Trade and Militarized Conflict:
How Modeling Strategic Interactions Between States Makes a Difference.

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Abstract. The study between the interaction of war and foreign trade has occupied scholars from political science and economics for thousands of years. I contribute to the trade and conflict debate by accounting for the strategic interaction between states that most or all theories in international relations (IR) assume. I use a strategic statistical model (Signorino 1999, 2003b) that endogenizes the actions that leads states to militarized conflict and peace. The results of the strategic probit model reveal non-linear, asymmetric relationships between trade dependence and militarized conflict for each state in the dyad. Not only are these effects non-linear, but, in equilibrium, also depend on the actions taken by the other state in the dyad. The trade dependence of one state on another can have *either* a pacifying *or* a positive effect on militarized conflict. Additionally, these effects are only realized for initial increases in trade dependence and that once a threshold is reached, the effects of trade dependence are constant.

"[I]nternational trade might work to the exclusive or disproportionate benefit of one or a few of the trading nations."

Albert O. Hirschman, *National Power and the Structure of Foreign Trade*

The study of war, or militarized conflict, and foreign trade and their interaction has occupied scholars from political science and economics for thousands of years. References to the economic causes for war can be traced back to Thucydides (1954) and the effects of war on the economy and trade can be traced back to Sun Tzu (1988). This illustrates that there tends to be an interactive effect between trade and militarized conflict. However, most scholars have focused only on one causal path, either the effects of conflict on trade, or the effects of trade on conflict (e.g. Polachek 1980; Mansfield 1994; Barbieri 1996a, 1996b; Oneal and Russett 1997). These studies, whether formal or empirical in nature, have produced inconclusive results. While some attempts have been made to account for temporal dependence (e.g. Beck, Katz, and Tucker 1998; Oneal and Russett 1999; Beck 1999) or the simultaneity present between trade and militarized conflict (Gasiorowski and Polachek 1982; Reuveny and Kang 1998, 2003; Timpone 2003), none have accounted for the strategic interaction present between states when making decisions on trading and militarization.

This paper contributes to the trade and conflict debate by accounting for the strategic interaction between states that most or all theories in international relations (IR) – whether formal or nonformal – assume, while bridging the gap between formal and empirical literature on this topic by presenting and testing a strategic statistical model (Signorino 1999, 2003b) that endogenizes the actions that leads states to militarized conflict and peace. Many of the problems in the current debate result from measurement error, differences in data sources, and estimation techniques, I argue that models not explicitly accounting for strategic interaction may also be a problem, since, as Signorino and Yilmaz (2003) convincingly illustrate, models that do not account for strategic interaction suffer from misspecification, especially in IR.[1]

The results of the strategic probit used in this paper reveal a non-linear, asymmetric relationship between trade dependence and militarized conflict for each state in the dyad. Not only are these effects non-linear, but, in equilibrium, also depend on the actions taken the other state in the dyad. The results from the strategic probit reveal that trade dependence can have *either* a pacifying or positive effect on militarized conflict. Increasing trade dependence of one state on another in a dyad decreases the likelihood of that state initiating a militarized conflict, *but* increases the probability that the other state will initiate a militarized conflict. This asymmetric relationship holds for both states in the dyad.

I will begin this paper by presenting an overview of the relevant literature in the trade – conflict debate. Next, I will outline the strategic statistical model that I use to capture the effects of strategic interaction on the decisions made by states to trade or engage in militarized conflict. I will then present my results and compare them to the predictions that typical logit, binary time-series, cross-section logit, and multinomial logit models would make.[2] I will conclude with a discussion of the results as well as some possibilities for future research.

Relevant Literature

There are two broad approaches explaining the effects of trade on conflict in International Relations (IR): liberalism and realism. The two approaches are opposing in views and there is little in the way of synthesis between the two. In addition, most of the literature within these contending debates rarely combines both empirical and formal methods, which further complicates the debate. Liberalism and neoliberalism focus on the absolute gains from trade and

[1] See also Signorino (1999, 2003b) and Smith (1999) for lengthy discussions on the importance of strategic modeling. These authors take different approaches to strategic modeling, but both agree that models that do not account for strategic interaction suffer from specification error.
[2] As I will discuss later in this paper, the use of multinomial logit models is inappropriate for this type of analysis, mostly due to the strong assumption of independent and irrelevant alternatives (IIA). This assumption is violated in this and perhaps many other types of discrete choice analyses in IR. I still include the results of a multinomial logit for heuristic purposes.

the ways in which economic interdependence fosters cooperation. Realism focuses on the conflictual nature of trading relations, resulting from increased interactions or asymmetric dependence, and the uses of trade and economic policies to achieve national interests.[3]

Liberal and neoliberal scholars argue that trade, institutions, and salient interdependence prevent conflict. Those adhering to these approaches argue for the benefits trade has on encouraging interdependence, cooperation, and peace. The idea shared by liberal and neoliberal scholars is that interdependency from trade can prevent war. This was best stated by the nineteenth century French economist Frederick Bastiat who claimed, "If goods cannot cross borders, armies will" (quoted in Jervis 2003: 401).

The argument of liberal and neoliberal scholars is that interdependence associated with institutions or salient trading relationships are important for cooperation under the international system of anarchy. In the absence of international institutions, trade can promote cooperation and limit conflict (Polachek 1980; Gasiorowski and Polachek 1982). Countries involved in trade receive absolute welfare gains and conflict causes trade to diminish due to an increase in transaction costs, tariffs, and quotas (Polachek, 1980; Polachek et al. 1999).

In order to illustrate the liberal argument, Polachek (1980) developed the "trade-conflict model" which was a formal, decision-theoretic model based on the expected utility maximizing behavior of a state that was assumed to be a welfare maximizing actor. This model was extended to examine the relations between East and West During the Cold War (Gasiorowski and Polachek, 1982) and to include the effects of tariffs, foreign aid, distance, and other political variables (Polachek et al. 1999). Polachek (1980) empirically tested this model using trade between dyads of countries and found that the more trade that occurred between dyads, the less

[3]Marxist and Neo-Marxists scholars that study in this area tend to focus on the conflictual nature of trade relations and economic policies, as do the realists. However, the Marxist and Neo-Marxist approaches have lost influence in IR over the past few decades, and so this approach will not be touched on in this paper. For extensive literature reviews on these debates, see Barbieri and Schneider (1999) and McMillan (1997). I only give a brief review of this large field of literature due to space constraints.

conflict was present.[4] Therefore, posited Polachek, the absence of conflict will encourage trade, which in turn will decrease the prospects for future conflict. Polachek (1980: 66) uses a "trade/conflict elasticity" to determine that a doubling in trade decreases conflict by 30%.

