: 1) the opportunity cost mechanism, 2) by empowering pro-peace interest groups, 3) by enabling costly signaling, and 4) by increasing the frequency of transnational social interactions so as to promote transparency and/or a sense of community.

First, the most prevalent of the four is the opportunity cost mechanism. The idea is elegant in its simplicity; governments choose peace over war in order to continue reaping the benefits of trade. The opportunity costs of forgoing trade during war cause peace. In what is often considered the first definitive statement of the opportunity cost mechanism, Polachek (1980) makes explicit the pivotal assumption that conflict reduces or eliminates trade:

Conflict is assumed to affect the terms of trade. Specifically, greater levels of conflict make trade more difficult. Reasons include retaliatory tariffs, quotas, embargoes, and other trade prohibitions.

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3 For reviews of this empirical literature, see Barbieri and Schneider 1999; Mansfield and Pollins 2001; McMillan 1997.
4 For references, see first footnote.
Anderton and Carter (2001, 445) similarly state that a fundamental assumption of the hypothesis that trade promotes peace is that “serious conflict among societies disrupts trade.” Yet in Polachek’s list, all of the factors which inhibit trade are voluntary actions taken by states; none are inevitable consequences of war. In formal work, Dorussen (1999, 453) shows that trade’s pacifying effect depends in part on the ability to commit not to trade after wars, which increases opportunity costs. Due to trade’s value, this commitment is not easy to make credible. This problem, as I will explore, also exists during war.

Although generally functioning as a constraint against war, the opportunity cost mechanism may be able to cause war under special circumstances. If a close trading partner is threatened with military defeat, it might make sense to come to their aid by joining a war (Aydin 2008). Fordham (2007) explains the entry of the United States into the First World War along these lines. In addition to causing war-joining, the opportunity cost mechanism may bring about war when a potentially lucrative trading partner chooses not to trade, leaving war as a means to force economic openness on them (e.g., Rosecrance and Thompson 2003, 382). The Opium Wars offer the best-known example, with British war aims being in part to open Chinese markets to opium exports.

Second, the opportunity to profit from trade can create and/or strengthen domestic interest groups that favor both trade and peace (Mansfield and Pollins 2001, 836; McDonald 2004; Oneal and Russett 1997, 268; Mastanduno 2003). Trade provides these exporters with an incentive to lobby for harmonious relations. Over time, the profits from this trade can empower

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5 Somewhat less clear is why the conquering power could not replace the former trading partner, which may suggest that this theory better fits sovereign debts (which would be renounced by the victor) than trade interdependence.

6 Somewhat less clear is why the trading partner would have resisted the benefits of trade, although that concern is resolved in the unique context of the Opium Wars given the social costs of opium use.
and entrench these groups, giving them added leverage to maintain the peace. The assumption again is that war necessarily disrupts trade. In that sense, this mechanism is susceptible to the same challenge I lay out for the opportunity cost mechanism in the remainder of the article.

Third, trade may increase the ability of states on the brink of war to send informative costly signals and thereby reduce the chances of war due to miscalculation (Morrow 1999; Gartzke et al. 2001). These signals take the form of economic sanctions and embargoes, with the hope that the cost to the sanctioner is sufficient to convince the target that only a highly resolute actor would be willing to endure those costs. Morrow (1999) goes farther, arguing that the incentive to trade merely increases the amount that the state threatening war can demand to avoid it, and therefore trade does not affect the probability of war except by enabling signaling.

Fourth, trade can cause peace because it increases transnational interpersonal interactions (Barbieri and Schneider 1999, 388-389; Dorussen and Ward 2010; Oneal and Russett 1997, 270). This could happen because trade provides information that averts dangerous misperceptions or for reasons more in line with Constructivism, for instance that trade brings with it increased social interaction that fosters a sense of commonality and esteem. Reed (2003) develops a model in which economic interdependence makes peace more likely by reducing uncertainty. Deutsch et al. (1957) consider various types of cross-border social interactions as causes of stable peace in the form of security communities.

A variety of theoretical criticisms have been leveled at the claim that trade causes peace. Most emanate in one way or another from the Realist paradigm, sometimes as explicit challenges

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7 Somewhat less clear is why trade offers a superior means to do this than that which always exists: a limited use of force. Alternatively, it may be problematic that trade sanctions can be perceived as a signal of the unwillingness to use force (low resolve) rather than as a signal of high resolve.

