

## Sleeping with the Enemy: The Impact of War on Trade\*

KATHERINE BARBIERI

*Department of Political Science, Vanderbilt University*

JACK S. LEVY

*Department of Political Science, Rutgers University*

Current debates over the question of whether economic interdependence promotes peace or contributes to international conflict are often framed in terms of the 'paradigm wars' between liberal and realist theory. In spite of their differences, most liberal and realist theories of interdependence and conflict agree that trade and other forms of economic interchange between societies will cease or be substantially reduced once states are engaged in serious forms of conflict with each other, particularly after the outbreak of war. Liberal theories generally assume that political leaders are deterred from engaging in conflict when they anticipate that conflict will disrupt or eliminate trade or adversely affect the terms of trade, so the hypothesis that trade deters war rests on the assumption that war impedes trade. Realist theories suggest that the concern over relative gains will lead at least one of the belligerents to terminate trade in order to prevent its adversary from using the gains from trade to increase its relative military power. Contrary to these predictions, there are numerous historical examples of trade between adversaries that continues during wartime. Our aim here is to examine this phenomenon more systematically by conducting an empirical analysis of the short-term and long-term impact of war on trade for seven dyads in the period since 1870. Applying an interrupted time-series model, we find that in most cases war does not have a significant impact on trading relationships. Although war sometimes leads to a temporary decline in the level of dyadic trade, in most instances war has no permanent long-term effect on trading relationships and, in fact, trade often increases in the postwar period. This empirical anomaly in both liberal and realist theories of interdependence and conflict leads us to conclude that both theories need to be reformulated.

### Introductory Theoretical Considerations

In recent years there has been a surge of interest in the relationship between trade and militarized international conflict, as scholars have begun to reformulate long-

standing arguments and to test these theoretical propositions systematically against the empirical evidence. The primary focus has been on the question of whether trade promotes peace, and scholars have generally framed the debate in terms of the 'paradigm wars' between liberalism and realism.<sup>1</sup>

Liberals advance a number of interrelated theoretical arguments in support of the

\* We would like to thank Martin Edwards, Andrew Enterline, Peter Liberman, Helmut Norpoth, Brad Palmquist, Daniel Verdier, and especially Mark Crescenzi for their assistance and for their valuable comments; Michael Ault, Joseph Gochal, and Oliver Selwyn for their research assistance; and Stuart Bremer for providing war data and for helpful advice. The data used in this study can be obtained from: <http://www.vanderbilt.edu/psci/barbieri/>.

<sup>1</sup> We develop this point at greater length in an earlier paper (Barbieri & Levy, 1997). For a critical view of the contribution of the paradigm wars to the cumulation of knowledge in the field, see Levy (1998b).

proposition that trade promotes peace.<sup>2</sup> The most compelling of these is that trade generates economic benefits for both parties, and that the anticipation that conflict will disrupt trade and lead to a loss or reduction of the gains from trade deters political leaders from conflict against key trading partners (Doyle, 1997; Oneal & Russett, 1997; Polachek, 1980).<sup>3</sup> Realists and others argue either that trade has a negligible impact on conflict (Buzan, 1984; Levy, 1989: 260–62; Ripsman & Blanchard, 1996/97), or that trade – and particularly asymmetric trade – actually increases conflict between trading partners (Barbieri, 1995).<sup>4</sup> Scholars on both sides of this debate have recently begun to generate empirical evidence to bolster their respective theoretical arguments.<sup>5</sup>

Although contemporary liberal and realist theories disagree about the effects of trade on conflict, they appear to agree on the effects

<sup>2</sup> For reviews, see Barbieri (1995) and McMillan (1997).

<sup>3</sup> The underlying assumption is that trade is more efficient than conquest for expanding markets and investment opportunities (Rosecrance, 1986), at least in the last century.

<sup>4</sup> The less dependent party may be tempted to use economic coercion to exploit the adversary's vulnerabilities and influence its behavior relating to security as well as economic issues (Baldwin, 1985), which can lead to counter threats, conflict spirals, and war. In addition, resource scarcities can lead to economic competition and rivalry (Choucri & North, 1975) and, under some conditions, economic rivalries escalate to strategic rivalries and war (Levy & Ali, 1998).

<sup>5</sup> For dyadic-level studies that support the pacifying effect of trade, see Gasiorowski & Polachek, (1982); Oneal & Ray (1997); Oneal & Russett (1997); Oneal et al. (1996); Polachek (1980, 1992, 1997) and Polachek & McDonald (1992); Focusing on a more extended temporal domain, Barbieri (1995, 1996a,b), provides evidence that interdependent dyads are more likely to engage in militarized disputes than other dyads, corroborating Wallensteen's (1973) and Russett's (1967) conclusions. Gasiorowski (1986) provides evidence that some forms of trade dependence are associated with conflict, while others appear to reduce conflict. Mansfield (1994) finds that trade has pacifying effects at the systemic level, and Domke (1988) finds pacifying effects at the monadic level. Soroos (1977) and de Vries (1990) find that interdependence increases both cooperation and conflict. Recent qualitative studies include Copeland (1996), Papayouanou (1996, 1997, 1999), and Ripsman & Blanchard (1996/97).

of conflict on trade. Both imply that trade and other forms of economic interchange between states will cease or be drastically reduced once states are engaged in serious conflicts with each other. The liberal hypothesis that trade deters conflict is based on the premise that conflict will substantially reduce trade or adversely affect the terms of trade. Realist theories imply that trade, particularly in strategic goods, will terminate between adversaries because of relative gains concerns (Grieco, 1990; Huntington, 1993; Waltz, 1979). Fearing that its adversary will reap relative gains from the continuation of trade and exploit those gains to increase its relative military power and potential, at least one state will perceive an incentive to cease trade.<sup>6</sup> If relative gains concerns exist during peacetime, we expect them to be even greater during wartime. Similarly, once states prove themselves to be adversaries in war, there should be a heightened sensitivity to concerns about security externalities and thus a reduction or elimination of trade between wartime enemies.

Contrary to both liberal and realist theories of interdependence and war, however, there are numerous historical cases of trading with the enemy during wartime, including trade in strategic goods that directly affect the ability of a state to prosecute the war. This is quite evident from numerous historical accounts (Giltner,

<sup>6</sup> Although some realists argue that strategic goods are especially important in relative gains concerns, Gowa (1994), who has been particularly influential in the contemporary literature, focuses on aggregate levels of trade. Gowa (1994) argues that states choose to trade with allies in order to avoid granting the gains from trade to adversaries, which may result in security externalities. It is not the adversary's increased income from trade that is of greatest concern, but the ability of the adversary to enjoy the gains arising from specialization (in international trade theory, gains from trade include both increased income and specialization). By permitting its adversary the opportunity to increase its productive efficiency and redirect resources away from alternative productive ventures, the adversary is better able to increase production of military resources and hence pose a potential challenge.