However, as influential as Polachek's (1980) "trade-conflict model" and its extensions have been, especially for the liberal debate, they do suffer from flaws. First, when looking at the results of the "trade/conflict elasticity", one finds that despite Polachek's (1980) claims, trade and conflict do not have an elastic relationship with one another. If a 100% increase in trade only reduces conflict by 30%, it would seem that conflict and trade are relatively inelastic.[5]

Second, the formal model used by Polachek (1980), Gasiorowski and Polachek (1982), and Polachek et al. (1999) is a decision-theoretic expected utility model. Such a model does not account for strategic interdependence, but instead only relies on the decision of one actor, *regardless* of the expected actions of the actor(s). Such a model is not realistic since states do not act in a vacuum in IR. Even Polachek et al. (1999: 406) recognize the strategic nature of relations in IR, especially in regards to trade and conflict, since they argue that "the magnitude of the relationship [between trade and conflict] depends on factors affecting the strategic nature of trade." Yet, they do not explicitly model strategic interaction in either their formal or empirical models. To illustrate the shortcomings of their approach, one only needs to look at the predictions of the model: an increase in export prices from State A reduces conflict, whereas a rise in import prices to State A increases conflict (Polachek 1980; Gasiorowski and Polachek, 1982; Polachek et al. 1999). Well, if export prices from State A increase, this causes import prices to State B to increase, which, according to the model, should increase the amount of

[4] The studies by Polachek (1980), Gasiorowski and Polachek (1982), and Polachek et al. (1999) are rare exceptions in the literature in that present both a formal theoretical model and empirical analyses. However, these studies do suffer from limitations, which I will be highlighting.

[5] And in fact, the results of my strategic analysis support such a claim, that conflict, after certain levels of trade are reached, are inelastic, in certain circumstances. Prior to reaching such a threshold, conflict appears to be highly elastic with trade dependence.

conflict from State B to State A. By only focusing on one actor, State A in this instance, one misses out on the possible chances for conflict due to choices made by State B.

Lastly, the empirical analyses of the "trade-conflict model" do not match the formal model. The results of the "trade-conflict" model are driven by export and import prices. However, in the empirical evaluations of these models, none of the authors use data on prices. The empirical analyses use trade flows between states as opposed to data on the terms of trade (which, as we will see, is one the main focuses of the counter argument by realists) and do not focus on militarized conflict, but conflict in general (see Polachek 1980; Polachek et al. 1999 for operationalizations and further details).

Liberals and neoliberals still argue that bilateral trade decreases the probability that states would become engaged in conflict. According to these scholars, interdependence fosters cooperation based on the gains received from trade and the expectations of future absolute gains (Gasiorowski & Polachek, 1982; Copeland, 1996). Interdependence will lead to peace if the trading partners expect to benefit from the arrangement in the future (Copeland, 1996) because those states that stand to benefit most from trade will be more accommodating to those states that can provide the most gains from trade (Gasiorowski & Polachek, 1982).

To illustrate this claim, Copeland (1996) developed an expected utility model of trade expectations to explain how trade can affect conflict. Unlike the traditional formal models of liberal scholars, Copeland's (1996) model showed that trade can constrain conflict only if a state expects to have favorable trading relations with another state into the future. If a state fears that its relations with the other state could be cut off at anytime by that other state, states would become more conflictual as a means of securing necessary resources. Again, Copeland's (1996) model is a decision-theoretic model based on the expected utility of one actor, without regard to the possible actions taken by other actors. Such a model, while being simple, can provide some insight into the decision-making calculus of states, but still does not capture the strategic interdependence present between states. Additionally, Copeland's (1996) model is largely non-formal in nature and does not endogenize the trade expectations of states.

In another recent, and often cited empirical article, Oneal and Russett (1997) argue that salient interdependence in trade between states significantly reduces the probability of conflict. Oneal and Russett conclude that trade interdependence, in conjunction with democracy produce the conditions necessary for the "liberal peace." Oneal's and Russett's (1997) article is empirical in nature relying only upon nonformal theory and standard discrete choice models (logit). Oneal and Russett's (1997) seminal article and "liberal peace" research program have been received with mixed views, however. Liberal scholars view the program by Oneal and Russett as a giant step toward defeating realism as a research program in IR. However, many scholars still criticize Oneal's and Russett's (1997) empirical findings based on both theoretical and methodological grounds.[6]

From a theoretical, and sometimes methodological standpoint, realists criticize the liberal and neoliberal claims that trade promotes peace and cooperation. Realists focus on the conflictual nature of trade relations and the ways that trade policies are a means for states to use power. Realists argue that trade promotes conflict through two possible means, relative gains seeking behavior by states (e.g. Waltz 1979; Grieco 1988) or from asymmetrical trading ties (e.g. Carr 2001; Hirschman 1945; Barbieri 1996a).[7]

Realists such as Carr (2001) and Hirschman (1945) claimed that states use economic policies as a means of securing and maintaining power. A state would pursue trade policies that best reflected its security interests (Carr 2001; Hirschman 1945). One such method is the use of foreign trade to gain control of foreign markets, adding to the political power of country (Carr

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[6] For more on this debate, see Beck, Katz, and Tucker (1998), Oneal and Russett (1999), and Beck (1999).

[7] While there are interesting realist and neorealist arguments for the effects of relative gains seeking behavior on conflict, I will not address them in any great length in this paper due to space constraints. The focus of this paper is on the more traditional argument of trade asymmetry. For further literature on the relative versus absolute gains debates, see Greico (1988), Snidal (1991a, 1991b), Gowa and Mansfield (1993), Morrow (1997), and Barbieri and Schneider (1999).

2001). In addition to using trade policies to increase *political* power, Hirschman (1945) argued that states seek to limit their trade dependence on other states due to the "*influence effect* of foreign trade" (Hirschman 1945:15, italics in original). Asymmetrical dependence created the possibility for conflict (instead of peace, as argued by liberal free traders) since states that were depended upon could use that leverage to extract economic or political concessions at the expense of the dependent trading states. Such leverage can be conducted through the:

> "[interruption of] *its own export and import trade*, which is at the same time the import and export trade of some other countries. The stoppage of this trade obliges the other countries to find alternative markets and sources of supply and, should this prove impossible, it forces upon them economic adjustments and lasting impoverishment." (Hirschman 1945: 15-16, italics in original).

The bulk of the empirical liberal studies aimed at refuting realist claims on the conflictual nature of trade do not account for asymmetric ties, but instead focus on the overall trade flows between states (e.g. Polachek 1980; Polachek et al. 1999) or on the weaker trade dependent state in a dyad (Oneal and Russett 1997).[8] While not directly using a liberal argument, Barbieri (1996a) looks at the effects of asymmetrical trading relationships on militarized conflict and finds that salient trading relationships are more likely to lead to conflict than those that have limited relationships. Barbieri (1996a) concludes that the best hope trade has to prevent conflict is if the trading arrangements were symmetrical (p. 42). Symmetry will only be temporary and asymmetrical relationships will evolve that will become more prone to conflict (Barbieri, 1996a). In addition to asymmetry, increasing costs and diminishing returns resulting from increased interdependence will also end in conflict (Barbieri, 1996a).

While not directly modeling strategic interdependence between states, Barbieri (1996a) at least opened the door to the possibilities that earlier arguments by realists and mercantilists about the conflictual nature of asymmetrical trade dependence may have empirical validity. However,

[8] The "weak-link" of trade dependence assumption is that the (so-called) pacifying effects of trade are constrained by the least dependent state in a dyad (Oneal and Russett 1997). This is very similar to the "wink-link" assumption of democracy used in the democratic peace literature (e.g. Maoz and Russet 1993).