8 Future research may wish to explore whether this conclusion is contingent on the modeling assumption of take-it-or-leave-it offers.
to the Liberal paradigm. Although rarely articulated in print, the most widely held objection is that trade is not important enough to states for it to be able to override the security considerations guiding decisions about war and peace (Barbieri 1996, 33; Barbieri and Schneider 1999, 388). At times this viewpoint takes the form of claims that the observed correlation between trade and peace exists because “trade follows the flag”; that is, close relations cause trade rather than trade causing close relations (Gowa and Mansfield 1993).

Barbieri (1996) has gone farther and argued that economic interdependence, when it takes the form of asymmetric dependence, can create insecurity for states and cause wars aimed at reducing their dependence on the caprices of a vital trading partner. Japan’s fears of economic strangulation and the role of the oil embargo imposed by the United States in 1941 in leading Japan to start the war seem to offer an example. Although usually cast as an empirical debate with the plurality of studies arguing in favor of the proposition that trade causes peace (e.g., Oneal and Russett 1997), Barbieri also extends earlier arguments about the perils of economic dependency to the theoretical claim that such tensions can cause wars.

Perhaps best known is the relative gains critique, which holds that states prioritize which side profits more from trade (and consequently gains in relative power) over the absolute size of their own profits (Grieco 1990; Mastanduno 1991). A trade in which one state gains 5 and another 3 is a relative loss of 2 for that second state, from this perspective. In contrast, the absolute gains perspective sees it as a gain of 3. The relative gains critique sees trade as much closer to a zero-sum situation in which any gain by one state is a relative loss for others. Consequently, if relative gains take precedence over absolute gains, trade is much less likely to

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9 However, Gartzke and Li (2003) argue that Barbieri’s measure of dependence is in part a measure of global economic isolation, because having few trading partners leads to large shares of trade (dependence) on a few. It may be that these economically isolated states tend to be politically isolated and war-prone as well, with the causal arrows unclear.
have a pacifying effect and the opportunity cost mechanism would no longer hold. However, the relative gains critique tends to break down if more than two actors are present, and especially if states have more than one plausible enemy in a future war (Snidal 1991a; Snidal 1991b; Liberman 1996). This is so because receiving less than a trading partner from a mutually profitable trade may represent a setback relative to that partner, but it is still a gain relative to every other state in the system. A trade in which one state gains 5 and another 3 is loss of 2 for that second state relative to its trading partner, but a gain of 3 relative to each other state. Morrow (1997) contributes a separate critique in the form of a model which shows that because states will likely spend a large fraction of their gains from trade in non-military areas, it is difficult for relative gains fears to outweigh absolute gains. As Morrow notes, however, this logic may well not apply during wars when military spending can increase greatly as a share of GDP. Although relative gains reappear in the analysis below, I will make the case that the gravest conceptual challenges to the opportunity cost mechanism hold even if states prioritize the absolute gains from trade.

The Option to Fight and Trade

An examination of the options available to states facing decisions about war and trade reveals the problem that the possibility of trading during war creates for the opportunity cost mechanism. In this section, I set up and walk through the logic of the opportunity cost mechanism both with and without the option to trade during war, but without further changes.

I adopt the approach of mirroring the existing literature’s theoretical discussion of the opportunity cost mechanism as closely as possible, with the eventual additions only of the option

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10 Morrow’s article is also notable and unusual because it allows for the possibility of trade during war when it is in the interests of the involved parties. However, the article focuses on relative gains and is not oriented as a critique of the opportunity cost mechanism.
to trade during war and costs incumbent in doing so. This approach best highlights the effects of these additions. An alternative approach which involves creating and then modifying a more sophisticated version of the opportunity cost mechanism would inevitably raise questions of whether the added sophistication factors into the theoretical results. Nonetheless, some might reasonably object to the simplistic approach I am using. For instance, it is decision-theoretic rather than game-theoretic, i.e., it looks at the incentives facing each actor in isolation. Like the existing literature’s discussion of the opportunity cost mechanism, it also assumes complete information and treats states as unitary actors. This means retaining the focus on national interests rather than firms’ interests, despite the fact that it is firms which conduct trade. Future research may wish to explore whether more complex models can find exceptions to my conclusions by incorporating strategic interaction, bargaining, multiple rounds of interaction, uncertainty due to private information, a domestic political level of analysis featuring competing interest groups, etc.\textsuperscript{11}

I start by defining the variables and outcomes. All are at the directed dyad level. The benefits of trade ($T$), therefore, refer only to the benefits for one state of trading with one specific would-be adversary. The costs of trading during war ($C_{TW}$) are italicized because they are introduced in the next section. I first consider the merits of the opportunity cost mechanism without those costs, in keeping with their absence in the current literature. This affects the payoff for the outcome of war with trade. Note that by allowing the expected utility of war ($W$)

\textsuperscript{11} For instance, including both of the states on the brink of war with each other would seem to make it easier for war to occur without trade, because only one of the two states must prefer an embargo to trade in order for trade to cease. However, allowing for the two states to negotiate and optimize the terms of trade to make trade beneficial for both sides might negate much or all of this effect.
to be positive, I am not assuming states derive any intrinsic utility from fighting a war, but rather merely that states may sometimes prefer war to peace based on all non-trade considerations.

