

5-2013

Testing Two Explanations of the Liberal Peace: The Opportunity Cost and Signaling Arguments

Nam Kyu Kim

University of Nebraska–Lincoln, namkyu@unl.edu

Follow this and additional works at: <http://digitalcommons.unl.edu/poliscifacpub>

 Part of the [Comparative Politics Commons](#), [International Relations Commons](#), [Models and Methods Commons](#), and the [Political Theory Commons](#)

Kim, Nam Kyu, "Testing Two Explanations of the Liberal Peace: The Opportunity Cost and Signaling Arguments" (2013). *Faculty Publications: Political Science*. 61.

<http://digitalcommons.unl.edu/poliscifacpub/61>

This Article is brought to you for free and open access by the Political Science, Department of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Faculty Publications: Political Science by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.



Testing Two Explanations of the Liberal Peace: The Opportunity Cost and Signaling Arguments

Nam Kyu Kim

Department of Political Science, University of Nebraska–Lincoln
528 Oldfather Hall, Lincoln, NE 68588-0328, email namkyu@unl.edu

Abstract

Considerable evidence suggests that economic interdependence and integration reduce the likelihood of militarized conflict. However, scholars have devoted remarkably scant attention to testing different explanations of the liberal peace. This article offers an empirical test that can help adjudicate the two main arguments on the liberal peace: the opportunity cost and signaling arguments. Under the incomplete information assumption, I derive different observable implications of the competing arguments regarding how target states respond when challenged. By estimating selection models comprising dispute initiation and reciprocation, I find that, as challengers are more dependent on bilateral trade, targets are less likely to reciprocate disputes, which is supportive of the signaling argument. Regarding dispute initiation, increases in foreign direct investment and financial openness are associated with a decrease in the probability of conflict initiation. Last, the pacifying effects of the liberal economic variables are much more pronounced in contiguous and major dyads than in other dyads.

Keywords: Economic interdependence, globalization, militarized disputes, opportunity costs, signaling

The effect of economic integration and interdependence on interstate conflict has been a central question in political science for centuries. According to the liberal peace literature, increased commerce reduces the likelihood of interstate conflicts. The explanations of the liberal peace can be grouped into two sets of arguments: the “opportunity cost” and “signaling” arguments, although other variants of explanations abound.¹ The basis of the opportunity cost argument is that militarized conflict diminishes interstate commerce. The fear of lost gains from commerce discourages states from engaging in military disputes. On the other hand, the signaling argument emphasizes that the opportunity costs of fighting allow states to reveal information. Only resolute political leaders will engage in military dispute, foregoing potential gains from trade and foreign investment. Therefore, economically globalized states can more credibly communicate their intentions and resolve with each other, reducing uncertainty and thus the likelihood of conflict.

An increasing number of empirical studies have demonstrated the pacifying effects of economic interdependence (e.g., Gartzke, Li, and Boehmer 2001; Gartzke and Li 2003; Gartzke 2007; Hegre, Oneal, and Russett 2010; Martin, Mayer, and Thoenig 2008; Oneal and Russett 1997, 1999). Yet, the existing literature has paid scant attention to differentiating the two arguments. Both arguments predict that increased economic globalization and interdependence reduce the risk of military conflict. Therefore, the previous focus on conflict onset or initiation does not provide a critical test of these two alternative theories. It is important to conduct such a test, given that several scholars (e.g., Mansfield and Pollins 2001; Way, forthcoming) criticize the underspecified causal mechanisms for the liberal peace and the poor match between theory and method. We still do not know which causal mechanism is responsible for the empirical regularity that economically globalized or interdependent dyads have a lower propensity to experience militarized disputes. The lack of empirical studies well suited to distinguishing the two theories will hinder the identification and development of the microfoundations underlying the liberal peace.

To adjudicate competing explanations of the same phenomenon, we should seek to derive different observable implications from each causal mechanism and test them against new evidence (King, Keohane, and Verba 1994). To this end, I approach the opportunity cost argument using the incomplete information assumption² and analyze how opportunity costs operate in a crisis bargaining situation. This implies that I examine and compare the two competing arguments under the informational theory of war. This strategy, building on Schultz (1999), who differentiates and tests two theories of the democratic peace, allows me to logically derive different observable implications of a credibility of a challenger’s threat and the corresponding target’s response to that threat. When threatened militarily by an opponent, a state must evaluate the other’s resolve or power to fight. If the opportunity cost argument is correct, then challengers that are more integrated into the global economy, or are more dependent on trade with another country, will be more likely to face reciprocation by targets.³ Economically globalized or interdependent states are constrained from using force because of the high economic

costs. Therefore, target states will doubt that the challengers will carry through on their threats. To the contrary, the signaling argument suggests that targets will be less likely to reciprocate threats issued by economically globalized or interdependent challengers. This is because economic globalization and interdependence enable challengers to send costly signals to their targets. I test these different empirical implications.

This article also seeks to investigate whether economic integration and interdependence have the same effect on conflict at both stages of a dispute: initiation and escalation. For instance, economic interdependence may fail to deter the initiation of disputes but may succeed in discouraging the escalation of those disputes. To examine this possibility, I look at both stages of disputes. If either theory accurately explains dispute initiation, we should observe that a greater degree of economic integration and interdependence reduces the propensity of a state to initiate a militarized dispute.

I perform empirical tests using a sample of all the directed dyads from 1950 to 2000. By estimating selection models, I examine how the degree of economic interdependence and openness to the world economy—bilateral, total trade, foreign direct investment (FDI) dependence, and government financial openness—affects the probability of conflict initiation and reciprocation. To preview the conclusion, the estimation results on reciprocation lend more support to the signaling argument, indicating that when challengers are more dependent on bilateral trade with their targets, challenges are less likely to be reciprocated by targets. This finding can be interpreted as evidence supporting the signaling explanation that economic openness serves as a medium for information exchange. With respect to dispute initiation, initiators' government financial openness and FDI dependence are found to reduce the likelihood of conflict initiation.⁴ Considering that both the probabilities of conflict initiation and escalation constitute the probability of conflict onset, these findings show that different liberal economic variables affect the risk of military conflict through different channels. I also find that the pacifying effects of economic interdependence and globalization are much more pronounced among contiguous and major power dyads than among noncontiguous and nonmajor power dyads.

The rest of the article is organized as follows. First, I begin with a brief review of the two arguments. In the following section, I propose a test to discriminate between the two arguments. Next, I present a series of empirical tests regarding conflict initiation and reciprocation. The final section concludes with a brief suggestion for future research.

Theoretical Discussion

The main point of the opportunity cost argument is that economic interdependence discourages states from engaging in militarized disputes by increasing costs for fighting

(e.g., Gasiorowski 1986; Oneal and Russett 1997, 1999; Polachek 1980). According to the standard trade theory, international trade allows states to specialize in production of goods and services that they produce most efficiently. This specialization and exchange based on comparative advantage increases national wealth. Military conflict interferes with this efficiency-enhancing process by endangering an importer's supply of needed goods and services or by making it difficult to export goods to the best trade partner (Oneal and Russett 1997, 270). As long as militarized disputes disrupt trade, international trade increases the opportunity costs of fighting. In short, trade reduces the expected utility of conflict, inducing states to prefer a peaceful solution.

This logic is not restricted to economic interdependence. States' exposure to the global market constrains them from engaging in military conflict insofar as economic agents react adversely to conflict. Conflict would affect not only bilateral trade between belligerents but also trade between belligerent and neutral countries (Dorussen and Ward 2010; Glick and Taylor 2010; Maoz 2009). Disruption of trade with third-party countries further constrains the use of force. Therefore, the level of total trade, as well as that of bilateral trade, would be influential in decisions to engage in militarized disputes. The same can be said of FDI and foreign indirect investment. Military conflict increases the risk that foreign investment will be expropriated, destroyed, or discouraged. Accordingly, foreign investment increases the opportunity costs of conflict, as does trade. Moreover, as Polachek, Seigle, and Xiang (2007, 281) note, FDI may reduce conflict more than will trade, since FDI involves some assets that cannot be moved without considerable loss, thereby being *ex post* immobile. Once a multinational firm undertakes an FDI, the investment becomes much more illiquid *ex post* while relatively liquid *ex ante* (Jensen 2003, 594). Consequently, "the loss resulting from interstate conflict can continue for a long time with the cost not being recovered" (Polachek, Seigle, and Xiang 2007, 282). In line with this argument, several studies (e.g., Souva and Prins 2006; Polachek, Seigle, and Xiang 2007) find that FDI decreases the risk of military conflict.

