Economic Exit, Interdependence, and Conflict

Mark J.C. Crescenzi
University of North Carolina

This article examines the question of whether economic interdependence constrains or motivates interstate conflict. The theoretical model predicts when and how interdependence influences conflict, using exit costs to separate economic interdependence from less binding economic interaction. Analysis of the model suggests that when exit costs exceed an endurance threshold for at least one state, the threat of exit becomes a viable but limited bargaining tool. Exceeding this threshold increases low-level conflict as states use economic and diplomatic tools to resolve demands; but it decreases high-level conflict because states take advantage of more efficient means of dispute resolution. If the stakes are too high, however, exit costs fail to check conflict and the economic relationship becomes an ineffective bargaining arena. Empirical analysis provides support for the hypotheses derived from the model.

Does economic interdependence lead to peace or conflict between nations? When two countries enter an economic relationship characterized by interdependence, are they constrained in their military behavior or are they adding one more source of discord? Such questions have been of interest to scholars for centuries, motivated by the hope that economic interdependence will help to extinguish interstate conflict and the fear that it will result in one more reason for states to fight one another. The topic is equally important to the policy world: as globalization continues to pervade the international arena, policy makers grapple with the political ramifications of their cross-national economic ties. Scholarly attention has repeatedly focused on this debate, and in response to Levy's (1989) call for research the last decade has produced a "burgeoning empirical literature" on the subject (Mansfield and Pollins 2001: 834).

Despite this recent attention, however, answers to these questions remain elusive. In current research, economic exchange is hypothesized to affect political conflict in one of three ways. One perspective argues that economic exchange leads to a more peaceful world (Polachek 1997, Gartzke, Li,

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and Boehmer 2001; Russett and Oneal 2001). A contradictory body of research asserts that economic exchange generates more conflictual behavior between states (Barbieri 1996). A third argument posits that economic exchange is not sufficiently important to have any impact upon states' decisions to engage in or avoid political conflict (Buzan 1984; Waltz 1970). This triangulation has yet to produce a convergence of answers. Recent reviews of the literature identify a prolonged and considerable debate regarding the existence and direction of a causal arrow between trade and conflict (Barbieri and Schneider 1999; McMillan 1997). While some of this disagreement can be attributed to different approaches to a complex research puzzle, the variance in findings remains problematic.

Two general problems hinder our ability to make progress in this debate. Those who study the relationship between economic interdependence and political conflict have largely ignored the literature on the concept of interdependence (Baldwin 1980; Hirschman 1945; Keohane and Nye 1989; Wagner 1988). To the extent that conflict scholars have attended to these studies of interdependence, the focus has been on issues of measurement and symmetry in the economic relationship (Barbieri 1995). The result is that conflict scholars resort too quickly to measures of economic activity. Such measures overlook key dimensions of economic relationships that distinguish interdependence from interaction. At the same time, earlier work on the concept of interdependence has never seriously considered the issue of conflict.

More importantly, theoretical progress has not matched advances in data collection and research design. Specifically, we lack a theoretical understanding of when, why, and how economic interdependence influences the decision by nations to engage in political conflict.[1] Too often scholars simply base their hypotheses on one of the three general arguments discussed above. Morrow (1999) suggests that this lack of explicit theoretical foundation makes even the most sophisticated empirical evidence vulnerable to claims of spurious correlation. In their review of recent contributions to the literature, Mansfield and Pollins conclude that our attention "needs to be focused on specifying and testing the observable implications of particular causal mechanisms advanced in theories of interdependence and conflict " (2001: 841).

This article addresses these two problems. I begin by conceptualizing economic interdependence based on earlier work by Baldwin (1980), Hirschman (1970, 1945), and Keohane and Nye (1989) as well as the literature on transaction costs (Williamson 1975, 1985, 1996). I then develop a theoretical model to establish a causal link between this interdependence and conflict. The model informs us as to when and why economic interdependence may have a positive or negative influence (or neither) on the onset of conflict. This represents an important shift away from the search for linear relationships to a better understanding of the causal linkage between economics and conflict. An empirical analysis follows, providing support for the hypotheses derived from the formal analysis of the theory. This support indicates that economic interdependence does indeed decrease the likelihood of high-level conflict, but it also increases the likelihood of low-level conflict. It also confirms the need to go beyond basic trade indicators in empirical tests of the interdependence–conflict puzzle.

Economic Interdependence

It is not surprising that the concept of economic interdependence is not fully developed in studies concerning its relationship with conflict, given that work in this area has involved sophisticated large-n research designs requiring easily quantifiable measures of variables that remain consistent over long periods of time. While measures of conflict have been refined over the years (Singer, Bremer, and Stuckey 1972; Jones, Bremer, and Singer 1996), measures of economic ties have been constrained by realities of data availability over long time periods. For some time, however, international political economy scholars have maintained that economic interdependence is not merely a function of current economic activity (Baldwin 1980, 1985; Hirschman 1945; Keohane and Nye 1989). Rather, it is a function of economic activity within the context of available alternatives. If we assume that states are involved in economic relationships that maximize welfare, then the costs involved in exiting these relationships are essentially what is lost in switching from this 'best' option to the next best alternative.[2] I define the opportunity costs associated with these alternatives as *exit costs*.[3] Exit costs are incurred if economic ties with a partner are severed. The degree to which the ties are severed and the ease in which

the interested parties can find alternative sources for economic exchange both determine the intensity of these costs.

This is not to argue that the level of economic interaction is not important. Certainly, levels of exchange help us define the magnitude of economic ties. Beyond these levels, however, we must also know the costs states face if these ties are broken. Two economic characteristics that define transaction costs in firms, asset specificity and market structure, serve to conceptualize exit costs at the state level.

The literature on transaction cost economics sheds considerable light on the factors that drive up the costs of exit. Transaction costs can occur on two levels. Accepted costs are always a part of the normal interaction between two states. For example, trade routes require the capacity to transport goods and services across geographical and political boundaries. The economic infrastructure between states is often complex and expensive, and states willingly bear these costs in order to attain the benefits that motivate the economic ties. These costs are made by a state in order to enjoy the benefits of trade. There exists, however, the potential for additional costs as a result of changes in the relationship or the economic infrastructure between those states. These are the costs associated with adaptation.

A key element to these adaptation costs lies in the specificity of the assets involved in the existing economic transactions. Williamson defines *asset specificity* as, "the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value" (1996: 59). Hirschman also recognizes the importance of asset specificity in determining exit costs. Using the term "mobility of resources" he details how the fungibility of assets can divert exit costs (1945: 28). Rigid, immobile resources make states vulnerable to trading partners. Resources that are more fungible enable states to adapt to potential changes that other states may threaten to impose.

Market structure also determines the extent to which economic exit generates the need to alter these factors of production. A state that incurs economic exit may have other potential partners with which to establish new ties. As these alternatives become scarce, current relationships become more costly to break. Gowa identifies this ability to find substitutes in the market as the key to opportunity

costs (1994: 118). Put simply, a market full of easily accessible substitutes will ameliorate much of the potential costs of economic exit from trading partners.

