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Interstate Conflict and International Trade

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Abstract: We provide a selective overview of the literature on the linkages between interstate conflict and international trade, paying special attention to how trade openness (i) affects arming incentives, (ii) the channels through which its effects travel, and (iii) its consequences for the emergence of war (or peace) as an equilibrium outcome. We also discuss how restrictive trade policies may interact with national security concerns and what they imply for welfare.

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I. Introduction

Historians and social scientists have long recognized the possible interplay between international conflict and trade. Focusing largely on the question of how international trade influences the emergence of war between nations, many scholars contend that greater economic interdependence better aligns the objectives of interacting countries. According to the liberal peace hypothesis, increased economic integration raises the opportunity cost of war – because conflict disrupts trade that countries value – and thus tends to pacify international relations. A competing perspective emphasizes the idea that international trade can alter the balance of power to favor one country over another. According to the realist hypothesis, if globalization leads to asymmetric gains, it can disrupt the balance of power and thereby increase the likelihood of war.[1]

While exploring these contrasting views, this entry discusses numerous themes that follow from the application of standard techniques used in economics and game theory.

II. Modeling Approaches

Since the theoretical approach to studying conflict and trade combines theories in these two distinct domains, we start by reviewing some key elements borrowed from both.

Gains from trade. The idea that trade between nations tends to be mutually beneficial can be traced back to David Ricardo and even Adam Smith before him. Trade enables nations to specialize in the production of ranges of goods in which they have a comparative advantage (i.e., a lower opportunity cost than their trade partners) and exchange those goods for ones they produce relatively inefficiently. Comparative advantage could arise in the presence of cross-country differences in the composition of countries' resource endowments (e.g., labor and land) that serve as inputs in the production of final goods and services. Alternatively, comparative advantage may be due to international differences in technology. In either case,

[1] See Morelli and Sonno (2017) for a discussion of these and related hypotheses in the international relations literature.

trade allows participating countries to shift their production towards the goods in which they have a such an advantage, exporting them to other countries in exchange for other goods. While inducing economic interdependence between countries, trade generates gains for the participants relative to autarky (i.e., no trade).

Even when countries have similar resource endowments and technologies, trade between them may generate gains if economies of scale are present in the production of certain products. In particular, when scale economies exist at the firm level, cost advantages can be realized through trade with specialization in the production of unique varieties or narrower product lines of intermediate or final goods destined for the larger world market. Among other things, trade may also give rise to gains from access to differentiated products.

The structure of international exchange matters for the distribution of gains from trade as well. Do adversarial countries trade only with each other, do they trade with other non-adversarial countries only, or do they trade with both adversaries and friends? Also relevant here is whether countries are small relative to the global economy, such that their choices have no effect of product prices (e.g., Luxembourg), or large in which case they do (e.g., the United States). The assumptions made below regarding trading relationships depend on the specific question being addressed.

Sources and resolution of conflict. In an international setting that can be viewed as anarchic since there is no higher authority to which countries must answer, it is natural to suppose that property rights are not well defined or cannot be perfectly enforced. For example, countries may have competing ownership claims over natural resources (such as land, oil, minerals, water, or timber), intermediate goods (such as computer chips) or intellectual property, all of which are used in the production of goods that are possibly traded in global as well as in domestic markets. Alternatively, the dispute might be over ownership claims to output itself.

To fix ideas, let us suppose there are only two countries that dispute ownership of some goods. Whether this dispute can be settled peacefully or not depends, in part, on the

information available to policy planners. If the information structure is complete so that each country's decision maker is aware of its opponent's payoffs, objectives and constraints, then the two countries can agree on the set of possible bargains where both stand to gain relative to engaging in destructive war. In this case, they might be able to negotiate a division of the disputed objects, thereby avoiding the costs of conflict. By contrast, in the presence of unresolved informational issues, the perceived bargaining set could vanish. A simple dispute, then, could escalate to war, which is costly due to intensified arming (and the consequent diversion of resources away from the production of goods and services for consumption), loss of lives, destruction of property, and disruption of trade.