Therefore, economic interdependence and integration foster domestic interests that prefer peace to conflict. In turn, these domestic interests provide leaders with incentives to avoid costly conflicts in favor of maintaining commercial ties and enhancing aggregate economic gains. "Fearful of the domestic political consequences of losing the benefits of trade," Oneal and Russett (1999, 4-5) write, "policymakers avoid the use of force against states with which they engage in economically important trade." Greater dependence on the global economy implies more constraints on using force. Therefore, dyads with higher levels of trade are discouraged from fighting and resolve their difference more peacefully than dyads with lower ones.

However, Morrow (1999) criticizes the opportunity cost argument, pointing out that the effect of the increased cost for fighting a war is not determinate. Trade has two countervailing effects on the likelihood of conflict. First, the possible loss of trade increases the cost of war and thus leads a state to be more willing to make concessions. At the same time, however, the other state may issue a threat or raise

greater demands because it knows the opponent is willing to make more concessions. Accordingly, the effect of trade on conflict is not clear and depends on which effect dominates. This theoretical problem arises because the opportunity cost argument relies on decision-theoretic accounts, focusing on the decision calculus of a single state without regard to the actions of other states (Way, forthcoming; McDonald 2009)⁵. That explanation also treats conflict and peace as two distinct phenomena. As Schelling (1981, 5) succinctly states, however, “most conflict situations are essentially bargaining situations.” War occurs as a result of strategic interactions between two states in which each state formulates strategy, taking into account the other state’s reaction and seek to change the other’s perceptions of its intentions. Without considering these strategic interactions, we cannot fully explain the effect of trade on conflict.

The signaling argument departs from the opportunity cost argument in that it is embedded in the bargaining theory of war. The well-known bargaining theory of war explains war as a result of bargaining failure, which is attributable to uncertainty and commitment problem (Fearon 1995).⁶ States possess private information about their resolve, their willingness to fight rather than make concessions, and power.⁷ Given informational asymmetry, states have incentives to exaggerate their own resolve and to discount opponents’ signals. This makes a settlement more difficult. Consequently, a reliable communication is necessary to avoid crisis escalation and to facilitate more efficient bargaining outcomes.

How does a state convince an adversary that it is resolute? Costly signals provide a mechanism to credibly communicate. Because only a resolute state is willing to pay the cost of signaling, for instance, costly signals provide an opportunity for opponents to reassess the resolve of the other state. The signaling argument for the liberal peace suggests that economic interdependence and globalization can generate a credible signal (Gartzke, Li, and Boehmer 2001; Gartzke and Li 2003; Morrow 1999; Reed 2003a). The argument views economic interdependence as an informational medium allowing states to reveal information about their resolve. Consider a political leader of a state that is highly integrated into the global economy. A threat to use force will frighten economic actors. In response to the increased risk of a militarized dispute, traders are likely to seek alternative markets or suppliers, and international investors may reallocate their capital to other countries or charge a higher risk premium, insofar as they believe the threat is genuine. As a state becomes more integrated into the global economy, economic actors are more able to respond to political risk and thus the state faces greater costs in pursuing conflict. If a state initiates a conflict despite the likelihood of such negative reactions, the state can credibly demonstrate its willingness to fight. An irresolute state would not forego gains from trade or foreign investment by issuing such a challenge. This separation of types allows the opponent to update its perception of the challenger’s resolve to fight. Hence, greater economic interdependence and globalization give states more options to reveal information about intention and resolve, allowing them to communicate more efficiently with one another.⁸

Testing Two Competing Explanations

No study to date has sought to test the validity of the two explanations. Most extant research studies examine the hypothesis that an increased level of dyadic trade makes militarized disputes less likely to occur (e.g., Barbieri 2002; Hegre, Oneal, and Russett 2010; Keshk, Pollins, and Reuveny 2004; Martin, Mayer, and Thoenig 2008; Oneal and Russett 1997, 1999). This method, however, does not differentiate between the opportunity cost and signaling perspectives, since both theories predict that trade dependence lowers the risk of disputes. Even the proponents of the costly signaling argument (e.g., Gartzke, Li, and Boehmer 2001; Gartzke and Li 2003) have tested the same hypothesis.⁹ Moving away from the existing tendency to focus on bilateral trade, for example, Gartzke and Li (2003) explore the role of openness to capital market and FDI in deterring militarized interstate dispute (MID) onset to test the signaling explanation. Yet, they do not consider that the opportunity cost argument can also explain the deterrent role of capital market and FDI. Accordingly, we still do not know which causal mechanism is responsible for the empirical finding, or whether both mechanisms simultaneously operate or not, although considerable evidence has lent support to the pacifying effects of economic openness.¹⁰

Some studies (Gelpi and Grieco 2008; Hegre 2004) instead focus on dispute initiation by distinguishing initiators and targets.¹¹ This strategy allows them to directly test one empirical implication derived from the opportunity cost argument that a state more dependent on trade with another state is less likely to initiate a dispute against that state. Many studies use the weak link measurement strategy that measures the level of economic interdependence in a dyad with the trade dependence of the less dependent country in a dyad. Hence, “if a military conflict occurs within a dyad, we cannot be sure if it was in fact the ‘less constrained’ state that initiated the dispute” (Gelpi and Grieco 2008, 19). Yet, the examination of conflict initiation is still ill equipped to test the opportunity cost argument against the alternative signaling argument because empirical implications regarding conflict initiation drawn from both arguments are observationally equivalent. Gartzke and Li (2003, 570) write that “leaders who anticipate negative economic consequences of hostile political words are aware that their talk is no longer cheap. Bluffing is less frequent as the cost involved in scaring markets deters leaders from idle threats.”

To adjudicate competing explanations of a single phenomenon, we should derive additional hypotheses from each explanation and see how evidence stacks up against the new competing expectations (King, Keohane, and Verba 1994). If one of the competing explanations can explain additional evidence, it should be judged superior because of its scope (Gelpi and Griesdorf 2001). Accordingly, a better theory of the liberal peace will be able to explain states’ behavior at the stage of conflict escalation, in addition to the stage of conflict initiation.

I derive different observable implications regarding conflict reciprocation, building on the literature on audience costs. Fearon (1994) argues that leaders would suffer domestic audience costs if they issued threats and failed to follow through. The threat of

this possible punishment discourages democratic leaders from making empty threats, making democracies' threats more informative. Thus, threats issued by democracies will, on average, be more effective than threats by nondemocracies. To test the hypothesis, several scholars (Schultz 1999; Prins 2003; Weeks 2008) investigate the relationship between the type of regime and crisis behavior. For example, Schultz (1999) and his follow-up studies (Prins 2003; Weeks 2008) have examined how target states react when challenged by democracies. They suggest that if democracies are systematically more able to make credible threats, they will face lower rates of resistance.

In particular, Schultz (1999) uses this reasoning to differentiate two institutional theories for the democratic peace: the institutional constraints and the informational arguments. Schultz argues that if the institutional constraints argument holds true, targets challenged by democracies are more likely to resist. This is because democratic leaders face higher political costs for using force and targets will not believe the threat will be carried out. According to the information argument, the democratic initiators are more able to reveal their resolve and the targets are less inclined to resist the threat.

I apply this logic directly to the two arguments on the liberal peace. Polachek and Xiang (2010) show that the opportunity cost argument can explain the pacifying effect of trade even under the incomplete information assumption. They conclude that it is not necessary to rely on the signaling argument to explain why trade deters conflict (p. 140). This conclusion indicates that I can approach the two competing arguments under the same assumption of incomplete information. In addition, Polachek and Xiang show only how opportunity costs can decrease the equilibrium probability of war. Therefore, it is useful to discuss the role of opportunity costs in crisis escalation.

How do the two arguments then yield different predictions about the credibility of threats? It simply depends on the role of signaling. If the signaling argument is correct, target states should be less likely to resist the threat as challengers are more dependent on the global economy or on bilateral trade with them. When threatened, targets must evaluate whether the threat is genuine before choosing to reciprocate or not, while challengers seek to manipulate the opponent's perception of their intentions. Challengers with greater economic dependence on bilateral trade with their opponent or in the global economy can more effectively and credibly reveal their resolve in a crisis. Since challengers' degree of economic dependence is readily observable and quantifiable (Gartzke and Li 2003), they can clearly display their resolve to fight and persuade their opponents to yield.

In contrast, the opportunity cost argument does not consider the role of costly signaling. If the opportunity cost argument holds true, therefore, target states should be more likely to resist threats from more globalized or interdependent challengers. Greater economic dependence of initiators, on the target, and in general, implies that they will face greater economic and thus political costs in waging war. Therefore, challengers with more constraints are more willing to find peaceful alternatives as the crisis escalates. Their opponents are well aware of that fact. Targets are thus more likely to believe that the threat is a bluff. Consequently, targets are more likely to

reciprocate when challenged by adversaries with greater economic dependence. How target states respond to threats issued by challengers then becomes an empirical question that should be of interest in understanding the effects of economic interdependence and integration on military conflict. I test the following hypotheses¹²:

Hypothesis 1A (signaling): As the challenger's economic dependence, on the target, and in general, increases, targets are less likely to reciprocate a militarized challenge.

