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The Wages of Peace
Trade, Democracy, Interests and International Conflict Among the Major Powers, 1907-1965

Introduction

Does a high level of trade between two states reduce the likelihood of conflict between them? Both theoretical arguments and empirical research present different answers to this question. Our goal is to address the question empirically, drawing our data from the major powers, who have been the leading trading states of the world, over the period 1907-1965, a span that witnessed significant shifts in both the pattern and level of trade, as well as extensive amounts of international conflict. We begin by presenting briefly both sides of the argument on the relationship between trade and conflict and the evidence that bears on this. We describe our data and report the results of our analysis. The paper concludes with a discussion of the implications of these results.

Trade and Conflict

At least since Kant (1795 [1991]) there has been a line of theory arguing that international commerce will reduce conflict between states. The arguments on behalf of this idea generally fall into two broad groups. The first of these is a venerable argument that relies relatively narrowly on the presumed beneficial effects of trade between states, that is, the gains from trade. This argument was advanced most notably by the members of the Manchester School of economics (Blainey, 1988) and was an element in arguments supporting the policy of free trade and opposing mercantilism in nineteenth century British politics. Under this theory, since trade is an important element in the wealth of a nation and, since conflict with a trading partner will diminish the gains from that trade, potentially costly conflicts will be avoided. That is, since international commerce is premised on gains from trade, anything that interferes with those gains is likely to meet with opposition in a state with the prospect of giving up the gains. The overall consequence of this is that as the web of trade increases, the incidence of conflict will decrease.

The second line of argument casts trade as one element, albeit an important one, in the broader web of interdependence that draws states closer together. Trade is thus one part of the larger mix of governmental and non-governmental international organisations, transnational flows of information, and technical exchange, to name a few elements. These transaction flows, in the view of Deutsch (1954), will lead to changed elite and mass attitudes, which will reinforce the growing pattern of interdependence. Using the ideas set forward by Deutsch, an early study of transaction flows and community formation (Alker and Puchala, 1968) focused precisely upon the extent to which trade had strengthened bonds among the North Atlantic states. More recent theorising along these lines is in the work of Nye (1971) and Keohane and Nye (1989).[1]

The main difference between the first and second approaches, of course, is the centrality of trade in the bonds that join nations. Under the first approach, it is central and the gains that it generates for the state are paramount, while under the second approach it is one element in a larger picture.

Of course, not all theorists agree with the notion that either trade or interdependence will promote a more peaceful world. Notably, Waltz (1979) believes that interdependence is either unrelated to conflict or can actually promote it, a point that other students of interdependence might well agree with if the relations are specified as uneven or asymmetric. Such an argument, of course, would find common ground with studies of dependency, where trade is seen as a tool used by one state against another.

While there is a long tradition of theory in this area, the question has been only recently the subject of empirical research. Most, but by no means all, of this research to one degree or another supports the idea that increased international commerce reduces conflict. Although the studies are numerous, because of their rigor and breadth a few of them deserve special discussion. Among the early empirical studies was Polachek's (1980) analysis of the relationship between trade and conflict in the period 1958-1967. Using COPDAB data (Azar, 1980) as his measure of conflict and introducing controls for a number of economic and demographic factors, Polachek's results indicate that trade between states does decrease conflict. Focusing on the more conflict-prone dyads of the United States and the Warsaw Pact states and again using COPDAB data and trade, Gasiorowski and Polachek (1982) find that across the period 1967-1978 economic interdependence reduced conflict. An additional recent paper by Reuveny and Kang (forthcoming) uses Granger techniques to investigate the effect of trade on conflict, with the latter being measured, once again, from COPDAB data. Their results, too, indicate that trade mitigates conflict. While these studies are of interest, as Weede (1995a) has noted, they are about the day-by-day flow of conflictual events between states and not about the larger context of international politics in which either crises and disputes threaten war or wars actually occur.