But, even when the information structure is complete, the resolution of disputes can be costly, especially when countries cannot make binding commitments on their security policies (i.e., arming or choice of weaponry), as is true in anarchic settings. Although it would be mutually beneficial for the two countries to divide the disputed objects without having armed, each could have an incentive to deviate unilaterally by arming in order to improve its leverage in negotiations with its rival or in war.

Suppose instead that the two countries arm before attempting to negotiate a peaceful settlement. A successful negotiation implies each country obtains a share of the disputed goods depending positively on its power – which is, in turn, positively related to the arms it brings to the negotiation table relative to that of its opponent. If negotiations were to break down, the dispute would escalate into a destructive war with each country deploying the arms it had previously produced; in this case, each country's probability of victory would depend on its relative arms. But, given the countries' arming choices, war's destructive effects alone make war unappealing to both. Hence, in a single-period setting, the threat of a destructive war supports (armed) peace. Of course, the diversion of valuable resources away from the production of civilian output to guns as each contender tries to improve its relative bargaining position implies that this form of conflict resolution, though appealing relative to destructive war, is costly.

Moreover, in a multi-period setting where the dispute is ongoing, a destructive war may be unavoidable. Although the contending countries can agree to a division of the objects they contest under the threat of war today, they may not be able to commit to a peaceful resolution in the future and, more precisely, how to divide the contested objects at that time. Sustaining peace requires additional bargaining and thus arming in the future. To the extent that victory in war today implies not only taking control of the disputed objects net of destruction but also gaining a strategic advantage in future disputes, one or both countries may find it advantageous to initiate war today. While it is possible that the threat of a destructive war can support peace over time, this eventuality requires countries to incur the costs of arming in each period.[2]

Domestic political institutions. Domestic political institutions are important as well since they shape the objectives of national policy planners. Policy could be chosen by a leader whose objectives are not perfectly aligned with the objectives of the citizenry due to political influences of certain groups and/or simply greed. In what follows, we suppose that decision makers aim to maximize national welfare. This focus highlights the possible distortions induced by conflict alone.

III. The Impact of Trade on Arming Incentives

This section considers the effects of trade that would emerge in a (mostly) static setting where conflict, due to the commitment problem, is resolved through bargaining under the threat of war. Thus, the focus here is on how the trade regime in place influences national arming incentives and thus the intensity and costs of conflict measured in terms of the level of arms produced. This influence operates through at least three distinct channels: the factor-price channel, the terms-of-trade channel and the income channel. Although two or more of these channels are likely to be operational at the same time in settings that are more general than those considered below, we discuss each in isolation of the other two. In

[2] Fearon (1995) provides a useful discussion of how incomplete information and commitment problems may lead to costly conflict.

addition, for greater clarity, we focus on two polar trade regimes: (i) autarky (or no trade) and (ii) free trade (i.e., a regime in which trade obstacles are absent).

Factor price channel. The factor-price channel can be studied in isolation of the other channels if we consider a model of conflict between two price-taking countries that trade final goods in the world market (see Garfinkel, Skaperdas and Syropoulos, 2015). In each country, there are two productive inputs (say, land and labor) that are combined via identical technologies by producers across countries to produce two consumption goods. While one of the inputs (say, labor) is perfectly secure (i.e., slavery is ruled out), the other (land/territory) is only partially secure in that some fraction of countries' combined holdings is subject to dispute.[3] This insecurity motivates the two states to arm (using some of their respective secure holdings of both land and labor) to obtain a larger share of the insecure portion of land. Once the dispute is resolved and the contested land is divided between the two countries, production and trade take place in domestic markets and possibly global markets as well.

In this setting, even though arming does not affect world prices, the introduction of trade itself alters (domestic) product prices which, in turn, affect the rewards paid to factor owners (i.e., factor prices) and thus each contending country's net marginal benefit of arming and, therefore, its incentive to arm. For specificity, suppose the rival states are identical not only in terms of their technologies but also their secure holdings of land and labor. When world prices are such that the countries export the good produced intensively with the contested input (land), a shift to trade raises the price of land relative to the price of labor in comparison with autarky. This shift, then, lowers the marginal cost of arming measured in land units and brings about an increase in the net marginal benefit of arming and thus each country's incentive to arm. As such, trade tends to increase the costs of conflict due to greater arming. Interestingly, the associated welfare losses may swamp the standard gains from trade

[3] There is a good reason to focus on competing claims over territory. A perusal of events in global affairs (e.g., the war in Ukraine, the not-too-distant conflicts in the Middle East and the ongoing international frictions over Taiwan) suggests that territorial disputes are salient.

attributable to the adjustment in product prices. In other words, trade can reduce welfare below the level obtained under autarky.