Hypothesis 1B (opportunity costs): As the challenger's economic dependence, on the target, and in general, increases, targets are more likely to reciprocate a militarized challenge.

Challengers' economic dependence, on the target, and in general, is not limited to bilateral trade. A monadic exposure to trade, FDI, or foreign indirect investment is also related to Hypotheses 1A and 1B. Several studies find supporting evidence. Glick and Taylor (2010) find the persistent negative impact of war on multilateral trade as well as on bilateral trade using data from 1870 to 1997.¹³ Bussmann (2010) reports that fatal disputes reduce FDI inflows, outflows, and stock, while Schneider and Troeger (2006) show, based on daily stock market data, that militarized conflicts negatively affect transactions in the core financial markets.

Note that instead of looking at challengers' attributes, focusing on targets or dyad's attributes is not helpful for testing the two explanations. Both arguments predict that targets that are dependent on the global economy or bilateral trade with their challengers will be more constrained from using force, thereby less likely to reciprocate. In a similar vein, disputes in more economically integrated or globalized dyads are expected to be less likely to escalate, either because both states more clearly understand about each other's intention and resolve or because both states find waging war very costly.

To explore whether the pacifying effects of trade and FDI holds up at the stage of dispute initiation, I examine the effect of those variables on the probability of conflict initiation. As emphasized, both theories expect that a challenger's dependence on bilateral trade reduces the likelihood that the challenger will initiate a dispute against its trading partner. This implication holds true for monadic openness to trade and FDI inflows (Gartzke and Li 2003; Souva and Prins 2006). Accordingly, I derive the following hypothesis:

Hypothesis 2 (both): As a state's bilateral trade, total trade, or FDI dependence increases, a state is less likely to initiate an MID.

Research Design

I test the hypotheses above using a directed-dyad year data set for 1950–2001. The directed-dyad year as a unit of analysis allows me to identify the initiator and target

of a dispute. Data for military conflict are taken from the Correlates of War (COW) MID data set (version 3.1; Jones, Bremer, and Singer 1996). MIDs are defined as situations “in which the threat, display or use of military force short of war by one member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state” (Jones, Bremer, and Singer 1996, 168). The data set includes 1,498 MIDs¹⁴ during the sample period, but the estimation sample includes 851 to 1,418 MIDs due to the availability of economic variables.¹⁵

Dependent Variable. To test Hypotheses 1A and 1B, RECIPROCATION is coded 1 when the target state responded with a threat, display, or use of force, and 0 when it took no militarized action, as in previous studies (Schultz 1999; Prins 2003; Weeks 2008). As Schultz (1999) explains, a lack of reciprocation suggests that the target did not find military escalation of the conflict to be worthwhile. The other dependent variable is the initiation of a military conflict during a given year. Previous literature considers two types of initiations. The first measure, INITIATION, is coded 1 if the potential initiator threatened, displayed, or used force in a given year, and 0 otherwise. The second measure, REVISION-INITIATION, is coded 1 if a state wanted to change the status quo and entered into a militarized dispute.

Key Independent Variables. The covariates of main interest are the degree of economic interdependence and integration. To measure economic interdependence, BI.TRADE DEP.A¹⁶ is defined as the volume of bilateral trade (the sum of its exports and imports) as a proportion of gross domestic product (GDP) to capture the importance of bilateral trade to a challenger’s economy.¹⁷ To measure the degree of economic integration, I use three covariates. First, I define TOT.TRADE DEP.A as the ratio of total trade (excluding bilateral trade flows) over GDP. Another measure for economic integration is annual FDI inflows, which is the sum of the year’s new direct investment in a given host country by foreign direct investors (net of direct investments withdrawn by foreign direct investors), calculated as a percentage of GDP (FDI DEP.A). FDI data, available since 1970, are from the online version of United Nations Conference on Trade and Development (UNCTAD)’s *Handbook of Statistics* (2009). The last variable is an initiator’s degree of openness in capital account transactions, FINANCIAL OPEN.A. For this variable, I rely on Chinn and Ito (2008) who created an index based on the annual report by the International Monetary Fund (IMF) on exchange arrangements and exchange restrictions to measure the extensity of capital controls. The IMF only reports data on member countries and thus, including FINANCIAL OPEN.A considerably reduces the sample size. For the missing values, I follow the IMF practice of replacing missing values with a zero, used in Gartzke and Hewitt (2010). The justification of this practice is that missing data tend to be from poorly integrated states. However, I also report the estimation results with missing values of FINANCIAL OPEN.A in the Supplementary Appendix. All economic variables are lagged one year behind the dependent variable to control for possible simultaneous bias.

Control Variables. I include a set of control variables culled from existing research. The democratic peace literature emphasizes the importance of controlling for political regimes in explaining conflict behavior. Following the standard method, I code DEMOCRACY A 1 if the combined Polity score (a state's democracy score minus its autocracy score) in a previous year from the Polity IV data (Jaggers and Gurr 1995) is greater than 6, and otherwise, I code them 0. Second, the balance of military capabilities within a dyad is one important determinant of military conflicts. To control for the balance of power, I include CAPABILITY RATIO A, the proportion of the capabilities within each crisis dyad that was controlled by the initiator, using the COW capabilities score (Singer, Bremer, and Stuckey 1972). Third, dispute initiation is known to be more likely in contiguous dyads and major power dyads. Dummy variables, MAJOR POWER A and MAJOR POWER B, are created to indicate major powers (China, France, the United States, the United Kingdom, and the Union of Soviet Socialist Republics). To control for proximity, the natural logarithm of the distance between capital cities, $\ln(\text{DISTANCE})$, and an indicator of contiguity, CONTIGUITY, is controlled. CONTIGUITY indicates whether two states share a land boundary or are separated by less than 400 miles of water. Last, it is necessary to include military alliances, since the liberal peace might be just a by-product of military alliances. ALLIANCE is a binary variable for the presence of a defense pact, neutrality agreement, or entente in the year prior to the onset of the dispute, based on the COW Alliance Dataset (Gibler 2004). A measure of alliance portfolio similarity, ALLIANCE SIMILARITY, using the Signorino and Ritter "S" score, is also included. The variable, modified to range from 0 to 1, measures the satisfaction of both states in the dyad (Signorino 1999). These control variables are included in both the selection and the outcome equations.

As Beck, Katz, and Tucker (1998) emphasize, the probability of dyadic conflict in a given year is likely to be dependent on the conflict history of that dyad. Specifically, the risk of a conflict is known to decrease as the amount of time since the last conflict increases. This implies that assuming a constant hazard leads to biased estimation results. I correct for temporal dependence by including years passed since the last MID between a dyad and three cubic splines in the initiation equation. The reciprocation equation additionally includes four indicator variables for the particular issue at stake in the dispute (TERRITORY, REGIME/GOV., POLICY, and OTHERS), following the previous research (Horowitz 2009; Schultz 1999; Weeks 2008). Some issues, such as territorial control, are often valued more than simple policy changes (Horowitz 2009). The baseline category for comparison is the case with no specific revision identified. The data for the issue at stake in the dispute are from Ghosn, Palmer, and Bremer (2004).

Estimation Method. Hypotheses 1A and 1B make predictions regarding reciprocation conditional on a state having chosen to challenge a target. A separate analysis of reciprocation may be subject to potential selection bias, since states strategically select themselves in and out of militarized disputes. Reed (2000) persuasively argues that the

onset of international conflict is endogenously related to the escalation of conflicts to war and that a failure to model the selection of states into conflict onset leads to biased inferences about the likelihood of conflict escalation. Reciprocation is a part of conflict escalation and the selection process might have to be controlled. To address this concern, I estimate the two-stage Heckman selection model. However, I am aware that the estimation of the selection model depends upon the exclusion restriction—the existence of at least one variable that is related to the selection equation but is also unrelated to the outcome equation (counter of years since the last MID between a dyad and cubic splines). These time variables may not satisfy the exclusion restriction since all factors that influence dispute escalation would also influence dispute escalation initiation. Therefore, it would be difficult to correctly specify the selection equation due to the exclusion restriction necessary to identify the two-stage probit model. A poorly specified selection equation can yield biased estimates, both in selection and in outcome equations, leading to incorrect inferences about hypothesis tests for selection (Brandt and Schneider 2007; Freedman and Sekhon 2010). This is the reason that, consistent with the recommendation of Brandt and Schneider (2007), I also estimate separate probit models for MID reciprocation to ensure the robustness of the result. In the latter case, the data set consists of only directed dyads having experienced MIDs at some point. The dispute data set, dropping all ongoing conflicts, includes 1,485 MIDs during the period under investigation.¹⁸ Standard errors are clustered at the dyad level in a selection model (or at the dispute level in a probit model) to address potential problems of heteroscedasticity and autocorrelation in the error terms.