Together, market power interacts with asset specificity to delineate the context within which economic interaction takes place. Embedding dyadic economic activity within this systemic and domestic context provides crucial information about the economic relationship. If the concept of economic interdependence represents something more than simple or proportional trade levels, it must be grounded in this notion of exit costs. These costs are a function of market structure, asset specificity, and the level of economic activity. High levels of interaction exacerbate interdependence, but only when market conditions constrain adaptation. Thus, the highest forms of interdependence exist when exit options are scarce, adaptation is costly, and the economic relationship is highly salient.

The Exit Model

With this concept of interdependence in mind, I turn now to the task of demonstrating a causal link between economic interdependence and political conflict. I develop a strategic model of Hirschman's (1945) classic scenario where one state seeks to use its economic relationship with another as bargaining leverage over an independent issue. This model is simple by design in order to focus on the fundamental theoretical relationship, but it allows for a multitude of complications.[4]

In this model there are two states: a *challenger* and a *target*. The challenger wants something from the target, and it must decide whether to issue a demand or keep quiet and forgo any effort to obtain what it desires. For example, the challenger may wish to reclaim some territory, as was the case when Great Britain demanded that Argentina relinquish its claim on the South Georgia and South Sandwich Islands in 1982. This demand can also be strictly political, as in a call for change in another country's human rights policy. It can even be an economic demand, (i.e., Iceland's demand to extend its exclusive fishing rights to fifty miles from its coast at the expense of British and West German access). The target, on the other hand, desires to remain at the status quo. The challenger's dilemma lies in how to extract this demand from the target with minimum cost. One option the challenger has is to use its economic ties

with the target to extract its demands from an otherwise unwilling partner. To do this the challenger attaches a threat of economic exit to its demand in an attempt to compel the target to concede.[5]

This game captures the reactive demand behavior of international economic sanctions, but it also captures proactive behavior by the challenger when it seeks to revise the status quo. It also reflects Keohane and Nye's (1989) notion of states using economic tools in bargaining without sacrificing the possibility of the use of military tools when necessary. Most importantly, the game allows us to ask if, how, and when economic interdependence can prove effective in bargaining and replace military force as the tool of choice when resolving disputes.

FIGURE 1 ABOUT HERE

The Game

The challenger makes the first move: it faces the choice of whether to make a political demand upon the target or remain at the status quo. The political demand in this game is accompanied by a threat of economic exit by the challenger in the event that the target does not comply with its request. The target makes the second move of this game, and it must choose between rejecting the challenger's demand and complying with it. If it complies, the game ends with the challenger gaining the utility of its demand, V_{CH}, and the target losing the utility V_T.

If the target rejects the demand, the game continues with the challenger's second move, in which it must choose whether to make good on its threat of economic exit or back down and withdraw its demand. If the challenger does not exit the economic relationship, the game ends. This brings with it audience costs, R_{CH}, for the challenger, and audience rewards, R_T, for the target (Fearon 1994a). The audience costs can be domestic; being caught bluffing reveals incompetence in the leader's foreign policy skills (Smith 1996). These costs can also be international, as other states may now expect the challenger is bluffing in other areas of its interstate activities. On the other hand, the target enjoys the rewards of successfully standing up to the challenger's demands. This enhances the target's stature both at home and abroad.

If the challenger acts on its threat and exits the relationship, then the target must again choose between rejecting and accepting the challenger's demand. If the target accepts, the game ends with the challenger gaining the value of its demand, V_{CH}, minus the adaptive costs that it incurs in the process of economic exit, e_{CH}. The target not only loses its value of the demand, V_T, but also the costs it endures when the challenger exits the economic relationship, e_T. If the target rejects the demand, then the use of the economic threat to gain political demands has failed, and the states enter into the arena of military conflict.

I represent the outcome of this conflict as a lottery that determines the victor. This simplification helps to maintain the focus of the analysis on how these two states make the decision to eschew the relatively safe, low-level conflict bargaining tools available in the economic arena for the riskier, costlier bargaining tools associated with militarized conflict.[6] The challenger wins the conflict with probability p and loses with probability $1-p$. Win or lose, both states pay the adaptation costs of economic exit, as well as the costs associated with the conflict, c_{CH} and c_T. Winning generates gains V_{CH} for the challenger. These expected utilities are represented along with the basic game structure in Figure 1.

Analysis

Three equilibria (see appendix) emerge from this analysis: a *constraint equilibrium*, where the costs of exit deter the challenger from issuing a demand; a *bargaining power equilibrium*, where the costs of exit for the target allow the challenger to induce the target to agree to its demands; and a *crisis equilibrium*, where the use of economic tools of persuasion fails and militarized conflict ensues. Below I discuss the logic that underpins the derivation of these equilibria, and then examine their implications.

The focus of the analysis on the cost parameters associated with economic exit (e_{CH} and e_T) produces an exit cost *threshold* for each player (e_{CH}^* and e_T^*).[7] An exit cost threshold is the level of exit costs beyond which a player cannot endure exit. Thus, a challenger whose actual exit costs exceed its exit cost threshold will not move to initiate economic exit in the game. Similarly, a target state with exit costs that exceed its threshold will accept a demand before the challenger exits.

Three factors govern the thresholds: the value of the issue at stake in the demand being made by the challenger, the costs of escalating to militarized conflict in the event of such an outcome, and the probability that the challenger or target will be successful in the event of conflict. The following equations define the exit cost thresholds for the challenger (e^*_{CH}) and the target (e^*_T):

let $e^*_{CH} = pV_{CH} - c_{CH}$ (1)

and $e^*_T = (1-p)V_T - c_T$ (2)

such that:

- When the challenger's exit costs are greater than its exit cost threshold, but the target's exit costs are less than its threshold ($e_{CH} > e^*_{CH}$ and $e_T < e^*_T$), then the challenger is deterred from making a demand. This is the *constraint equilibrium*, because the challenger here is constrained by the economic relationship.

- When both players' exit costs are less than their exit cost thresholds ($e_{CH} < e^*_{CH}$ and $e_T < e^*_T$), then the challenger makes a demand, the target rejects it, the challenger exits, and the target again rejects the demand. Conflict is not constrained by the economic relationship, and jumps to higher levels (such as threats of force, militarized disputes, war, etc…). This is the *crisis equilibrium*.

- When the target's exit costs exceed its exit cost threshold, ($e_T > e^*_T$), the challenger makes a demand and the target complies. This is the *bargaining power equilibrium*, as the target's level of interdependence affords the challenger bargaining power. Note that this equilibrium holds even when the challenger's exit costs also exceed its own threshold. Because the target state is unwilling to bear the costs of exit, the challenger can extract demands without the fear of enduring its own exit costs.

The three equilibria show that all three interdependence-conflict relationships suggested in the literature are possible. The constraint equilibrium is compatible with the argument that economic interdependence reduces conflict because the challenger's exit costs prevent the initiation of a demand that can lead to conflict. The bargaining power equilibrium is partially compatible with the argument that economic interdependence generates conflict. In this equilibrium, the challenger gets what it wants through the use of threats; far from a utopian or classic liberal world. These threats and demands can be thought of as low-level conflict, as they are manifestations of a dispute between the two states, but do not lead to militarized conflict. This is not to say, however, that the economic interdependence causes conflict. The only circumstance in which the economic interaction between two states is the cause of interstate conflict occurs when there is an economic issue motivating the challenger's demand. This special case aside, the bargaining power equilibrium demonstrates that economic interdependence can sometimes *enable* low-level conflict.