Variables

\[ W \quad \text{Expected Utility from War} \]

\[ P \quad \text{Expected Utility from Peace} \]

\[ T \quad \text{Benefits from Trade} \]

\[ C_{TW} \quad \text{Costs of Trading during War} \]

Outcomes Payoffs

Peace with No Trade \( P \)

Peace with Trade \( P + T \)

War with No Trade \( W \)

War with Trade \( W + T - C_{TW} \)

With no modifications, the opportunity cost mechanism causes peace under two conditions: 1) Peace with trade must be preferable to war without trade. 2) War without trade must be preferable to peace without trade. This second condition is necessary for trade to shift the situation from war to peace; without it peace would happen regardless of any trade considerations. These two conditions are reproduced below:

\[ W < P + T \]

\[ W > P \]
These conditions can be combined into a window of cases in which trade causes peace. This window should be thought of in terms of how much war can be preferred to peace such that trade still causes peace. When war is too strongly preferred to peace, the benefits of trade are insufficient to cause peace. When war is not preferred to peace at all, trade makes no difference for the outcome. The window falls in between. A wide window would imply that trade often causes peace. The inequalities make clear that the potency of trade as a cause of peace depends mainly on how much trade is valued, as one would expect.

\[ P < W < P + T \]

Simplifies to: \[ 0 < W - P < T \]

This window (above) is the standard theory of when and why the opportunity costs of forgone trade cause peace. It seems quite plausible. It relies, however, on the implicit and implausible assumption that states do not have the option to trade and fight.

Relaxing this assumption through the addition of the option to trade during war produces starkly different conclusions. Without introducing the costs of trading during war, this difference is particularly striking. Assuming trade is at least slightly beneficial (\( T > 0 \)), war with trade is always preferable to war without trade. Similarly, peace with trade is always preferable to peace without trade:

\[ W + T > W \]

\[ P + T > P \]
Consequently, the two strictly dominated options will never be selected, so the decision reduces to a choice between war with trade and peace with trade. War will then ensue if war with trade is preferable to peace with trade, as shown below.

\[ W + T > P + T \]
Simplifies to: \[ W > P \]

Because the benefits of trade are obtained regardless of the decision between war and peace, trade cancels out of the decision calculus altogether. Without costs of trading during war, introducing the option to trade and fight – an option that states do possess – causes the opportunity cost mechanism to fall apart entirely. This is the basic reason why the logic of the opportunity cost mechanism is under-developed. Whether it is wrong or merely incomplete is the subject of the remainder of this article. In the next section, I explore whether introducing costs from trading during war can rescue the theory.

**Can the Costs of Trading during War Save the Opportunity Cost Mechanism?**

The window of cases in which trade is expected to cause peace depends not just on the size of the benefits of trade, but also on the size of the costs of trading during war. This section explains the necessity of that added constraint by developing the logic of the opportunity cost mechanism to incorporate the costs of trading during war. This new variable has the effect of allowing peacetime trade to be more valuable than wartime trade.
What are these costs of trading during war? Are they large enough to matter? I revisit these questions in more detail in a later section, but a definition is useful here. The costs of trading during war are costs that do not exist when trading during peace or when fighting a war without trade. These costs, by definition, exist only in the joint condition of trade and war. They can be thought of as both the reduced value of trade due to war and the reduced value of war due to trade (e.g., if trade reduces the probability of victory). The costs of trading during war include only the costs directly from forgone trade, and do not extend to the many other types of economic costs suffered during wars. Within those bounds, this variable is something of an umbrella encompassing several forms of costs. I have identified three main types. First are logistical costs such as the expenses incurred in bypassing active battlefields or shipping goods through neutral states, including transportation costs and insurance premiums. Second are strategic costs taking the form of relative gains concerns, i.e., the fear that the adversary will gain more from trade and so gain a military advantage. Third are normative costs deriving from a strong norm against trading with the enemy, provided that such a norm exists. I evaluate these in more detail in a later section, but for the moment it suffices to treat the costs of trading during war as a broad umbrella term.