Results

Table 1 presents the results of two-stage selection models comprising the selection and outcome equations. The dependent variable of the selection equation is INITIATION, while the dependent variable of the outcome equation is RECIPROCATION. Models 1 through 4 each include one lagged economic variable, and model 5 controls for all of them. The likelihood ratio test for the independence of the two equations ($\chi^2(1) = 10.0$) rejects the null hypothesis of the independence ($p < .001$). Consistent with Reed (2000), this indicates that the two stages, MID initiation and reciprocation, are linked and that we need to account for the selection process to examine the effect of economic interdependence and globalization on reciprocation.

Table 1 shows that all liberal economic variables of main interest—BI. TRADE DEPA, TOT. TRADE DEPA, FDI DEPA, and FINANCIAL OPEN.A—are negatively associated with the likelihood of reciprocation.¹⁹ This result bears out the signaling rather than the opportunity cost argument, indicating that targets are less likely to resist challengers who has a greater degree of economic interdependence or exposure to the global economy. However, only the estimated coefficient on BI. TRADE DEPA is statistically significant at the 10 percent level. BI. TRADE DEPA remains negative and significant even when all other economic variables are added to the

Table I. Selection Models of Reciprocation

	Model 1	Model 2	Model 3	Model 4	Model 5
Reciprocation					
Bi.Trade Dep.A	-0.648* (0.343)		-0.590*		(0.308)
Tot.Trade Dep.A		-0.015 (0.016)			0.010 (0.019)
FDI Dep.A			-0.015 (0.027)		-0.016 (0.026)
Financial Open.A				-0.027 (0.040)	-0.029 (0.047)
Democracy A	-0.025 (0.102)	-0.026 (0.100)	0.033 (0.137)	-0.039 (0.133)	0.063 (0.147)
Democracy B	-0.055 (0.093)	-0.086 (0.092)	0.035 (0.114)	-0.017 (0.108)	0.049 (0.119)
Capability Ratio	-0.164 (0.148)	-0.140 (0.146)	-0.184 (0.184)	-0.211 (0.168)	-0.234 (0.189)
Major-Minor	0.118 (0.134)	0.092 (0.135)	0.103 (0.190)	0.141 (0.159)	0.189 (0.189)
Minor-Major	0.092 (0.176)	0.032 (0.168)	0.126 (0.222)	0.064 (0.192)	0.246 (0.238)
Major-Major	-0.467** (0.198)	-0.508** (0.200)	-0.469* (0.257)	-0.574*** (0.220)	-0.369 (0.256)
Alliance	0.064 (0.101)	0.054 (0.101)	0.005 (0.122)	0.012 (0.109)	0.025 (0.126)
Alliance Similarity	0.225 (0.150)	0.211 (0.150)	0.669*** (0.214)	0.308 (0.189)	0.646*** (0.220)
ln(distance)	-0.039* (0.023)	-0.037 (0.023)	-0.027 (0.031)	-0.023 (0.026)	-0.032 (0.031)
Contiguity	-0.310* (0.181)	-0.323* (0.181)	-0.130 (0.220)	-0.066 (0.195)	-0.058 (0.220)
Territory	0.043 (0.109)	0.045 (0.108)	0.018 (0.146)	0.114 (0.133)	0.048 (0.150)
Policy	-0.774*** (0.101)	-0.775*** (0.100)	-0.711*** (0.129)	-0.668*** (0.113)	-0.691*** (0.133)
Regime/ government	-0.002 (0.168)	0.018 (0.169)	-0.386 (0.249)	-0.106 (0.201)	-0.368 (0.270)
Other issues	-0.700*** (0.192)	-0.696*** (0.191)	-0.734*** (0.228)	-0.656*** (0.202)	-0.718*** (0.232)
Constant	1.537*** (0.312)	1.590*** (0.310)	0.948*** (0.409)	1.132*** (0.374)	0.746* (0.409)
Initiation					
Bi.Trade Dep.A	-0.023 (0.083)				-0.045 (0.082)
Tot.Trade Dep.A		0.007 (0.005)			-0.003 (0.007)

(continued)

Table 1. (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
FDI Dep.A			-0.014* (0.008)		-0.010 (0.009)
Financial Open.A				-0.043*** (0.014)	-0.037*** (0.013)
Democracy A	-0.162*** (0.039)	-0.169*** (0.039)	-0.189*** (0.041)	-0.183*** (0.036)	-0.148*** (0.039)
Democracy B	0.081** (0.038)	0.079** (0.038)	-0.026 (0.039)	-0.048 (0.038)	0.030 (0.039)
Capability Ratio	0.247*** (0.050)	0.252*** (0.050)	0.284*** (0.053)	0.270*** (0.047)	0.287*** (0.053)
Major–Minor	0.365*** (0.059)	0.369*** (0.059)	0.337*** (0.070)	0.330*** (0.060)	0.356*** (0.068)
Minor–Major	0.511*** (0.068)	0.511*** (0.067)	0.499*** (0.072)	0.483*** (0.067)	0.490*** (0.071)
Major–Major	1.031*** (0.156)	1.036*** (0.156)	0.947*** (0.186)	0.929*** (0.160)	0.929*** (0.190)
Alliance	-0.055 (0.054)	-0.055 (0.054)	0.087 (0.055)	0.084 (0.054)	0.090* (0.054)
Alliance Similarity	-0.356*** (0.054)	-0.362*** (0.054)	-0.602*** (0.074)	-0.584*** (0.065)	-0.591*** (0.073)
ln(distance)	-0.071*** (0.014)	-0.071*** (0.014)	-0.085*** (0.015)	-0.080*** (0.014)	-0.081*** (0.015)
Contiguity	0.996*** (0.111)	0.994*** (0.110)	0.860*** (0.122)	0.901*** (0.111)	0.864*** (0.121)
Peace Years	-0.166*** (0.011)	-0.166*** (0.011)	-0.148*** (0.012)	-0.140*** (0.010)	-0.173*** (0.013)
Constant	-1.909*** (0.126)	-1.913*** (0.126)	-1.536*** (0.152)	-1.679*** (0.140)	-1.494*** (0.152)
ρ	-0.407***	-0.421***	-0.406***	-0.388***	-0.351***
Number of observations	907,454	907,454	637,146	796,649	626,911
Uncensored observations	1,418	1,418	856	1,095	851

FDI = foreign direct investment. Standard errors clustered by dyad in parentheses.

Cubic splines included but not reported. All economic variables are lagged.

* $p < .10$; ** $p < .05$; *** $p < .01$

regression. I interpret these findings as evidence that challengers with a greater degree of bilateral dependence on targets are more able to issue credible threats.

Turning to the initiation equation at the bottom of Table 1, I examine the impact of economic variables on dispute initiation. If either theory of the liberal peace is valid at the stage of dispute initiation, we should expect that a greater level of economic interdependence or globalization will be associated with a lower probability

of dispute initiation. Table 1 shows that the effects of all economic variables except total trade dependence are in the expected directions. Consistent with Gartzke and Li (2003) and Gartzke (2007), FINANCIAL OPEN.A is statistically significant at the 1 percent level and negative. FDI DEP.A is significant only when estimated without other economic variables. On the other hand, BI.TRADE DEP.A comes nowhere near conventional levels of statistical significance. Like Gelpi and Grieco (2008), I include interaction variables between economic variables and DEMOCRACY A to examine the contingent effect of economic variables. There is no significant evidence that the effects of economic variables differ according to the political regimes (reported in Supplementary Appendix). Regardless of political regimes, BI.TRADE DEP.A is not significant. This result is different from Gelpi and Grieco's (2008) finding that the effect of trade on conflict initiation is contingent on democratic political institutions. One possible reason for this difference is that they use the continuous Polity IV democracy indicator to measure political regimes and investigate only the years from 1950 to 1992.

I employ an alternative estimator to check the robustness of the previous finding.²⁰ To ensure against the possibility of a poorly misspecified selection equation, models 1 and 2 in Table 2 report the estimation results of probit models in which the dependent variable is RECIPROCATION and the sample is dispute-dyads. Here I dropped all ongoing conflicts, making the number of MIDs 1,485. However, the estimation results remain robust to the inclusion of all dispute-dyads experiencing ongoing conflicts (see the Supplementary Appendix). The result is very similar to Table 1, although the coefficient estimate on BI.TRADE DEP.A is slightly smaller in magnitude compared to those in the selection model. Coefficient estimates on other economic variables of interest remain negative but not significant (reported in the Supplementary Appendix). Only BI.TRADE DEP.A is negatively and significantly associated with the probability of reciprocation.

