Cheaper Wars

How the WTO Binds the Hands of the Enemy's Friends

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ABSTRACT

Liberals argue that extensive trade and globalization support peace because they assume among other things that wars reduce trade. We claim that wars affect market agents in third parties with a mix of trade obstruction (due to the war's direct and indirect damages) and trade substitution (which expands trade with third parties). In addition, we claim that the political reactions of third parties with similar interests to those of the combatant states and their enemies are associated with a substantial portion of the reduction in trade during war. We argue that by binding the hands of the enemy's friends WTO's expanding membership and deepening commitments have over the years made wars less costly: increasing trade institutionalization, increasing variety of trade partners, higher capital mobility and vertical integration in the world economy, all narrow the scope for states to use trade as a foreign policy tool when they are not directly involved in a war. In order to support this argument we built the largest (dyadic) dataset ever used in this literature (over one million observations), which distinguishes exports from imports and covers 188 countries and territories during the period 1950-2000. Estimates are based on linear regressions with exporter-country fixed effects, importer-country fixed effects, year fixed effects, and country-pair fixed effects, modeled on the gravity equation, with alternative treatments to the problem of zero trade observations.

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Introduction

The rapid growth in international trade and investments that took place since the end of the Second World War (WW2) has inspired hopes for a more peaceful world. Such hopes were mainly based on the classic liberal proposition that interdependent states have ever more to lose by initiating hostilities against each other, because war disrupts trade. Serious quantitative research of this proposition started to develop after Polachek's (1980) seminal work.[1] Most of the studies in the Commercial Liberalism literature (Nye, 1988) have shown that bilateral trade reduces the likelihood of Militarized Interstate Disputes (MIDs)[2] (Hegre, 2004; Herge, Oneal and Russett 2010; Mansfield, 1994; Oneal and Ray, 1997; Oneal and Russett, 1997; 1999; Russett and Oneal, 2001; Weede, 1995; Xiang, Xu and Keteku, 2007).[3] A related literature has argued that it is capitalism that induces peace, by promoting investments, economic development and financial and

[1] For a full review of the scientific literature on commercial liberalism see Barbieri and Schneider (1999), Mansfield and Pollins (2003), and Schneider (2010).

[2] Polachek (1980) and Pollins (1989b) preferred to use events data to show that trade increases (decreases) cooperation (conflict).

[3] Barbieri (1996; and 2002) dissented, but Xiang, Xu and Keteku (2007) attributed their findings to methodological issues (Schneider, 2013). Other scholars conditioned the pacifying effects of trade on the existence of democratic national institutions (Gelpi and Grieco, 2008) or Preferential Trade Agreements (PTAs) (Mansfield and Pevehouse, 2000) and on the inelasticity of import demand and export supply (Polachek and McDonald, 1992).

monetary integration (Gartzke, 2007; McDonald, 2009; Mousseau, 2013). Gartzke and Li (2003a) and Russett and Oneal (2001) found that trade openness in general as well as bilateral trade reduces the tendency to be engaged in MID. Souva and Prins (2006) arrived at similar conclusions with particular regard to fatal-MID.[4]

More recently, the Social Network Analysis literature extended the Commercial Liberalism logic to networks of states, developing new methods to analyze how indirect trade via third parties reduces the likelihood of MIDs between dyad of states (Dorussen and Ward, 2010; Kinne, 2012; Maoz, 2009; Poast, 2010). A state that trades extensively with two other states could become an efficient mediator because it has an interest in preventing escalation of MID between them and because trade provides it with good information about them. Some mediator states may be able to prevent escalation of MID even among partners of their partners.

As noted above, the Commercial Liberalism literature reasons that trade openness and trade flows increase the opportunity cost of war and lower forms of MID. This claim rests on three assumptions: (1) trade increases overall welfare; (2) wars and lower forms of MID hamper trade; and (3) engaging in wars or lower forms of MID is a choice of rational decision makers maximizing the national welfare.

Scholars of the domestic political economy have qualified these assumptions, breaking down the national opportunity costs of wars and lower forms of MID into local winners

[4] In contrast Aydin (2008; 2010) and Peterson (2011) suggested that under certain conditions states are likelier go to war if trade with third parties (states who are not directly involved in the conflict) changes the international balance of power.

and losers, who may enjoy greater access to policy than the general public.[5] Powerful interest groups form coalitions for or against war depending on their expected gains or losses from it; their choices might be sub-optimal from a national perspective.

The "costly signals" literature takes issue with assumption (3): sometimes rational decision makers forgo maximum national welfare in the short term, preferring instead to take actions that bear economic costs, as a form of communication. Building on bargaining theory of war (Fearon, 1995) this literature argues that decision makers with incomplete information about the resolve of the opponents need to signal their willingness to suffer reduced trade and incur other economic costs. Trade openness (and capital flows) allows states to send such "costly signals" about their resolve, and thus helps reduce the incidence of outright war (Gartzke, Li and Boehmer, 2001; and Gartzke and Li, 2003b).[6]

Assumption (2) above, namely that MIDs disrupt trade, has been the focus of many studies too (see next section), but the effects of MIDs on trade with third parties received

[5] For example Rogowski (1989) focused on the asymmetric effects of trade on different interest groups. Kastner (2007) showed that trade between countries with conflicting political interest can flourish if strong domestic political actors benefit from commerce relation with the rival state. Kirshner (2007), McDonald (2009), Narizny (2007), Press-Barnathan (2006), Rogowski (1989) and Schneider and Schulz (2003) showed that national decision makers may be captured by vested interests.