For trade to cause peace, peace with trade must be preferable to war with trade, as shown below. Without costs of trading during war, this was only possible when peace was preferable to war, in which case trade was making no difference. Introducing the costs of trading during war allows peace with trade to be preferable to war with trade even when war without trade is preferable to peace without trade. Including these costs therefore reopen the possibility that the opportunity cost mechanism can be sustained for some cases. As shown below, the result is a new condition limiting the window of cases in which trade causes peace.
\[ P + T > W + T - C_{TW} \]

Simplifies to: \[ P > W - C_{TW} \]

Rearranges to: \[ C_{TW} > W - P \]

The previous section explained the logic behind two other conditions: 1) peace with trade is preferable to war without trade and 2) war without trade is preferable to peace without trade. Combining both with the new condition that peace with trade must be preferable to war with trade, trade causes peace if all three of the following conditions are met:

\[ \begin{align*}
W - P &> 0 \\
W - P &< T \\
W - P &< C_{TW}
\end{align*} \]

For the opportunity costs of forgone trade to cause peace, a state must prefer war to peace, but this difference must be less than the value of the trade and the costs of trading in war, whichever is lower. This is a new limiting condition. If the costs of trading during war are low, trade very rarely causes peace. If these costs are zero, trade never causes peace through the opportunity cost mechanism. In itself, this set of constraints would seem to offer reprieve to the opportunity costs mechanism in that the resultant window of cases could still be quite significant. But, the next section addresses the gravest challenge facing the opportunity cost mechanism.

**Why Not Fight and Trade?**
The gravest challenge for the opportunity cost mechanism is that if trade is so valuable that it can cause peace, states which choose to fight wars would follow their incentives and choose to trade during them. Trade would continue during most wars, but it normally does not. Explaining the rarity of trade during war is necessary for the opportunity cost mechanism to be plausible, but it is no small challenge due to the assumption that trade is valuable enough to prevent wars. For the opportunity cost mechanism to be able to cause peace while also explaining the rarity of trade during war, yet another constraint comes into play.

Do states trade during wars? This is an empirical question in need of further study, but the existing evidence seems to support the conclusions that 1) war greatly disrupts trade (Glick and Taylor 2010), 2) large-scale trade during war is uncommon (Anderton and Carter 2001), but 3) there are noteworthy cases of trade between belligerents continuing during war (Barbieri and Levy 1999). Some wartime trade takes the form of smuggling, at times with tacit government approval, while in other cases governments have openly approved and even facilitated such trade. In the War of 1812, for example, it was initially U.S. government policy to permit trade with the Britain even to the extent of supplying food to the Royal Army. Thomas Jefferson wrote to President James Madison that the American people would be more likely to support the war if they could continue to reap the benefits of trading with Britain, no small concern given the strong opposition to the war in New England (Bickham 2012, 94). Levy and Barbieri (2004) 12

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12 The question of why states forgo trade during war despite the costs of doing so parallels the rationalist war puzzle (Fearon 1995), which asks why states go to war at all given the costs of doing so. The same question can also be asked about why wars escalate from limited war towards total war, and the cessation of trade can be thought of as one element of that escalation. One can argue along these lines that mutually costly escalation consistently happens despite its costs as states punish and pressure each other, so the lack of wartime trade should not be surprising. Yet, peace is common, as is limited war. So then, why is wartime trade so rare? The analogy between wartime embargoes and escalation is apt in many ways, but it does not seem to be able to explain why the default policy of belligerents is to prohibit trade.
survey a variety of cases of wartime trade, including the War of the Spanish Armada, the War of the League of Augsburg, the Seven Years War, the War of 1812, the Crimean War, the American Civil War, and the 1992-1995 Bosnian War (also see Andreas 2004). They provide a set of hypotheses to explain variation in wartime trade, emphasizing most of all that trade during war is more common when state capacity to control it is inadequate.

The existence of trade during war would seem to pose an even more damning problem for the opportunity cost mechanism than the problems discussed here, because self-evidently there can be no opportunity cost from forgone trade if trade is not forgone (Levy 2003; Levy and Barbieri 2004; Barbieri and Levy 1999, 465). This is certainly correct for the cases in which belligerents are trading, but, perhaps counter-intuitively, it is rarity of trade during war which raises greater doubts about the opportunity cost mechanism.

If trade usually does occur during war, it would be quite plausible that another large set of cases exists in which trade is causing peace. Why? Suppose that the costs of trading during war reduce the value of wartime trade relative to peacetime trade, but wartime trade still retains some positive value. When states care more about this reduction in the value of trade than about going to war, peace with trade would result. When states care more about going to war than the reduction in the value of trade caused by it, their incentives dictate that they would go to war while continuing to trade in order to reap as much of its benefits as is possible in wartime. Whether war or peace occurs would then depend on whether the preference for war over peace is larger or smaller than the costs of trading during war. The existence of many cases of war with trade therefore would fit a version of the opportunity cost mechanism remodeled to incorporate the costs of trading during war, as shown below.
Peace with trade if: \[ 0 < W - P < C_{TW} < T \]
War with trade if: \[ 0 < C_{TW} < W - P < T \]

The problem here is still that the value of trade necessarily implies that trade should normally occur in the wars that do take place. This leads back to the puzzle: the rarity of wartime trade despite the value of trade.