To understand the magnitude of the substantive effect, Figure 1A illustrates the effect of challengers' bilateral trade on the predicted probability of dispute reciprocation computed from model 1 in Table 2.²¹ I use the probit model for substantive interpretations. The solid lines refer to the point estimates of the predicted probabilities of reciprocation, and the dotted lines indicate 95 percent confidence intervals. The predicted probability of reciprocation drops from 0.48 to 0.39 as the level of BI.TRADE DEP.A jumps from 0 (the first percentile) to 0.4 percent (approximately the 99th percentile). To understand the magnitude of the effect better, I calculate the effect of a regime change in a challenger on the probability of reciprocation. A change from autocracy to democracy is estimated to reduce the probability of reciprocation by 0.056. This implies that the estimated effect of bilateral trade on the reciprocated conflict is not ignorable.

Next, I employ REVISION-INITIATION as a measure of dispute initiation. To recall, the initiator of a dispute is defined as the first state to threaten or to use military force. This definition does not account for whether a state publicly demanded to revise the status quo. The reaction toward conflict initiation with revisionist aims may

Table 2. Probit Regression of Reciprocation.

	All Initiations		Revision-Initiations			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Bi. Trade Dep. A	-0.474*	-0.547*	-0.996**	-0.924**	-0.654*	-0.864**
	(0.279)	(0.304)	(0.438)	(0.439)	(0.336)	(0.425)
Tot. Trade Dep. A		0.016		0.013		0.020
		(0.022)		(0.021)		(0.023)
FDI Dep. A		-0.036		-0.026		-0.040
		(0.031)		(0.031)		(0.035)
Financial Open. A		-0.044		-0.063		-0.072
		(0.052)		(0.053)		(0.060)
Democracy A	-0.112	-0.084	0.187	0.259*	-0.052	0.094
	(0.097)	(0.133)	(0.127)	(0.140)	(0.112)	(0.150)
Democracy B	-0.123	-0.127	-0.043	-0.060	-0.134	-0.217*
	(0.089)	(0.118)	(0.114)	(0.117)	(0.100)	(0.130)
Capability Ratio	-0.055	-0.073	-0.278	-0.329	-0.026	-0.173
	(0.150)	(0.191)	(0.202)	(0.204)	(0.170)	(0.211)
Major–Minor	0.213	0.278	0.106	0.198	0.167	0.323
	(0.132)	(0.215)	(0.200)	(0.205)	(0.147)	(0.224)
Minor–Major	0.159	0.347	0.496**	0.487**	0.359**	0.542**
	(0.155)	(0.216)	(0.246)	(0.246)	(0.176)	(0.240)
Major–Major	-0.069	-0.088	-0.172	-0.131	0.095	0.105
	(0.203)	(0.333)	(0.374)	(0.375)	(0.227)	(0.361)
Alliance	-0.042	0.065	0.019	0.043	-0.079	0.028
	(0.099)	(0.126)	(0.127)	(0.129)	(0.111)	(0.139)
Alliance Similarity	0.080	0.322	0.596***	0.598***	0.048	0.316
	(0.143)	(0.231)	(0.230)	(0.231)	(0.164)	(0.250)
In(distance)	-0.051***	-0.040*	-0.050	-0.047	-0.063***	-0.051*
	(0.017)	(0.024)	(0.031)	(0.031)	(0.019)	(0.027)
Contiguity	0.235*	0.378**	-0.046	-0.059	0.226	0.353*
	(0.133)	(0.183)	(0.231)	(0.231)	(0.153)	(0.203)
Territory	0.148	0.130	0.751***	0.778***	0.835***	0.813***
	(0.116)	(0.162)	(0.223)	(0.223)	(0.205)	(0.231)
Policy	-0.742***	-0.593***	0.034	0.044	-0.040	0.106
	(0.105)	(0.149)	(0.213)	(0.213)	(0.201)	(0.227)
Regime/ government	0.060	-0.409	0.374	0.347	0.772***	0.283
	(0.186)	(0.262)	(0.307)	(0.312)	(0.253)	(0.311)
Other issues	-0.693***	-0.682***				
	(0.206)	(0.242)				
Constant	0.226	-0.262	0.128	0.079	-0.437	-0.886**
	(0.210)	(0.319)	(0.478)	(0.484)	(0.298)	(0.392)
Observations	1,414	849	626,911	626,911	1,130	715

Models 3 and 4 present the Heckman selection estimates and other models report the binary probit estimates. Standard errors clustered by dyad in selection models (3 and 4) or by dispute (in other probit models). Selection equations in models 3 and 4 not reported.

* $p < .10$; ** $p < .05$; *** $p < .01$

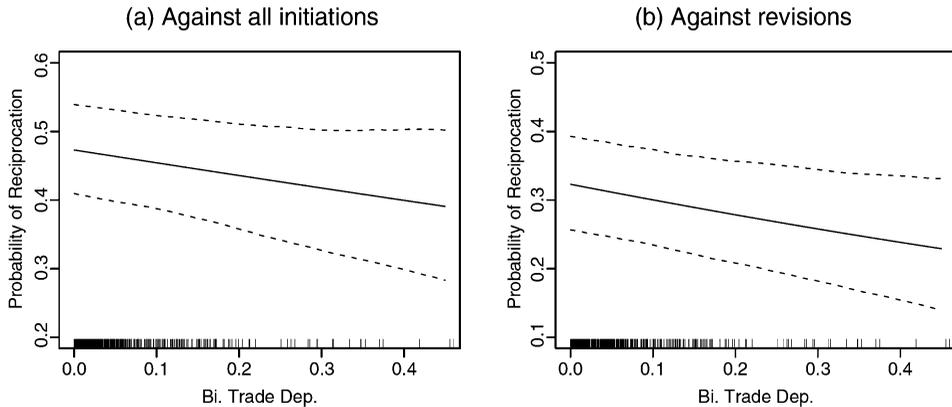


Figure 1. Bilateral trade dependence and predicted probability of reciprocation. Each graph plots the predicted probability of reciprocation and 95 percent confidence intervals as BI.TRADE DEPA increases. Estimates are computed from models 1 and 5 in Table 2 using the CLARIFY program (King, Tomz, and Wittenberg, 2000). Continuous (discrete) variables are set to their means (medians).

be different from the reaction toward initiation in their absence. Consequently, I estimate the same models on samples where the initiator publicly made a revisionist demand.²² This modification reduces the number of MID dyads from 1,485 to 1,187 during the sample period. Models 3 and 4 in Table 2 report the estimates of the selection models, while models 5 and 6 present those of the probit models. The coefficient estimates on BI.TRADE DEPA increase in magnitude and statistical significance (see also Figure 1b). They are statistically significant at the 5 percent level.²³

I also examine whether the previous finding varies across different subsets of the data. Some previous research (e.g., Maoz and Russett 1993; Oneal and Russett 1999) uses politically relevant dyads that are contiguous dyads and/or dyads in which at least one of the states is a major power (Lemke and Reed 2001). Since these dyads have more opportunities to interact with each other, researchers expect them to be more likely to engage in militarized disputes. Politically relevant dyads comprise 9.5 percent of all dyad-years but account for 85 percent of all MIDs in the sample. Furthermore, Vasquez (1995) and Reed and Chiba (2010) argue that neighboring states respond differently than do nonneighboring states to the same ex ante observable variables. This behavioral difference explains to a great degree why conflict probability differs between contiguous and noncontiguous dyads. Conflicts among contiguous dyads account for 70 percent of all MIDs. Therefore, it is useful to check how economic interdependence or globalization operate among neighboring or politically relevant dyads.

I estimate model 1 in Table 2 on four different sub samples: politically relevant, contiguous, nonrelevant, and noncontiguous dyads. To conserve space, I report only the estimated effects of BI.TRADE DEPA whose coefficient is statistically significant.