[6] However, Polachek and Xiang (2010) argue that opportunity costs are the decisive factor in decreasing the probability of war even in signaling models.

less theoretical and empirical attention than the effect of wars and lower forms of MIDs on trade between the combatant or otherwise adversarial states. This study contributes to the literature by arguing that unilateral and bilateral responses to war motivated by a similarity of national interests between trade partners are associated with a significant portion of the reduction in trade between a state at war and third parties. Furthermore, we argue in the next section that as the World Trade Organization's (WTO) expanding membership and deepening commitments restrict states' ability to manipulate trade, and given its conflicting effects of making existing trade more vulnerable to war and simultaneously making it easier to find alternative business opportunities the WTO regime paradoxically makes wars cheaper (We use the term WTO throughout to refer to the GATT system that preceded it as well).

The third section sets out the research design. We innovate with a dataset of over one million observations, which consists of almost all of the states and most of the years after WW2 and distinguishes export flows from import flows. This dataset improves the precision of the estimates and the external validity of the findings, and enables better controls for omitted variables. We also take advantage of recent advances in the field of trade economics that can be used to control for omitted variables. In the fourth section we use this dataset to test our hypotheses and support our argument with Fixed Effects regressions applied to a Gravity model and discuss the results. The fifth section provides conclusions.

WTO and the falling cost of war

Wars and lower forms of MIDs between states often involve partial or full trade embargoes and boycotts. On top of government actions, MIDs, especially outright wars, raise the costs to private agents of engaging in trade with agents from a belligerent state. Risk premiums increase and logistics are burdened by the violence, destruction and regulations. Nationalistic chauvinism distorts household and business decisions.

This is empirically documented by a vast literature, which with some exceptions mostly found that trade flows between combatant or otherwise adversarial states fall significantly as bilateral political relations deteriorate.[7] The effect of MIDs on trade with third parties has been the subject of only a few studies. Glick and Taylor (2010), Hegre, Oneal and Russett (2010) and Long (2008) found that MIDs damage trade with third parties in addition to the damage to trade between the adversarial states. Their findings contrast with those of Martin, Mayer and Thoenig (2008), who found that MIDs have very marginal effects on third parties.

Conventionally wars obstruct trade with third parties mostly indirectly, by causing a collapse of the economies of the belligerent states and reducing their production

[7] See Anderton and Carter, 2001; Keshk, Pollins and Reuveny, 2004; Keshk, Reuveny and Pollins, 2010; Kim and Rousseau, 2005; Mansfield and Bronson, 1997; Oneal, Russett and Berbaum, 2003; Polachek, 1980; 1997; Pollins, 1989a; 1989b; Reuveny, 2001; Reuveny and Kang, 2003; Russett and Oneal, 2001. For different results see Barbieri and Levi, 1999; Blomberg and Hess, 2006; Mansfield and Pevehouse, 2000; Morrow, Siverson and Tabares, 1998; and Reuveny and Kang, 1998.

capabilities, their purchasing power, and their demand for consumption and investment. In addition, wars can disrupt global supply chains at one of their critical points, disrupt shipping lanes, raise insurance and trade finance costs with particular partners, or have adverse macroeconomic effects stemming from spiraling energy costs. Lingering damage to the economies of the combatant states can reduce their trade with third parties for some years after the war has ended.

However, trade with third parties should on average fall by a lower proportion than trade between the warring states. First, wars can actually increase trade with some third parties, which provide substitute export markets and import sources to those lost among the warring states. This substitution effect of conflict on trade with third parties mitigates the conventional obstruction effect to some extent. Second, third parties are very numerous and the damage is spread over many of them.

While existing studies of the effect of conflict on trade recognize the conventional aspects of the obstruction effect of conflict on trade with third parties, as described above, they have overlooked the effect of similarity of national interests on the cost of war. Specifically, we can expect that a third party *B* with similar interests to those of a combatant state *A* will try to assist *A* in times of peace and especially in times of war, by restricting its trade with *A*'s enemy and increasing trade with *A*. Likewise we can expect that *A* will do what it can to increase trade with *B* and possibly that *A*'s enemy will also take measures to reduce its trade with *B*.

The enemy of the combatant state *A* and the third party *B* can restrict their trade with each other by way of formal government actions consisting mainly of embargos, boycotts,

tariff increases and the imposition of a wide variety of Non-Tariff Barriers (NTBs). Informal actions by the state's bureaucracy are also possible, mainly by imposing undeclared NTBs. Such special treatment can take the form of extended time for processing applications for permits or for clearing customs, unusually thorough inspections of traded goods, unusually comprehensive tax auditing and stricter enforcement of laws in general.