Finally, the crisis equilibrium demonstrates that economic interdependence is not always sufficient to persuade either side from backing down. In this equilibrium, the economic behavior has no impact on the incidence of conflict (unless an economic issue motivates the initial demand made by the challenger). This equilibrium occurs when the exit cost thresholds for both states exceed the actual exit costs faced in the game. Both states are able to absorb the costs of exit and stand firm, and the economic arena becomes ineffective in resolving the dispute. Several factors can lead to this result. The value states place on the issue at stake may be high enough to push the exit cost thresholds above the actual exit costs. Similarly, if the costs of higher levels of conflict are minimal, then states are less likely to balk at exchanging economic gloves for military ones. These three equilibria demonstrate that the affect of economic interdependence on political conflict must be assessed within the context of the political and military dimensions of the situation.

Empirical Analysis

Hypotheses: Deriving Implications from the Exit Model

The analysis of the exit model focuses on the relationship between exit costs and exit cost thresholds for both the target and the challenger. Four possible combinations of the exit cost and exit cost threshold parameters produce three equilibrium paths, each with a unique predicted outcome of the game. Table 1 summarizes these variable combinations and the associated outcomes. Two basic hypotheses emerge regarding the causal impact of economic interdependence upon political conflict. The first hypothesis involves the ability of the challenger to use the exit costs of the target (as predicted in the bargaining power equilibrium). The second hypothesis sets forth the proposition that economic interdependence creates a more efficient arena within which issues and disputes are addressed, thereby reducing the occurrence of higher degrees of conflict.

TABLE 1 ABOUT HERE

Exit Costs and Low-level Conflict

The relationships between these variables and the equilibrium are translated here into testable hypotheses. The first task is to differentiate between the economic conditions that lead to status quo versus low-conflict behavior. The constraint equilibrium suggests that the status quo obtains when the challenger faces exit costs that exceed its threshold *and* the target faces exit costs that are less than its threshold ($e_{CH} > e^*_{CH}$ and $e_T < e^*_T$). The bargaining power equilibrium, on the other hand, states that low-level conflict occurs when the target faces exit costs that exceed its threshold ($e_T > e^*_T$). Status quo and low-level conflict outcomes differ in the target's exit costs vis-à-vis its exit cost threshold. This threshold is a function of the value the target places on the issue at stake, as well as the costs of high-level conflict and the likelihood of winning such a conflict. Quantifying this value of the demand for either state on a large-n basis is not possible, which in turn makes the exit cost thresholds unobservable.

A solution to this problem is to make some abstract assumptions about the likelihood of where an exit cost threshold lies on the range of possible values (Crescenzi 1999). The exit cost threshold splits the range of possible exit costs into two spaces. Exit costs that are less than the threshold are associated with either the status quo or high-level conflict. Exit costs that exceed the threshold are associated with the occurrence of low-level conflict initiated by the challenger. Assuming that the exit cost threshold is unknown but fixed (with all values equally likely), it follows that higher levels of exit costs are more likely to be in this second set and thus associated with low-level conflict. These assumptions allow me to propose the first hypothesis:

H1: *Higher exit costs for the target increase the likelihood of low-level conflict. Higher challenger exit costs will not increase the likelihood of low-level conflict.*

Exit Costs and High-level Conflict

The exit costs to cost-threshold relationships for the challenger and target in the crisis equilibrium stipulate the conditions for which economic interdependence is ineffective in reducing the occurrence of high-levels of conflict. Table 1 shows that *both* states have to face exit costs that are lower than their respective thresholds ($e_{CH} < e^*_{CH}$ and $e_T < e^*_T$). This joint condition leads to the next hypothesis:

H2: *Higher exit costs for the target or challenger decrease the likelihood of high-level conflict.*

Since high exit costs for either state can decrease the incidence of high-level conflict, directionality of events within the dyad is not important for these hypotheses.

Research Design

Political Conflict

The predictions emerging from the exit model suggest political behavior between states should be organized into three categories: status quo behavior, low-level conflict, and high-level conflict. The conflict variable should also reflect directionality within the dyad. As the exit model is a story about the

presence or absence of conflict and does not touch on cooperation between states, I incorporate cooperation and neutral interaction into the category of status quo behavior. Low-level conflict is defined here as behavior involving non-military threats, demands, and actions against another state aimed at changing the status quo (including the threat or imposition of economic sanctions, halting negotiations, and breaking agreements). The essential characteristic of this type of event is that it is employed by a state to change some dimension of its political or economic relationship with another state, but with no indication that the revisionist state resorts to military tools to achieve its goals. Consequently, high-level conflict involves the use of military tools and threats against another state. This includes threats where force is specified, meaning troop movement and displays of possible force, as well as the use of force. The general rule applied is that the state initiating this behavior is willingly using the military arena to address an issue or dispute it has with a target state.

The standard data set employed to represent political conflict variables in quantitative studies of international conflict is the Militarized Interstate Dispute data (Jones, Bremer, and Singer 1996). However, I require information regarding low-level as well as high-level conflict. As its name suggests, the MID data are concerned only with the threat or use of militarized force, and thus captures only the presence or absence of high-level conflict. I therefore use the World Events Interaction Survey (WEIS) data for this variable (Goldstein 1992). The data were originally coded categorically, with 61 different kinds of events representing the scope of information captured. Each event is coded directionally, with an actor initiating the event against a target. I assume here that the terms *actor* and *challenger* are synonymous. I have recoded these events into the three broader categories using the above criteria.[8] The result captures the quality of these events that are key to this study (the presence and quality of conflict) without restricting the range of possible issues that motivate interstate disagreements.

Trade, Inelasticity, and Exit Costs

The challenge here is to develop a valid measure of exit costs while maintaining the systematic and general approach of a large-n analysis. I interact bilateral price elasticity data (Marquez 1990) with

trade activity data (Barbieri 1995; Oneal and Russett 1997) in a joint representation of market structure, asset specificity, and intensity of potential economic exit costs. Measuring these factors of exit costs presents a difficult hurdle, with the majority of empirical work appearing in the form of single country case studies (see Alston, Eggertsson, and North 1996; Williamson 1996). I operationalize exit costs using two pieces of information in order to establish a broadly applicable measurement of a state's ability to adapt to economic change. The first involves measuring market structure and asset specificity using the inelasticity of import prices. Price elasticity measures the sensitivity of a nation to a change in the price of imports using the following simplified logic (Landsburg 1995):

$$\textit{Price Elasticity} = \frac{\text{Percentage Change in Quanitity of Imports}}{\text{Percentage Change in Price of Imports}}. \quad (3)$$

Price elasticity is a measure of a state's ability to adjust its demand for imports given a change in import prices. A state that is able to curb its demand for imports when prices rise and expand its demand for these imports when prices fall has an elastic demand for the imports. At the other end of the spectrum, a state that cannot alter the amount of imports it needs given an increase or decrease in prices has an inelastic demand.