More recently, this aspect of international conflict has been addressed by Oneal and his associates (Oneal *et al.*, 1996), who used logistic regression to investigate the impact of a number of political and economic variables on the occurrence of militarised interstate disputes (MIDs). Drawing their data from politically relevant dyads in the period 1955-1985, their results show that economic interdependence reduces conflict between states even when controls are introduced for a number of other factors including that the states are both democratic, their contiguity, and the stability of the government.

A common characteristic of all these studies is the fact that their data are drawn from the post-World War II era. Thus the domain about which they inform us is relatively limited, and is, moreover, one that was dominated by the Cold War and the relatively rigid bloc structure that attended it. Recent research by Barbieri (1996) investigates the relationship of trade and conflict over the longer period 1870-1938. Barbieri's work is noteworthy in several respects. First, the research covers more than 60 years, the longest of any of the studies. Second, the number of cases, 14,341, is large relative to any of the other studies except Oneal and his associates, where the number of cases was about 7,000, depending upon which model was being analysed. Notably, Barbieri's results are contrary to the other studies: trade increases conflict. It is tempting to attribute this difference to the multipolar international system that characterised this period, but Oneal and Russett (1996) offer an alternative explanation in which Barbieri's results may be due to her research design in which all dyads were included instead of only those that were politically relevant to each other. Thus there is the possibly that the results were influenced by a spurious correlation between economic interdependence and trade, because each is highly correlated with geographic proximity, a key factor in identifying politically relevant dyads.

However, it remains that with the exception of Barbieri's work, the evidence, broadly taken, appears to support the argument on behalf of international trade as a pacifying agent. However, the evidence is not without its empirical problems. First, as noted above, almost all the data in the various studies are drawn from the period following the end of World War II. To be sure, this period has witnessed a huge growth in international trade, but it also a period that was dominated by the Cold War and the attendant bipolar structure. Since the world has moved away from this structure, good reasons exist to examine data from an earlier period. Second, most of the empirical research examines trade in relation to conflict without simultaneously assessing the capacity of other theories or factors to explain the presence or absence of conflict between states. Of course, several research reports include other variables, but these are used mainly to see if the effects of trade on conflict are reduced by distance or some other factor, usually economic or demographic. Finally, while Oneal *et al.* have reported the most complete, well specified study of the relationship between

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economic interdependence and militarised interstate disputes, a recent reanalysis of their data that includes time dependence in the model suggests that trade does *not* make a difference in the amount of conflict between states (Beck and Tucker, 1996).

Turning to the theoretical arguments, there is a possible difficulty with at least one central element of the effects of trade on international conflict. This is that there is a generally unrecognised assumption in these theories that those who benefit from trade are able to influence the policies of the state. Given the root of many of these ideas about the relationship between trade and conflict in the United Kingdom it is not difficult to see how the relationship could well work out. In the nineteenth century the political system of the United Kingdom was particularly open to those who benefited from trade. Under those circumstances individuals involved in, and groups benefiting, from international trade would indeed have avenues to sway political leaders away from conflicts that would disrupt trade.[2] This type of openness is a hallmark characteristic of the liberal democratic state. However, in other types of systems, particularly those that are totalitarian, avenues for access are not only more limited, but economic actors are part of the state and are themselves the subjects of its manipulation. In sum, economic agents from open, liberal economies are likely to be privately owned firms that seek to shape policies to advance their interests, while in closed economies they are likely to be state firms or agencies that act at the behest of state policy. The consequence of this is that open economies and open polities typically occur together, so the coincidence of open, liberal political systems predicts higher trade. This leads to the question of whether the observed relationship of high trade to low conflict may be an artifact of this association, a possibility that must be given serious consideration given what is known about the pacific inclinations of democratic states toward each other (Maoz and Abdolali, 1989; Bremer, 1992).

More generally, besides shared democracy, there are a number of putative explanations of processes that may be affecting both conflict and trade at the same time or in different ways. We now turn to this subject.

Alternative Formulations of the Relationship Between Trade and Conflict

While there is good reason to suspect a possible dampening effect of international trade on conflict between states, there, of course, a number of other factors which may plausibly be associated with both high trade and low conflict. To draw proper inferences about the relationship between trade and conflict these variables must be introduced into the study. The individual factors that

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both theoretically and empirically appear to provide the most plausible alternative factors are contiguity, joint democracy and shared interests. We discuss each in turn.