Indirect obstruction of trade is also possible by firms, investors, trade unions and consumers. These reactions can be spontaneous if people share the government's approach to the conflict, or if firms and households avoid trade with the target state in expectation of government action, even if such action fails to materialize. In doing so they may be responding to government signals about the (un)desirability of trade with the target state.

The combatant state *A* and the third party *B* can increase their trade by way of formal, informal and indirect action too, although domestic politics, bureaucratic and fiscal constraints may create a protectionist bias that makes it harder to increase trade during war (between *A* and *B*) than to restrict it (between *B* and *A*'s enemy). Increased trade will help *A* if it comes in the form of a trade-creating agreement (increasing both exports and imports) or in the form of unilateral increase in imports from *A* to *B*. However, in domestic politics international trade agreements are hard to ratify because the jobs protected by import-substituting industries are more visible than the potential for new jobs to be created by export industries (and consumer lobbies are hardly influential). According to this logic unilaterally increasing imports from *A* to *B* would meet even greater domestic resistance in *B* than a bilateral trade deal.

Restricting trade between *B* and *A*'s enemy can come in the form of a unilateral decrease in exports and imports, through taxation or outright bans. In this case the jobs in the export industries may be as visible as those in the import-substituting industries, so government action in both states is likely to focus on the import side and rely on the political support of their import-substituting industries. Exports of each state may nevertheless fall if the other state retaliates, which is by no means automatic. In that case the exporters may lobby against the import restrictions but the governments may shift the blame for the lost jobs in the export industry onto the other state.

From a bureaucratic perspective trade agreements are always more difficult and time-consuming to negotiate and implement than unilateral action. As a result trade agreements may not be practical as an urgent wartime measure (to be distinguished from peacetime agreements that reflect similar national interests). As for unilateral action, it is always easier for an office to take its time and insist on detail when processing various trade formalities (between *B* and *A*'s enemy) than to work faster (between *B* and *A*).

From a fiscal perspective spending more governments money on imports between *B* and *A* (often the fastest and simplest way to increase trade) is more difficult than saving governments money by importing less between *B* and *A*'s enemy. If the imports from *A*'s enemy are essential to *B* (or the other way around) then either they will not be restricted after all, or costlier substitutes will have to be found, but one cannot say that importing more from *A* is easier for *B* than importing less from *A*'s enemy.

H1: Wars between states are associated with increased trade between a third party and a combatant state *A* with similar national interests, proportionally less than they are associated with reduced trade between that third party and *A*'s enemy.

How does globalization affect the costs of war? Globalization involves many processes, among which the process of increasing trade openness through the WTO regime is central to this study. Openness and the number of states have increased simultaneously in recent decades: the more numerous states grew, the smaller they became, economically at least (obviously some of the decolonized states were very populous). Small states find it harder than large ones to enjoy the rewards of specialization and scale within their territory and thus have much to gain from being more open and joining the WTO. Thus, the WTO regime tends to enhance the importance of trade with third parties relative to overall economic activity.

The potential effect of the WTO regime on the war's conventional obstruction to trade with third parties is straight forward: the greater the volumes of trade the more is at stake when war breaks. But the potential obstruction is all the more greater because globalization and the development of the WTO regime make international supply chains more entangled, shipping lanes longer and busier, trade-related finance more sensitive to risk, international business cycles more synchronized, and consumer and investor sentiment in third parties more sensitive to foreign wars.

However, the WTO regime also enhances the ability of market agents to substitute for lost trade because the greater variety of third parties makes it more likely that some of them are near-perfect substitutes for the lost trade. As a result, the development of the

WTO regime lowers the potential cost of the trade diversions associated with war (thus this greater substitution is actually associated with lower trade diversion in the economic sense of this term). As the number of countries roughly doubled from 85 in 1950 to 183 in 1993-2000, the number of pairs among these countries more than quadrupled from 7,140 to 33,306 (based on Gleditsch, 2002).

It is difficult to hypothesize whether the development of the WTO regime enhances the conventional obstruction effect of war on trade with third parties more than the opportunities for trade substitution (or the other way around). However, globalization has overall an unequivocal constraining effect on the ability of politically motivated action to obstruct or promote trade with a target state.

The WTO limits unilateral and bilateral trade policies. This does not mean that there is no room for such formal action. First, as of 2014 there are still some 30 states who are not members of WTO and trade with them is not subject to its rules. There were even more such non-members in previous years since WW2. Second, some of the international trade is in sectors that are either not subject to the principle of free trade (such as commodities and arms sales), or that lay within the WTO framework but as of yet without much binding commitments (such as agriculture and certain elements in WTO agreements on services, investments and government procurement). Some sectors are new and evolving and WTO rules take time to catch up with them (high-tech). Third, if the political motivation for imposing sanctions or preferences on a target state is strong enough, member states may decide to violate WTO rules for a short period of time. However, the more states join the WTO and the deeper the practical commitments to free trade under the WTO become the less room for unilateral and bilateral trade policies.