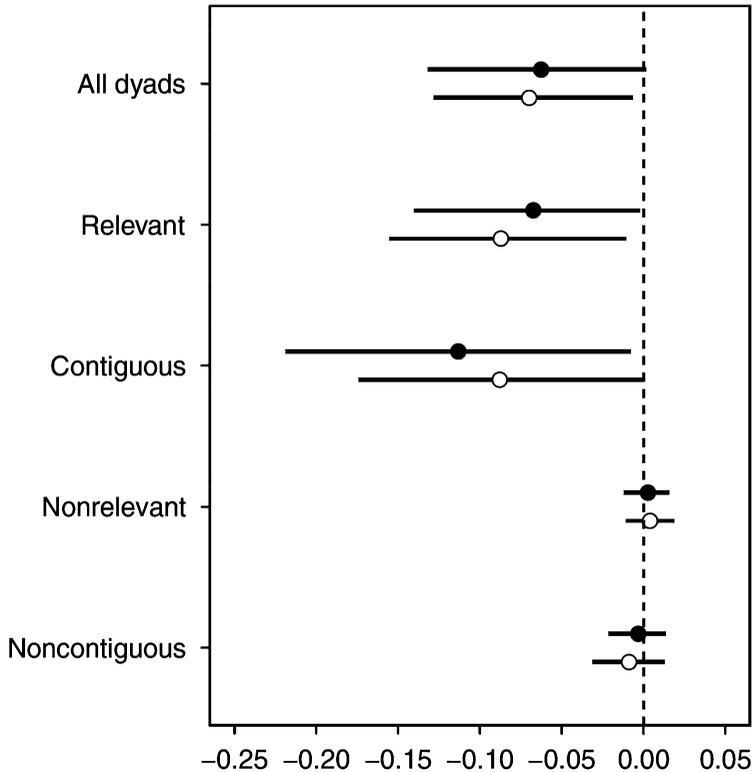


Figure 2. Predicted probability of reciprocation for different subsets of data. This figure illustrates the differences in the predicted probability of dispute reciprocation when increasing BI.TRADE DEPA from its mean by one standard deviation, holding other variables constant at their means or medians. Dots refer to the point estimates of the first difference, and horizontal lines associated with dots are 95 percent confidence intervals. Estimates are computed from models 1 and 5 in Table 2 using the CLARIFY program (King, Tomz, and Wittenberg, 2000). White dots indicate the effects when the initiator publicly wanted to change the status quo, while black dots refers to those without imposing any restriction on militarized interstate dispute initiation.

Figure 2 illustrates how the previous estimates vary according to the choice of sample. The black dots refer to the point estimates of the change in probability due to a one standard deviation change in the economic variables, holding other continuous (discrete) variables constant at their mean (medians). The lines around the dots show 95 percent confidence interval.²⁴ The negative effects of Bi.Trade Dep.A on the likelihood of reciprocation are found in samples comprising major power or contiguous dyads. Consistent with previous research (e.g., Reed and Chiba 2010), they are the most pronounced among contiguous dyads. This finding seems to indicate that the informative effect of economic interdependence and globalization is limited to interactive dyads in which states pay closer attention to each other. Restricting analysis only to initiators that publicly made the revisionist claim does not significantly alter the results. The estimation results are presented in white dots and their corresponding lines in Figure 2.

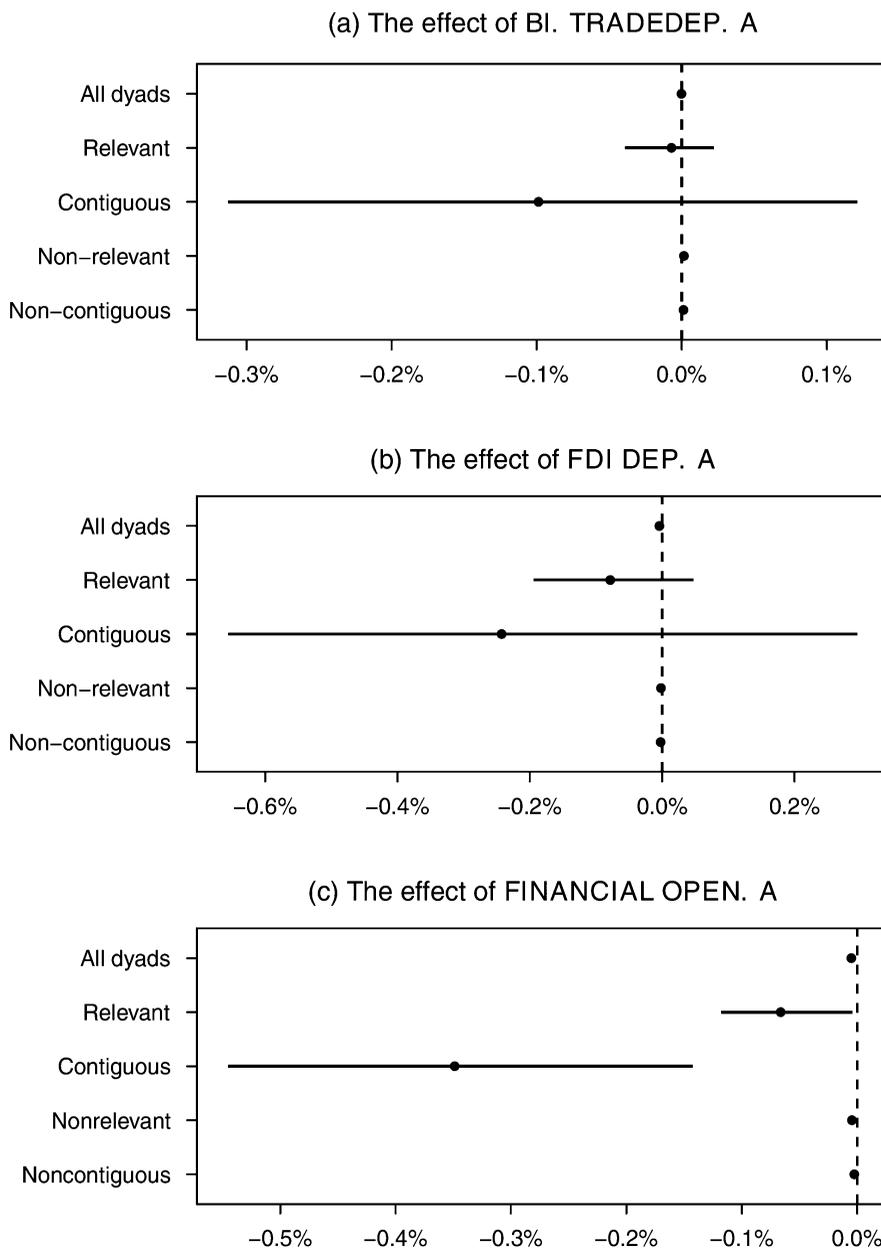


Figure 3. Predicted probability of initiation for different subsets of data. This figure illustrates the differences in the predicted probability of dispute initiation when changing economic variables from its mean by one standard deviation, holding other variables constant at their means or medians. Dots refer to the point estimates of the first difference and horizontal lines associated with dots are 90 percent confidence intervals. Estimates are computed from models 3 and 4 in Table A12 of the Supplementary Appendix.

I also repeat the same exercise for conflict initiation. Figure 3 displays the point estimates of first differences and their confidence intervals across different samples. A clear pattern stands out among three graphs. The deterrent effect of the liberal economic variables is much greater for contiguous dyads than for noncontiguous ones. As mentioned above, the effect of BI.TRADE DEP.A is not significant across different samples.²⁵

Last, I check the robustness of the results against the impact of outliers. For instance, some countries, such as the United States, China, and the Soviet Union, engage in militarized disputes much more frequently than others do (Weeks 2008). To ensure that empirical results are not driven by any particular country, I perform a jackknife analysis. Specifically, I reestimate model 4 in Table 2 by excluding one initiator in each run, resulting in estimating 139 regressions. Point estimates on BI.TRADE DEP.A always remain negative and similar (-0.36 to -0.60). Approximately, 95 percent of the estimated coefficients are found within approximately a 10 percent range (-0.41 to -0.52) of the coefficient estimate (-0.47) computed based on the full set of dyads in model 1 of Table 2. This finding indicates that the main result consistent with the signaling argument is not driven by individual states.

Conclusion

An increasing number of studies have found that greater economic interdependence or globalization, particularly bilateral trade, is associated with a decreased probability of MID. The opportunity cost argument suggests that interstate commerce discourages states from fighting by increasing the cost of fighting. The signaling argument emphasizes that economic interdependence and integration allow states to more credibly reveal their intentions and resolve, thereby reducing uncertainty and the likelihood of conflict. I contend that the failure to conduct a test to discriminate the two perspectives is one of the reasons for our inability to adjudicate alternative explanations. Most studies have examined the onset of militarized disputes. This is not helpful in differentiating the two arguments since both of them identically predict the pacifying effect of economic interdependence or integration.

I employ the information theory of war to seek the different empirical implications of the two arguments. Under the incomplete information assumption, both the opportunity costs of fighting and the costly signaling can reduce the equilibrium probability of war. However, I can derive different predictions regarding how states behave in dispute situations by drawing on the existing literature on democratic peace and audience costs. If the signaling argument is correct, a threat from a more economically integrated or interdependent challenger is more credible since that challenger can more effectively convey information. Therefore, the target is less likely to reciprocate. To the contrary, should the opportunity cost argument hold true, challengers more dependent on bilateral trade with the target or more exposed

to the global economy are more constrained from using force. The target is aware of this fact and thus, the challengers' threats are less credible. This leads the target to be more likely to resist the challenge. These different predictions about the crisis behavior of target states can shed light on how economic interdependence and integration influence states' behavior in a crisis, helping us adjudicate the competing explanations.