Contiguity

There has been a growing recognition that geographic distance is closely related to international conflict. Part of the thinking behind this has been advanced by Most and Starr (1980), who plausibly argue that states that share a border have heightened probabilities for conflict because of the host of issues that may arise because of their contiguity. Territory, of course, is the most obvious, but also important are questions that revolve around such things as resource access, cross-border shared ethnicity and immigration. However, while conflict opportunities are increased, so, too, are opportunities for mutual gains through trade. It is not possible to assess the net effect of trade without also considering the conflictual possibilities that follow from close proximity.

Joint Democracy

The recent interest in the relationship between democratic states and their war participation has centred largely on the theoretically and politically important observation that democratic states have not fought each other in a war of any meaningful size in the modern era. This has been found in a number of studies, including those of Small and Singer (1976), Chan (1984), Ray (1995) and Weede (1984). In one such recent study Maoz and Abdolali (1989), observe no instances of significant international war between political systems they identify as democratic on the basis of a rigorous coding scheme derived from Gurr's work on political systems in the modern era.[3]

Subsequent work by Maoz and Russett (1992b) explores the extent to which the observed absence of conflict between democratic states could be due to factors other than shared democraticness, and from their analysis it is evident that while such things as mutual alliance, wealth and trade may dampen conflict slightly, the democratic peace cannot be attributed to these alone. Thus, shared democracy furnishes a powerful indicator of peaceful dyads.[4]

The importance of the lack of war between democratic political systems for the study of the effects of trade on peace is that democratic states are more likely to have liberal trading policies than non-democratic states. The latter are likely, to one degree or another, to be command economies in which markets and the behaviour of individual economic actors, such as firms and entrepreneurs, are subsidiary to the state. In democracies, economic actors are hence more likely to influence the policies of the state more than in non-democratic states.

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Shared Interests

International conflict occurs when the different interests of states cannot be reconciled by other means. To the extent that states have similar interests, conflicts between them should be less frequent than otherwise, and when they do occur, they should be easier to resolve. These points can hardly be startling to any observer of international politics, but as prosaic as they are it is less clear from where interests emerge than that they exist. Realism, an almost dominant theory of international politics over the past decades, asserts that states have something close to a uniform set of interests in that they all pursue the maximisation of security, despite whatever difference may exist in the internal political institutions. However, there is evidence that the accuracy of this view may be open to question. Two points are relevant to this possibility. First, the literature on the democratic peace strongly suggests that the differences that exist between and among democracies must not be as significant as the differences that separate other states. If this were not so, then we would find more conflict and war than is revealed in the extant data analyses. Second, there is some evidence to suggest that democratic states ally with each other more than probability indicates they should (Siverson and Emmons, 1991). This is true for the 15 years following the end of World War I and at least for the 20 years (i.e., 1946-1965) following the end of World War II. It is not true for the years just before World War II, in part because a number of previously democratic regimes were overthrown by groups that instituted authoritarian regimes, while the alliances stayed in place, at least temporarily. It may be true for the period after 1965, but data analysis for this period has yet to be done.

All this is important to the relationship between trade and conflict because to the extent that economic actors anticipate future good relations with another state, they may be willing to increase their trade with that state. The possibility of political disruptions to trade create a risk for economic agents involved in trade, and so the more likely conflict is, the more profitable the trade must be to compensate for the risk of disruption. However, when good relations are anticipated, the risk is minimised and more trade can result. In view of this it becomes important for us to consider the condition of relations between two states.