Barbieri's (1996a) analysis was empirical in nature, not being derived by any type of formal theory. Also, Barbieri (1996a) was able to empirically show the affects of asymmetry, but her empirical model was incapable of distinguishing between how asymmetry might influence states to become conflictual, only that they would.

To sum, the theoretical and empirical literature present in the debate on the effects of trade on conflict are mixed and inconclusive, at best. The debate, as of this time, has yet to be solved. While this paper may not solve the debate once and for all, it will at least call attention to importance of modeling strategic interaction between states when addressing the effects of trade on conflict.

Theory and Research Design

The approach of this paper is partially influenced by the question put forth by Morrow (1999), "How could trade affect conflict?" In his article, Morrow (1999) argues that perhaps the underlying reasons for the inconclusiveness of results and differences between the realists and liberals stem from the indeterminate effects of trade on conflict, inappropriate assumptions - such as Polachek's (1980) welfare-maximizing state – and the inability to deal with the unobservable value of trade to different states. This paper contributes to solving some of these problems by using a statistical strategic model that can account for unobserved utility in outcomes and strategic interdependence (Signorino 1999, 2003a, 2003b).

I use a statistical strategic model that accounts for both the strategic interdependence inherent in relations between states and the unobservable component of utility over outcomes in a crisis game when trade and conflict are present (Signorino, 2003b). I will first describe the crisis game and then the statistical strategic model that is directly derived from the crisis game. In the next section, I will report the results of running the model on a population of 22976 dyad years for the years of 1948-1992.

For this analysis, I use a simple crisis game that is similar to the game examined by Signorino (1999) in his introduction of the use of the logit quantal response equilibrium (LQRE) solution concept for models of strategic interaction in IR. The game is represented in Figure 1. The crisis game shown in Figure 1 has been used extensively in the game-theoretic literature on conflict in IR (e.g. Bueno de Mesquita and Lalman 1992; Signorino 1999).

The Crisis Game

Structure of the Game. As can be seen from Figure 1, the game has two players (states), State 1 and State 2. State 1 is the first mover and has the option to either fight (F) or not fight (NF). If State 1 chooses NF, State 2 then moves. State 2 has the option to either fight (f) or not fight (nf). If State 2 selects the action of nf, the game ends with the status quo (SQ). If State 2 chooses f, then State 1 gets a move. At this information set, State 1 can either not fight (NF') or fight (F'). If State 1 chooses NF', the game ends with State 1's capitulation (Cap_1). If State A chooses F', then the game ends in war (War_2). If State 1 chooses F in the first information set, then State 2 can either fight (f') or not fight (nf'). If State 2 chooses nf', the game ends with State 2 capitulating to State 1 (Cap_2). If State 2 chooses f', the game ends in war (War_1).

It is important to note that the labels of State 1 and State 2 are labels only. It does not matter which state in a dyad are labeled State 1 or State 2. This because the structure of the game does not discriminate against either player by granting any type of first mover advantage or allowing only State 1 the choice to initiate a crisis (choosing the strategy of F). If State 1 chooses not to initiate a crisis, then a new subgame is started in which State 2 is given the choice to initiate a crisis (by choosing the strategy f) or to pursue the status quo. It is possible in this sense for State 2 to be the initiator of a crisis, in which case State 1 is allowed the opportunity to escalate the crisis by fighting back, or to give in by capitulating. Conversely, if State 1 chooses in its first move to initiate a crisis, State 2 can either escalate the crisis to war or capitulate.

Also, another benefit to the use of this model is that it produces two separate war outcomes (see Figure 1). Many non-formal and non-game-theoretic models in IR that look at militarized conflict do not differentiate between the initiator of the conflict, only whether or not a militarized dispute occurred between two states. The use of the crisis model clearly indicates that there are two possible war outcomes, War_1 and War_2, which are initiated by State 1 and State 2, respectively. It is also important to note that just because State 1 or State 2 initiates a militarized conflict, a war outcome does not always necessarily occur. The State that is the target of the initiation can back done or fight back. It is the fighting back by the target that is necessary for the war outcome to be reached.

Finally, in general, the use of the crisis game is a reasonable way of modeling trade and conflict in IR. The model allows two states to make sequential choices allowing for “tacit bargaining” to occur between states (Schelling 1960). This “tacit bargaining” allows states to signal resolve and create credible commitments, even in the absence of formal communication (Schelling 1960). The reason this game is appropriate to model trade and conflict is because trade is a form of signaling used by states to show resolve (Morrow 1999). Trade dependence can be used by states to show their resolve in committing to the use of force, because the interruption of trade that may occur due to fighting a war can potentially do harm to the state initiating the war, regardless of which state is the victor.

Solving the Crisis Game. The solution concept used to solve the game in Figure 1 is both a game-theoretic solution concept and a statistical estimation procedure. In order to solve the crisis game pictured it is necessary to know the utilities each player has for the various outcomes of the game. The utilities for each outcome for each player is based on the probabilities of reaching each information set in the path to a particular outcome, or put another way, is each players expected utility of reaching each of the possible outcomes. Before illustrating the various utilities for each outcome in the crisis game, I must first provide a discussion on how the strategic probit is different than a standard random utility model. Following Morrow’s (1999) argument, I assume that effects of trade on conflict are indeterminate unless the unobservable utility for the value of trade derived from a state is modeled. Morrow (1999) argued that such a task would be difficult, since a typical statistical model of trade and conflict would look something like:

$$\text{Conflict} = \beta'X + \varepsilon \qquad (1)$$

where $\beta'X$ is a vector of independent variables (typically either trade flows or trade dependence along with other indicators of resolve) and ε is the error term that captures the unobservable value of trade for each state. The problem with equation (1) is that the error term is most likely going to be correlated with both the independent and dependent variables, which violates many of the assumptions for standard statistical estimation (Morrow, 1999).

In order to solve this problem, I propose using a strategic probit model that explicitly accounts for the unobservable utility for each state over each possible outcome and fits the parameters in a maximum likelihood estimation procedure that yield the values most likely to achieve a certain outcome, based on the natural data (Signorino 2003b). The strategic probit is a better model to use than the LQRE since the LQRE assumes agent error in decision-making, a form of bounded-rationality (McKelvey and Palfrey 1995, 1998; Signorino 1999, 2003b). While a theoretic argument could be made for use of such a model, I assume that decision-makers make the best decisions possible, given their *private* information over outcomes and their expectations of the actions the other player will make.

In the strategic probit model that assumes private information about outcome payoffs, the State A is assumed to have private information about its value for trade with State B and vice versa. This private information is unknown to both the opposite player and the analyst (Signorino 2003b). However, the opposite player and analyst are assumed to know the distribution of the unobservable utility component of player *i,* which is assumed to be normally distributed. The LQRE specification (agent error) assumes a Type I extreme value distribution on the error (McKelvey and Palfrey 1998; Signorino 1999).

The unobservable value in the strategic probit is also different from standard regressor error for both theoretical and methodological reasons. Theoretically, assuming private information about payoffs assumes that only the individual player is aware of their true utility, $U_i(Y_k)^*$, where $U_i(Y_k)^* = U_i(Y_k) + \pi$ and π is the unobservable value of trade for $State_i$ with $State_j$. Errors in decisions resulting from this type of unobservable occur because of the miscalculation of the other player's private information. This differs than the regressor error model in that all error is assumed to be due to the analyst's misspecification; meanwhile the players are actually perfectly informed (Signorino 2003b).