Price elasticities are often discussed at the goods level, and it is natural to expect that import price elasticities will vary across goods imported from any given state. This is problematic for this study because I wish to explain the dyadic conflict behavior of states. Unpacking the exit costs variable without a strong theoretical explanation for how these good-specific elasticities influence foreign policy decision-making is dangerous. For example, the presence of inelastic labor-intensive goods may be irrelevant if state leadership is supported by a capital-intensive winning coalition. Marquez (1990) has estimated bilateral import price elasticities that are aggregated to the dyad level, providing information regarding one state’s elasticity for the aggregation of all imports from another state. The resulting elasticity estimates allow the extraction of information on one state's market relationship with another, as state-level elasticities reflect a state's ability to react to economic change initiated by another state. In addition to

being bilateral and aggregated at the state level, the elasticity scores are directional, such that Germany's elasticity score for imports from France is not necessarily the same as France's score for German imports.

Because demand elasticities reflect the slope of the demand curve, they are always negative or zero. A score of zero indicates perfect inelasticity, and larger negative scores reflect increased elasticity. For the purposes of this study I have adjusted these scores such that positive scores reflect *inelasticity* and a score of zero indicates the most elastic score in the data set.[9] I label this indicator $Inelasticity_{ij}$, such that $Inelasticity_{ij}$ is state I's price inelasticity of imports from state J.

The Marquez data, unfortunately, are limited in spatial and temporal scope. The countries included in his study are Canada, Germany, Japan, the United Kingdom, and the United States. He also includes aggregate group estimates for the rest of the OECD countries, as well as LDC and OPEC countries.[10] Data from 1973 to 1984 are used to compute the elasticity scores, but the scores themselves are cross-sectional and do not vary over time. Indeed, Marquez tests these estimates for temporal stability and finds that the aggregate price elasticity scores do not vary during the 1973-84 period.

While the Marquez elasticity data measures the adaptability of states to changes in import prices from other states, it is also important to assess the degree to which a state needs to implement these changes. That is, I require a measure of dyadic economic activity relative to each state's economy and trade portfolio in the global market. This information is important because the degree to which one state involves another in its economy provides additional information about how costly it would be for the first state to endure an exit from this economic relationship. Just as a trade relationship can represent a large portion of a state's economy but still not be costly if this trade is elastic, the same relationship can be inelastic but still not be costly if this trade represents only a small portion of its economy or total global trade. To capture this concept of the degree of trade relative to a state's total trade or economy, I include Barbieri's (1995) measure of dyadic imports and exports relative to a state's total trade: *TradeShare*. The *TradeShare* indicator is dyadic and directional, such that

$$TradeShare_{ij} = \frac{DyadicTrade_{ij}}{TotalTrade_{i}} \tag{4}$$

where $DyadicTrade_{ij}$ is the total imports and exports between states *I* and *J*.[11]

Trade data are obtained from Barbieri's International Trade data set (Barbieri 1999).[12] The data are averaged into one cross sectional value for each directed dyad in order to match the Marquez elasticity data.[13] Case selection is also limited to the spatial set determined by the elasticity data. Such limitations have inspired researchers to eschew elasticity data in favor of increased generality and spatio-temporal domains (Barbieri 1995), but I argue that the concept of economic interdependence cannot be validly operationalized using trade scores alone.

Using both the elasticity and the tradeshare data, I define exit costs for state I with respect to state J as:

$$Exit\ Costs_{ij} = TradeShare_{ij} * Inelasticity_{ij} \quad (5)$$

This variable represents economic interdependence in the dyadic relationship.

The use of import price elasticity and trade data provides a useful but imperfect operationalization of exit costs. It is useful because the inelasticity dimension captures most of the market structure information needed to identify interdependence. The inelasticity score measures the degree to which a state is unable to reduce demand or find alternate sources of imports from another state. In addition, the proportional trade dimension approximates the intensity of the trade relationship. The measure is also imperfect, for example, because it does not account for third party interdependence. Nevertheless, it is a significant improvement over existing measures. Situations of high levels of economic activity characterized by high elasticity for both states are not characterized as interdependent.

Aggregation Issues & Methodology

In order to match the format of the Marquez elasticity data, the WEIS event data are collapsed from its daily (at least hypothetically) coding to one observation for the entire temporal period of 1966 to 1992. I extract the highest level of conflict during this period.[14] The loss of information from this temporal aggregation ranges from minor to extensive. Some dyads such as Canada-Germany are represented in the WEIS data set in only 5 *days* during this 27-year period. Their spotty presence in the data suggests that less drastic aggregations such as yearly data would lead to the opposite problem of not

enough information. Other dyads such as the United States and Japan, however, contain over 700 observations over the 27-year period, and focusing only on the most conflictual level of conflict leads to a stark reduction in the available information. Even yearly aggregation in these high-profile dyads, however, can truncate over 50 observations into one. Nonetheless, this aggregation does have advantages. First, it places the forty directed dyads in the study on equal footing in the data set in that each is represented by one observation. This eliminates a previous bias towards the dyads containing high-profile states (esp. the United States). Second, the content validity of the measure is maintained because information can still be extracted regarding the occurrence of low and high-level conflict.

The most restrictive problem stemming from the constraints imposed by using the Marquez data is the lack of dyads that have encountered the most extreme form of political conflict: interstate war. This restriction limits the validity of this study such that I cannot make conclusions about the impact of economic interdependence on war. This limitation highlights the tradeoff between obtaining valid measures of economic interdependence and obtaining valid measures of political conflict (see Barbieri 1995). It is important to point out, however, that these data constraints bias the analysis in favor of *rejecting* hypothesis 2. Because the Marquez elasticity data are limited to advanced western democracies, the probability of high-level conflict is reduced (if not eliminated) by a host of factors (joint democracy, alliances, etc…). A secondary limitation is that virtually all of the standard control variables present in current empirical research in the study of conflict are inapplicable. The cross-sectional elasticity data also make pooled cross-sectional time series methods inappropriate. While the data constraints are a source of frustration, they do not aid in the empirical confirmation of my theoretical model. Quite simply, the Marquez data are the only *bilateral, directional* price elasticity data available at the country level of analysis, and the concept of economic interdependence as developed in this article cannot be operationalized by trade data alone. In this author's opinion, the benefits of employing the elasticity data to generate exit cost data combined with the ability to observe low-level as well as high-level conflict outweigh the costs outlined above.

Results

Low-level Conflict and Target's Exit Costs

The dichotomous nature of the dependent variables, Low-level conflict and High-level conflict, suggests the use of logistic regression techniques (King 1989; Liao 1994). The first model evaluates the claim that an increase in the target's exit costs leads to an increase in low-level conflict initiated by the challenger (H1). Support for this hypothesis would come in the form of a positive and statistically significant parameter estimate for the $Exit\ Costs_{tc}$ variable in equation (6) below. Because studies have shown that import price inelasticity and trade variables can have an independent effect on conflict (Barbieri 1996; Oneal and Russett 1997; Polachek, et al. 1999; Polachek and McDonald 1992; Polachek 1997), I include these independent variables throughout the analysis to ensure the proper estimation of the interactive Exit Costs variables.[15]:

$$Low\ Conflict_{ct} = \beta_0 + \beta_1 Trade_{tc} + \beta_2 Inelasticity_{tc} + \beta_3 Exit\ Costs_{tc} \quad (6)$$

Column 1 of Table 2 displays the estimation results of this first model. The parameter estimate for the $ExitCosts_{tc}$ variable is positive and statistically significant at the $p<0.05$ level, providing support for the prediction that an increase in the target's exit costs indeed increases the likelihood of low-level conflict. The next set of models examines the prediction of the exit model that the challenger's exit cost levels do not affect low-level conflict. The inclusion of independence variables for the challenger transforms equation (6) into the following:

$$\begin{aligned} Low\ Conflict_{ct} = {} & \beta_0 + \beta_1 Trade_{tc} + \beta_2 Inelasticity_{tc} + \beta_3 Exit\ Costs_{tc} \\ & + \beta_4 Trade_{ct} + \beta_5 Inelasticity_{ct} + \beta_6 Exit\ Costs_{ct} \end{aligned} \quad (7)$$

In this model, the expectation is that the added $ExitCost_{ct}$ variable will not be statistically significant. Column 2 of Table 2 displays the estimates of this model. The results are consistent with the hypothesis that the challenger's exit costs do not have an impact on the incidence of low-level conflict initiated by the challenger. The addition of the economic variables for the challenger does not reduce the impact of the target's exit costs ($ExitCost_{tc}$) on low-level conflict.