So, what determines whether or not trade occurs in war? For states to embargo trade during war, war without trade must be preferable to war with trade. As shown below, states would only choose war without trade over war with trade if the costs of trading during war exceed the value of the trade:

\[
W > W + T - C_{TW}
\]
Simplifies to: \[ C_{TW} > T \]

But, if trade is so valuable, how plausible is it that this condition is met? To explain the historical regularity of wars without trade, it must be true that the costs of trading in war usually exceed the benefits of trade. The opportunity cost mechanism can cause peace without falsely predicting that trade generally continues during war under the following conditions, and only under these conditions:

\[
0 < W - P < T < C_{TW}
\]
The most critical issue is now the surprising need for the costs of trading during war to exceed the benefits of trade. In the next section, I take up this question of how high the costs of trading during war can be. In particular, I consider how they can be greater than the benefits of trade. I explain why this final requirement is only likely to be met if the trade is not very valuable. Because the strength of the opportunity cost mechanism is bounded by the benefits of trade, this would imply that the explanatory power of the theory is low.

**How Large Are the Costs of Trading during War?**

The viability of the opportunity cost mechanism depends on the magnitude of the costs of trading during war. The two previous sections showed the two distinct ways in which this is true, and explained why the costs of trading during war must generally exceed the benefits of trade for the theory to hold. Building on the division of these costs into logistical costs, strategic costs, and normative costs, I discuss in this section whether each can lead the costs of trading during war to be so high that they exceed the benefits of trade. The question is not whether these costs exist, but whether they exceed the benefits of trade.

First, it is usually more costly and risky to conduct trade with an enemy during a war, in large part due to the need to traverse or bypass active battlefields (Anderton and Carter 2001, fn. 2). These logistical costs seem to align best with the ostensibly liberal nature of the opportunity cost mechanism. However, although these costs surely do exist, it is a logical impossibility for the logistical costs of trading during war to be greater than the benefits of trade, which is the issue at hand. For any single transaction, if the logistical costs of completing the transaction would exceed the benefits, the firm declines to make the trade. Consequently, those logistical costs are not borne. Because unprofitable transactions are not made, for any given transaction the logistical costs can at most equal the value of trade, meaning it removes all of the value of
that transaction to the state. Therefore, even if the logistical costs were so severe that they stopped all trade, they would only equal the benefits of trade, not exceed it. More realistically, trade in certain goods will remain profitable despite increased transaction costs from war, as the long history of wartime smuggling suggests. If so, the logistical costs of trade during war are limited to a fraction of the benefits of trade.\textsuperscript{13}

Moreover, although the logistics of trading are more challenging in wartime, logistical costs can be minimized through readily available policy choices. Governments seeking the benefits of trade would have a strong incentive to take such actions. One common means for trading during a war is to route the trade through a neutral third party, or to carry it on a ship under the flag of a third party. Even in World War I, for instance, illicit trade circumventing the British blockade of Germany was often possible via Denmark, the Netherlands, and Switzerland among others. At one point in the war, the British government approached the Germans looking

\textsuperscript{13}Below I express these claims more formally. Recall that T denotes the overall value of trade.

\[
K \quad \text{The number of transactions} \\
V_i \quad \text{The value of each transaction} \\
C_{Li} \quad \text{The logistical costs of each transaction} \\
C_L \quad \text{The overall logistical costs} \\
\]

\[
T - C_L = \sum_{i=1}^{K} [V_i - C_{Li}] 
\]

However, because unprofitable transactions will not occur, these transactions must be set equal to zero:

\[
T - C_L = \left\{ \sum_{i=1}^{K} [V_i - C_{Li}] \middle| V_i - C_{Li} > 0 \right\} + \left\{ 0 * \sum_{i=1}^{K} [V_i - C_{Li}] \middle| V_i - C_{Li} \right\}
\]

This simplifies to the following:

\[
C_L = T - \left\{ \sum_{i=1}^{K} [V_i - C_{Li}] \middle| V_i - C_{Li} > 0 \right\}
\]