Based on the above discussion, the payoffs for each outcome can be derived by the choice probabilities for each state. The choice probabilities are the probabilities for each state reaching particular information sets in the crisis game. Once the choice probabilities are determined, the outcomes are specified as functions of independent variables. Then the equilibrium is solved for using a maximum likelihood estimation procedure that fits parameters to the independent variables that make the specific outcomes most likely to happen (Signorino 1999, 2003a, 2003b). I will now derive the choice probabilities for the crisis game. In order to derive the choice probabilities, I will use backwards induction. The resulting choice probabilities are:

$p_4 = \Phi[U_1(Cap_1) – U_1(War_2)/\surd(\sigma^2_{\pi 1C1} + \sigma^2_{\pi 1W2})]$; (2)

$q_3 = \Phi[U_2(Cap_2) – U_2(War_1)/\surd(\sigma^2_{\pi 2C2} + \sigma^2_{\pi 2W1})]$; (3)

$q_2 = Pr[U_2(f)^* > U_2(SQ)^*]$

$= Pr[p_4U_1(War_2)^* + (1- p_4)\, U_1(Cap_1)^* > U_2(SQ)^*]$

$= \Phi[p_4U_1(War_2) + (1- p_4)\, U_1(Cap_1) - U_2(SQ) /\surd((1- p_4)^2\sigma^2_{\pi 1C1} + p_4{}^2\sigma^2_{\pi 1W2} - \sigma^2_{\pi 2SQ})]$; (4)

$p_1 = Pr[U_1(F)^* > U_1(NF)^*]$

$= Pr[q_3U_2(War_1)^* + (1 – q_3)U_2(Cap_2)^* > q_2[p_4U_1(War_2)^* + (1- p_4)\, U_1(Cap_1)^*]]$

$= \Phi[q_3U_2(War_1) + (1 – q_3)U_2(Cap_2) - q_2[p_4U_1(War_2) + (1- p_4)\, U_1(Cap_1)]/ \surd((1- q_3)^2\sigma^2_{\pi 2C2} +$

$q_3{}^2\sigma^2_{\pi 2W1} - (1- p_4)^2\sigma^2_{\pi 1C1} + p_4{}^2\sigma^2_{\pi 1W2})]$. (5)

Once the choice probabilities are derived, it is possible to determine the outcome probabilities. The outcome probabilities are simply the product of the choice probabilities along the paths to the outcomes. Therefore, the outcome probabilities are:

$P_{SQ} = (1 – p_1)(1 – q_2)$ (6)

$P_{Cap1} = (1 – p_1)q_2(1 – p_4)$ (7)

$P_{War2} = (1 – p_1)q_2p_4$ (8)

$P_{\text{Cap2}} = p_1(1 - q_3)$ (9)

$P_{\text{War1}} = p_1 q_3$ (10)

The last step in specifying the model is to specify the outcomes as functions of independent variables. Once the functions for each outcome are specified, then the model can be estimated for equilibrium probabilities. The utilities over outcomes for each state is as follows:

$U_i(SQ) = \beta Democracy_{ij} + \beta Dependence_{ij}$ (11)

$U_i(C_i) = 0$ (12)

$U_i(C_j) = 0$ (13)

$U_i(W_i) = \beta Relative\ Capabilities_i$ (14)

where $i =$ 1, 2 and $j \neq i$ and $Democracy_{ij}$ is utility that State$_i$ derives for both states in the dyad being democracies; $Dependence_{ij}$ is the trade dependence of State$_i$ on State$_j$; and *Relative Capabilities*$_i$ is the relative material capabilities of State$_i$, which is equal to the material capabilities of State$_i$ divided by the capabilities of both State$_i$ and State$_j$. The utilities for capitulation by both states has been fixed to zero due to the lack of data available on the assets obtained for any given crisis. In his seminal article, Signorino (1999) specified the utilities for capitulation being based on the assets gained or lost by each state. Signorino (1999) was able to generate data on these variables (and all others in his crisis game model) using Monte Carlo simulation. However, since I am using natural data, no such data exists.[9]

Description of Data

The strategic probit model estimated in this paper uses a population of 22,976 dyad years for the time period of 1948-1992. The time period was chosen for three reasons. First, many of the previous studies on trade and conflict restrict their temporal domain to the post World War II period. In order to remain as consistent with the existing literature as possible, I am using the

[9] Signorino (2003a) warns against using data with missing values or non-varying values since they can (and usually do) cause convergence problems. However, setting utilities equal to zero does not cause convergence problems in *STRAT*. By setting the utility of capitulation equal to zero, I am allowing the unobservable value of trade (π) account for each state's private information over payoffs account for this outcome, which is a rare outcome in any event.

same time period. Second, reliable trade data is hard to obtain prior to World War II, resulting in the majority of the years having missing values. Missing value pose a problem for the estimation of strategic models, which I will discuss below. Third, I wanted to limit the number of total cases that would be included in the study. When using a dyadic analysis, it is very easy to reach sample sizes of great magnitude.[10]

In addition to restricting the temporal domain of this analysis, I restricted the possible population of cases to those dyads that meet the "politically relevant dyad" criteria (Moaz and Russett 1993). Politically relevant dyads are dyads of states that are either contiguous or contain at least one major power as identified by the COW project. The intuition here is that only dyads of contiguous states or dyads containing at least one major power have the political and military projection capabilities to credibly engage each other. If politically relevant dyads are not used to avoid the selection problem, then the number of possible cases increases greatly. However, the majority of cases would be dyads that realistically could not interact, such as a dyad with Togo and Bhutan.

Dependent Variable. The dependent variable of this paper is nominal nature, with a total of five separate outcomes (see Figure 1). I use the MID3 dataset on militarized interstate disputes as the basis for the dependent variable for this paper. The data on MIDs was obtained from the Correlates of War (COW) MID3 dataset (Jones, Bremer, and Singer 1996) using *EUGene* (Bennett and Stam, 2000). The presence of a MID in a dyad year is measured as an outcome other than the status quo (SQ). Any case where a MID was present, that was coded as having State 1 as the initiator without further escalation by State 2 was coded as a capitulation by State 2 (Cap_2). Any dyad year that had a MID in which State 2 was the initiator without further escalation by State 1 was coded as a capitulation by State 1 (Cap_1). Any dyad year that had a

[10] An initial population of cases going back to 1870 produces a sample of over 150,000 cases. Even after dropping all missing values, the number of cases is still greater than 100,000. This is a problem, since one of the outcomes is a militarized dispute. With a population of over 100,000, the occurrence of a MID becomes less than a tenth of a percent. Even with 22,976 cases, the two war outcomes only comprise a total of about 1% of all observations. With events this rare, it makes it hard to produce significant results.

MID where State 1 was the initiator and was followed by escalation in threat by State 2 was coded as a war (War_1). Similarly, any dyad year that had a MID where State 2 was the initiator that was followed by an escalation in hostilities by State 1 was coded as a war (War_2). All other dyad years where a new MID was not initiated (and excluding joiners) was coded as the status quo (SQ).