High-level Conflict and Target's Exit Costs

Equation (8) examines the claim that an increase in the target's exit costs leads to a decrease in the likelihood of high-level conflict (H2):

$$High\ Conflict_{ct} = \beta_0 + \beta_1 Trade_{tc} + \beta_2 Inelasticity_{tc} + \beta_3 Exit\ Costs_{tc} \quad (8)$$

The estimates for this model are in the third column of Table 2. The parameter estimate for the *ExitCosts* variable is negative and statistically significant at the $p<0.05$ level, providing support for the hypothesis. Model diagnostics indicate that the model significantly improves on our ability to predict high-level conflict.[16]

For high-level conflict the exit model predicts that higher exit costs for the challenger will have the same negative effect as the target's exit costs. Including the economic independent variables for the challenger changes equation (8) to the following equation:

$$\begin{aligned} High\ Conflict_{ct} = {} & \beta_0 + \beta_1 Trade_{tc} + \beta_2 Inelasticity_{tc} + \beta_3 Exit\ Costs_{tc} \\ & + \beta_4 Trade_{ct} + \beta_5 Inelasticity_{ct} + \beta_6 Exit\ Costs_{ct} \end{aligned} \quad (9)$$

For this model, I expect $ExitCosts_{tc}$ and $ExitCosts_{ct}$ to be negative. Estimates of this model are included in column 4 of Table 3. The parameter estimates for both variables are in the expected direction, but only $ExitCosts_{tc}$ is statistically significant. Likelihood ratio tests indicate that the challenger variables do not enhance the ability of the model to predict the occurrence of high-level conflict. The results indicate that the target state's exit costs remain an important predictor for the absence of high-level conflict. The challenger, however, may not be as constrained as the theory predicts.[17]

TABLE 2 ABOUT HERE

Interpreting the Impact of Exit Costs

The inclusion of the interaction terms ($ExitCost_{ct}$, $ExitCost_{tc}$) can make the coefficients in Table 2 difficult to interpret.[18] Figure 2 demonstrates graphically how the interaction of trade and inelasticity is critical to the likelihood of low and high-level conflict. Both figures are generated by varying inelasticity

and tradeshare simultaneously. Figure 2A shows that when either variable is low, the likelihood of low-level conflict is also low. Only when both variables increase significantly does the likelihood of low-level conflict increase. Similarly, the likelihood of high-level conflict is at its lowest point when both trade and inelasticity are high (Figure 2B). A drop in either trade or inelasticity can increase the likelihood of high-level conflict. These results confirm the predictions of the exit model. It is this interaction of trade and inelasticity that generates economic exit costs, and these exit costs have important effects on the incidence and the character of political conflict.

FIGURE 2 ABOUT HERE

Because of the limitations and operationalization of the interdependence variable used here, it is difficult to compare the empirical analyses in this project to current large-n research (Barbieri 1996; Russett and Oneal 2001). Using the elasticity data inhibits a comparable research design. More importantly, most studies in this area of research use trade as a proxy for interdependence, but the results in Table 2 and Figure 2 indicate that trade and interdependence (as defined in this article) do not necessarily have the same impact on conflict. For example, for low-level conflict there can be beneficial (pacific) effects from trade that are countered by interdependence only when the exit costs in the economic relationship exceed the target's threshold. Similarly, trade may have beneficial (Russett and Oneal) or deleterious (Barbieri) effects on the likelihood of militarized conflict, but interdependence only constrains the use of militarized conflict when at least one state has exit costs exceeding the threshold. The goal is not to crown a winner in the great debate, but rather to suggest an alternative approach to solving the puzzle.

Conclusions

The theoretical arguments and empirical work of this article suggest that the time has come to move beyond the long-standing debate over whether economic interdependence has a purely pacific or conflictual influence in world politics. Using a simple modeling technique, I demonstrate that the

relationship between economic interdependence and conflict is conditional not only upon the ability of nations to alter or forgo their economic ties, but also the issues at stake in their political discourse and the ever-present context of relative power. Based on these conditions, the causal link can be pacific, conflictual, or nonexistent. This article suggests that future research in this area should focus on identifying when and why each particular causal relationship prevails. The theoretical model developed here is a first step, but more research is needed.

Multilateral models are needed to assess some of the more subtle implications of interdependence theory. One could also study the effects of relaxing several of the assumptions imposed on the exit model. For example, relaxing the assumption that challengers prefer the status quo to paying the audience costs associated with failed exit threats can help explain much of the sanctioning behavior we observe between states. Endogenizing the demand made by the challenger and the degree of economic exit enables the researcher to consider a broader range of policy behavior. Finally, allowing for the reality that states harbor private information about the value they attach to the issues of dispute captures the inherent uncertainties that plague these bargaining processes. Empirical support indicates that the exit model provides new and interesting insight about the interdependence–conflict relationship, but more work needs to be done. Expanding the set of available dyads for analysis to include dyads that are not both democratic, have fought wars, and are less economically active would strengthen the ability of the empirical analyses to make more general claims about the causal relationship between interdependence and conflict.

All of these extensions of the exit model may prove fruitful, but they should not overshadow the importance of laying out the basic model as a foundation for theories of economic interdependence and conflict. In this simple format, the exit model generates innovative predictions about the interdependence–conflict relationship. Future research may profit by focusing on the conditions that lead to exit costs that exceed a state's threshold and the ways in which these costs constrain or empower political leaders. This future research, whether it is expanded spatially or temporally, will be able to take advantage of the theoretical platform established by the exit model.

Appendix

To analyze the equilibrium outcomes of this game, I employ a sequential equilibrium solution concept (Gibbons 1992; Morrow 1994). Mixed strategy equilibria are not considered in this analysis. I make the following initial assumptions: $e_{CH}, e_T \geq 0; V_T, V_{CH} \geq 0; R_{CH}, R_T > 0$.

Target's Second Move: Reject or Comply

Beginning with the last move of the game, the target decides whether to *reject* or *concede*:

$$p(-V_T - e_T - c_T) + (1 - p)(-e_T - c_T) = -V_T - e_T \tag{10}$$

Solving for V_T produces a threshold value, V_T^*, for the target.

$$V_T^* = \frac{c_T}{1 - p} \tag{11}$$

The target rejects the challenger's demand when $V_T > V_T^*$, and complies when $V_T < V_T^*$.