Description of the Data and Measurement of Variables

To assess the impact of trade on conflict we collected data for all the major powers at the beginning of the twentieth century —the United States, Great

Britain, France, Germany, Italy, Russia, and Japan— during the period 1907-1965. We chose this domain for reasons that were both theoretical and pragmatic. Theoretically, these are the leading trading states in the international system. Although there may be some short-term variation, it is probably the case that for the period covered the combined trade for these states is more than 50 per cent of total world trade. Although each has a large economy, trade is likely to be important to the political and economic leaders of each state. It is also the case that these states are relatively close to each other in terms of their power. To be sure, there will be variation across states at any one point and other differences across time periods, but in the aggregate they are closer in power to each other than are other trading states. Because of this we will be able to estimate the effects of trade on conflict without the possibly confounding problem of sharp power differences that can, for example, maintain peace through dominance. It is also the case that conflicts among these states have been among the defining elements of international politics in this century. As we will see below, there is an ample amount of conflict to study. A pragmatic reason for this choice of states is the difficulty of acquiring reliable trade data for minor powers over an extended period of time. Indeed, we suspect that this is one reason why so much of the extant research on trade and conflict focuses on the period after 1945, when the quality of trade data increased markedly. Data on the major powers, however, is relatively easier to collect with confidence.

Important characteristics of international trade shaped the way we chose to construct our data set, so we will first explain this and our other independent variables and then describe our dependent variable, conflict.

From the set of major powers we constructed 42 directed dyads. That is, each case represents the behaviour of one state, the exporter, to another state, the importer. Thus annual sum of exports from France to Germany is one case and exports from Germany to France is another. We do this in order to single out for each state the effects of trade on its conflict involvement. Combining the trade from two states into one case would create significant problems of drawing inferences from an aggregation that could have quite different meanings across cases. Our time period is the years 1907 to 1965.[5] The years 1914 to 1919 and 1939 to 1947 are excluded, due to the lack of trade data during the wars and the low reliability of it in the years immediately following the wars. Each observation of the trade data records the flow from one major power to another during one year in this domain. Each of the 42 cases has 46 yearly observations, giving a total of 1,932 possible observations in all.[6]

We use constant U.S. dollar values to measure exports and GNP in order to minimise the effects of changing price levels and inflation over time. We first convert nominal values in national currency to current U.S. dollars[7] and then convert the current dollar values to constant 1947-1948 dollar values.[8] The current exchange rate controls for national currency inflation relative to the dollar,

and the constant dollar conversion controls for inflation of the U.S. dollar. The main independent variable, then, is the value of exports from state *i* to state *j* in millions of constant U.S. dollars (EXP).[9]

There are at least two specifications of the trade measure that we wish to explore. The first is simply the size of a state's trade with another state in pure financial terms as explained above. Second, however, we wish to make an estimate of how important the trade between the two states is to the exporter. To find this we simply divide the adjusted exports of state *i* to state *j* by the size of the GNP of state *i*. Because the data on the size of a state's exports have a skewed distribution, for our analysis we use the natural log of the actual data. The second construction of the export data is a ratio and will not be transformed.

Our first control variable is the distance between the trading states, measured here by whether the states were contiguous (CONTIG=1) or not (CONTIG=0). We do this because it is well known that the physical distance between trading partners affects the trade between them (Aitken, 1973; Anderson, 1979; Bergstrand, 1985). The further apart two states are, the less their trade since transportation costs are higher. Not including this control variable, at least in an initial model, could underestimate the effects of trade. The source of these data was Siverson and Starr (1991).

The second control variable addresses whether democratic dyads have higher trade flows than other dyads. We consider as democratic those states that score 6 or above on Gurr's 11 point scale (0-10) of institutionalised democracy (Gurr, Jaggers, and Moore 1989, 1991). If both members of a dyad are democracies, the dyad is democratic. We code democratic dyads as 1 and non-democratic dyads as 0 (DEMD).