Independent Variables. Since this paper is seeking to reveal the relationship between bilateral trade and the onset of militarized disputes between states, I use the dependence on trade for State 1 on State 2 and vice versa. The trade dependence of State 1 on State 2 is derived by taking the amount of trade from State 1 to State 2, divided by State 1's GDP. State 2's dependence on State 1 is determined in the same fashion. The data on trade dependence is obtained from Oneal and Russett (1997).

The next independent variable in my model is the relative capabilities of each state in the dyad. Traditional statistical models only include the relative capabilities one state, since the other is usually dropped from the model due to collinearity (relative capabilities of the challenger + relative capabilities of the target = 1). However, the strategic probit model I use in this paper allows both states' relative capabilities to be used in calculating the equilibrium outcomes. The data I use for the relative capabilities of each state is derived from the Composite Index of National Capabilities (CINC) in the COW project dataset and were obtained using *EUGene* (Bennett and Stam 2000). In order to measure the relative capabilities ratio of each state, each state's CINC value was divided by the sum of the CINC values for both states.

The third independent variable I include in this model is joint democracy. It has been well established in IR literature that joint democracy has a dampening effect on the likelihood of conflict in dyads (Maoz & Russett 1993; Oneal & Russett 1997; Beck, Katz, and Tucker 1998). I use a dummy variable to measure joint democracy. The dummy variable is coded as a 1 if both states have democracy scores of 6 or more on the Polity III index (Jaggers and Gurr, 1995), and 0 otherwise.

Additionally, all cases with missing values for any of the variables were dropped. The MLE algorithms used in *STRAT* do not automatically drop observations with missing values. Attempting to estimate a model containing observations with missing values prevents the model from converging and if convergence does occur, the Hessian matrix will not be inverted, preventing the calculation of the covariance matrix, which is necessary to obtain standard errors of the coefficients. After dropping all observations with missing data, I was left with 22,976 cases.

Results

The results from the estimation of the strategic probit model can be found in Table 1. As Table 1 shows, all of the coefficients of the explanatory variables are statistically significant. On their own, these coefficients can be interpreted as their effect on the probability of each outcome. However, since the strategic probit is an extension of a non-strategic sequential probit model, the predicted probabilities are somewhat complicated to calculate. Fortunately, *STRAT* is able to calculate the predicted probabilities of reaching certain outcomes based on varying values of the independent variables. I will briefly discuss the coefficients in Table 1 and then discuss the predicted probabilities of the war outcomes based on the trade dependence variables (see also Figures 2-5).

First, The coefficients for the variables of trade dependence for State 1 and joint democracy are both positive and statistically significant ($p < .001$). What this reveals is that both variables have a positive effect on the probability that State 1 will choose the actions necessary to reach the outcome of SQ. Since the capitulation outcomes for both states have been set to zero, there are not any explanatory variables to discuss for either of those outcomes.

However, the two war outcomes, being functions of State 1's relative capabilities can be discussed. The coefficient for State 1's relative capabilities is both positive and significant ($p < .001$) for the War_2 outcome, meaning that all else constant, as State 1's relative capabilities increase, State 1 is more likely to escalate hostilities to war once State B has initiated (less of a chance for State 1 to capitulate), ceteris paribus. Since the coefficient for State 1's relative capabilities is negative and significant ($p < .001$) for the War_1 outcome, this indicates that as the relative capabilities of State 1 increase, the less likely State 2 will be to respond with an escalation to hostilities initiated by State 1, therefore indirectly increasing the probability that State 2 will capitulate to any threat of force by State 1, all else being constant.

Turning to the results of the coefficients for the variables of State 2, we see an opposite relation, which should not be too surprising, given the nature of strategic interdependence. First, similar with State 1, the coefficients for both trade dependence and joint democracy are both positive and significant ($p < .001$ for both). Again, this means that the probability that State B will seek the SQ outcome is higher, all else being constant.

Second, the effect of State 2's relative capabilities has the opposite relation to the two war outcomes than those of State 1. The negative and significant ($p < .001$) coefficient for State 2's relative capabilities indicates that as State 2's relative capabilities increase, the likelihood of reaching the War_2 outcome decreases, ceteris paribus. This again indicates that State 1 would be more willing to capitulate if it feels it does not have enough capabilities to escalate hostilities initiated by State 2. As I mentioned earlier, the positive coefficient of State 1's relative capabilities indicated that State 1 would be more likely to escalate instead of capitulate. This claim is *dependent* on the level of State 2's capabilities, which illustrates the complexity involved with strategic interdependence.

The positive and significant ($p < .001$) coefficient for State 2's relative capabilities indicates that as State 2's relative capabilities increase, the likelihood of reaching the second war outcome, War_1, increases, ceteris paribus. As with the results for the first war outcome, when looking at the opposite effect on this outcome that State 2's relative capabilities has compared with those of State 1, it would imply that as State 2's relative capabilities increase, the likelihood that State 2 capitulates to the threat of force by State 1 decreases, all else being constant. Again, this reflects the complexity involved when strategic interaction takes place.

So, these results beg the questions: (1) What does this tell us? and (2) What do these results tell us about the effects of trade on militarized conflict? The answer to the first question is that using simple discrete choice models that assume simple monotonic relationships between variables does not do an adequate job in capturing the nature of strategic interaction between states. The answer to the second question is illustrated in Figures 2-5.[11] As shown in Figure 2A, an increase from zero trade dependence for State 1 to most minimal levels greatly increases the probability of the outcome of War_2, but after reaching a certain level, the effects of trade on conflict level off. This means that only at very low levels of trade dependence is there a positive relationship with militarized conflict, but once a threshold has been reached, the probability of conflict is constant.

When looking at the effect of State 2's trade dependence on the War_2 outcome (see Figure 2B), we see that there is an almost opposite relationship than State 1's dependence. Figure 2B shows that at initial levels of dependence, the probability that outcome War_2 is reached is greatly decreased. However, once a threshold is reached, the effects of trade dependence remain constant, as they did for State 1. This reveals that trade dependence has an *initial* pacifying effect for State 2 *only*.

When we examine Figures 3A and 3B, which depicts the effect that State 1's and State 2' trade dependence on the outcome of War_1, respectively, we see an opposite relationship between trade dependence and conflict as with the previous war outcome. In this case, *initial* increases from zero dependence greatly reduces the likelihood that the outcome of War_1. However, once the initial pacifying effects of trade dependence are realized, the effect of increasing dependence is constant. Conversely, for State 2, initial increases in dependence greatly *increase* the

[11] Figures 2 and 3 illustrate the effects of trade dependence for each state on the two war outcomes. Figures 4-5 depict the effects of trade dependence for each state on the two capitulation outcomes. The graphs are derived from the predicted probabilities of each outcome, allowing the values of each States' dependence to vary across their ranges while holding all other variables at their mean values.

likelihood for war. As with the other outcomes, this effect levels off and then remains constant for further increases in trade dependence.

Figures 4 and 5 paint similar pictures as those for the war outcomes. In Figures 4A and 5A, it can be seen that as State 1's trade dependence on State 2 increases, the probability that State 1 will capitulate if State 2 initiates a militarized dispute *increases*, all else being equal. However, as State 1's dependence increases, it simultaneously *decreases* the probability of reaching the capitulation outcome for State 2. When looking at State 2, we can see a similar situation – State 2's trade dependence *increases* the probability that State 2 would capitulate if State 1 initiates a militarized dispute, but decreases the likelihood of reaching an outcome of capitulation by State 1.