This result shows that the logistical costs can at most equal (and never exceed) the value of trade. It is much more likely that the logistical costs will be limited to a fraction of the value of trade, because they can only negate trade if they are so high as to render all wartime trade unprofitable, even trade in highly lucrative and easily transportable commodities.
to purchase binoculars and gun-sights, because the German optics industry was the world’s finest. The Germans agreed in exchange for rubber, another critical military commodity cut off by the British blockade, and the trade was conducted at the Swiss border (Hochschild 2011, 161). Safe zones can also be arranged for the purpose of conducting trade. Although trade during war has been the exception more than the rule, states have been able to trade in war when they both wished to do so. The prevalence of smuggling and illicit trade between belligerents in some eras despite policing efforts also suggests the potential for still greater levels of profitable trade if the two sides actively try to maintain trade rather than to suppress it. The logistical costs of trade during war are part of a larger explanation for the rarity of wartime trade. But they cannot be the answer in themselves, and states choosing to trade during war would often be able to make arrangements to facilitate such trade, thereby minimizing the logistical costs.

Second, strategic costs in the form of relative-gains concerns offer another candidate explanation for the rarity of wartime trade. These costs may well remain even assuming that states looking to continue receiving the absolute gains of trade can and would negotiate to balance the relative gains. It would be rather ironic if a realist relative-gains constraint on wartime trade was in fact the basis for this ostensibly liberal theory about how the absolute gains from trade cause peace. Levy (2003, fn. 19) makes this point clearly:

Liberals assume that dyadic trade drops significantly with the onset of war between trading partners but usually are not explicit about why this occurs. If trade between adversaries stops primarily because state leaders prohibit or fear that the adversary will reap a disproportionate share of gains from trade and convert those gains into military power (the realist relative-gains argument), the distinctively ‘liberal’ character of the liberal economic theory of war comes into question. Arguments based on the impact of increased transportation and insurance costs on incentives to trade would be more consistent with fundamental liberal assumptions.
The scope for these strategic costs is considerably smaller than it might appear. Intuitively, it seems reasonable that if relative gains concerns are so strong as to overwhelm the absolute gains from trade, the potency of a theory of peace premised on those absolute gains must be called into question. In the terms used in this article, the critical distinction is between the strategic costs of trading with a rival (in peace or war) and the additional strategic costs of trading with that adversary once the war starts. This distinction is important in two ways. First, only the latter qualify as costs of trading during war. This is not so problematic in itself, because it is reasonable to expect that relative gains concerns reach their peak during wars (Barbieri and Levy 1999, 464). This is likely despite the fact that the comparison is not to peace generally, but rather to the tensest peacetime moments in which war would occur if not for the desire to continue trading.

More importantly, if wartime relative gains concerns are so acute, it stands to reason that relative gains for states on the cusp of a potential war also weigh heavily against the absolute gains of trade. This would mean the value of trade to states on the brink of war is greatly reduced, matching the intuition that the prioritization of relative gains over absolute gains compromises a theory premised on the idea that states pursue the absolute gains from trade. In other words, the greater the strategic costs of trading during war are, the smaller the benefits from trade on the brink of war are likely to be. If the benefits from trade are low, the opportunity cost mechanism cannot have much explanatory power.

Third, there may be a powerful norm against trading with the enemy in wartime. Treason, after all, is often defined as “giving aid and comfort to the enemy.” The norm might

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14 In the interest of avoiding an additional variable that would not have altered any major conclusions, no separate term for general/peacetime relative gains concerns (costs) was used. Instead, these relative gains incentives are folded into the benefits from trade.
influence leaders directly, or indirectly if the norm affects the behavior of voters or power-brokers who could punish leaders for violating it. Pollins (1989) implies such a norm in arguing that consumers eschew purchasing imports from hostile nations based on a principled opposition to that state’s policies and/or solidarity with their own government’s foreign policy. Yet, there has been almost no research directly on this norm against wartime trade to my knowledge, save for a brief discussion in Levy and Barbieri (2004, 33). If this single norm that has received scant academic interest is in fact so powerful that it routinely overcomes the (by assumption) very high benefits of trade, it might call into question the explanatory power of liberal-rational opportunity cost mechanism in a manner reminiscent of the relative gains explanation. If this norm is so powerful weighed against economic incentives, perhaps social norms trump such rational-economic incentives in general?

Normative costs as the main explanation for the rarity of wartime trade would again result in the irony of this theory seemingly premised on economic incentives in fact relying on a non-rational normative constraint on state behavior. Constructivists might reasonably object to conceiving of a norm against wartime trade as a cost in a larger cost-benefit calculation; but, regardless of its nature, a normative constraint on wartime trade could undergird the opportunity cost mechanism if it is strong enough to overcome the benefits of trade.