To measure economic linkages, this article utilizes not only bilateral trade but also total trade, government financial openness, and FDI inflows. The estimation of the selection models suggests that target states are less likely to reciprocate as challengers' bilateral trade increases. This is consistent with the signaling argument rather than with the opportunity cost argument. Next, both theories argue that economic interdependence and globalization reduce the probability of conflict initiation. Only government financial openness and FDI dependence, intended to capture the degree of economic integration, are significantly associated with a decreased probability of conflict initiation. However, there is no significant evidence for a deterrent effect of bilateral trade dependence on dispute initiation. If bilateral trade contributes to peace, it will be through the effect on the probability of reciprocation.

To extend this line of research, I will investigate how economic interdependence and integration influence the outcome of crisis bargaining in the future (e.g., Gelpi and Griesdorf 2001; Beardsley and Asal 2009). If the opportunity cost argument is accurate, initiators exposed to the global economy or dependent on bilateral trade are less likely to prevail or gain concessions in a crisis than are those isolated from the global economy. These challengers will face greater costs of fighting and, therefore, will prefer peaceful outcomes. The signaling argument suggests that more globalized initiators are more likely to prevail than other types of initiators. This is because their escalatory moves will hurt themselves and their threats will be considered more credible. Accordingly, challengers exposed to the global economy should be able to coerce opponents into backing down. Additional results supportive of the signaling argument will merit stronger confidence in the signaling argument.

Replication data and Supplementary Appendix can be downloaded from the *Journal of Conflict Resolution* archive at <http://jcr.sagepub.com/content/58/5/894/suppl/DC1>. This supplementary (.zip) file is also available from the html cover page for this article in the UNL DigitalCommons repository.

Acknowledgments – An earlier version of this article was presented at the 2011 Annual Meeting of the Southern Political Science Association in New Orleans. I would like to thank Jim Morrow, Dan Reiter, Mi Hwa Hong, Gary Uzonyi, Scott Templin, Jana Von Stein, and two anonymous reviewers for their valuable comments. All remaining errors are my own.

Notes

1. For instance, several studies focus on economic development to explain the capitalist peace. Mousseau (2003) emphasizes the role of market-oriented economic development in creating peaceful preferences. He argues the contingent effect of the democratic peace according to the level of economic development. In a similar spirit, Gartzke (2007) suggests that development discourages states from engaging in conquest, while it increases the ability to project power, leading to more fights over policy goals. Last, McDonald (2009) argues that the relative dominance of private ownership in a domestic economy and competitive market structures has promoted peace between states.
2. It is well known that war occurs under incomplete information due to the so-called risk-return trade-off (Fearon 1995; Powell 1999).
3. It is worthwhile to note that the opportunity cost argument is silent on the escalation of a militarized dispute. Even Polachek and Xiang (2010), who analyze the opportunity cost argument in the incomplete information game, address only the equilibrium probability of war. How opportunity costs affect states' crisis behavior is rarely discussed. I employ the incomplete information assumption and derive the implication about targets' reciprocation from the opportunity cost argument.
4. I interchangeably use the terms foreign direct investment (FDI) dependence and FDI openness throughout this article.
5. One exception is Polachek and Xiang (2010). They consider the strategic interaction to explain the role of opportunity costs in conflicts and show that opportunity cost can reduce the likelihood of military conflict in the incomplete information game.
6. Due to the space limitation, I discuss only the informational problem.
7. Uncertainty not only about resolve but also about power is an important determinant of war. Then uncertainty about the distribution of power, not the distribution of power itself, causes conflict (Reed 2003b).
8. It is worth noting that both sets of arguments rely on the opportunity costs for waging war. The willingness to pay the opportunity costs increases the credibility of a threat to use force. Therefore, a key assumption behind both arguments is that trade and foreign investment react adversely to military conflict. Morrow, Siverson, and Tabares (1998) and Morrow (1999) argue that if economic agents predict conflict and reduce their economic transaction in advance, the actual onset of a militarized dispute would not decrease trade. Economic actors would not have perfect information about political relations among states. To the degree traders' information is imperfect, conflict should often shrink trade (Hegre, Oneal, and Russett 2010).
9. One exception is Reed (2003a). With a Bayesian heteroskedastic probit model, he directly tests the informational argument that uncertainty increases as states trade less, leading to a higher probability of militarized interstate dispute (MID) onset. However, this method does not test the signaling argument against the opportunity cost argument.
10. For studies with different findings, see Barbieri (2002) and Keshk, Pollins, and Reuveny (2004). Contrary to Keshk, Pollins, and Reuveny (2004), however, Hegre, Oneal, and Russett (2010) find a pacifying effect of trade using a simultaneous estimator. Additionally, increasing evidence has shown the pacifying effect of trade.

11. Souva and Prins (2006) analyze the effect of trade and FDI dependence on fatal MID initiation at the monadic level.
12. I thank an anonymous reviewer for suggesting these succinct hypotheses.
13. To the contrary, Martin, Mayer, and Thoenig (2008) find little evidence for the negative effect on trade with neutral countries, although they find that military conflicts have a large and persistent effect on future bilateral trade between ten and twenty years.
14. I restrict the analysis only to originators to a dispute by dropping latecomers and joiners, and do not include dyad-years with an ongoing dispute unless there is a new initiation in a given year. Last, when multiple MIDs occur in a year, I use data from the highest intensity MIDs.
15. Data for all variables, except economic variables, are generated using the EUGene software, version 3:204 (Bennett and Stam 2000).
16. A denotes the challenger, while B refers to the target.
17. I average the directed trade flows, where directed trade equals imports plus exports since the sum of A's exports to and imports from B is not equal to the sum of B's exports to and imports from A (Gleditsch 2002, 715).
18. The previous full data set including all directed dyads includes only one observation per year, while the dispute data set includes multiple MIDs per year. This is the reason that the two data sets have different numbers of MIDs.
19. The only exception is TOT. TRADE DEP.A when controlled for other economic variables.
20. Supplementary Appendix includes the results of several additional estimations.
21. The estimates are calculated using CLARIFY (King, Tomz, and Wittenberg 2000).
22. In this case, the reference category is Others. It is dropped from estimation.
23. See the Supplementary Appendix for additional analysis of other economic covarates.
24. Accordingly, the first difference for all dyads estimated on INITIATION (the uppermost black dot and lines) is statistically significant at the 10 percent level. Likewise, the first difference for contiguous dyads estimated on REVISION-INITIATION is also statistically significant only at the 10 percent level.
25. The effect of FDI dependence on all dyads is significant at the 10 percent level. However, the effect was so small compared to that in contiguous dyad that it cannot be precisely depicted in the figure.

References

- Barbieri, Katherine. 2002. *The Liberal Illusion*. Ann Arbor: University of Michigan Press.
- Beardsley, Kyle, and Victor Asal. 2009. "Winning with the Bomb." *Journal of Conflict Resolution* 53 (2): 278–301.
- Beck, Nathaniel, Jonathan N. Katz, and Richard Tucker. 1998. "Taking Time Seriously: Time-Series-Cross-Section Analysis with a Binary Dependent Variable." *American Journal of Political Science* 42 (4): 1260–88.

- Bennett, D. Scott, and Allan C. Stam. 2000. "Eugene: A Conceptual Manual." *International Interactions* 26 (2): 179–204. Accessed July 16, 2008. <http://eugenesoftware.org>.
- Brandt, Patrick T., and Christina J. Schneider. 2007. "So the Reviewer Told You to Use a Selection Model? Selection Models and the Study of International Relations." Working Paper, University of Texas at Dallas, Richardson, TX.
- Bussmann, Margit. 2010. "Foreign Direct Investment and Militarized International Conflict." *Journal of Peace Research* 47 (2): 143–53.
- Chinn, Menzie D., and Hiro Ito. 2008. "A New Measure of Financial Openness." *Journal of Comparative Policy Analysis* 10 (3): 309–22.
- Dorussen, Han, and Hugh Ward. 2010. "Trade Networks and the Kantian Peace." *Journal of Peace Research* 47 (1): 29–42.
- Fearon, James D. 1994. "Domestic Political Audiences and the Escalation of International Disputes." *The American Political Science Review* 88 (3): 577–92.
- Fearon, James D. 1995. "Rationalist Explanations for War." *International Organization* 49 (3): 379–414.
- Freedman, David A., and Jasjeet S. Sekhon. 2010. "Endogeneity in Probit Response Models." *Political Analysis* 18 (2): 138–50.
- Gartzke, Erik. 2007. "The Capitalist Peace." *American Journal of Political Science* 51 (1): 166–91.
- Gartzke, Erik, and Joseph J. Hewitt. 2010. "International Crises and the Capitalist Peace." *International Interactions* 36 (2): 115–45.
- Gartzke, Erik, and Quan Li. 2003. "War, Peace, and the Invisible Hand: Positive Political Externalities of Economic Globalization." *International Studies Quarterly* 47 (4): 561–86.
- Gartzke, Erik, Quan Li, and Charles Boehmer. 2001. "Investing in the Peace: Economic Interdependence and International Conflict." *International organization* 55 (2): 391–438.
- Gasiorowski, Mark J. 1986. "Economic Interdependence and International Conflict: Some Cross-National Evidence." *International Studies Quarterly* 30 (1): 23–38.
- Gelpi, Christopher F., and Joseph M. Grieco. 2008. "Democracy, Interdependence, and the Sources of the Liberal Peace." *Journal of Peace Research* 45 (1): 17–36.
- Gelpi, Christopher F., and Michael Griesdorf. 2001. "Winners or Losers? Democracies in International Crisis, 1918–94." *The American Political Science Review* 95 (3): 633–47.
- Ghosn, Faten, Glenn Palmer, and Stuart Bremer. 2004. "The MID3 Data Set, 1993–2001: Procedures, Coding Rules, and Description." *Conflict Management and Peace Science* 21 (2): 133–54.
- Gibler, Doug. 2004. "Measuring Alliances: The Correlates of War Formal Interstate Alliance Dataset, 1816–2000." *Journal of Peace Research* 42 (2): 211–22.
- Gleditsch, Kristian S. 2002. "Expanded Trade and GDP Data." *The Journal of Conflict Resolution* 46 (5): 712–24.