1997; Levy, 1998a).<sup>7</sup> For example, the Baltic trade was so essential to the economy of the Netherlands in their Eighty Years' War with Spain (1565–1648) that the Dutch served as carriers of naval stores for the Spanish. In this way the Dutch earned monies to pay the forces that protected Dutch frontiers against Spanish attack, while Spain secured the stores that helped maintain its fleets engaged in the protection of Spanish commerce against Dutch attacks (Howard, 1976:44). Or consider the Anglo-Dutch Wars, in which British insurance companies continued to insure French naval and commercial ships and to pay enormous sums to replace ships that were actively being searched and destroyed by British warships (Pares, 1963). Trading with the enemy was also widespread during the Seven Years' War, the War of 1812, and the Crimean War (Levy, 1998a), and this phenomenon has not ceased in this century.<sup>8</sup>

Trading with the enemy – whether directly or indirectly through neutral states – is an interesting phenomenon in itself and one that has important implications for contemporary theories about the relationship between economic interdependence and peace. The liberal hypothesis that trade deters conflict rests on the assumption that conflict reduces trade and hence the welfare gains from trade, so that systematic evidence that states trade with the enemy during wartime would undercut this central causal mechanism of the liberal

proposition. Such evidence would also undercut the strong implication of realist theory that relative gains concerns will lead one or both adversaries to terminate trade in order to deny the other the ability to convert relative gains into usable military power.

Thus both liberal and realist theories generate the strong hypothesis that the outbreak of war substantially reduces levels of trade, at least while the war is underway. Whether trade will remain depressed after the termination of war, or whether it will quickly return to prewar levels, is less well specified. Liberal theories imply that the loss of the gains from trade refers not only to the losses suffered during the war itself, but also to the adverse impact of war on the future trading relationship, at least for a while.<sup>9</sup> It is conceivable in some other instances, although less likely, that political leaders are concerned only with the loss of trade during the war and expect a rapid recovery after the war. Clearly, the deterrent effects of the anticipated loss of trade will be lower if leaders expect that trade will resume immediately after the termination of war. Thus we conclude that liberal theories predict both a reduction of trade during war and only a delayed and gradual recovery of trade after war under most conditions, but that the intrawar effect is on average stronger than the postwar effect.

Similarly, realists do not clearly specify what happens to trade after a war is over. Under some conditions, war resolves outstanding disputes and creates the conditions for profitable trade soon after the termin-

<sup>7</sup> We use the term 'trading with the enemy' to refer broadly to trade, finance, and other forms of economic cooperation between adversaries. This is standard usage in the literature and also in many state statutes on 'trading with the enemy'.

<sup>8</sup> Six days after Pearl Harbor a US presidential edict created legislation for the granting of licensing arrangements for trading with the enemy, and there are countless examples of US firms doing business in strategic goods with Nazi Germany. Standard Oil of New Jersey, for example, sold oil to Germany through Switzerland while Allied forces suffered shortages, and Ford Motor Company sold trucks to Nazi forces in occupied France (Aarons & Luftus, 1994; Higham, 1983).

<sup>9</sup> We might hypothesize that the impact of war on postwar trade will be a function of the duration of war and other measures of the seriousness of war. Alternatively, the key variable might be the type of war rather than its duration. Rasler & Thompson (1989) suggest that the economic impact of global wars (on GNP, public expenditures, and public debt) is greater than that of other interstate wars involving the great powers. See also Vasquez (1993: 52–53).

ation of war.<sup>10</sup> Under other conditions mutual threat perceptions remain high after the end of war because of fears that the adversary may use gains from trade to enhance its military power and potential for leverage in future conflicts or wars, perhaps motivated by the loser's incentives to recover its losses.<sup>11</sup> Our reading suggests that the second set of conditions is more common, with the prediction of a slow recovery of trade after war being weaker than the prediction of the reduction of trade during war.

Many of the same arguments about the impact of war on trade should apply to militarized conflict short of war, largely because of fears of escalation to war. Because of uncertainties about escalation, however, the causal effects should be somewhat weaker, whether motivated by liberal concerns of the loss of welfare gains from trade or by realist concerns for relative gains. We would hypothesize that the impact of war on trade should be greater than the impact of militarized disputes on trade.<sup>12</sup> Consequently, trading with the enemy in wartime is more of an anomaly for contemporary liberal or realist theories of interdependence and war than is trading with the adversary during a period of militarized disputes or rivalry, and for this reason our empirical study focuses on the impact of war rather than on more generalized forms of conflict.

Our argument, then, is that impact of conflict (and particularly war) on trade has enormous implications for the impact of trade on conflict in contemporary liberal and realist models of the relationship between economic interdependence and conflict. We

are careful to distinguish, however, between liberal and realist paradigms of international politics and contemporary scholars' *applications* of those paradigms to the question of the relationship between economic interdependence and conflict. Our argument is not that liberal and realist paradigms are incapable of explaining the 'trading with the enemy' phenomenon, but rather that liberal and realist theories of interdependence and conflict, as they are now formulated in the literature, do not adequately deal with this phenomenon.

As we argue later, liberal theory can explain this phenomenon by incorporating the political power and interests of key societal groups, and realists can do so by incorporating third parties into their conceptualization of relative gains. Applications of these paradigms to the interdependence and conflict debates, however, are framed much more narrowly. Both liberals and realists focus primarily on the dyadic level, ignore the role of domestic actors and third parties, and are consequently unable to account for the important phenomenon of trading with the enemy. Moreover, because the impact of conflict on trade is central to theories of the impact of trade on conflict, current liberal and realist theories fail to provide a satisfactory explanation of the consequences of economic interdependence for international conflict. By demonstrating that war – the most serious manifestation of conflict – does not systematically reduce levels of trade between states, we hope to emphasize the need to construct a more complete and more accurate theory of the relationship between economic interdependence and militarized interstate conflict.

### *Empirical Literature on Conflict and Trade*

In spite of its theoretical importance, scholars have devoted remarkably little sys-

<sup>10</sup> Victorious states sometimes have strong economic or strategic incentives to rebuild the economies of the losers after the war, which may increase trade, as illustrated by the experience of the USA and both Japan and Germany after World War II.

<sup>11</sup> This is exacerbated by risk acceptance in the domain of losses, as suggested by prospect theory (Levy, 1997).

<sup>12</sup> This implies that trade between adversaries should be depressed during periods leading up to war, but not as much as it is during war itself.

tematic attention to either the phenomenon of trading with the enemy or to the broader question of the impact of war on trade. Historians have examined particular instances of this phenomenon (Giltner, 1997), and recent theoretical work on the security externalities of trade (Gowa, 1994; Morrow, 1997; Werner, 1997) has important implications for this question,<sup>13</sup> but there are few systematic empirical studies of the frequency and importance of trade with the enemy or the conditions under which this is most likely to occur.<sup>14</sup>

Similarly, there has been relatively little systematic research on the broader question of the impact of war on trade.<sup>15</sup> One of the few studies to focus on war per se is Mansfield (1994), whose systemic-level study shows that less trade is conducted during periods in which major powers are involved in wars against each other or against other states.<sup>16</sup> Others focus on the impact of cooperative and conflictual relationships defined more broadly. Pollins (1989a,b) constructs a model of bilateral trade flows and finds that for the 1960–75 period cooperative political relations between states increases trade between them.