Challenger's Second Move: Exit or Back Down

The next step is to examine the challenger's second move in the game. If the challenger backs down, then the target does not respond; if the challenger exits the economic relationship, then the target can either reject the challenger a second time or comply with its demands. Case 1 assumes the target complies, and Case 2 assumes it rejects the demand in the final round.

Case One: $V_T < V_T^*$, (Target Complies)

If the target complies with the challenger's demands in the final node, the challenger will receive $V_{CH} - e_{CH}$. Otherwise it recieves $-R_{CH}$:

$$V_{CH} - e_{CH} = -R_{CH} \tag{12}$$

Unless $R_{CH} > e_{CH} - V_{CH}$, the challenger will choose to exit when the target complies.

Case Two: $V_T > V_T^*$, (Target Rejects)

If $V_T > V_T^*$, the challenger faces a choice between backing down and enduring audience costs or entering into escalated conflict with the target. Indifference holds when:

$$p(V_{CH} - e_{CH} - c_{CH}) + (1 - p)(-e_{CH} - c_{CH}) = -R_{CH} \tag{13}$$

Let R_{CH}^* be the threshold of audience costs such that when $R_{CH}^* > R_{CH}$, the challenger backs down. When $R_{CH}^* < R_{CH}$, the challenger exits the economic relationship.

$$R_{CH}^* = e_{CH} + c_{CH} - pV_{CH} \tag{14}$$

Target's First Move: Reject or Comply

Three cases are considered by the target when weighing its options between rejecting the demand made by the challenger and complying. The first involves the scenario in which the challenger will back down if the target rejects the initial demand. The second and third cases deal with a scenario in which the challenger will exit the economic relationship if the target rejects the initial demand. In case two, the target will comply in the second round after the challenger exits. In case three, the target rejects the challenger's demands in both rounds of the game.

Case One: $R_{CH}^* > R_{CH}$, (Challenger will Back Down)

Given $R_{CH}^* > R_{CH}$, $\qquad -V_T < R_T$, for all V_T, R_T (15)

The target will reject this demand if the challenger will back down in response.

Case Two: $R_{CH}^* < R_{CH}$, $V_T < V_T^*$, (Challenger will Exit, Target will Comply)

A target that will comply in its second move will also comply in its first move:

$$-V_T \geq -V_T - e_T, \text{ for all } V_T, e_T \tag{16}$$

The target always prefers to comply early instead of after exit (weekly prefers it if $e_T = 0$).

Case Three: $R^*_{CH} < R_{CH}$, $V_T > V^*_T$, (Challenger will Exit, Target will Reject)

If the target rejects the demand in the first round, it faces escalated conflict. If the target complies in the first round, it loses the value it associates with the demand:

$$p(-V_T - e_T - c_T) + (1 - p)(-e_T - c_T) = -V_T \tag{17}$$

Solving for e_T generates an *exit cost threshold* for the target, e^*_T, which drives its choice between compliance and rejecting the initial demand:

$$e^*_T = (1 - p)V_T - c_T \tag{18}$$

This exit cost threshold is a function of the probability that the target will win the escalated conflict, the value that it associates with the demand, and the costs the target incurs in the escalated conflict. When the costs of exit are below this threshold, $e_T < e^*_T$, the target will reject the demand and escalated conflict will result. When the costs of exit exceed this threshold, $e_T > e^*_T$, the target cannot afford to endure the costs associated with rejecting the demand. The target complies with the challenger's demand at its first opportunity.

Challenger's First Move: Demand or Not Demand

In this first move of the game there are three scenarios for the challenger to consider. In case one, the target will comply with the initial demand in its first move. In the second and third cases, the target will reject this initial demand and the challenger will have to either act on its exit threat or back down. Case two considers the scenario in which the challenger backs down, and case three considers the scenario in which the challenger exits and the target again rejects the demand.

Case One: $e_T > e^*_T$, (Target will Comply in First Round).

If the challenger knows that the target will comply when first faced with a demand, then the challenger faces two possibilities: the status quo or successfully extract its demand. The challenger will always prefer to extract this demand rather than remain at the status quo:

$$V_{CH} \geq 0, \text{ for all } V_{CH} \tag{18}$$

Case Two: $e_T < e_T^*,\ R_{CH}^* > R_{CH}$, *(Target Rejects, Challenger Backs Down).*

Here the challenger knows that if it makes a demand the target will reject it and the challenger will then back down. The challenger will always prefer to remain at the status quo:

$$-R_{CH} < 0, \text{ for all } R_{CH} \tag{20}$$

Case Three: $e_T < e_T^*,\ R_{CH}^* < R_{CH}$, *(Target Rejects, Challenger Exits, Target Rejects)*

Here the challenger is resolute in its threat of exit, and the target is resolved to reject the demand. If the challenger does not make a demand, the status quo results. If the challenger makes the demand, escalated conflict results:

$$p(V_{CH} - e_{CH} - c_{CH}) + (1 - p)(-e_{CH} - c_{CH}) > 0 \tag{21}$$

Solving for the challenger's exit costs reveals an *exit cost threshold* for the challenger, e_{CH}^*, such that,

$$e_{CH}^* = p(V_{CH}) - c_{CH} \tag{22}$$

When actual exit costs exceed this threshold, $e_{CH} > e_{CH}^*$, the challenger is deterred from making the demand, and the status quo results. When its exit costs fall below this threshold, $e_{CH} < e_{CH}^*$, the challenger makes the demand and escalated conflict ensues.