- Glick, Reuven, and Alan M. Taylor. 2010. "Collateral Damage: Trade Disruption and the Economic Impact of War." *The Review of Economics and Statistics* 92 (1): 102–27.
- Hegre, Håvard. 2004. "Size Asymmetry, Trade, and Militarized Conflict." *The Journal of Conflict Resolution* 48 (3): 403–29.
- Hegre, Håvard, John R. Oneal, and Bruce M. Russett. 2010. "Trade Does Promote Peace: New Simultaneous Estimates of the Reciprocal Effects of Trade and Conflict." *Journal of Peace Research* 47 (6): 763–74.
- Horowitz, Michael. 2009. "The Spread of Nuclear Weapons and International Conflict: Does Experience Matter?" *The Journal of Conflict Resolution* 53 (2): 234–57.
- Jagers, Keith, and Ted R. Gurr. 1995. "Transitions to Democracy: Tracking Democracy's 'Third Wave' with the Polity III Data." *Journal of Peace Research* 32 (4): 469–82.
- Jensen, Nathan M. 2003. "Democratic Governance and Multinational Corporations: Political Regimes and Inflows of Foreign Direct Investment." *International Organization* 57 (3): 587–616.
- Jones, Daniel, Stuart Bremer, and J. David Singer. 1996. "Militarized Interstate Disputes, 1816-1992: Rationale, Coding Rules, and Empirical Patterns." *Conflict Management and Peace Science* 15 (2): 163–217.
- Keshk, Omar M. G., Brian M. Pollins, and Rafael Reuveny. 2004. "Trade Still Follows the Flag: The Primacy of Politics in a Simultaneous Model of Interdependence and Armed Conflict." *The Journal of Politics* 66 (4): 1155–79.
- King, Gary, Robert Keohane, and Sidney Verba. 1994. *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton, NJ: Princeton University Press.
- King, Gary, Michael Tomz, and Jason Wittenberg. 2000. "Making the Most of Statistical Analyses: Improving Interpretation and Presentation." *American Journal of Political Science* 44 (2): 347–61.
- Lemke, Douglas, and William Reed. 2001. "War and Rivalry Among Great Powers." *American Journal of Political Science* 45 (2): 457–69.
- Mansfield, Edward D., and Brian Pollins. 2001. "The Study of Interdependence and Conflict—Recent Advances, Open Questions, and Directions for Future Research." *The Journal of Conflict Resolution* 45 (6): 834–59.
- Maoz, Zeev. 2009. "The Effects of Strategic and Economic Interdependence on International Conflict Across Levels of Analysis." *American Journal of Political Science* 53 (1): 223–40.
- Maoz, Zeev, and Bruce Russett. 1993. "Normative and Structural Causes of the Democratic Peace, 1946-1986." *American Political Science Review* 87 (3): 624–38.
- Martin, Philippe, Thierry Mayer, and Mathias Thoenig. 2008. "Make Trade not War?" *The Review of Economic Studies* 75 (3): 865–900.
- McDonald, Patrick J. 2009. *The Invisible Hand of Peace: Capitalism, The War Machine, and International Relations Theory*. New York: Cambridge University Press.
- Morrow, James D. 1999. "How Could Trade Affect Conflict?" *Journal of Peace Research* 36 (4): 481–89.

- Morrow, James D., Randolph M. Siverson, and Tressa E. Tabares. 1998. "The Political Determinants of International Trade: The Major Powers, 1907-90." *The American Political Science Review* 92 (3): 649-61.
- Mousseau, Michael. 2003. "The Nexus of Market Society, Liberal Preferences, and Democratic Peace: Interdisciplinary Theory and Evidence." *International Studies Quarterly* 47 (4): 483-510.
- Oneal, John R., and Bruce M. Russett. 1997. "The Classical Liberals were Right: Democracy, Interdependence, and Conflict 1950-1985." *International Studies Quarterly* 41 (2): 267-94.
- Oneal, John R., and Bruce M. Russett. 1999. "Assessing the Liberal Peace with Alternative Specifications: Trade still Reduces Conflict." *Journal of Peace Research* 36 (4): 423-42.
- Polachek, Solomon, Carlos Seiglie, and Jun Xiang. 2007. "The Impact of Foreign Direct Investment on International Conflict." *Defense and Peace Economics* 18 (5): 415-29.
- Polachek, Solomon, and Jun Xiang. 2010. "How Opportunity Costs Decrease the Probability of War in an Incomplete Information Game." *International Organization* 64 (1): 133-44.
- Polachek, Solomon W. 1980. "Conflict and Trade." *The Journal of Conflict Resolution* 24 (1): 55-78.
- Powell, Robert. 1999. *In the Shadow of Power: States and Strategies in International Politics*. Princeton, NJ: Princeton University Press.
- Prins, Brandon C. 2003. "Institutional Instability and the Credibility of Audience Costs: Political Participation and Interstate Crisis Bargaining, 1816-1992." *Journal of Peace Research* 40 (1): 67-84.
- Reed, William. 2000. "A Unified Statistical Model of Conflict Onset and Escalation." *American Journal of Political Science* 44 (1): 84-93.
- Reed, William. 2003a. "Information and Economic Interdependence." *The Journal of Conflict Resolution* 47 (1): 54-71.
- Reed, William. 2003b. "Information, Power, and War." *The American Political Science Review* 97 (4): 633-41.
- Reed, William, and Daina Chiba. 2010. "Decomposing the Relationship between Contiguity and Militarized Conflict." *American Journal of Political Science* 54 (1): 61-73.
- Schelling, Thomas C. 1981. *The Strategy of Conflict*. Cambridge, MA: Harvard University Press.
- Schneider, Gerald, and Vera E. Troeger. 2006. "War and the World Economy: Stock Market Reactions to International Conflicts." *The Journal of Conflict Resolution* 50 (5): 623-45.
- Schultz, Kenneth A. 1999. "Do Democratic Institutions Constrain or Inform? Contrasting Two Institutional Perspectives on Democracy and War." *International Organization* 53 (2): 233-66.

- Signorino, Curtis S. 1999. "Strategic Interaction and the Statistical Analysis of International Conflict." *The American Political Science Review* 93 (2): 279–97.
- Singer, David J., Stuart Bremer, and John Stuckey. 1972. "Capability Distribution, Uncertainty, and Major Power War, 1820-1965." In *Peace, War, and Numbers*, edited by Bruce Russett, 19–48. Beverly Hills, CA: Sage.
- Souva, Mark, and Brandon Prins . 2006. "The Liberal Peace Revisited: The Role of Democracy, Dependence, and Development in Militarized Interstate Dispute Initiation, 1950- 1999." *International Interactions* 32 (2): 183–200.
- UNCTAD (United Nations Conference on Trade and Development). 2009. *UNCTAD Handbook of Statistics 2009*. New York, Geneva: United Nations. Accessed October 03, 2011. <http://unctadstat.unctad.org>.
- Vasquez, John A. 1995. "Why do Neighbors Fight? Proximity, Interaction, or Territoriality." *Journal of Peace Research* 32 (3): 277–93.
- Way, Christopher. Forthcoming. *Manchester Revisited: Economic Interdependence and Conflict*. Ithaca, NY: Cornell University Press.
- Weeks, Jessica L. 2008. "Autocratic Audience Costs: Regime Type and Signaling Resolve." *International Organization* 62 (1): 35–64.