As noted, Gowa (1994) finds that trade is higher among allies than among adversaries, which she interprets in terms of the security externalities of trade.

Most scholars who have empirically examined the impact of conflict on trade and the impact of trade on conflict concede that the true nature of the relationship between these two variables is probably reciprocal, and that current models fail to capture the relative importance of these causal paths. Polachek (1980: 63), for example, notes that from his early study it is impossible to determine 'whether trade diminishes conflict, or whether in fact the reverse is true, and it is really conflict that reduces trade'.

Concerns that unidirectional models of the conflict–trade relationship are misspecified have led scholars to apply Granger causality analysis (Freeman, 1983) in an attempt to disentangle the effects of conflict on trade and the effect of trade on conflict. Gasiorowski and Polachek (1982) examine the US–Warsaw Pact dyad for 1967–78, use the COPDAB data to measure conflict and cooperation, and conclude that Granger causality for short-lag periods runs overwhelmingly from trade to conflict and not from conflict to trade. If true, this is a puzzling finding, because it simultaneously supports the liberal prediction that trade depresses conflict while undercutting the central causal mechanism of the liberal hypothesis – the anticipation that conflict reduces trade and consequently the welfare gains from trade will deter states from conflictual behavior.

After criticizing the use of pooled time-series analysis in Gasiorowski & Polachek (1982) and other studies on the grounds that this technique might mask dyad-specific effects, Reuveny & Kang (1996) examine the trade–conflict relationship for 16 individual dyads from 1960 to the early 1990s, combining the COPDAB and WEIS

<sup>13</sup> For an economic model of the simultaneous presence of arming, conflict, and trade, but one that is based on a rather different set of assumptions, see Skaperdas & Syropoulos (1996).

<sup>14</sup> Liberman (1996) looks at trade between adversaries during periods of hostility prior to war (Britain and Germany, 1890–1914; USA and Japan, 1930–41), but we have argued that trade between adversaries during periods of rivalry or militarized conflict short of war is less anomalous than trade between enemies during war. Even Liberman (1996: 173) argues that 'relative gains block cooperation among states only at the brink of war', which implies that trading with the enemy during wartime should not occur.

<sup>15</sup> This reflects a more general lack of attention by international relations scholars to the economic consequences of war, though there have been some important recent exceptions (Goldstein 1988; Modelski & Thompson, 1996; Organski & Kugler, 1980; Rasler & Thompson, 1989).

<sup>16</sup> This systemic-level finding does not necessarily imply that major power war reduces trade between states at the dyadic level, though this is a plausible hypothesis that needs to be tested.

events datasets. They find that although the causal relationship between conflict/cooperation and trade is dyad-dependent, it is largely reciprocal. In a subsequent study, Reuveny & Kang (1998) disaggregate trade by commodity group, and find that Granger causality from conflict to trade is more pronounced in 'strategic goods' than in other goods, though they acknowledge the ambiguity of the strategic goods concept. They also find that patterns of causality are generally not affected by the presence of a political rivalry, though in the USA-USSR and USA-China dyads bilateral trade in some goods increases as political relations improve. Recent dyadic-level work on the impact of conflict on trade has moved the debate forward and has contributed to larger debates regarding the relationship between economic interdependence and conflict. The fact that these studies have been limited to three decades of the Cold War period, and thus to a relatively unique set of international and domestic conditions, significantly reduces our confidence that the results of these studies can be generalized to other international systems – either those of the past or those that will emerge in the future. Our more general theoretical concerns lead us to focus on a more extended temporal domain and to construct a research design consistent with that objective.

Our aims are both descriptive and explanatory. We want to describe the phenomenon of trade between adversaries and explain why states continue to trade with their enemies both during and after wars. We focus on wars rather than a broader category of conflictual events because it is for war that the hypothesized causal mechanisms should be strongest and the 'trading with the enemy' phenomenon the most anomalous for contemporary liberal and realist theories of interdependence and war.

## Research Design

We have argued that contemporary liberal and realist theories of economic interdependence and conflict strongly imply that conflict between trading partners will significantly reduce the level of trade between them, particularly after the outbreak of war. There is some expectation that in the period after war, trade will remain depressed and only slowly recover from prewar levels, and that in the period leading up to war, trade will begin to decline. Declines in trade both before and after war, however, should be weaker than declines during war.

We investigate the extent to which war disrupts trading relationships using interrupted time-series analyses (Lewis-Beck, 1979; Lewis-Beck & Alford, 1980).<sup>17</sup> This technique permits us to examine the level and trend in trade conducted before and following the outbreak of war. If war has a significant effect on trading relationships, we would expect to witness a decline in trade between adversaries that engage in war. Interrupted time-series analysis also permits us to examine both the long- and short-term impact of war. In addition, it permits us to assess whether or not the anticipation of war leads to a reduction in trade.

Testing hypotheses about the impact of war on trade poses a number of formidable methodological problems. One relates to the fact that many states do not provide complete reports of their trading activities during periods surrounding wars. There is a failure to report trade with allies as well as trade with adversaries, and consequently we cannot assume that the absence of trade reports implies the absence of trade. This is particularly true during World War I and World War II, where trade reports are

<sup>17</sup> In an earlier version of this paper, we used ARIMA analysis to explore the impact of war on trade (Barbieri & Levy, 1997). The findings presented here are consistent with those derived from the ARIMA analysis.

incomplete but where there is ample evidence from secondary historical accounts that some trade continued between belligerents in these wars (Aarons & Loftus, 1994; Higham, 1983). In addition, states may have political and economic motivations for mis-reporting trade flow values, both during wartime and peacetime. We expect that the problem of mis-reporting would be greater during wartime, since states may wish to conceal trade ties with adversaries. If legal restrictions to trade are imposed, illegal activities will also be excluded from official statistics. Thus, the value of trade may be underrepresented in official reports. Thus data limitations posed by inaccurate and incomplete information are difficult to overcome, and it is often hard to determine whether war seriously disrupts trade flows or simply the reporting of those flows.