There are three more ways in which the WTO regime reduces the scope for informal and indirect action to reduce trade with a target state, but does not reduce the scope for action to promote trade with a target state. First, in a highly globalized world, governments hesitate to impose formal, informal or indirect sanctions on a target state lest firms from other states will take up the forsaken trade. Second, under rising capital mobility formal and informal government action is less effective as profit-seeking local firms and multilateral corporations can better evade it, and are less inclined to act as foreign policy tools of governments. Third, in a global economy based on intra-industry trade and vertical integration action against trade with state *A*'s enemy may have adverse repercussions on the initiating third party's own industries.

In these three ways the development of the WTO regime reduces the effectiveness of unilateral action against a target state relative to action for the benefit of a target state and *ceteris paribus* reduces the opportunity cost of war. Thus, our second hypothesis is:

H2: The more developed is the WTO regime, the weaker is the wartime effect of the similarity of national interests on trade with third parties in general, and with regard to reducing trade with a target state in particular.

Research design

For the sake of better external validity and avoiding specific wars from determining the results, our dyadic dataset covers 51 years (1950-2000) in annual frequency and up to 188 countries and territories for which trade data is available. Earlier periods are not included because the argument of this paper may not be relevant to imperial trade systems and the two world wars. Obviously the world wars were qualitatively different than other wars (Martin, Mayer and Thoenig, 2008) and mixing them in one dataset with post-WW2 wars would render the estimates less meaningful. Historical datasets are also challenged by inconsistencies in data compilation methods as they are retrieved from a variety of sources. The post-2000 years are excluded for lack of consistent data on similarity of national interests.

The dependent variable is the log of annual nominal USD merchandise exports from one state to another, taken from Gleditsch (2002) database, which treats missing trade values as zero values as long as both states appear in IMF reports. This treatment is based on the assumption that trade goes unreported mostly when there indeed are no trade flows to report (i.e. zero trade), so dropping such observations is equivalent to systematically removing zero trade observations from the dataset, which may lead to problems of Heteroskedasticity and unpredicted estimation bias (Helpman, Melitz and Rubinstein, 2008; Santos-Silva and Tenreyro, 2006; Tenreyro, 2010). However, coding zero for missing trade values is not a consensual treatment of the data among scholars, as sometimes values may be missing in cases of actual non-zero trade. Thus, in order to check for the robustness of the estimation results the hypotheses are also tested without

coding missing trade data as zero trade. This trade series is taken from the Correlates Of War (COW) 2.0 database.

In order to allow the logarithmic transformation of trade flows, observations with zero trade are assumed to have a value of USD 1,000, which is the minimum value to be recorded in international trade. As a further robustness check the hypotheses are also tested with real trade and GDP values.

For every pair of states the trade flows in each direction are recorded as separate observations. Aggregating data, such as summing exports and imports in each dyad, represents a loss of information and reduces the precision of the estimates. Distinguishing exports from imports is also necessary for the method that we use to control for omitted variables (see below). As a result there are 1,094,084 trade observations.

As in most studies of the effect of war on trade, the hypotheses are tested with a gravity equation, which explains trade as driven by the importing nation's demand variables (its GDP and consumer price index), the exporting nation's supply potential (its GDP and market access factor), but hampered by transaction costs (including bilateral distance and price mark-ups).[8]

Measurement, data availability and instrumentation problems mean that such important variables (including certain domestic political variables) are often omitted in empirical

[8] The index of importer prices and the exporter's market access make up what Anderson and Van Wincoop (2003) referred to as multilateral trade resistance). See Anderson (1979), Baldwin *et al*. (2008, 10-17), Bergstrand (1985) and Anderson and Van Wincoop (2001) for a very detailed exposition.

research. Baier and Bergstrand (2007), Baldwin and Taglioni (2006), Baldwin *et al*. (2008, 39-42) and Sadeh (2014) control for such variables with Exporter-Year Fixed Effects (EYFE), Importer-Year Fixed Effects (IYFE) and Country-Pair Fixed Effects (CPFE). We accept that this method is least likely to produce biased estimates, and a very powerful method in minimizing endogeneity.

We run a Fixed Effects regression to control for the CPFE (34,882 pairs, or less depending on missing data in some variables). Since the number of EYFE and IYFE would exceed the maximum possible (10,998) in the software package used for this study (STATA 13 8-core SE) we specify 50 Year Fixed Effects (YFE), 187 Exporter-Country Fixed Effects (ECFE) and 187 Importer-Country Fixed Effects (ICFE).[9] Robust standard errors are clustered at the country-pair level to address potential interdependence of dyadic observations and problems of heteroskedasticity and autocorrelation in the error terms (for a more detailed explanation see De Benedictis and Taglioni, 2011; Glick and Taylor, 2010, f.23).