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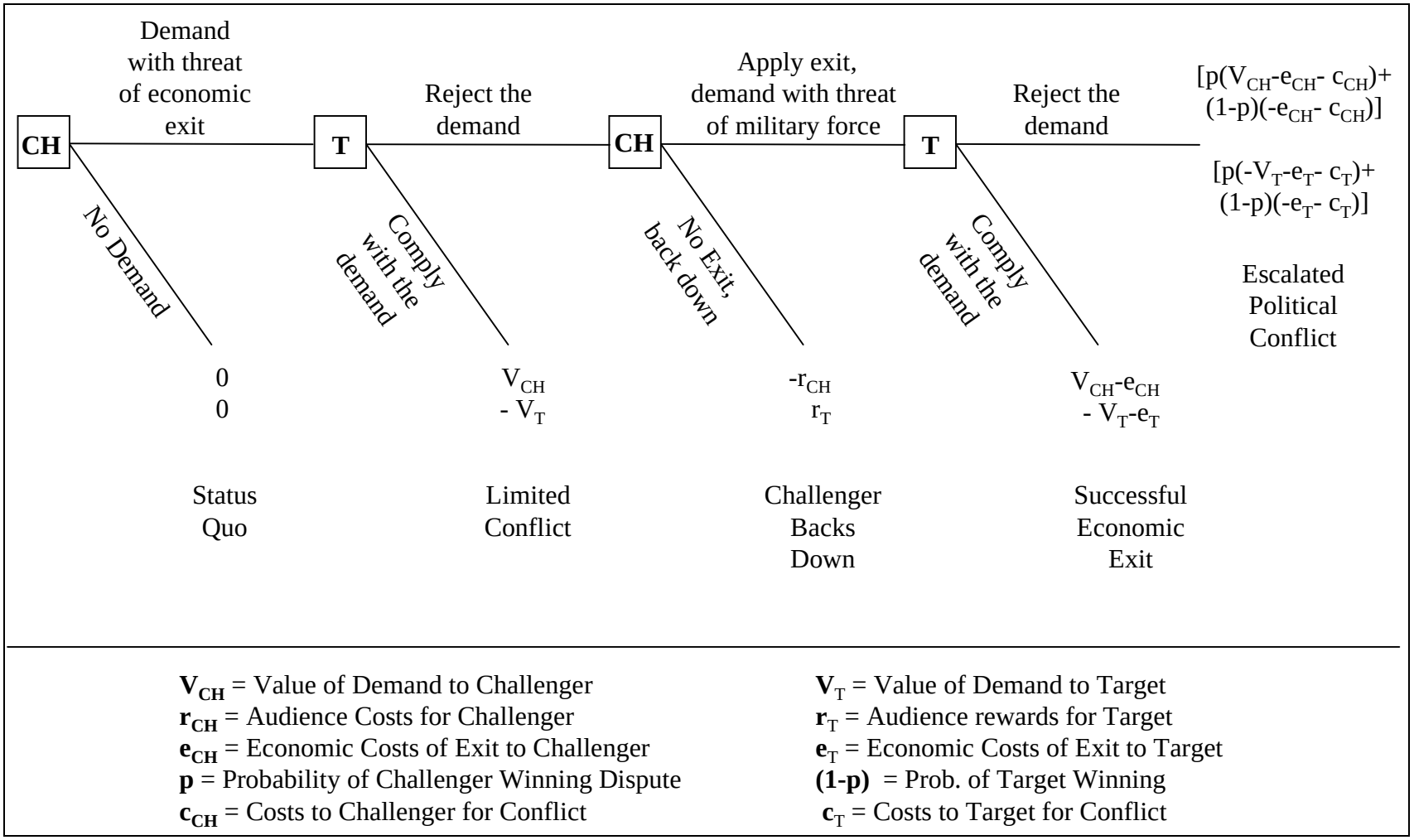
FIGURE 1: The Exit Model



V_{CH} = Value of Demand to Challenger
r_{CH} = Audience Costs for Challenger
e_{CH} = Economic Costs of Exit to Challenger
p = Probability of Challenger Winning Dispute
c_{CH} = Costs to Challenger for Conflict

V_T = Value of Demand to Target
r_T = Audience rewards for Target
e_T = Economic Costs of Exit to Target
(1-p) = Prob. of Target Winning
c_T = Costs to Target for Conflict

FIGURE 2A : Effect of Trade and Inelasticity on Low Conflict

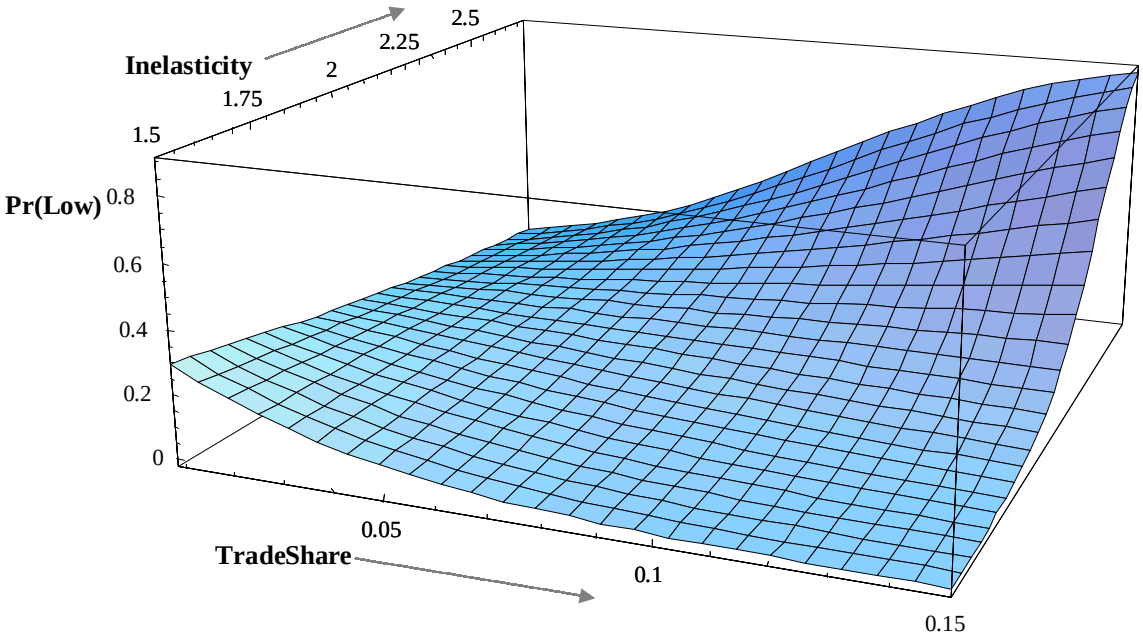


FIGURE 2B: Effect of Trade and Inelasticity on High Conflict

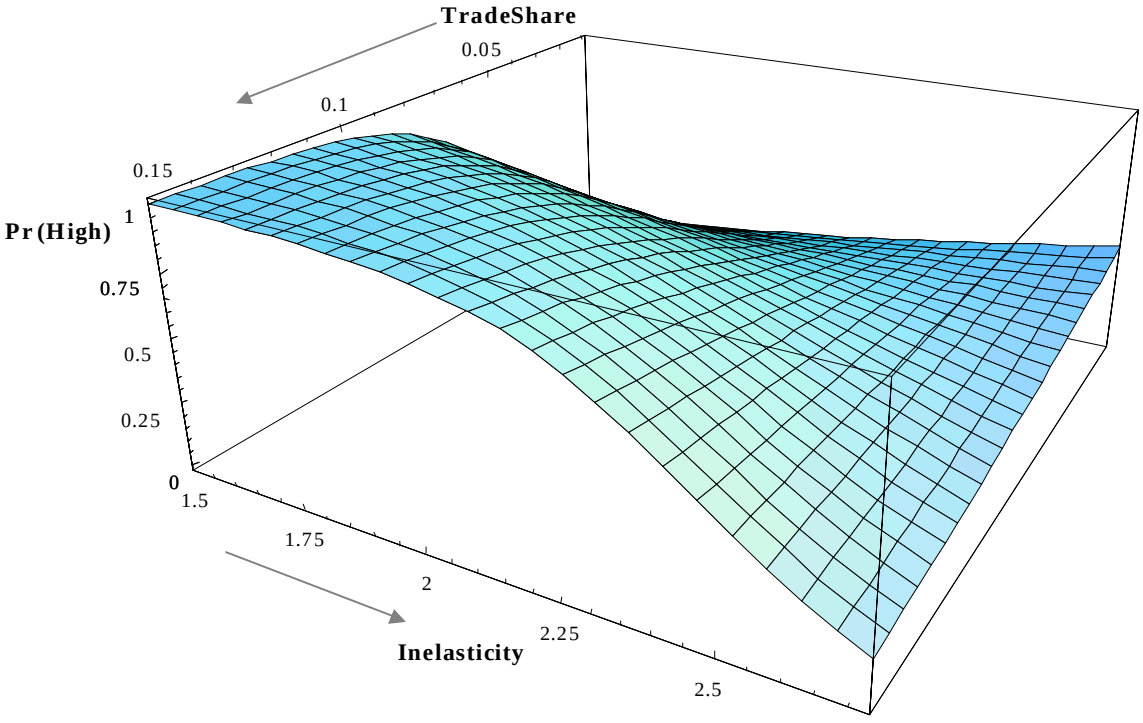


TABLE 1: Exit Costs and Equilibrium Behavior

Equilibrium	Exit Cost–Threshold Relationship	Predicted Outcome
Case 1: Constraint	$e_{CH} > e^*_{CH}$, $e_T < e^*_T$	Status Quo
Case 2: Bargaining Power	$e_T > e^*_T,\ e_{CH} > e^*_{CH}$ or $e_T > e^*_T,\ e_{CH} < e^*_{CH}$	Low-level Conflict
Case 3: Escalation	$e_{CH} < e^*_{CH}$, $e_T < e^*_T$	High-level Conflict