In part, we address the problem of inaccurate reporting by one state by relying on the information provided by both states in a dyad. To do this, we rely on the import records for each side of the dyad. If one state is misrepresenting its trade values, our reliance on both states' reports provides a more balanced picture of the relationship.<sup>18</sup> Our measure of dyadic trade, therefore, is defined as the sum of  $IMPORTS_{ij}$  plus  $IMPORTS_{ji}$ , where  $IMPORTS_{ij}$  is the flow from state  $j$  to state  $i$  and  $IMPORTS_{ji}$  is the flow from  $i$  to  $j$ , reported in USD millions. Trade data were derived from an extended and revised version of a trade database constructed by Barbieri (1995).<sup>19</sup> Data from the Correlates of War Project are used to identify the date of a state's partici-

pation in a given war (Small & Singer, 1982).<sup>20</sup>

The lack of available trade data, both for periods during war and for earlier historical eras, restricts the number of dyads that we can analyze. Since time-series analysis requires that we have a continuous series of dyadic trade reports, both our spatial and temporal domains were restricted.<sup>21</sup> We began our investigation by examining the trade patterns for all dyads that experienced a war at some time during the period 1870–1992, which corresponds to the availability of our trade data. We selected for our analysis those cases for which data were available for at least ten years before and ten years after the outbreak of war.<sup>22</sup> The temporal domains for our time-series range from 17 years to 122 years.

In most cases, the dyad analyzed has a much longer history of engaging in trade than our analysis portrays. When there were interruptions in the time-series for data reports, we isolated the analysis to the years immediately before and after the war. In addition, we focus our attention on the impact of one war, even when dyads experience more than one war in their history. Dyads experiencing multiple wars in a short period of time proved difficult to analyze since it was not easy to distinguish the effect of each war. For example, in the case of China and Japan, five wars occurred in the 1870–1992 period and several were so temporally proximate that it was impossible to distinguish the postwar trade recovery and the prewar trade trend.

<sup>20</sup> We used a slightly extended version of the dataset reported in Small & Singer (1982).

<sup>21</sup> We choose not to interpolate data points, since we are interested in discovering variations in trade flows and did not wish to assume a continuous trend in the series. Since it is difficult to distinguish missing trade reports from zero trade, we make no assumptions about the value of missing reports.

<sup>22</sup> We have one exception to this rule. For UK–Egypt, we had only eight years of data prior to the Sinai War. The cases that were excluded were far less complete in terms of continuous series.

<sup>18</sup> The trade statistics reported by the importing nation are used to calculate dyadic trade unless these data are missing, in which case we rely upon the exporting nation's trade report.

<sup>19</sup> A large portion of the data for the post-World War II statistics were derived from the International Monetary Fund's *Direction of Trade Statistics* (1996), made available by the Inter-university Consortium for Political and Social Research.

From our selection process, we are left with only seven dyads: Argentina–UK, UK–China, Cyprus–Turkey, Greece–Turkey, Uganda–Tanzania, UK–Egypt, and USA–China. We recognize that our limited number of cases restricts our ability to generalize beyond our findings to other cases. The extent of the biases is hard to estimate, however, because it is unclear whether there is any systematic relationship between the availability of trade data surrounding a given war and the way in which the war affected the trading relationship.

One thing that is clear is that each of the wars in our sample is relatively short in duration, with all but one (Uganda–Tanzania) lasting less than a year. Although this is troublesome in the sense that we might expect that longer wars have a greater impact on the reduction of bilateral trade between belligerents, we should note that short interstate wars are the norm rather than the exception in international politics.<sup>23</sup> Moreover, by restricting our analysis to short wars we effectively control for the effect of a change in GNP on bilateral trade, because long wars are much more likely than short wars to have a significant effect on national economies. This enables us to isolate the direct impact of war on trade, which is the primary testable implication of liberal and realist theories of interdependence and war, as distinct from the impact of GNP on trade.<sup>24</sup>

We should also note that because of incomplete data our sample includes no cases of great power (major–major) wars. We know from historical accounts of World War II and other cases (as mentioned earlier) that trading with the enemy occurs during great power wars, but our analysis in this study will not formally permit us to generalize about the impact of great power

wars on bilateral trade, which is unfortunate.

Although our research design will not allow us to make inferences about how frequently or to what extent trade between wartime enemies occurs in the universe of all wars, it will allow us to demonstrate that this phenomenon occurs frequently enough to constitute a potential problem for contemporary liberal and realist theories of trade and conflict.

### *Statistical Techniques*

For each dyad, we estimate the following equation (Lewis-Beck, 1979: 1132; Lewis-Beck & Alford, 1980: 747):<sup>25</sup>

$$\text{Trade}_t = \beta_0 + \beta_1 \text{Trend}_t + \beta_2 \text{War Level}_t + \beta_3 \text{War Rate}_t + \epsilon_t$$

where  $\text{Trade}_t$  = the annual observation of dyadic trade flows in USD millions,  $\text{Trend}_t$  is a counter for each year of the series,  $\text{War Level}_t$  = a dichotomous variable that equals 0 for each observation before the outbreak of war and 1 for each year after the outbreak of war; and  $\text{War Rate}_t$  = a counter of years scored 0 before the outbreak of war and 1, 2, 3 ... once the war occurs. The parameters  $\beta_0$  and  $\beta_1$  allow us to estimate the level and slope of dyadic trade before the war, respectively;  $\beta_2$  estimates the change in the level of trade after the war; and  $\beta_3$  estimates the change in the slope after the war. In addition, we include a first-order autoregressive (AR1) process to address the problem of autocorrelation.<sup>26</sup>

<sup>25</sup> We used EViews Version 3.0 for all analyses performed here (EViews, 1994–97).

<sup>26</sup> We investigated whether Autoregressive (AR) and Moving Average (MA) processes were present in the series by inspecting correlograms. In preliminary tests, we identified an AR1 process in many dyadic trade-series. The models were estimated initially with a lagged dependent variable, which served to account for the process and allow us to overcome problems of autocorrelation. However, we follow the recommendation of reviewers that we include the AR1 parameter and exclude the lagged dependent variable. Our results do not change significantly when using these alternative approaches. For details about EViews' estimation techniques, see the help file document, 'How EViews Estimates AR Models'.

<sup>23</sup> Of the wars since 1816 contained in the COW Interstate War dataset, approximately 67% lasted less than one year.

<sup>24</sup> We thank Jacek Kugler for suggesting this point.

Figure 1. Hypothetical Impact of War on Trade Flows

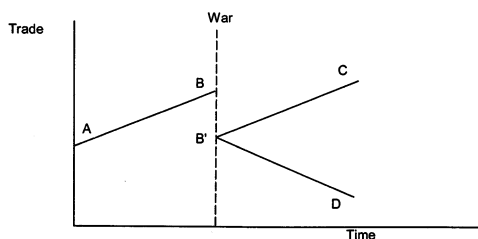


Figure 1 illustrates the manner in which we can utilize interrupted time-series techniques to assess the impact of war on trade.<sup>27</sup> Imagine two states whose trade increases each year, yielding the positive sloping line AB. If war has a substantial disruptive impact on trade, we would see a decline in the value of trade from B to B' accompanying the outbreak of war. The harm to the trading relationship may be temporary or permanent. If the reduction in trade were permanent, postwar trade would conform to a non-positive slope, such as the negative slope illustrated by B'D. If the impact of war were temporary, we would see a recovery in trade, illustrated by the positive slope of B'C. If war were to have no impact, we would see a continuous trend in the trade relationship, regardless of the outbreak of war. We would also see an increase in trade at point B. Similarly, the anticipation of war may affect prewar trading levels, in which case we might witness a negative slope in trade prior to the outbreak of war.