Following Bueno de Mesquita (1975, 1981), we operationalise common interests in a dyad of states by the tau-b correlation of their alliance portfolios (TAU). This revealed-choice measure of interests assesses the complete array of alliances that the member states of the dyad hold in common and apart. Although it is correlated with the presence of an alliance in the dyad, the existence of an alliance accounts for only about half of the variance in the tau-b scores in our sample, so *there is significant variation in the tau-b scores for which the presence of an alliance in the dyad does not account*. Negative tau-b scores should also predict the possibility of conflict in a dyad, the converse, of course, of the argument that common interests are a signal of lower political risk. The possible range of tau-b scores is -1 to +1. We draw our list of alliances from the Correlates of War's list of mutual formal alliances between the states.[10]

Our measure of interstate conflict is derived from the most recent version of the Militarised Interstate Dispute data set, assembled as part of the Correlates of War project. We test the direct effects of trade flows on conflict by examining whether the importing and exporting states were engaged in a militarised interstate dispute (MID) with each other in the next year, that is, in t+1. A militarised

interstate dispute occurs when at least one member of the dyad has made a threat to use force against the other or actually uses it (Gochman and Maoz 1984). Our data thus include not only disputes, but wars as well. For the purposes of this analysis, we combine both of these events, threats of force and its actual use, into one dummy variable; that is, we code dyad-years with a militarised interstate dispute or war as 1 and those without as 0. The reason for choosing to use MIDs in year t+1 follows from the clear probability that using t would introduce simultaneity bias. That is any year with a war or serious conflict between two states is bound to show a decrease in trade. Using t is hence inappropriate, but using data on our independent variable and the controls to assess conflict in t+1 carries no such liability.

Statistical Results

Because our dependent variable is a dichotomy, we use logit analysis to test the relationships of interest. Tables 1 and 2 present the main elements of our results. The former reports the results when the dependent variable is the logged value of the exports of state i to state j, and the latter reports the results when the dependent variable is the ratio of state i's exports to state i's GNP. Each set of results is presented as a series of models, in which the variables are omitted in order to observe their joint and individual effects.[11]

Table 1 presents six individual statistical analyses, referred to as M-1 through M-6. The results of Model 1-1 reveal that between these states over the time period studied conflict was mitigated by international trade, as shown by the negative coefficient (-.27, p < .001). For those who adhere to the position that trade is an effective method of reducing international conflict this is an encouraging result.

Table 1

Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
Total Trade	-.27**	-.02	-.02	-.16**	-.06	
Contiguity		1.09**		1.08**	.75**	1.09**
Democratic Dyad		-2.41**	-2.40**		3.04**	-2.42**
Similarity of Interests		-6.50**	5.58*	7.47**		-6.92**
Constant	-1.66**	-2.91**		-2.83	2.15**	-3.13**
X^2	21.7	150.8	132	111.0	99.7	151.5
R^2	.02	.19	.16	.14	.12	.18
N	1788	1787	1780	1780	1780	1890

Any joy, however, will be short lived, since, as shown in M1-2, the consequence of including the control variables drastically changes the initial results. The results in M1-2 indicate that impact of trade on conflict reduction may well have been an artifact of the joint association of trade and conflict with contiguity, democracy and shared interests; all three of the control variables have their predicted effects on international conflict and these are so strong that trade's effect is indistinguishable from zero. Contiguity has a positive effect on conflict (1.09, $p < .001$), while both joint democraticness (-2.41, $p < .001$) and the similarity of interests (-6.50, $p < .001$) have negative effects. Moreover, while trade was able to explain less than 3 per cent of the variance in M1, the inclusion of the other variables boosts the variance explained to just under 20 per cent, an impressive increase.

By sequentially dropping each one of the control variables we can get an idea of which ones are most important in terms of reducing the impact of trade without giving up explanatory power. The results of this are shown in M1-3, M1-4 and M1-5. Dropping contiguity (M1-3) reduces the overall power of the model, but the coefficient for trade does not become significant. Dropping joint democraticness (M1-4) both reduces the power of the model and makes trade significant. In M1-5 the measure of joint interests is dropped, and trade once again falls below significance and the power of the model decreases. Finally, in M1-6 trade is eliminated altogether and just the control variables are used. The coefficients are markedly similar to those obtained in M-2, as is the explanatory power of the model. Plainly, for these data the value of a state's exports to another state is not as important in explaining the conflict between the two states in the next years as are contiguity, joint democraticness and shared interests.