In addition to the above array of fixed effects, and as part of the Gravity equation we also specify the logarithmic transformation of nominal US dollar GDPs of the exporting and importing states as independent variables (or real GDPs – in 1996 US dollars – when real trade data is used) taken from Gleditsch's (2002) database. We next specify an array of dummy variables controlling for the effects of trade clubs and currency blocks; these

[9] In order to avoid a linear combination between each of the ECFE and ICFE on the one hand and the CPFE on the other hand, a default year is coded zero in all ECFE and ICFE.

include dummy variables for pairs of two WTO/GATT member states (WTO), two member states of a common Preferential Trade Agreement (PTA), and two member states of a common currency block (CURRENCY). To each of these three dummies two more dummies are added, coding for a member of the club/block exporting to a non-member of the same club/block (noted with the suffix EX), and a club/block member importing from a non-member of the same club/block (noted with the suffix IM).[10]

WAR is a dummy variable scoring in each observation 1 for a war between the particular pair of states in the particular year.[11] This coding is based on the interstate war list taken from the COW database, which defines war as involving sustained combat by organized armed forces, resulting in a minimum total of 1,000 battle-related combatant fatalities within a 12 month period).[12] Thus, there are a total of 34 wars in the dataset (if wars with

[10] Data on PTA membership is taken from Mansfield, Milner and Pevehouse (2007), who include under PTAs any reciprocal arrangements. Data on currency block membership is taken from Glick and Rose (2002). They defined currency blocks as country pairs whose monies are either common or interchangeable at 1:1 par for an extended period of time. We do not specify population size as an independent variable because recent contributions to the gravity literature have shown that the theoretical basis for this practice is weak, in spite of its popularity (Baier and Bergstrand, 2007; Baldwin *et al*., 2008).

[11] We do not consider wars of independence because trade data is not available for the belligerent entities in such conflicts.

[12] As a right-hand side variable a dummy is preferable to COW's MID index, which is a five-notch ordinal variable that has arbitrary intervals between its values. If our findings

similar main combatants in consecutive years are counted as one event). Only states that committed at least 1,000 troops and suffered at least one battle related death are considered as war participants. Thus, there are 488 observations with WAR = 1. The coefficient of WAR measures the effect of war on trade between the warring states; it is expected to be negative.

WAR3 is a dummy variable scoring in each observation 1 if one of the states in the particular pair was at war with a state from another pair in that particular year. There are a total of 65,322 observations in the dataset with WAR3 = 1. The coefficient of WAR3 is expected to be negative but with a smaller magnitude than the coefficient of WAR.

SIMINT is an index of similarity of national interests between the two states in each observation, to control for the effect this may routinely have on bilateral trade. We expect the coefficient of SIMINT to be positive because similar interests could facilitate greater trade at least between various agencies and state-owned enterprises of the two states. We also interact WAR3 and SIMINT in order to captures the effect on trade of wartime policies resulting from the similarity of interests between one of the states, which is at war, and the other, which is not. We expect the coefficient of the interaction WAR3*SIMINT to be positive.

Two different variants of the index of similarity of national interests are used. Both variants measure the similarity of the two states' portfolios of alliances based on the data in EUGene (Bennett and Stam, 2000; Signorino and Ritter, 1999), ranging from -1 (least

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support our argument – that wars are cheaper than many assume – they apply for lower levels of dispute militarization as well.

similarity) to 1 (perfect similarity), but one of them weighs the different alliances according to military capabilities (S Weighted Regional in the original dataset) and the other does not (S Unweighted Regional). Both variants only consider allies within each of the two states' geographical region in order to eliminate the bias towards the middle of the scale generated by the scarcity of alliances in the world.

ENEMY_SIMINT is an index of the similarity of national interests between a third party and the enemy of its trade partner (*A*'s enemy) with the same two variants described above. In each observation consisting of states *A* and *B* if state *A* is at war with some other state ENEMY_SIMINT measures the similarity of national interests between *A*'s enemy and *B*. For example, in 1982 the UK was at war with Argentina; in the observation of trade between the US (state *B*) and the UK (state *A*) in 1982, ENEMY_SIMINT represents the similarity of national interests between the US and Argentina (*A*'s enemy).

In a year in which *A* was at war with more than one state, the value of ENEMY_SIMINT is an average of the similarity values of state *B vis-à-vis* all of *A*'s enemy states. If states *A* and *B* were each simultaneously engaged at war but not with each other (because they were allies in the same war or because they happened to fight at different wars in the same year) ENEMY_SIMINT is the average of the two different similarity values calculated for each state in the pair (between its enemies and the other state in the pair). In all observations with both states at war with each other or without any state at war (WAR3 = 0) ENEMY_SIMINT has a value of 0. We expect the coefficient of ENEMY_SIMINT to be negative. H1 is supported if the coefficient of WAR3_SIMINT is smaller in absolute terms than the coefficient of ENEMY_SIMINT.

Controlling for the development of the WTO regime is tricky. Various potential operational measures might be simultaneous with much of the other variables in this dataset. Since the development of the WTO regime has a strong temporal trend we could simply interact the year dummies with the variables of interest. However, because there are at most one or two wars in each year (and none at all in many years) the coefficients of such high-frequency interactions would reflect the specific nature of these wars, rather than just the effect of globalization.