### Empirical Analysis

It is useful to combine a statistical analysis based on interrupted time-series techniques with a visual examination of scatter plots of the dyadic trade flows for each of the seven dyads in the sample. Figure 2 illustrates the trade-series for each of our seven cases. The

point at which a war interrupts the trade time-series is demarcated with a broken line. Findings that we obtain with the interrupted time-series analyses should be visible in an inspection of the scatter plots.

Table I reports the results of each dyadic analysis, with each column representing a different dyad. We are interested in assessing whether war has a significant effect on trade relations and whether that effect is temporary or permanent. The scatter plots in Figure 2 are useful for discerning the patterns in trade relations, but our statistical analysis allows us to determine the magnitude and significance of the effect. We first consider whether or not war leads to a decline in the level of trade between states composing the dyads investigated. This information is revealed in the coefficient for the War Level variable. A negative coefficient for this variable means that the outbreak of war leads to a decline in the level of trade between states. Looking at the results for all seven dyads, we see that in five instances (Argentina–UK, UK–China, UK–Egypt, Cyprus–Turkey, and Greece–Turkey) the coefficient has a negative sign. But this apparent decline in trade after the onset of war is only statistically significant for one dyad; the outbreak of the Falklands War led to a dramatic reduction in the level of trade between the UK and Argentina. These patterns are corroborated with our scatter plot in Figure 2.

We also see that dyadic trade sometimes increases after the onset of war, as confirmed by our statistical analyses of the Uganda–Tanzania and USA–China dyads. None of these positive coefficients for the War Level variable are statistically significant, however, and the pattern is not easily discerned in the scatter plots.

There are several reasons why we might witness an increase in trade associated with war. First, the trade level reflects the value of goods traded, rather than the quantity of

<sup>27</sup> Figure 1 is an adaptation of Figure 3 in Lewis-Beck (1979: 1130).

Figure 2. Dyadic Trade Relationships

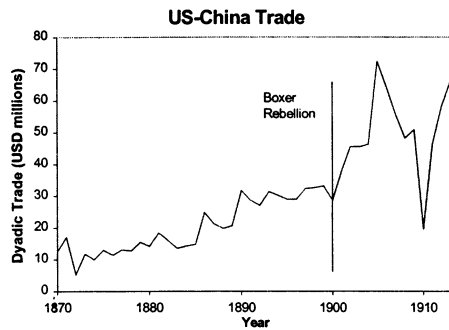
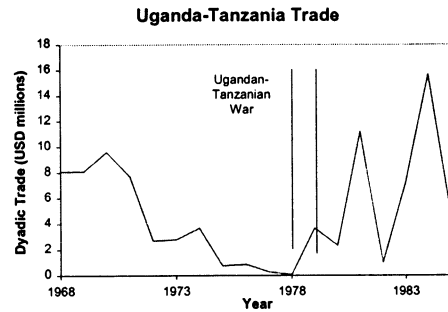
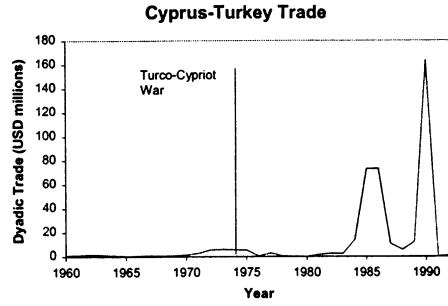
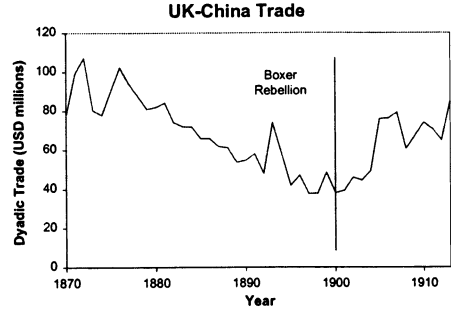
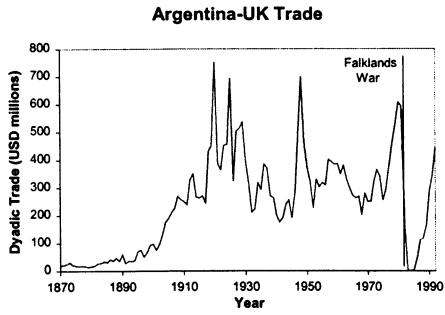


Table 1. The Impact of War on Dyadic Trade

<i>Variables</i>	<i>Argentina–UK 1870–1992 Falklands (1982)</i>	<i>UK–China 1870–1913 Boxer Rebellion (1900)</i>	<i>UK–Egypt 1948–92 Sinai (1956)</i>	<i>Cyprus–Turkey 1960–92 Turco–Cypriot (1974)</i>	<i>Greece–Turkey 1886–1911 Greco–Turkish (1897)</i>	<i>Uganda–Tanzania 1968–85 Ugandan–Tanzanian (1978)</i>	<i>USA–China 1870–1913 Boxer Rebellion (1900)</i>
Constant	49.607 (67.717)	103.449*** (4.462)	137.963 (153.760)	−0.665 (20.135)	4.801*** (0.668)	11.129** (2.979)	5.860 (3.361)
Trend <sub>t</sub>	3.577*** (0.990)	−2.091*** (0.242)	−20.528** (9.053)	0.322 (2.280)	−0.012 (0.093)	−1.179* (0.456)	0.908*** (0.186)
War Level <sub>t</sub>	−462.398*** (90.619)	−2.254 (6.782)	−50.178 (150.310)	−11.343 (21.807)	−0.520 (0.717)	1.204 (3.511)	7.896 (5.604)
War Rate <sub>t</sub>	30.299* (15.561)	5.252*** (0.736)	43.641** (13.459)	2.409 (2.619)	−0.026 (0.118)	2.330** (0.712)	0.149 (0.584)
AR 1	0.755*** (0.062)	0.225** (0.079)	0.763*** (0.101)	0.000 (0.001)	0.256 (0.199)	−0.002 (0.004)	0.011 (0.013)
R <sup>2</sup>	0.78	0.81	0.83	0.21	0.28	0.50	0.79
Adjusted R <sup>2</sup>	0.77	0.79	0.81	0.09	0.15	0.34	0.76

Standard errors appear in parentheses. \* $p \leq 0.05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ .

commodities traded. If war leads to restrictions on trade and consequently to shortages and to higher prices for the goods that are traded, the result would be an increase in the value of goods traded, even if the volume of trade conducted were to decline. In addition, one of the motivations for war may be to create the conditions for an increase in trade. A major objective for China's adversaries in the Boxer Rebellion was the opening up of China's trade. Therefore, it is not surprising that the War Level variable for the USA and China is positive with respect to the Boxer Rebellion. Although the UK–China dyad reveals a negative coefficient for the War Level variable, trade does increase between these states after the Boxer Rebellion. China appears to open up to trade as a result of the war, but more slowly in the case of the UK than the USA.