Another interesting possibility is that the relative world price of goods is such that the two countries import the good produced intensively with the contested input (land). Consistent with the liberal peace hypothesis, a shift from autarky to free trade in this case, which effectively lowers the price of land relative to labor, not only generates the standard gains from trade, but also serves to pacify relations between the two countries and thus lowers the arming costs of conflict. National welfare unambiguously rises in this case.

If countries are not identical, it is also possible for one of them to gain from trade and the other to find trade unappealing due to differential effects on interstate arming. The key point is that trade affects arming incentives through product-price changes and the just-described factor-price channel.

Terms of trade channel. The terms-of-trade channel for arming incentives captures the importance of trade and thus economic interdependence between large, contending countries, that is central to the liberal peace hypothesis. This channel, which again makes arming incentives trade-regime dependent, is easiest to isolate and understand in a model in which trade is motivated by differences in technology, as in the Ricardian model (see Garfinkel, Syropoulos and Yotov, 2020). Suppose again there are two countries in dispute over the ownership of a partially insecure factor of production (say again, land). Labor and land can be combined, via a constant returns-to-scale (CRS) technology, to produce an intermediate good that can in turn be used to produce, with other CRS technologies, two distinct final goods destined for consumption. Owing to international differences in technology, each country has a comparative advantage in producing a distinct final good. As above, countries first use a portion of their secure resource endowments to produce guns as they compete for shares of the insecure portion of land. After the dispute is resolved and the insecure portion of land is divided based on guns chosen, they produce final goods for trade domestically and possibly with each other. Under autarky, each country produces both

final goods. Under trade, each shifts their production towards the good in which they enjoy a comparative advantage for export to the other country in exchange for the other good.

An important feature of this set up is the endogeneity of the countries' terms of trade with respect to their arming choices. In particular, under autarky, each country chooses its arming to equate its marginal benefit of securing the disputed land to the marginal cost of diverting resources from its own production of the two final goods. Each ignores the negative externality of its own arming on the rival's production, reflected in a reduced access to land. Under trade, the two countries similarly make their arming choices to balance their marginal benefits against their marginal costs, but the calculus in this case naturally accounts for this negative externality. Specifically, each country recognizes that an increase in its arms, given the rival's choice, reduces the rival's production of its exported good. Hence, a marginal increase in one country's arming results in a deterioration of its own terms of trade (i.e., a higher import price), which lowers the net marginal benefit of arming for each country given the rival's arming choice relative to autarky. There is also a strategic or indirect effect at play here, but that tends to be of secondary importance particularly when the distribution of labor and secure land across countries is sufficiently even. Overall and consistent with the liberal peace hypothesis, trade tends to reduce equilibrium arming and thus serves to pacify international relations, with national welfare rising for both countries.[4]

However, in contrast to the scenario described immediately above, the terms-of-trade channel could aggravate tensions between adversaries, particularly when the two rivals have similar technologies such that they would not trade with each other even in the absence of a dispute. Suppose, instead, they compete in the same export market to trade with other (friendly) countries. In this case, relative to autarky, each has an added marginal benefit to arming, which is to reduce the rival's production of the good they both export and thereby improve its own terms of trade. Thus, the possibility of mutually beneficial trade with

[4] See Seitz, Tarasov and Zakharenko (2015) who present empirical evidence that reductions in trade costs between countries decrease their own as well as other countries' military spending.

a third (friendly) country can induce greater arming incentives and worsen relations between the two adversaries.[5]

Income channel. The income channel can be studied in isolation of the other two channels in a dynamic setting, where trade between two countries in the current period when peace prevails is mutually beneficial, but there is a possibility of a dispute between them in the future (see Garfinkel, Syropoulos and Zylkin, 2022). Using their respective initial resource endowments, each country produces a distinct intermediate good that can be used alone (as under autarky) to produce a final good or in combination with another intermediate good produced by the other country (as under trade). The resulting output is then allocated to current consumption and to goods that support future consumption: investment that yields future output and arming in preparation for a potential conflict over the insecure portion of their joint output. When peace continues to hold in the future, the arms previously produced have no value, and each country consumes the output generated from their respective savings. Otherwise, a dispute emerges over the insecure portion of that future income, and that dispute is settled peacefully via bargaining under the threat of war.