(*) denotes threshold vs. actual exit costs

TABLE 2**:** Logit estimates of Low-level, High-level Conflict

Dependent Variable		**Low-level Conflict**		**High-level Conflict**	
Explanatory Variables		Eqn (6)	Eqn (7)	Eqn (8)	Eqn (9)
Target's TradeShare	β	**-118.166**	**-211.962**	**139.212**	**132.738**
	SE_β	57.793	116.836	62.604	70.317
	p	0.021	0.035	0.013	0.030
Target's Inelasticity		**-1.683**	**-2.688**	1.9777*	1.666
		0.901	1.440	1.326	1.409
		0.031	0.031	0.068	0.119
Target's Exit Costs		**54.834**	**90.530**	**-54.524**	**-53.808**
		25.411	47.233	26.385	28.965
		0.016	0.028	0.020	0.032
Challenger's TradeShare			-23.538		89.9469*
			147.795		63.319
			0.437		0.078
Challenger's Inelasticity			6.1027*		0.444
			4.139		1.040
			0.070		0.335
Challenger's Exit Costs			6.881		-30.879
			60.072		26.150
			0.455		0.119
Constant		1.949	-8.475	-5.5525*	-6.8636*
		1.741	8.435	2.865	3.815
		0.263	0.315	0.053	0.072
Log Likelihood		-17.592	-11.949	-20.669	-18.657
L R χ^2 (df)		7.47[a] (3)	18.75[a] (6)	13.71[a] (3)	17.74[a] (6)
LR p-value		0.058	0.005	0.003	0.007
Pseudo R^2		0.175	0.440	0.249	0.322

N = 40. * = p < 0.10, **bold** = p < 0.05; p-values are one-tailed, except Constant; [a]LR test versus null model

Endnotes

[1] Copeland (1996) and Gartzke, et al. (2001), are exceptions here. Copeland's rational expectations argument suggests that expected changes in the benefits of trade could motivate conflict. Gartzke, et al., argue that severing economic ties signal resolve in disputes such that opposing states pursue negotiated settlements. Gartzke, et al., however, treat economic ties strictly as a benefit; not a source of alternative conflict.

[2] For example, these alternatives could involve other trading partners or a return to autarky.

[3] Exit costs are similar to Baldwin's (1980) use of the term *opportunity costs*. I adopt the new terminology to highlight Hirschman's (1970) concept of exit as the source of these costs.

[4] For simplicity the model assumes complete information of player types, and exit options are modeled as discrete instead of continuous bargaining ranges.

[5] Such threats can be proactive or reactive. Sanctions often overlap here, but not all threats of sanctions imply significant exit costs. When President Carter threatened a grain embargo against the Soviets, for example, the ability of the Soviets to satisfy its demand for grain from other suppliers meant that it faced minimal exit costs from President Carter's actions.

[6] This is not to imply that these states leap from economic exit directly to war; simply that continued conflict after economic exit represents a departure from the use of the economic relationship to settle the dispute. The use of a lottery to represent the outcome of such crises is fairly standard (e.g., see Bueno de Mesquita and Lalman 1992, Morrow 1994.) but not universally accepted. Wagner (2000) argues against the use of lotteries to collapse the dynamic bargaining processes involved in conflict into a simple roll of

the dice. Even models that do resort to lotteries to capture uncertainty in conflict outcomes may explicitly model the dispute escalation process (Bueno de Mesquita and Lalman 1992, Fearon 1994b).

[7] These thresholds are also commonly referred to as reference points or tipping points. As the payoffs of this game are a function of the cost and benefit parameters, the researcher has flexibility in terms of solving for a specific parameter. My decision to focus on the exit cost parameter is driven by the substantive interests of this study, but one could just as easily center the analysis around the probability of winning a militarized conflict (p), or the value of the issue at stake (v).

[8] The recategorization is available from the author by request. Goldstein (1992) adapts these categories into a conflict-cooperation scale (-10 to 8.3). Events ranging from +8.3 to -3.4 are coded as status quo events; -3.4 to -6.9 are low-level conflict events; and -7.0 to -10.0 are high-level conflict events.

[9] This is accomplished by adding the absolute value of the most elastic score to all the estimates.

[10] Marquez uses data from the *Direction of Trade* data set published by the International Monetary Fund (1993). I disaggregate the 'rest of the OECD' group into Italy and France, but exclude the other groupings because there are too many states included in each group to obtain useful information. Polachek (1997) and Polachek, Chang and Robst (1999) set a precedent for the extraction of Italy and France from the 'ROECD' group. Since, however, both states will have identical elasticity vectors, I do not include the France-Italy or Italy-France dyads in this study.

[11] An alternative indicator of this degree of economic interaction represents the total imports and exports, this time normalized by state I's Gross Domestic Product (Oneal and Russett 1997): $TradeGDP_{ij} = \frac{DyadicTrade_{ij}}{GDP_i}$. There is considerable debate regarding which operationalization of this trade intensity is the more valid measure. The Barbieri measure captures the degree to which state I relies on

state J for imports relative to all of I's import needs. The Oneal and Russett $TradeGDP_{ij}$ measure captures the intensity of imports from state J relative to I's domestic economy. Logic and regression diagnostics suggest that the two indicators are also quite related, so only Barbieri's measure will be used in the analysis. All the models were run with both measures, however, with consistent results.

[12] GDP data for Oneal and Russett's measure is obtained from the Penn World Tables (Mark 5.6) (Heston and Summers 1991; Heston and Summers 1994).

[13] Maximum trade values were also used with similar results.

[14] The basic coding rule for the MIDs data is to report the highest level of hostility in any given dyad-year. Using the average level of conflict with respect to the three categories of status quo, low and high-level conflict produced similar results.

[15] For this and the remaining logit models, I present only the variables and parameters involved, and ask the reader to assume the logit model structure is present.

[16] Using *TradeGDP*, the impact of *ExitCosts* on *High-level Conflict* remains negative and statistically significant, although the significance level drops to the $p < 0.10$ level.

[17] The parameter for the Challenger's Exit Costs hovers on the cusp of statistical significance ($p = 0.119$), which may be attributable in part to limitations in sample size.

[18] As an additional diagnostic tool, I reestimate equations 7 and 9 using a centering technique to compensate for the possible multicollinearity between the interaction and the additive terms. The results continue to support the hypotheses, but the signs for the *inelasticity* variables flip. Whether this qualitative change is easily interpretable is a matter of debate.