In general, our findings for the War Level variable demonstrate that trade suffers an immediate decline with the outbreak of war, but that the decline is rarely statistically significant. In fact, the decline is probably even less significant than our results reveal, since

official reports exclude illegal trade carried on during wartime and thus underrepresent the trade being conducted. If the official reports reveal no dramatic decline in trade, we expect that more accurate estimates of wartime trade with the enemy would reveal even less of a decline in trade. If anything, it might seem surprising that the official reports do not lead us to detect a more significant decline in trade levels for most cases. Admittedly, we are analyzing short wars, but all of these instances are cases that result in at least 1,000 battle-related deaths. This in itself seems serious enough to warrant an interruption in business as usual.

We next turn to the question of whether the outbreak of war has a permanent effect on a trading relationship. Liberal and realist theories of interdependence and war are less clear on this point, but we argue that both theories imply that after a war between trading partners dyadic trade should usually (but not always) remain depressed and be slow to recover to prewar levels. A visual inspection of our scatter plots in Figure 2 reveals that, in most instances, we see a rise

in trade following the war. We can determine whether this trend is significant through the information provided in the War Rate variable.

Table I reveals that in six of our dyadic analyses, the War Rate variable is positive, meaning that the slope in the change of trade is positive for the postwar period (Argentina–UK, UK–China, UK–Egypt, Cyprus–Turkey, Uganda–Tanzania, and USA–China). In four of these six cases, the coefficient is statistically significant. This suggests that the effect of war on trade is generally temporary. In the majority of cases where war led to a decline in the level of dyadic trade (i.e. in four of the five cases with a negative War Level variable), the War Rate variable is positive. We find only one case (Greece–Turkey) with a negative War Rate coefficient.

In the case of Greece and Turkey, we find negative coefficients for both the War Rate and War Level variables. One possible explanation for the failure of this trading relationship to recover from the war is that the postwar relationship is actually a prelude to other wars, the anticipation of which may keep trade low. The low levels of trade (averaging between USD 3 million and USD 5.5 million) and the negative trend in trade observed in the later years of the series may reflect a diminution in trade in the period leading up to the outbreak of the First Balkan War in 1912, the Second Balkan War in 1913, and the Greco–Turkish War in 1919. Unfortunately, we could not analyze the period surrounding the later wars, due to the lack of data for those periods.

The Greece–Turkey case raises the question of whether the anticipation of war leads to deterioration in trade. The Trend variable evaluates the prewar trading trend. A negative coefficient for this variable reveals that trade declines in each year prior to the war, while a positive coefficient for the Trend

variable reveals a positive slope in trade prior to the war. Table I shows that our seven cases are nearly equally divided, where three dyads have a positive coefficient for the Trend variable and four have a negative coefficient. Two of the three positive coefficients and two of the four negative coefficients are statistically significant. Trade, therefore, appears to be nearly equally likely to increase or to decrease in the period leading up to a war. In fact, we could imagine a set of equally plausible explanations for why the prewar period would experience either a positive or a negative trend. Hostilities may be so intense that they lead to restrictions or the breaking of trade ties even before the war occurs. Similarly, firms may be risk-averse and refrain from forging new deals with partners in a climate of uncertainty. On the other hand, businesses anticipating a war may rush to place orders or complete shipments for fear of a coming disruption to trade. For example, in some cases, legal restrictions to trade with the enemy still permit some allowances for firms to honor existing contracts. There would, therefore, be an incentive to increase trade prior to the war or at least to refrain from breaking off trade ties.

To summarize, our empirical analysis demonstrates that there is some variation in the impact of war on trade across the dyads in our sample. In a majority of cases, the outbreak of war appears to result in a decline in the level of dyadic trade, but for all but one dyad this decline is not statistically significant. In fact, we suspect that the real decline is even weaker than that suggested by our analysis based on official statistics, given the amount of illegal trade that may be conducted during wartime and excluded from official reports. Moreover, even when war leads to a decline in trade, this decline is almost always temporary; in general, trade increases in the postwar period. As to the period leading up to war, there is no system-

atic evidence that the anticipation of war usually results in a reduction in trade.

As previously noted, data limitations prevent us from providing a more comprehensive picture of the impact of war on trade. Governments often do not provide reports on wartime trade with the adversary. The fact that wartime trade data are also missing for other states suggests that the absence of trade reports does not necessarily imply the absence of trade. Even where data are complete, however, the fact that we are limited to annual data limits the number of observations, and this in turn makes it difficult to achieve levels of statistical significance with our interrupted time-series methods. This is compounded by the fact that nearly all of the wars in our sample are relatively short. As a result, in many cases we are left with a very small number of data-points to measure the immediate impact of war on trade.

Our empirical tests of predictions of liberal and realist theories are also plagued by ambiguities in the theories, particularly for the period after the termination of war. Although both theoretical perspectives imply that trade will not quickly return to prewar levels after the termination of war, this is not a logical necessity, and there are some conditions under which we might expect a rapid recovery of trade. States may choose war as a means of opening up markets to trade, or they may want to rebuild the economies of their defeated adversaries in order to strengthen them and bring them into the balance of power against new enemies. Here we look at the aggregate effects of these contrary tendencies but, in the future, it would be useful to hypothesize about the conditions under which trade increases immediately after war and to test these hypotheses against the evidence.

Our data are more reliable for periods after the termination of war, but the theoretical predictions are somewhat weaker. To

the extent that political leaders' fears that war impedes trade are based both on the loss of trade during war and the slow recovery of trade after war, and to the extent that the experience of war generates hostility and continued sensitivity to relative gains, both liberal and realist theories predict that trade between wartime adversaries will not immediately return to prewar levels, but instead return slowly at best. If this is the prediction, it is clearly falsified by our analysis. In each of our cases trade increases quite rapidly within a few years after the end of war.

### Theoretical Implications

This study of the short-term and long-term impact of war on trade provides modest evidence that contradicts the predictions of liberal and realist hypotheses on economic interdependence and conflict, at least judging from our sample of seven dyads. There is no consistent, systematic, and substantial reduction in trade between belligerents during wartime, and trade between adversaries appears to recover quickly after the termination of war. Moreover, because the impact of conflict on trade is central to realist and particularly liberal hypotheses on the impact of trade on conflict, and because the hypothesized linkages should be stronger for war than for conflictual behavior short of war, these findings, while modest in strength, suggest that current liberal and realist theories fail to provide a satisfactory explanation of the overall relationship between economic interdependence and international conflict.

As we noted earlier, our argument here is not with liberal and realist paradigms themselves, but rather with specific applications of those paradigms to the question of the relationship between economic interdependence and conflict. Contemporary liberal and realist scholars have framed the debate

over trade and conflict in excessively narrow terms – they both focus primarily on the dyadic level and ignore the role of domestic actors and third parties. This represents a substantial departure from the liberal and realist paradigms that have shaped much of the debate in the international relations field.