In this setting, the gains that each country realizes in the current period from trade over autarky, which may be due to comparative advantage or product diversity and economies of scale, translate into greater income available to arm as well as save under trade. Thus, the countries' relative future power depends on the distribution of their relative gains from trade today. Importantly, that distribution depends on countries' relative size, which in turn depends on the initial distribution of resources and technology. In such settings, smaller countries enjoy higher relative income gains from trade than their larger trading partners. Consequently, a shift from autarky to free trade that generates higher income for both countries relative to autarky induces them to increase their arming, but the smaller country devotes a larger share of its gains to arming, which enhances that country's relative power.

[5] Complementing Seitz, Tarasov and Zakharenko's (2015) empirical findings, Garfinkel, Syropoulos and Yotov (2020) present evidence in support of these ideas: a country's military spending is positively related to trade costs with its rivals but negatively related to trade costs with its friends.

Along the lines of the realist perspective on trade and conflict, although the larger country remains richer and more powerful, the implied erosion of its relative power induced by a shift to free trade can be sufficiently large to more than offset its gains from trade. This welfare implication is more likely when the international distribution of initial resources is sufficiently uneven.

Other channels. The list above is not exhaustive. In general, trade tends to expand participating countries' access to resources (e.g., oil, timber, rare-earth minerals, etc.) and perhaps to superior technologies that are not subject to dispute. While expanded access through trade can enhance a country's effectiveness in producing intermediate and final goods for domestic and world markets, it can also augment a country's ability to expand its military capabilities, which could, in turn, influence the balance of power in ways that may be relatively unappealing to at least one country.

IV. The Effects of Trade on the Emergence of War

We now turn to the question of how trade matters for war initiation. Conflict theory suggests that the more destructive is war, the larger is the bargaining set and thus the more likely are two countries to resolve their dispute through some peaceful settlement. A central idea of the liberal peace hypothesis, complementing that notion, is that, insofar as war also disrupts trade as shown empirically by Glick and Taylor (2010) among others, increased trade openness raises the opportunity cost of war, thereby expanding the bargaining set to make war less likely to emerge.

Martin, Mayer, and Thoenig (2008) take this hypothesis head on assuming that, due to incomplete information, negotiations to reach a mutually beneficial settlement can break down. Furthermore, they make an important distinction between bilateral trade openness and multilateral trade openness that affect the bargaining set in different ways. They find that greater bilateral trade openness and economic interdependence between two potential rivals would expand that set to increase the likelihood that they resolve their dispute via bargaining instead of war. By contrast, trade liberalization that expands trade opportunities

with third countries reduces the economic interdependence between the two rivals and thereby shrinks the bargaining set to increase the likelihood that their dispute escalates to war.[6]

As suggested earlier, incomplete information is not necessary for negotiations to break down and war to emerge given the potential for mutually beneficial trade between rivals under peaceful settlement. When the dispute between rivals is ongoing and countries cannot commit today to a future division of contested objects, one or both countries might find war today (that precludes trade in the current period and in the future) to be relatively appealing as the winner realizes a strategic advantage in future disputes relative to what happens under settlement. Suppose, as an extreme example, that the victor in war secures all of whatever is being contested net of destruction without having to arm at all in the future. The decision to wage a war, then, would depend not only on the magnitude of war's destructive effects but also on the possible savings in not having to arm in the case of victory. In addition, this decision would depend on the foregone gains from trade that would be conditioned on the initial distribution of secure resources as well as the degree of substitutability between traded inputs in the production of final goods. Sustained peace requires not only that it Pareto dominates war, but also that unilateral deviations from it are unprofitable to both countries. Garfinkel and Syropoulos (2024) show that, if war between two countries is sufficiently destructive, peace can be sustained for all resource distributions even when the degree of substitutability between traded inputs is relatively high. But, if war is not very destructive, the interplay between the possible savings in arms under war and the magnitude of the gains from trade under settlement takes on greater importance. Given the degree of substitutability between traded goods, the gains from trade tend to be larger when countries are more similar in size initially; however, arming today and into the future under settlement, and thus the savings from victory in a war today, also tend to be larger. For sufficiently even distributions of resources, unilateral deviations from peace turn out to be