To sum, by using a strategic probit model that accounts for strategic interdependence between states and the unobserved value of trade for each state, we see a much different picture than what would be presented by a non-strategic discrete choice model. The strategic probit model is able to reveal two important aspects of trade and conflict between states. First, and most important, Figures 2 and 3 show that there indeed does exist a conflictual relationship between trade dependence and militarized conflict that arises from asymmetry. This important finding needs some further explanation. From Figures 2A and 3A we see that increases in State 1's trade dependence on State 2 *decreases* the probability of reaching the War_1 outcome (a war initiated by State 1), but *increases* the probability of reaching the War_2 outcome (a war initiated by State 2). This relationship holds for State 2, as well – increases in State 2's trade dependence decreases the probability of reaching the War_2 outcome, but increases the probability of reaching the War_1 outcome. This can be explained by using the classical realist (and mercantilist) argument of the effects of asymmetric trade dependence (e.g. Hirschman 1945; Carr 2001).

As mentioned above, trade creates an "influence effect" that provides leverage to states who are depended upon for goods (Hirschman 1945). States in the position to use leverage will do so (at least I assume that they do). In the context of this model, when State 1's trade dependence on State 2 increases, State 2's leverage over State1 increases. Since State 1 does not want to disrupt trade (since State 1 is dependent on it), State 1 will refrain from initiating any militarized dispute with State 2 (possibly leading to the War_1 outcome). State 2 realizes this, and can then use its leverage to press for political or economic concessions by initiating a militarized dispute in the hopes that State 1 will capitulate to State 2's demands (since State 1 does not want to have its trade disrupted with State 2). However, once pressed, militarily, State 1 chooses to fight back (leading to the War_2 outcome) instead of capitulating, hoping to gain what it can through force instead of through trade. The reason State 1 would fight back instead of capitulating is because State 1 now realizes that capitulation now would signal a low resolve and the possibility of having to capitulate to State 2's demands in the future. The importance of showing resolve is well established in the realist literature (e.g. Morgenthau 1966; Schelling 1960; Waltz 1979; Morrow 1999). So State 1 fights back now in order to prevent a series of future capitulations and "loss of face", thus realizing the War_2 outcome.

One may wonder why, if this sequence were known, would State 2 not use backwards induction to realize that initiating a militarized dispute would lead to the War_2 outcome, and instead just settle for the status quo. The answer is that this game does not assume perfect information. In a perfect information game, such might be the case. However, since this model accounts for the private information over outcome payoffs, State 2 is not aware of the full utility that State 1 derives from trade with State 2. State 1 knows its true utility, but State 2 does not, and likewise. Therefore, it is possible for both states to miscalculate the extent to which the other state values trade, not based on bounded rationality, but on imperfect information.

The strategic probit results also show that trade dependence may have a pacifying effect on militarized conflict and it may not, *initially*. This all depends on the equilibrium outcome probabilities that are dependent on the values of the regressors for *both* states involved. However, once trade dependence for both states reaches a certain level, we see that trade dependence no longer has a negative or positive effect on conflict. Using non-strategic models that cannot explicitly account for the actions and decisions of both states prevents such effects from being witnessed. This can be further illustrated by comparing the results from the strategic probit model to those obtained from estimating a standard logit model, a BTSCS logit model, and a multinomial logit model (see Tables 2-3 and Figures 6-7).

Table 2 reports the results of both a logit and BTSCS logit.[12] When looking at the results from the standard logit model, which is the traditional model used in conflict studies, we see that the only variables that are significant are the trade dependence for State 2 and joint democracy. Both of these variables have the anticipated negative signs showing a pacifying effect, but the trade dependence of State 1 is not significantly affecting the probability of war.[13] This result does not make any theoretical sense, since if trade leads to peace or conflict; it should do so for both states involved. The logit results tell us that only State 2's dependence really matters, and it doesn't inform us of which state it matters to, State 1 or State 2. Additionally, Figure 6 shows us that based on the predicted probabilities for war from the logit model, both dependence variables have a negative, monotonic relationship with the probability for war, which is quite different than what Figures 2 and 3 revealed.

When looking at the results of the BTSCS logit model to correct for temporal dependence (Beck, Katz, and Tucker 1998), we see that democracy is again negative and significant. However, it is now the trade dependence of State 1 that matters, whereas the dependence of State 2 is no longer significant. Again, this does not answer the question of which state finds the trade dependence of State 1 important or whether there is a non-monotonic relationship present.[14]

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[12] The BTSCS logit was estimated using the BTSCS utility for Stata 8 developed by Tucker (1999).
[13] For the logit models, the War_1 and War_2 outcomes were collapsed to make a binary war or not war variable.
[14] I did not include a graph of the predicted probabilities of war for the BTSCS model, since the time variable was not significant as well as two of the three cubic splines. This may indicate that temporal dependence is not a problem, presumably due to the number gaps present from dropping all missing values.

Lastly, when looking at the results of the multinomial logit in Table 3 we still see monotonic relationships between the dependence variables and the non status quo outcomes.[15] Before discussing further the comparison between the strategic probit and a multinomial logit, it is important to note that the use of a multinomial logit in this paper is for comparison only. The multinomial logit is an inappropriate model to use for estimations of outcomes in IR, mostly due to the strong assumption it makes of independence of irrelevant alternatives (IIA). The IIA assumption basically says that preference orderings for outcomes should not change if an additional outcome is added or a present outcome removed. According to the IIA assumption, if the outcome of the status quo were removed from the model, the preferences for all other outcomes for both states would remain *unchanged*. This is obviously a highly restrictive, and unrealistic, assumption for IR data, especially those that rely on strategic interaction. Multinomial probit would be more appropriate since it does not have the IIA assumption. However, estimation of a multinomial probit is not feasible for models with more than four outcomes (Maddala 1986; Long 1997).

With the above cautionary note aside, I can further discuss the results from the multinomial logit. As Table 3 shows, none of the variables have a consistent statistically significant effect on all of the outcomes. While the strength of a multinomial logit model is that it can reveal the conditional effects of variables on different outcomes, the results do not make much intuitive sense. According to Table 3, State 1's trade dependence only has a significant effect on the outcomes of whether War_2 occurs, which is a war initiated by *State 2*. However, State 2's dependence is negative and significant for the outcomes of Cap_1, War_2, and War_1. While this seems intuitive for the effect on the outcomes of war, the results are not intuitive for the other outcome, since the Cap_1 outcome has threats of force being initiated by State 2.

Looking at Figures 7A and 7B, we see that the predicted probabilities for the war outcomes are monotonic relationships of each states trade dependence. Figure 7A shows that

[15] The base category used in estimation was the status quo outcome.

State 1's trade dependence, all else held constant at their mean values and 1 for joint democracy, has a positive, monotonic effect on both of the war outcomes. When compared to Figures 2 and 3, we see that a positive effect is only present for one of the war outcomes, and even then it is only for initial increases in trade dependence. Similarly, Figure 7B shows the effect of State 2's trade dependence, holding all other variables at their mean and 1 for joint democracy. According to Figure 7B, State 2's trade dependence has a negative, monotonic effect on both war outcomes. Again, this is different than the results of the strategic probit as shown in Figures 2 and 3.