Thus, we divide the data period into an early period characterized by a rudimentary stage of the WTO regime and a later period characterized by an advanced stage of globalization. GLOB is a dummy variable coded 1 for each year after 1971. This year is selected because it is a major turning point in the process of globalization (the year in which the US went off gold and the Bretton Woods system of fixed exchange rates was effectively undone) and also because the frequency of observations with WAR3 = 1 is very similar before and after 1971. The full effect of each variable in the globalized period is measured by the sum of its coefficient and the coefficient of its interaction with GLOB. H2 would be supported if the coefficient of the interactions of GLOB with both WAR3_SIMINT and ENEMY_SIMINT are positive, and the coefficient of WAR3_SIMINT is smaller in absolute terms than the coefficient of ENEMY_SIMINT. To control for the full range of the war's potential effects GLOB is also interacted with WAR, WAR3 and with SIMINT.

Results

We begin in Table 1 with a set of simple specifications that include no interactions with the globalization dummy. Regression (1) is a basic gravity specification. The income elasticity of trade in both directions is near unitary. As expected WTO membership is shown to stimulate trade among member states. The negative coefficients of WTO membership on non-members can reflect trade diversions, but may also reflect the tendency for autarky in WTO non-members (such as Communist states). PTA membership enhances trade even more than WTO membership, and has small positive effects on trade with third parties.

A currency union raises trade between its member states by more than 250 percent, as suggested by a number of studies, including Rose (2000), Frankel and Rose (2002) and Glick and Rose (2002). Currency unions are also found to stimulate trade with non-members. This is further evidence that their main economic advantage is not in reducing transaction costs but in reducing the fixed costs of international trade and allowing small firms to become cross-border traders, thus increasing variety-driven trade (Helpman, Melitz and Rubinstein, 2008; Baldwin *et al*., 2008, 59-60).

Regression (2) adds WAR and WAR3 without any meaningful change to the estimated coefficients of the gravity variables. As expected bilateral trade is shown to collapse at times of war (the exponential transformation of -2.07 represents a fall of 87%). Trade with third parties falls by a smaller magnitude (34%).

Regressions (3)-(4) include each a different operational variant of the index of– the similarity of interests between the two trade partners (SIMINT) and between one of the

two states in the observation and the war enemies of the other state (ENEMY_SIMINT). Most of the coefficients of the gravity and war variables are again not meaningfully different compared with regressions (1)-(2). The exceptions are the fall in the trade effect between WTO members, and especially the weakening of all of the trade effects of PTAs.

This can be explained by the expectedly positive coefficient of SIMINT – common or similar alliances are associated with greater trade, and it seems that to some extent trade agreements tend to be concluded between states with similar national interests. This is in line with Gowa (1994), Gowa and Mansfield (1993), and Mansfield and Pevehouse (2000) who argue that national security interests influence commercial ties and find that alliances promote trade (although SIMINT is not identical to the variables that they use, and does not necessarily reflect an alliance in each dyad).

As expected, the coefficient of ENEMY_SIMINT is negative and the coefficient of the interaction WAR*SIMINT is positive in both columns. However, the statistical insignificance of the coefficient of WAR*SIMINT and the lower magnitude of the coefficient of ENEMY_SIMINT in Regression (3) compared with Regression (4) suggests that (unsurprisingly) at war the similarity of interests is better measured when allies' military capabilities are weighted. The greater absolute magnitude of the coefficient of ENEMY_SIMINT compared with the coefficient of WAR*SIMINT supports H1.

Table 1: The association of war, similar national interests and trade

	(1)	(2)	(3)	(4)
Operational variant of the index of similarity of interests:			Not weighted by allies' military capabilities	Weighted by allies' military capabilities
Log of GDP of exporting state	0.98 ***	0.98 ***	0.94 ***	0.94 ***
	(0.03)	(0.03)	(0.03)	(0.03)
Log of GDP of importing state	1.03 ***	1.02 ***	0.97 ***	0.97 ***
	(0.03)	(0.03)	(0.03)	(0.03)
WTO - Dummy for pairs of two WTO member states	0.32 ***	0.30 ***	0.20 ***	0.20 ***
	(0.03)	(0.03)	(0.03)	(0.03)
WTOEX - Dummy for WTO member exporting to WTO nonmember	-0.25 ***	-0.26 ***	-0.27 ***	-0.26 ***
	(0.02)	(0.02)	(0.03)	(0.03)
WTOIM - Dummy for WTO member importing from WTO nonmember	-0.38 ***	-0.38 ***	-0.40 ***	-0.40 ***
	(0.02)	(0.02)	(0.02)	(0.02)
PTA - Dummy for two members in the same PTA	0.53 ***	0.53 ***	0.29 ***	0.28 ***
	(0.04)	(0.04)	(0.04)	(0.04)
PTAEX - Dummy for PTA member exporting out of that PTA	0.09 ***	0.09 ***	0.01	0.00
	(0.02)	(0.02)	(0.02)	(0.02)
PTAIM - Dummy for PTA member importing from outside that PTA	0.08 ***	0.07 ***	-0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)
CURRENCY - Dummy for two members in the same currency block	1.29 ***	1.26 ***	1.38 ***	1.38 ***
	(0.11)	(0.11)	(0.11)	(0.11)
CURRENCYEX - Dummy for currency block member exporting out of that block	0.26 ***	0.25 ***	0.30 ***	0.30 ***
	(0.02)	(0.02)	(0.02)	(0.02)
CURRENCYIM - Dummy for currency block member importing from out of the block	0.24 ***	0.23 ***	0.29 ***	0.29 ***
	(0.02)	(0.02)	(0.03)	(0.03)
WAR - Dummy for two warring states		-2.07 ***	-2.00 ***	-2.01 ***
		(0.26)	(0.26)	(0.26)
WAR3 - Dummy for a state at war trading with a state not at war with it		-0.41 ***	-0.39 ***	-0.35 ***
		(0.02)	(0.02)	(0.03)
ENEMY_SIMINT - Similarity of interests between a third party and the war enemies of its trade partner			-0.12 **	-0.28 ***
			(0.05)	(0.04)
SIMINT - Similarity of interests between the two trade partners			0.15 ***	0.18 ***
			(0.02)	(0.03)
SIMINT * WAR3 – Wartime similarity of interests between the two trade partners			0.07	0.16 ***
			(0.05)	(0.04)
R^2	0.46	0.46	0.44	0.43
Observations	1,094,084	1,094,084	1,025,910	1,026,856