If trade in war is in fact rare, as appears to be the case, then some combination of these three types of costs presumably explains why.15 Because logistical costs are inherently limited to explaining only a fraction of why the costs of trade during war exceed the benefits of trade, the burden falls primarily on a norm against wartime trade or relative gains concerns in war that greatly exceed relative gains concerns between rivals on the cusp of war. Neither explanation is

15 I say “presumably” because it is impossible to deductively prove the absence of another type of cost that I have neglected to consider.
impossible in a world where trade is extremely valuable to states. Perhaps one or both of these factors is so potent as to cause the rarity of wartime trade despite states tending to value trade among their foremost national interests. That is the more charitable view that one can take, in that it leaves some latitude for the opportunity cost mechanism to operate. Proponents of this viewpoint will, I hope, at least agree that this article has added important components to the logic of the opportunity cost mechanism.

The alternative conclusion to draw is that, although these costs do exist, they only offer a strong explanation for the rarity of wartime trade if the benefits of trade are low. The opportunity cost mechanism assumes that the absolute gains from trade are valuable enough to supersede other foreign policy priorities in a significant proportion of cases. This valuation of trade simply does not seem likely if the value of trade is routinely exceeded by a norm that has received little attention. And while relative gains concerns may explain the rarity of wartime trade, they do so in a way that calls into question this notion of how highly states value the absolute gains from trade. It is difficult to provide a convincing explanation for the rarity of wartime trade that does not include the conclusion that trade is not as valuable to states as the opportunity cost mechanism assumes.

**How Much Do States Value Trade?**

Taken together, the problems and constraints afflicting the opportunity cost mechanism suggest that states do not value trade nearly as much as the opportunity cost mechanism presumes. On reflection, this is not necessarily surprising. One might have thought that the opportunity costs mechanism represents a straightforward instance of applying insights from International Political Economy to International Security. But, this borrowing appears to have
started and ended with the theory of comparative advantage, overlooking the bulk of what has been learned about how much states actually value trade.

Existing research on protectionism and openness has extensively documented that states frequently opt for protectionism over trade, often at the behest of narrow domestic interest groups. This empirical literature on trade policy suggests that states simply do not value trade as much as the literature on trade and war has assumed (Milner 1999; Frieden 1988; Fordham and McKeown 2003; Mansfield and Busch 1995, 724-727). Far from having its roots in this international political economy literature on trade policy, the opportunity costs mechanism relies on an assumption of how highly states value trade that may be fundamentally at odds with that literature. Just as the fact that states have often preferred war without trade to war with trade provides information about how much states value trade, the fact that states have often preferred peace without trade (or with trade voluntarily reduced by tariffs) to peace with trade also suggests that states simply do not value trade enough for it to be a potent barrier to war.16 If trade is so valuable that it can constrain states into choosing peace over war, why have states frequently and voluntarily forgone large shares of the benefits of trade by imposing tariffs?17

There are still more reasons to suspect that trade is not valued enough by states to serve as the deterrent incentive envisioned by the opportunity cost mechanism. Dyadic trade with one potential adversary is usually only a fraction of a state’s total trade, which is in turn only a fraction of its economic interests, which are in turn only a fraction of its overall national

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16 Optimal tariff theory offers a potential qualification to this point. However, because history provides many instances of tariffs and other trade barriers far exceeding the levels that could be argued to be optimal on this basis, the same basic doubt about the degree to which states value trade exists.

17 Alt et al. (1996, 709) pose a refined version of this puzzle. They ask why, even if protectionist interest groups have the political power to redistribute resources in their favor by restricting trade, do these interests not simply redistribute resources by more direct means that impose smaller overall welfare losses to society?
interests. The collective weight of economic considerations influencing the onset of war relative to and over security considerations would seem to need to be quite high for dyadic trade to carry such causal weight. Moreover, the consequences of losing trade with one partner are often greatly ameliorated by states’ ability to substitute another. Although some loss is surely involved, the costs of switching to a second-best market may often be a shadow of the costs of losing the trade entirely (Martin et al 2008; Gholz and Press 2001).

**Observable Implications and the Trade-Conflict Relationship**

Although this article primarily takes aim at the need to better develop the theoretical logic of the opportunity cost mechanism, this exercise suggests that the empirical literature on trade and war would benefit from examining a broader set of observable implications. Dozens of articles, many quite sophisticated, aim to establish a direct causal effect of trade on peace (Oneal and Russett 1997 offers a representative example). Far less attention, however, has been paid to testing other observable implications of the broader theoretical claim that trade causes peace.\(^{18}\) The question of why states do not elect to trade and fight teases out and exploits the need to reconcile the theory with the observed reality that trade during war is rare. In that way, it incorporates a new observable implication.