Conclusion

In this paper, I make a contribution to the trade and conflict debate by accounting for the strategic interaction between states that most or all theories in IR assume. I simultaneously attempted to bridge the gap between formal and empirical literature on this topic by presenting and testing a strategic statistical probit model (Signorino 1999, 2003b) that uses a formal game-theoretic model with a statistical solution concept. This is an important contribution, since the literature, both formal and empirical (rarely together), is replete with mixed and inconclusive results. While many of these problems result from measurement error, differences in data sources, and estimation techniques, I argue that models not explicitly accounting for strategic interaction may also be a problem, since, as Signorino and Yilmaz (2003) convincingly illustrate, models that do not account for strategic interaction suffer from misspecification, especially in IR.

The results of the strategic probit that I used in this paper reveal a non-linear, asymmetric relationship between trade dependence and militarized conflict, for each state in the dyad. Not only are these effects non-linear, but, in equilibrium, also depend on the actions taken by the other state in the dyad. The results from the strategic probit reveal that trade dependence can have *either* a pacifying or positive effect on militarized conflict. Increasing trade dependence of one state on another in a dyad decreases the likelihood of that state initiating a militarized conflict, *but* increases the probability that the other state will initiate a militarized conflict. This asymmetric relationship holds for both states in the dyad.

To further illustrate the importance of using a strategic model in IR, I compared the results of the strategic probit model to those of a logit, BTSCS logit, and multinomial logit. All of the non-strategic models produced inconsistent results and could not account for strategic interdependence. Further, the results of these models all reported strictly monotonic effects, mostly pacifying, which would support the traditional liberal argument. However, as the strategic probit revealed, the effects of trade dependence for both states were not always pacifying.

Theses results have important policy implications. The prior studies that showed a strictly pacifying effect of trade dependence on militarized conflict (e.g. Polachek 1980; Gasiorowski and Polachek 1982; Oneal and Russett 1997, 1999; Polachek et al. 1999) would call for an increase in trading relationships and interdependence as a means of increasing peace. The results of the model I present in this paper call such a policy into question. While such a policy may prevent militarized conflict in certain circumstance, it can actually *increase* the likelihood for conflict in others. Additionally, any pacifying effects on conflict would only be felt with initial increases in trade dependence with other states. Once a certain conflict threshold is reached, further increases in trade dependence will not decrease (or increase) the likelihood of militarized conflict between states.

It is also important to stress the simplicity of the model presented in this paper. I by no means argue that the strategic probit model presented in this paper is the definitive model on trade and militarized conflict. The whole purpose of this paper was to call attention to the necessity of modeling strategic interdependence; especially since many IR scholars recognize trade policies and militarized conflict are the products of strategic decisions and interactions.

Future research using strategic models would benefit greatly from improvements in data collection. Obtaining data on costs to states (both domestic and international) for engaging in conflictual behavior (and pacifying behavior, since peace has its own costs, as well) would greatly improve any strategic model. Also, reliable data on demands, assets, and revisions to the status quo would greatly improve the construction of utilities for outcomes in strategic models.

Finally, improved data on trade would be invaluable to further studies on the relationship between trade and conflict.

Without the data mentioned above there will most likely never be a definitive answer to the question, What effect does trade have on conflict? However, what I argue in this paper is that even without improvements in data collection, we can still make progress towards answering the question through improvements in methods and theory. The use of strategic statistical models that account for strategic interdependence is a necessary step in the progression toward understanding the complex relationship between trade and conflict.

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Table 1 Results of the Strategic Probit Model

Outcome	Variable	Coefficient (S.E.)
SQ for State 1	Trade Dependence of 1	427.7690*** (14.4547)
	Joint Democracy	2.2407*** (0.1688)
War_2 for State 1	Relative Capabilities of 1	0.5556*** (0.0594)
War_1 for State 1	Relative Capabilities of 1	-5.1506*** (0.1338)
SQ for State 2	Trade Dependence of 2	35.0873*** (0.9139)
	Joint Democracy	1.3972*** (0.0559)
War_2 for State 2	Relative Capabilities of 2	-6.7405*** (0.1246)
War_1 for State 2	Relative Capabilities of 2	2.6418*** (0.3717)
N		22976
Mean Log-Likelihood		-0.310102
% Correctly Predicted		97.402%

*** p < .001

Table 2 Effects of Trade on Conflict: Logit and BTSCS Logit

	Logit		BTSCS Logit	
Variable	Coeff. (S.E.)	Odds Ratio	Coeff. (S.E.)	Odds Ratio
Dependence 1	-5.299 (4.189)		-31.261*** (6.496)	2.653e-14
Dependence 2	-4.286*** (1.494)	.014	-2.193* (1.629)	.112
Democracy	-1.104*** (.127)	.332	-.652*** (.175)	.521
Relative Cap. 1	.115 (.123)		-.166 (.284)	
Relative Cap. 2	a		a	
Peace years			5.30e-06 (.000033)	
Spline 1			1.32e-12 (1.53e-12)	
Spline 2			-3.09e-14 (2.81e-14)	
Spline 3			3.66e-15** (1.71e-15)	
Constant	-3.365*** (.087)		-5.043*** (.266)	
N	22976		22976	
Log-Likelihood	-2700.972		-2034.495	
X^2 (d.f.)	134.85 (4)		-	
p-value	0.0000		-	

* p < .1 ** p < .05 *** p < .01 [a] dropped due to collinearity

Table 3 Effects of Trade on Conflict: Multinomial Logit

Y35678	Variable	Coefficient (S.E.)	Odds Ratio
5	Dependence 1	.754 (3.718)	
	Dependence 2	-2.68* (1.636)	.069
	Relative Capabilities 1	.287** (.157)	1.332
	Joint Democracy	-1.232*** (.166)	.292
	Constant	-4.003*** (.113)	
6	Dependence 1	-75.142*** (31.215)	2.324e-33
	Dependence 2	-5.304* (4.043)	.005
	Relative Capabilities 1	-.523** (.286)	.592
	Joint Democracy	-.17 (.235)	
	Constant	-4.691*** (.202)	
7	Dependence 1	-8.645 (42.375)	
	Dependence 2	1.965 (5.464)	
	Relative Capabilities 1	-.043 (1.075)	
	Joint Democracy	-1.051 (1.109)	
	Constant	-7.82*** (.797)	
8	Dependence 1	-14.48 (15.112)	
	Dependence 2	-13.831*** (5.766)	9.850e-07
	Relative Capabilities 1	.103 (.273)	
	Joint Democracy	-1.97*** (.424)	.14
	Constant	-4.77*** (.188)	
	N	22976	
	Log Likelihood	-3270.482	
	X^2 (d.f.)	174.65 (16)	
	p-value	0.0260	