There are a number of possible explanations for the 'trading with the enemy' phenomenon, and nearly all of these are in fact quite compatible with broader conceptualizations of liberal or realist theory. Political leaders may fear that a cut-off of trade would result in a loss of trade to a third party or the alienation of neutrals. Alternatively, they may anticipate that the continuation of trade during wartime may create the opportunity to make relative gains at the expense of third parties or to gain influence over the adversary by making him economically dependent. Each of these explanations is compatible with a realist framework.<sup>28</sup>

Political leaders may also be concerned about the domestic economic consequences and political costs of a cessation of trade. Key social groups may expect private gains from a continuation of trade with the enemy and may have the political power to block the government from imposing restrictions on such trade, as the government may be dependent on the economic support of leading commercial and financial interests for the financing of the war effort (Barbieri & Levy, 1997; Levy, 1998a). Each of these explanations is compatible with a liberal (or Marxist) conceptual framework.

Our interrupted time-series analysis of

patterns of war and trade for seven dyads demonstrates that the outbreak of war often fails to significantly reduce trade between adversaries and that when trade does fall it often quickly returns to prewar levels after the cessation of war. Although the patterns do vary, and although our limited sample precludes us from formally generalizing other cases, our findings raise possible doubts about the validity of the hypothesis that trade between adversaries will cease or be significantly reduced after the outbreak of war.

This hypothesis is a strong implication of both liberal and realist theories of economic interdependence and war, which suggest, respectively, that the fear of the loss of welfare gains from trade deters political leaders from conflictual behavior that runs a high risk of war, or that relative gains concerns lead to the cessation or significant reduction in trade between adversaries after the outbreak of war. Because these hypotheses play a pivotal role in liberal and realist theories of trade and war, and because our findings draw some support from detailed historical studies of the phenomenon of trade between adversaries during wartime, it seems clear that further investigation of the question of the impact of war on trade should be a high priority for future research.

The further confirmation of our findings in subsequent research would suggest that contemporary liberal and realist theories of trade and war are misspecified and that each of these theories needs to be revised. Our strong suspicion is that a fully satisfactory theory of trade and conflict will have to build on insights from both liberal and realist perspectives.<sup>29</sup> Such a theory will have to incorporate a range of key factors that

<sup>28</sup> This argument about the need to conceptualize relative gains in systemic rather than dyadic terms draws support from recent theoretical work on relative gains (Powell, 1991; Snidal, 1991), which suggests that relative gains concerns diminish as the number of actors in the system increases. For more specific theoretical discussions of the role of relative gains in trading relationships, see Morrow (1997) and Werner (1997).

<sup>29</sup> For a recent study that attempts to incorporate both liberal and realist hypotheses into a single theory of economic interdependence and conflict, see Papayouanou (1999).

enter political leaders' cost-benefit calculations regarding decisions for war and decisions to maintain or suspend trade in the event of war. These include leaders' fears of the impact of war on the welfare gains from trade; expectations of the impact of a cessation of trade on the domestic economy, on the ability to sustain the war effort, and on the support of key economic interest groups for the government and for the war effort; and expectations regarding the effects of the maintenance or cessation of trade on the relative position of potential economic and military rivals.

## References

- Aarons, Mark & John Loftus, 1994. *The Secret War Against the Jews: How Western Espionage Betrayed the Jewish People*. New York: St Martin's Griffin.
- Baldwin, David A., 1985. *Economic Statecraft*. Princeton, NJ: Princeton University Press.
- Barbieri, Katherine, 1995. *Economic Interdependence and Militarized Interstate Conflict, 1870-1985*. PhD Dissertation. Binghamton, NY: Department of Political Science, Binghamton University.
- Barbieri, Katherine, 1996a. 'Economic Interdependence: A Path to Peace or Source of Interstate Conflict?', *Journal of Peace Research* 33(1): 29-49.
- Barbieri, Katherine, 1996b. 'Explaining Discrepant Findings in the Trade-Conflict Literature'. Paper presented at the International Studies Association Annual Meeting, San Diego, CA, 16-20 April.
- Barbieri, Katherine & Jack S. Levy, 1997. 'Sleeping with the Enemy: Trade between Adversaries During Wartime'. Paper presented at the Annual Meeting of the American Political Science Association, Washington DC, August.
- Buzan, Barry, 1984. 'Economic Structure and International Security: The Limits of the Liberal Case', *International Organization* 38(4): 597-624.
- Choucri, Nazli & Robert North, 1975. *Nations in Conflict: National Growth and International Violence*. San Francisco, CA: Freeman.
- Copeland, Dale C., 1996. 'Economic Interdependence and War: A Theory of Trade Expectations', *International Security* 20(4): 5-41.
- de Vries, Michiel S., 1990. 'Interdependence, Cooperation and Conflict: An Empirical Analysis', *Journal of Peace Research* 27(4): 429-444.
- Domke, William K., 1988. *War and the Changing Global System*. New Haven, CT: Yale University Press.
- Doyle, Michael W., 1997. *Ways of War and Peace: Realism, Liberalism, and Socialism*. New York: Norton.
- EViews User's Guide, 1994-97. Quantitative Micro Software. Irvine, CA.
- Freeman, John R., 1983. 'Granger Causality and the Time Series Analysis of Political Relationships', *American Journal of Political Science* 27(2): 327-358.
- Gasiorowski, Mark, 1986. 'Economic Interdependence and International Conflict: Some Cross-National Evidence', *International Studies Quarterly* 30(1): 23-28.
- Gasiorowski, Mark & Solomon W. Polachek, 1982. 'Conflict and Interdependence: East-West Trade and Linkages in the Era of Détente', *Journal of Conflict Resolution* 26(4): 709-729.
- Giltner, Philip, 1997. 'Trade in "Phoney" Wartime: The Danish-German "Maltese" Agreement of 9 October 1939', *The International History Review* 19(2): 333-336.
- Goldstein, Joshua S., 1988. *Long Cycles: Prosperity and War in the Modern Age*. New Haven, CT: Yale University Press.
- Gowa, Joanne, 1994. *Allies, Adversaries, and International Trade*. Princeton, NJ: Princeton University Press.
- Grieco, Joseph M., 1990. *Cooperation among Nations: Europe, America, and Non-tariff Barriers to Trade*. Ithaca, NY: Cornell University Press.
- Higham, Charles, 1983. *Trading with the Enemy: The Nazi-American Money Plot, 1933-1949*. New York: Barnes & Noble.
- Howard, Michael, 1976. *War in European History*. Oxford: Oxford University Press.