[6] The authors present empirical evidence in support of these hypotheses. Also, see Morelli and Sonno (2017) for a related discussion and analysis.

profitable. Thus, given war is not very destructive, peace is more likely to be sustained only when the initial distribution of resources is sufficiently uneven.[7]

Work by Bonfatti and O'Rourke (2018) takes a somewhat different approach to study the importance of trade for war initiation, while also emphasizing commitment problems in a complete information setting. With a focus on two small countries trading in world markets though not necessarily with each other – an established power (the leader) and a rapidly rising power (follower) that compete for some exogenous pie either through war or bargaining effectively based on their relative arming choices – the analysis considers the allocation of resources to production of consumption goods and arming over time. Of particular interest are two scenarios, both in the spirit of the realist tradition, in which one country chooses war in the initial period. The first is where the follower is expected to grow at a sufficiently high rate to allow it to catch up and gain relative power. Although the follower would like to assure the leader that it would not exploit its increased power in the future, it cannot commit to do so. As such, the leader may find it appealing to launch a preemptive war. The second scenario, which underscores the importance of import dependence, is where the leader can, in the event of war, impose a blockade on the follower to limit its access to a resource that is essential to its production of arms as well as consumption goods. The possible blockade on the follower's access to the imported resource combined with a sharp rise in its expected import dependence could imply an expected erosion of the follower's expected relative power under maintained peace that makes war more appealing to the follower.[8]

[7] In an extension of our baseline model in Garfinkel and Syropoulos (2025) that allows the contending states to also trade with a neutral country, we find that such trade liberalization may amplify their incentives to arm for leverage under peace, but their gains from trade with the neutral country tend to outweigh the cost of increased arming. Additionally, we find that, if war is so severe that it precludes the possibility of any trade, the payoff increases under peace may overwhelm the corresponding payoff increases under a unilateral deviation, thus enhancing the prospects of peace.

[8] Without claiming that their model can explain the cause of the two world wars, the authors discuss several historical examples that provide support for the key mechanism they identify based on increasing in import dependence for the follower—most notably, Japan's aggressive behavior in trying to achieve self-sufficiency in raw materials through territorial expansion and the response by the US, joined by several other countries, to impose trade restrictions embargoes against Japan leading up to WWII.

V. National Security and Trade Policy

The discussion above should make clear that the introduction of trade can either pacify or magnify international tensions through its effects on arming and the decision to initiate war. What's more, the relation between conflict and trade is considerably more nuanced than what might be inferred from the liberal peace and realist perspectives. In any case, trade openness affects national security and that affects national welfare.

When trade amplifies conflict sufficiently to lower national welfare, then, policy planners may find it appealing to limit their own or their adversaries' trade opportunities in world markets. With an aim to undermine their rivals' military capabilities and/or induce them to stop war, a state could impose trade sanctions that take the form of comprehensive trade embargoes or blockades.[9] Alternatively, with a specific aim to target a rival nation's access to natural resources, dual-use inputs (e.g., computer ships) or superior technologies for use, at least in part, in military sectors, a state could use restrictive trade policies, which might even have extra-territorial or multilateral reach.[10]

In addition to generating deadweight losses due to distortions in prices and in the allocation of productive resources, such policies often generate welfare losses to senders as well as to targets due to, among other things, suboptimal investment decisions (in physical and human capital) and disincentives to engage in innovation. Despite these costs, however, a country in conflict could view trade-restricting policies as welfare improving relative to conflict and unrestricted trade.

[9] A recent example would be the imposition of sanctions by the US and other countries on Russia in response to its invasion of Ukraine in 2022.

[10] In response to China's relatively recent policy shift to foster dual-use infrastructure and resource sharing between the military and civilian government, research institutes and companies, the US has imposed sanctions on China. Similarly motivated sanctions had been imposed on Russia by the US even before its invasion of Ukraine.

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