But is the value of exports measured properly here? Exports can be a large number and still be small relative to the state's overall economy. It is for this reason that we report a second set of models, which are similar to the first except that the measure of trade is the states exports to another state divided by its own GNP. This tells us how large the state's exports to another are in terms of its total economy, which may be a better indicator of the gains from trade that would have to be given up in the event of a conflict. These results are presented in Table 2.

Table 2

Variable	Model				
	(1)	(2)	(3)	(4)	(5)
Trade/GNP	-93.01**	-28.6	-12.7	-64.10**	-47.3**
Contiguity		1.21**		1.30**	.85**
Democratic Dyad		-2.64**	-2.67**		-3.31**
Similarity of Interests		-6.42	5.46	-7.39**	
Constant	-2.37**	-2.92**	2.60**	-3.32**	-2.19**
X^2	16.9**	158.2**	137.2**	114.9**	110.1**
R^2	.02	.20	.17	.15	.14
N	1717	1717	1717	1717	1717

We begin again in M2-1 with an estimation of the effects of trade alone on conflict. These results parallel those of M1-1 closely (the coefficients are of very different sizes because of differences in their respective scales). Too, M2-2 is markedly similar to the results in M1-2; the introduction of all the control variables eliminates any statistical effect of trade on conflict, while dramatically improving the explanatory power of the model. However, note that, as shown in M2-3 and M2-4, if either joint democraticness or similarity of interests is omitted from the model the coefficient for trade increases in size and is significant. Put simply, the effects of the importance of a state's trade with another state are meaningful until both joint democraticness and similarity of interests are taken into account. However, recall from M1-6 that results quite similar to those of the full model used here (i.e., M2-2) can be obtained by omitting the measure of trade.[12]

Coefficients have a certain dry, impersonal character. Perhaps, in view of that, the more helpful question to ask is, how much of difference does each of the variables make in terms of its consequences for conflict between states. Table 3 gives the estimated effect of changes in the incidence of conflict for the specified changes in the independent variables. The first column reports the results when the trade variable is the total flow of exports from *i* to *j*, while the second column reports the same results when we divide that number by *i's* total GNP. The first row of this table reports the baseline case; that is, as in column 1 of the table about 1.5 per cent of the cases reveal a dispute, while in column 2 about 1.4 per cent of the cases have a dispute (the differences between these are occasioned by missing data and rounding). While there are some minor differences between the two specifications of the trade variable, the overall pattern across the two columns is strongly similar. The story they tell is that changes of one standard deviation up or down in the mean value of trade have a hardly

distinguishable effect on conflict. Also having a small effect is the contiguity of the dyad. Much more significant effects are found when the dyad is non-democratic, in which case the chances for conflict more than triple, while a democratic dyad cuts the chances of conflict by more than half. The most important effects, however, are to be found in the state of political relations between the states. A change in one standard deviation in the similarity of interests between the states reduces the chances of conflict by about a factor of five, while a somewhat larger effect is shown when the interests are not similar, that is, when tau is negative.

Independent Variables	(1) Total Trade	(2) Trade/GNP
Baseline	1.5%	1.4%
Trade up one standard deviation	1.4%	1.1%
Trade down one standard deviation	1.6%	1.6%
Relations up one standard deviation	0.3%	0.2%
Relations down one standard deviation	8.4%	7.5%
Non-contigious dyad	1.2%	1.1%
Contigious dyad	3.4%	3.4%
Non-democratic dyad	4.0%	4.0%
Democratic dyad	0.4%	0.3%