- Huntington, Samuel P., 1993. 'Why International Primacy Matters', *International Security* 17(4): 52-83.
- International Monetary Fund, 1996. *Direction of Trade*. (ICPSR 7628) Washington DC: IMF; Ann Arbor, MI: Inter-University Consortium for Political and Social Research.
- Levy, Jack S., 1989. 'The Causes of War: A Review of Theories and Evidence', in Philip E. Tetlock, Jo L. Husbands, Robert Jervis, Paul C. Stern & Charles Tilly, eds, *Behavior, Society, and Nuclear War*, vol. 1. New York: Oxford University Press (209-333).
- Levy, Jack S., 1997. 'Prospect Theory, Rational Choice, and International Relations', *International Studies Quarterly* 41 (March): 87-112.
- Levy, Jack S., 1998a. 'Historical Perspectives on Interdependence and Conflict'. Paper prepared for Workshop on New Directions on Trade and Conflict, Annual Meeting of the International Studies Association, Minneapolis, MN, 18-21 March.
- Levy, Jack S., 1998b. 'The Causes of War and the Conditions of Peace', *Annual Review of Political Science* 1998 (1): 139-166.
- Levy, Jack S. & Salvatore Ali, 1998. 'From Commercial Competition to Strategic Rivalry to War: The Evolution of the Anglo-Dutch Rivalry, 1609-1652', in Paul F. Diehl, ed., *The Dynamics of Enduring Rivalries*. Champaign Urbana, IL: University of Illinois Press (29-63).
- Lewis-Beck, Michael S., 1979. 'Some Economic Effects of Revolution: Models, Measurements, and the Cuban Evidence', *American Journal of Sociology* 84(5): 1127-1149.
- Lewis-Beck, Michael S. & John R. Alford, 1980. 'Can Government Regulate Safety? The Coal Mine Example', *American Political Science Review* 74(3): 745-756.
- Liberman, Peter, 1996. 'Trading with the Enemy: Security and Relative Economic Gains', *International Security* 21(1): 147-175.
- McMillan, Susan M., 1997. 'Interdependence and Conflict', *Mershon International Studies Review* 41(1): 33-58.
- Mansfield, Edward D., 1994. *Power, Trade, and War*. Princeton, NJ: Princeton University Press.
- Modelski, George & William R. Thompson. 1996. *Leading Sectors and World Powers: The Coevolution of Global Economics and Politics*. Columbia, SC: University of South Carolina Press.
- Morrow, James D., 1997. 'When Do "Relative Gains" Impede Trade?', *Journal of Conflict Resolution* 41(1): 12-37.
- Oneal, John R.; Frances Oneal, Zeev Maoz & Bruce Russett, 1996. 'The Liberal Peace: Interdependence, Democracy and International Conflict, 1950-1986', *Journal of Peace Research* 33(1): 11-28.
- Oneal, John R. & James Lee Ray, 1997. 'New Tests of the Democratic Peace: Controlling for Economic Interdependence, 1950-85', *Political Research Quarterly* 50(4): 751-775
- Oneal, John R. & Bruce M. Russett, 1997 'The Classical Liberals Were Right: Democracy, Interdependence, and Conflict, 1950-1985', *International Studies Quarterly* 41 (March): 267-294.
- Organski, A. F. K. & Jacek Kugler, 1980. *The War Ledger*. Chicago, IL: University of Chicago Press.
- Papayoanou, Paul A., 1996. 'Interdependence, Institutions, and the Balance of Power: Britain, Germany, and World War I', *International Security* 20(4): 42-76.
- Papayoanou, Paul A., 1997. 'Economic Interdependence and the Balance of Power', *International Studies Quarterly* 41(1): 113-140.
- Papayoanou, Paul A., 1999. *Power Ties: Economic Interdependence*. Ann Arbor, MI: University of Michigan Press.
- Pares, Richard, 1963. *War and Trade in the West Indies*. London: Frank Cass.
- Polachek, Solomon W., 1980. 'Conflict and Trade', *Journal of Conflict Resolution* 24 (1): 57-78.
- Polachek, Solomon W., 1992. 'Conflict and Trade: An Economics Approach to Political International Interactions', in Walter Isard & Charles H. Anderton, eds, *Economics of Arms Reduction and the Peace Process*. Amsterdam: North-Holland (89-120).
- Polachek, Solomon W., 1997. 'Why Do Democracies Cooperate More and Fight Less: The Relationship between International Trade and Cooperation', *Review of International Economics* 5(3): 295-309.

- Pollins, Brian, 1989a. 'Does Trade Still Follow the Flag?', *American Political Science Review* 83(2): 465–480.
- Pollins, Brian, 1989b. 'Conflict, Cooperation and Commerce: The Effect of International Political Interactions', *American Journal of Political Science* 33(3): 737–761.
- Powell, Robert, 1991. 'Absolute and Relative Gains in International Relations Theory', *American Political Science Review* 85(4): 1303–1320.
- Rasler, Karen A. & William R. Thompson, 1989. *War and State Making: The Shaping of the Global Powers*. Boston, MA: Unwin Hyman.
- Reuveny, Rafael & Heejoon Kang, 1996. 'International Trade, Political Conflict/Cooperation, and Granger Causality', *American Journal of Political Science* 40(3): 943–970.
- Reuveny, Rafael & Heejoon Kang, 1998. 'Bilateral Trade and Political Conflict/Cooperation: Do Goods Matter?', *Journal of Peace Research* 35(5): 581–602.
- Ripsman, Norrin M. & Jean-Marc F. Blanchard, 1996/97. 'Commercial Liberalism under Fire: Evidence from 1914 and 1936', *Security Studies* 6(2): 4–50.
- Rosecrance, Richard, 1986. *The Rise of the Trading State: Commerce and Conquest in the Modern World*. New York: Basic Books.
- Russett, Bruce M., 1967. *International Regions and the International System: A Study in Political Ecology*. Chicago, IL: Rand McNally.
- Skaperdas, Stergios Constantinos Syropoulos, 1996. 'Competitive Trade with Conflict', in Michelle R. Garfinkel & Stergios Skaperdas, eds, *The Political Economy of Conflict and Appropriation*. New York: Cambridge University Press (73–95).
- Small, Melvin & J. David Singer, 1982. *Resort to Arms: International and Civil Wars 1816–1980*. Beverly Hills, CA: Sage.
- Snidal, Duncan, 1991. 'Relative Gains and the Pattern of International Cooperation', *American Political Science Review* 85(3): 701–726.
- Soroos, Marvin, 1977. 'Behavior Between Nations', *Peace Research Reviews* 7(2): 1–107.
- Vasquez, John A., 1993. *The War Puzzle*. New York: Cambridge University Press.
- Wallensteen, Peter, 1973. *Structure and War: On International Relations 1920–1968*. Stockholm: Raben & Sjögren.
- Waltz, Kenneth N., 1979. *Theory of International Politics*. Reading, MA: Addison-Wesley.
- Werner, Suzanne, 1997. 'In Search of Security: Relative Gains and Losses in Dyadic Relations', *Journal of Peace Research* 34(3): 289–302.

KATHERINE BARBIERI, b. 1965, PhD in Political Science (Binghamton University, 1996), Assistant Professor, Vanderbilt University (1998–).

JACK S. LEVY, b. 1948, PhD in Political Science (University of Wisconsin, 1976), Board of Governors' Professor, Rutgers University.