The value of integrating additional observable implications extends beyond the opportunity cost mechanism. For instance, the next-most prevalent mechanism in the literature is that trade strengthens and empowers pro-peace interest groups, thereby tilting state-level policy towards peace. The most direct observable implication of this theory is indeed a

\(^{18}\) (Mansfield and Pollins 2001, 841; Levy 2003, 128). On the methodological virtue of testing all possible observable implications, see (King et al 1994, 24; Van Evera 1999, 30-40). In addition to shedding light on the overall trade-conflict relationship, testing additional observable implications is the only way to distinguish and evaluate the rival mechanisms through which trade may cause peace.
correlation between peace and trade. However, another straightforward observable implication of this mechanism is that dovish parties should tend to take more favorable stances towards free trade, and vice versa. But is this true? In the United States in recent decades, the Republican Party has been seen as both more hawkish and more “liberal” in the classic economics sense of preferring unfettered free markets and free trade. The historical inspiration for the mechanism in which trade empowers pro-peace interests is rather antiquated, raising questions about whether it remains valid today even if it was when Immanuel Kant first emphasized it (Kant 1795). Future research is needed to determine whether pro-trade parties and exporters’ interest groups do in fact tend to be pro-peace, because without that association the empowering pro-peace interests mechanism loses much of its appeal.19

Similarly, if trade increases transnational social ties and in so doing creates social bonds or provides information that makes war less likely, there should be evidence that trade is among the important causes of such cross-border interactions. It seems plausible that international trade involves far less interpersonal interaction than many other forms of transnational activity, such as foreign direct investment, tourism, or social media.

Deducing and testing additional observable implications is vital for progress in the empirical literature on trade and conflict not merely because these tests are possible and informative, but also because it is so difficult for the existing approach of trying to establish a direct effect of trade on peace to move past correlation to causation. Considerable progress has been made on this front, for instance with the reverse causation problem arising from the fact that trade may reduce the incidence of war while war may also reduce the incidence of trade (Hegre et al. 2010; Reuveny and Kang 1996; Reuveny and Kang 1998; Keshk et al. 2004; Kim

19 My own limited investigation suggests that the major roadblock to this analysis is measuring which political parties are pro-trade and which are anti-trade.
and Rousseau 2005). Problems arising from certain omitted variables have received extensive attention, most importantly the fact that geographic proximity is an extremely potent cause of both war and trade (Robst et al 2007; Hegre et al. 2010). Nonetheless, significant inferential challenges remain. Among these are the potential for liberal ideas to act as a confounding variable and the various reasons why states might tend to trade more with states with which they have better relations, and thus are less likely to fight. In light of these obstacles, the advantages of broadening the set of observable implications in the empirical literature on trade and war are particularly worth exploiting.

Conclusion

Allowing for the fact that states have the option to trade and fight should they wish to do so calls into question the logic of the opportunity cost mechanism, the main reason trade is thought to cause peace. The opportunity cost mechanism’s twin assumptions - that states do not trade in war and that trade is so valuable to states that they would choose it over war - are at odds with one another. The gravest challenge for the theory is reconciling them. At a bare minimum, the theory requires a critical new variable (the costs of trading during war), previously unrecognized constraining conditions, and important enhancements to the theoretical logic.

Even in the most favorable interpretation for it, the liberal-rational opportunity cost mechanism turns out to hinge on some combination of realpolitik relative gains fears and/or a social norm against wartime trade. Either possibility poses no small amount of irony from the standpoint of the longstanding paradigmatic clashes in International Relations. More importantly, either possibility changes how the field understands the trade-conflict relationship and when, if ever, trade should be expected to cause peace through the opportunity cost mechanism.
My hope is that this article will provoke theoretical efforts to salvage the opportunity cost mechanism, or, failing that, to further develop the alternatives and perhaps generate new possibilities. It could also be true that other forms of economic interdependence such as foreign direct investment, multinational supply chains, and sovereign debt holdings are better suited to causing peace (Gartzke 2007, 170; Rosecrance and Thompson 2003; Brooks 2005). There are many questions still to be answered. How costly is trading during war? Which costs are the most powerful? Is there a powerful global norm against wartime trade? How strong is it? When and why do states perceive wartime trade as strongly favoring one side over the other? How difficult is it logistically to conduct trade during war when belligerents choose to do so? More generally, how common is wartime trade? When and why does it take place? There is no shortage of avenues, both theoretical and empirical, through which future research can expand the field’s understanding of the opportunity cost mechanism and the trade-conflict relationship.
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