Discussion

Our conclusion is that the occurrence of international conflict may be more readily attributed to the interests of states and the joint characteristics of their political institutions than it is to the trade between them. This conclusion is not consistent with either the theories advanced by those who believe that trade reduces conflict or with the evidence from recent empirical studies, and because of this it deserves careful consideration. We should note that the theories are often wrong, no matter how desirable their implications. The idea that trade dampens conflict may be (1) simply misguided, (2) a product of wishful thinking, or (3) an attendant part of a larger process in which trade appears to be related to the mitigation of conflict, while others factors are at work, which both increase trade and reduce conflict. The first two of these possibilities seem much less likely than the third. Of course, further, more fully specified research is in order, but based upon the results of earlier research, we suspect that the same political factors that appear to draw states together also increase trade. Specifically, in an earlier paper (Morrow, Siverson and Tabares, 1996), our results indicated that shared interest, joint

democracy and low conflict were strongly associated with high levels of trade. In our view, economic agents, i.e., importers and exporters, made judgements about the durability of their investments in trade and acted accordingly. If trade had a political risk attached to it, then, other things being equal, it would not be a preferred as trade where risk was low. Conflict is exactly one type of such risk. The recognition that some other state shares your foreign policy goals is a powerful indicator in forecasting the likelihood of future conflict.

This is underlined in a recent study by Beck and Tucker (1996), who reanalysed the results of Oneal *et. al.* (1966). In order to understand the impact of temporal dependence on the observed results, they introduced a variable that simply recorded the number of years within dyads that had elapsed since the states were involved in a dispute. The introduction of this variable removed the effect of trade on the mitigation of conflict. Although it was undertaken for methodological reasons, there is a straightforward theoretical interpretation of this: the longer states have been at peace, the more likely they are to remain at peace, and the less the political risk to trade. For example, the United States and France have not had a serious dispute since the late nineteenth century, and it is unlikely that any reasonable person would seriously consider the risk of a war or militarised dispute disrupting trade between these states. Additionally, democratic states are likely to have relatively open trading regimes and thereby encourage trade, while statist regimes, as we argued above, may make trading concerns subsidiary to other interests.

The previous paragraph undermines the straightforward peace through trade argument, but there are some equally good reasons not to abandon it too quickly. First, we note that our data are drawn from a limited set of states, the major powers. These states are not representative of the other states in the system, and we should be mindful of this fact. Second, some parts of our analysis deserve additional research. Two aspects of the analysis are particularly deserving of consideration. First, our analysis focuses upon the relationship of trade in one year with conflict in the next. Perhaps rather than looking at the absolute level of trade or its importance, we should also should explore, as well, whether these have been increasing or decreasing. In fact, a preliminary analysis of this aspect of the data provides a reasonably good fit between increasing levels of trade and low conflict, even when the control variables are present. However, the overall contribution of trade to mitigation of conflict remains low.[13] Second, the data we use constitute a pooled cross-section of data with a binary dependent variable. Until now relatively limited diagnostics have been available for this kind of analysis. However, the extremely recent work of Beck and Tucker opens up new avenues for understanding the quality of the models used in this kind of analysis.[14]