Note: Results from linear regressions with Exporter-Country Fixed Effects, Importer-Country Fixed Effects, Year Fixed Effects and Country-Pair Fixed Effects. Entries are coefficient estimates, clustered standard errors in parentheses. * $.05 < p \leq .10$. ** $.01 < p \leq .05$. *** $p \leq .01$. The dependent variable is the natural logarithmic transformation of annual nominal USD exports of merchandise. The constant was not reported to save space.

In Table 2 we introduce the interactions with the globalization dummy. The coefficients of the gravity equation's variables are not reported to save space – they are not meaningfully from those reported in parallel regressions in Table 1. Table 2 shows that the development of the WTO regime does not affect the extent of disruption to trade between the combatants (the coefficients of GLOB*WAR are insignificant in all columns). The coefficient of GLOB*WAR3 is positive in Regression (5), but becomes insignificant when similarity of interests is controlled for. This means that the WTO regime reduces the costs of war to trade with third party, but only because it changes how national interests affect wartime trade. Otherwise it seems that the WTO regime does not affect the balance of obstruction and substitution effects of war on trade. As expected in both Regressions (6) and (7) the coefficients of the interaction GLOB*ENEMY_SIMINT are positive and the coefficients of the interaction GLOB*WAR*SIMINT are negative. H2 is supported because the formers are greater in absolute magnitude than the latters.

We check the robustness of our results in Table 3 by running the same three regressions with real trade data, and with nominal data that does not convert missing trade values into zeros. The results continue to support H2. The development of the WTO regime now seems on balance to slightly raise the costs of war irrespective of national interests (negative and significant, but small coefficients for GLOB*WAR3 in Regressions (9)-(10), (12)-(13)). In Regressions (11)-(13) the effects of war on trade between the combatants and with third parties are greatly diminished (see coefficients of WAR and WAR3) and the R^2 values are lower compared with the other regressions, but these results may be less reliable because of the method of not coding missing trade values as zeros.

Table 2: War, trade, national interests and globalization

	(5)		(6)		(7)	
Operational variant of the index of similarity of interests:			Not weighted by allies' military capabilities		Weighted by allies' military capabilities	
WAR - Dummy for two warring states	-1.94	***	-1.74	***	-1.78	***
	(0.26)		(0.26)		(0.26)	
WAR3 - Dummy for a state at war trading with a state not at war with it	-0.50	***	-0.41	***	-0.33	***
	(0.03)		(0.03)		(0.04)	
ENEMY_SIMINT - Similarity of interests between a third party and the war enemies of its trade partner			-0.31	***	-0.39	***
			(0.07)		(0.06)	
SIMINT - Similarity of interests between the two trade partners			-0.01		0.33	***
			(0.03)		(0.04)	
SIMINT * WAR3 - Wartime similarity of interests between the two trade partners			0.21	***	0.11	**
			(0.06)		(0.06)	
GLOB*WAR - change in war's direct trade effect after 1971	-0.32		-0.59		-0.51	
	(0.43)		(0.43)		(0.43)	
GLOB*WAR3 - change in war's trade effect on third parties after 1971	0.16	***	0.03		-0.01	
	(0.03)		(0.04)		(0.05)	
GLOB*ENEMY_SIMINT - change in wartime trade obstruction policies after 1971			0.30	***	0.33	***
			(0.08)		(0.07)	
GLOB*SIMINT - change in effect of similar interests on trade after 1971			0.18	***	-0.20	***
			(0.03)		(0.03)	
GLOB*WAR3*SIMINT - change in wartime trade promotion policies after 1971			-0.20	**	-0.12	*
			(0.08)		(0.07)	
R^2	0.46		0.44		0.44	
Observations	1,094,084		1,025,910		1,026,856	

Note: See notes to Table 1. The coefficients of the gravity equation's variables are not reported to save space.