Notes

1. To be sure, not all studies of community formation see trade as central. For example, despite its relative empirical focus, Jacobson=s (1979) study of the growing international community had little to say about trade and nothing about trade and conflict.
2. However, as Hobson pointed out in the context of the political economy of imperialism (1902/1965), these same individuals and groups would have an interest in conflicts, presumably against less powerful states, where the commercial interest of the United Kingdom could be advanced. Fighting France was one thing, but conflict with Mexico or Venezuela was quite another.
3. From the marginals in their main analytical table (Table 3.1.4, p. 22), it is easy to calculate that there should have been 16 wars between democracies during the period studied.
4. Despite the relatively large amount of rigorous data analysis, the idea of the democratic peace is not without its critics. Two notable examples of such doubts are to be found in papers by Spiro (1994) and Layne (1994), which, in turn, are critically reviewed by Russett (1995).
5. After 1949, data are for the Federal Republic of Germany only; after 1917, data for the Soviet Union are used.
6. We use directed dyads in this study; trade from Germany to France is one time series and trade from France to Germany is another. One concern with this procedure might be that our use of directed dyads could result in observations that are not independent of one another. In particular, many of our measures of our independent variables are dyadic, and so we have two directed dyads with the same values of many of the independent variables. A conservative approach here would eliminate one of each pair of directed dyads in our sample. This step would reduce our sample size by one-half. An alternative adjustment is to consider our effective sample size to be one-half of the actual sample size. In that case, we simply divide all the t-scores by /2. We discuss the consequences of such an adjustment for our results in fn 16.
7. Exchange rates for 1907 to 1920 for France, Germany, Italy, Japan and Great Britain were taken from Bidwell (1970) and Liesner (1989); for 1921 to 1929, rates used were from the US Census Bureau (1928, 1931); and from 1930 to 1965, rates were taken from the United Nations (1955, 1966).
8. Constant dollar values were obtained using the consumer price index (CPI) provided in the US Census Bureau, *Statistical Abstracts of the United States* (1962) and derivations thereof.
9. The primary source of export data for the years from 1907 to 1965 was Mitchell (1980, 1982, 1983, 1992). Exceptions to this follow. France's exports to Japan and the Soviet Union for all years were taken from Bureau de la Statistique Générale (1900-1911, 1932, 1961-1966). Germany's exports to Japan from 1907 to 1954 were calculated from reported Japanese imports from Germany; for 1955 to 1965 data was taken from the United Nations (1959, 1961, 1966). Italy's exports to Japan and the Soviet Union for all years were taken from Istituto Centrale di Statistica (1912, 1914, 1922-5, 1929, 1933, 1936, 1939, 1941, 1952, 1959, 1962, 1966). The Soviet Union's exports to France, Germany, Italy, Great Britain, and the United States from 1909 to 1913 were taken from Miller (1967); for exports to Italy, Japan and the United States from 1913 to 1965 data was taken from Clarke and Matko (1983). Great Britain's exports to Italy and Japan for all years came from Great Britain Central Statistical Office (1914, 1928, 1938, 1953, 1961, 1967). United States's exports to Italy and the Soviet Union for all years were taken from

the United States Census Bureau (1912, 1919, 1921, 1928, 1931, 1933, 1938, 1940, 1941, 1947, 1955, 1958, 1962, 1967). Japan's exports to Italy and the Soviet Union were taken from The Department of Finance (1916, 1936, 1940) and the United Nations (1950, 1951, 1959, 1962, 1967).

[10.] The alliances we use are drawn exclusively from the Correlates of War project's listing (Small and Singer, 1969). Unlike our study, Gowa and Mansfield (1993) add a bilateral alliance between the United States and Japan to the Correlates of War listing for the bipolar era. Indeed, it is the only bilateral alliance their data contain for this period. However, the Japanese-American Security Agreement, on which they base their coding, is widely regarded as a protectorate and not an alliance since it does not carry reciprocal obligations.

[11.] To guard against the danger of colinearity, we report the correlations between our independent variables. None of the relationships is large enough to indicate a problem in this respect. All coefficients are significant beyond the $p < .001$ level.

	Size of trade	Trade/GNP	Contig.	Demo.	Tau
Size of trade	1.00				
Trade/GNP	.57	1.00			
Contig.	.08	.17	1.00		
Demo.	.49	.19	.14	1.00	
Tau	.37	.16	.25	.47	1.00

[12.] While not reported here, we carried out an additional analysis on each specification of the model in which dummy variables were introduced for (1) all years between 1919 and 1939, inclusive, and (2) all years between 1947 and 1965, inclusive (because we did not include dummy variables for the years prior to 1914, we had ample degrees of freedom to do this). Neither dummy variable changed the reported results in any meaningful way and neither of them was statistically significant. In other words, the results we have found are general and probably not due to any particular temporal variation, although we admit that more analysis of this is needed.

[13.] To be specific, a one standard deviation increase in trade reduces conflict to 1.4 per cent from its 1.6 per cent baseline, while a similar decrease in trade increases conflict to 1.9 per cent. Different interests, however, continues to dominate the results. A one standard deviation decrease in these moves conflict up to 8.6 per cent over the baseline, a large percentage increase. These are, however, only an initial analysis.

[14.] In relation to this, we note that we did generate a crude, incomplete variable measuring the years of peace in a dyad. When included in model M-2, the coefficient for this variable had a negative sign and was significant. Moreover, it rendered the coefficients measuring trade as even less significant, but did not change the values or significance of the other independent variables.