Table 3: War, trade, national interests and globalization, with alternative trade measures

	(8)	(9)	(10)	(11)	(12)	(13)
Trade and GDP values:	Real	Real	Real	Nominal	Nominal	Nominal
Missing trade values:	Coded zero	Coded zero	Coded zero	Left missing	Left missing	Left missing
Operational variant of the index of similarity of interests:		Not weighted by allies' military capabilities	Weighted by allies' military capabilities		Not weighted by allies' military capabilities	Weighted by allies' military capabilities
WAR - Dummy for two warring states	-1.90 ***	-1.88 ***	-1.90 ***	-1.21 ***	-1.17 ***	-1.20 ***
	(0.30)	(0.29)	(0.29)	(0.27)	(0.27)	(0.27)
WAR3 - Dummy for a state at war trading with a state not at war with it	-0.41 ***	-0.34 ***	-0.21 ***	-0.33 ***	-0.26 ***	-0.19 ***
	(0.03)	(0.04)	(0.05)	(0.03)	(0.04)	(0.04)
ENEMY_SIMINT - Similarity of interests between a third party and the war enemies of its trade partner		-0.34 ***	-0.49 ***		-0.53 ***	-0.48 ***
		(0.08)	(0.07)		(0.07)	(0.06)
SIMINT - Similarity of interests between the two trade partners		-0.02	0.34 ***		-0.16 ***	0.28 ***
		(0.04)	(0.04)		(0.04)	(0.04)
SIMINT * WAR3 - Wartime similarity of interests between the two trade partners		0.21 ***	0.08		0.42 ***	0.27 ***
		(0.07)	(0.06)		(0.07)	(0.06)
GLOB*WAR - change in war's direct trade effect after 1971	-0.60	-0.63	-0.57	-0.55	-0.60	-0.55
	(0.46)	(0.46)	(0.46)	(0.64)	(0.63)	(0.63)
GLOB*WAR3 - change in war's trade effect on third parties after 1971	0.03	-0.04	-0.12 **	-0.04	-0.11 **	-0.13 **
	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.05)
GLOB*ENEMY_SIMINT - change in wartime trade obstruction policies after 1971		0.31 ***	0.41 ***		0.54 ***	0.47 ***
		(0.09)	(0.08)		(0.09)	(0.07)
GLOB*SIMINT - change in effect of similar interests on trade after 1971		0.12 ***	-0.22 ***		0.28 ***	-0.18 ***
		(0.03)	(0.04)		(0.03)	(0.04)
GLOB*WAR3*SIMINT - change in wartime trade promotion policies after 1971		-0.20 **	-0.09		-0.44 ***	-0.34 ***
		(0.09)	(0.08)		(0.09)	(0.08)
R^2	0.44	0.43	0.43	0.38	0.38	0.38
Observations	1,031,156	1,023,030	1,023,976	813,567	813,108	813,563

Note: See notes to Table 2.

Conclusions

The "Trade brings peace" thesis expects trade and globalization to reduce interstate violence because it assumes that militarized conflicts harm trade among adversaries and with third parties; this study indeed provides support for this assumption when the entire 1950-2000 period is studied. However, we show that in a globalized world the overall fall in trade with third parties is more moderate.

We provide evidence that unilateral and bilateral responses to war motivated by a similarity of national interests between trade partners are associated with a significant portion of the reduction in trade between a state at war and third parties. Our explanation for this is that domestic, bureaucratic and fiscal factors make it is easier for states to reduce trade with target states than to stimulate it.

We further argue and demonstrate that the WTO regime restricts the ability of states to use trade as a political tool and thus affects the opportunity costs of war. Trade institutionalization, the increasing variety of trade partners, higher capital mobility and vertical integration in the world economy narrow the scope for states to use trade as a foreign policy tool when they are not directly involved in a war, and make it especially difficult to reduce trade with target states. In this sense and all else equal the development of the WTO regime makes wars cheaper. Our evidence further suggests that irrespective of the effects of national interests globalization tends to only slightly increase the costs of war to trade with third parties, or possibly has no effect at all. We explain this to be a result of a balance between the WTO's conflicting effects of making existing trade more

vulnerable to war and simultaneously making it easier to find alternative business opportunities.

Methodologically, this study innovates with the largest dataset ever used in this literature, which distinguishes exports from imports rather than aggregate them. This dataset improves the precision of the estimates and the external validity of the findings, and enables better controls for omitted variables. We apply a particular set of fixed effects to a Gravity model based on recent advances in the field of trade economics, and use alternative treatments to the problem of zero trade observations.

Admittedly our findings are based on a rather crude measurement of the development of the WTO regime. Further research should attempt to find more sophisticated ways to operationalize its exogenous effects on the cost of war. However, the results of this study point to the need for a more comprehensive research agenda of the effects of war on third parties in a globalizing world.

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