* p < .1 ** p < .05 *** p < .01

Figure 1 The Crisis Game

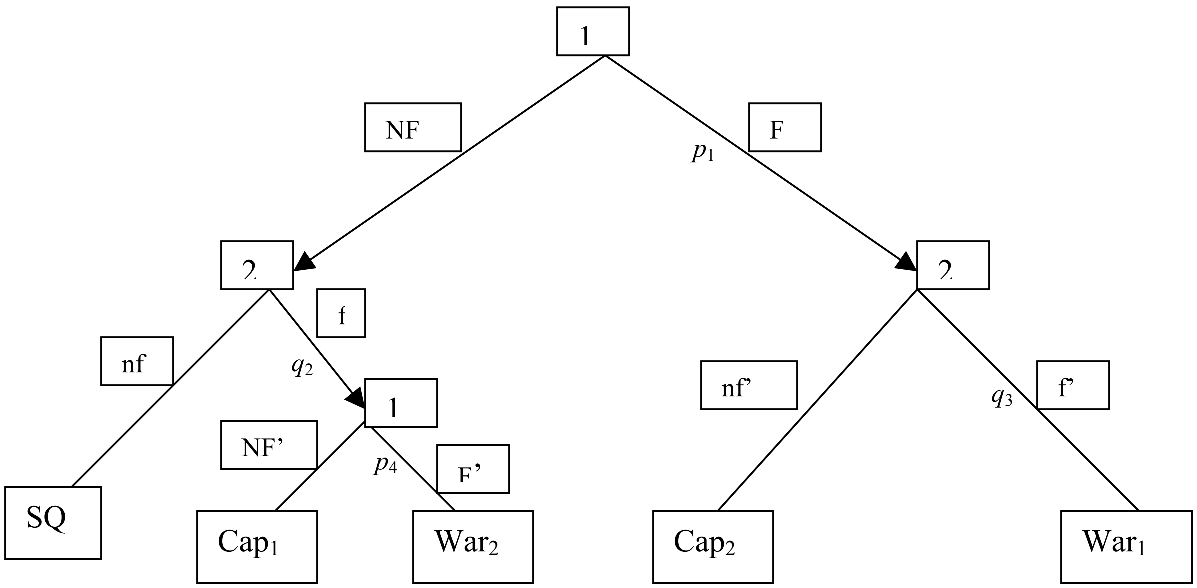


Figure 2A The Effects of State 1's Trade Dependence on War_2: Strategic Probit

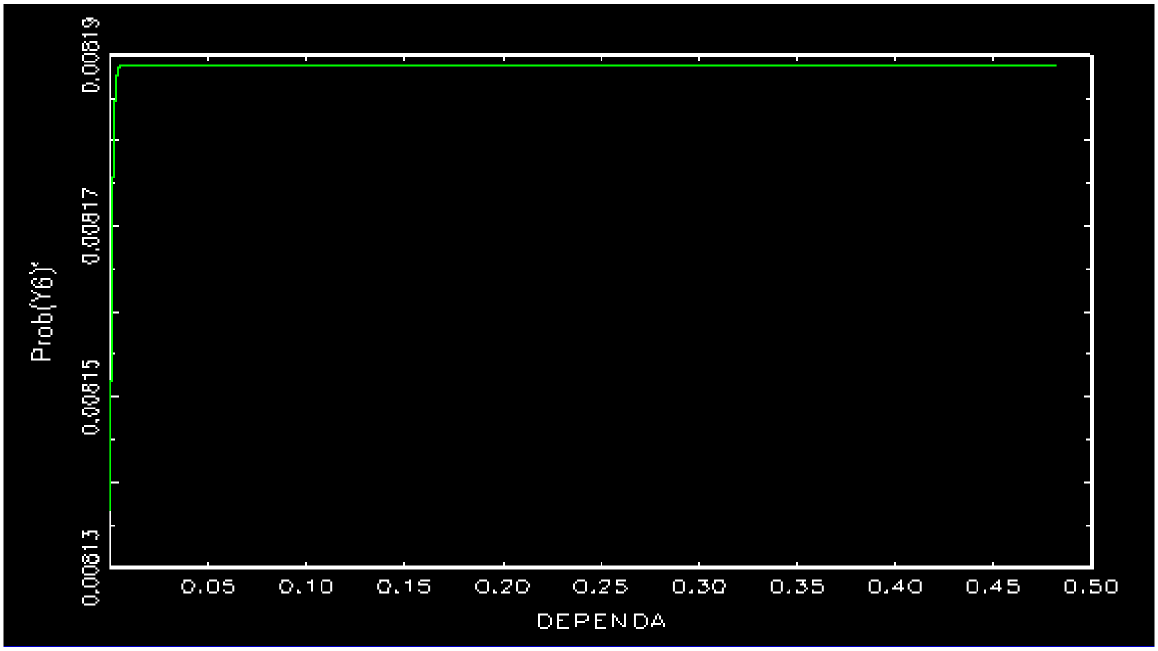


Figure 2B The Effects of State 2's Trade Dependence on War_2 Strategic Probit

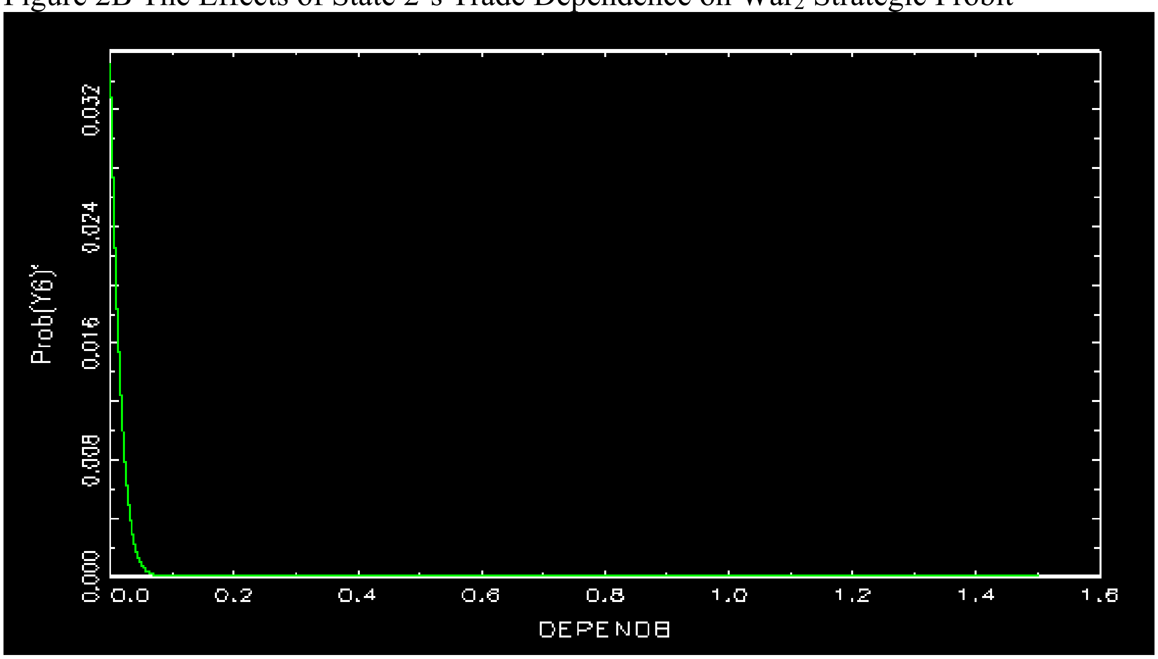
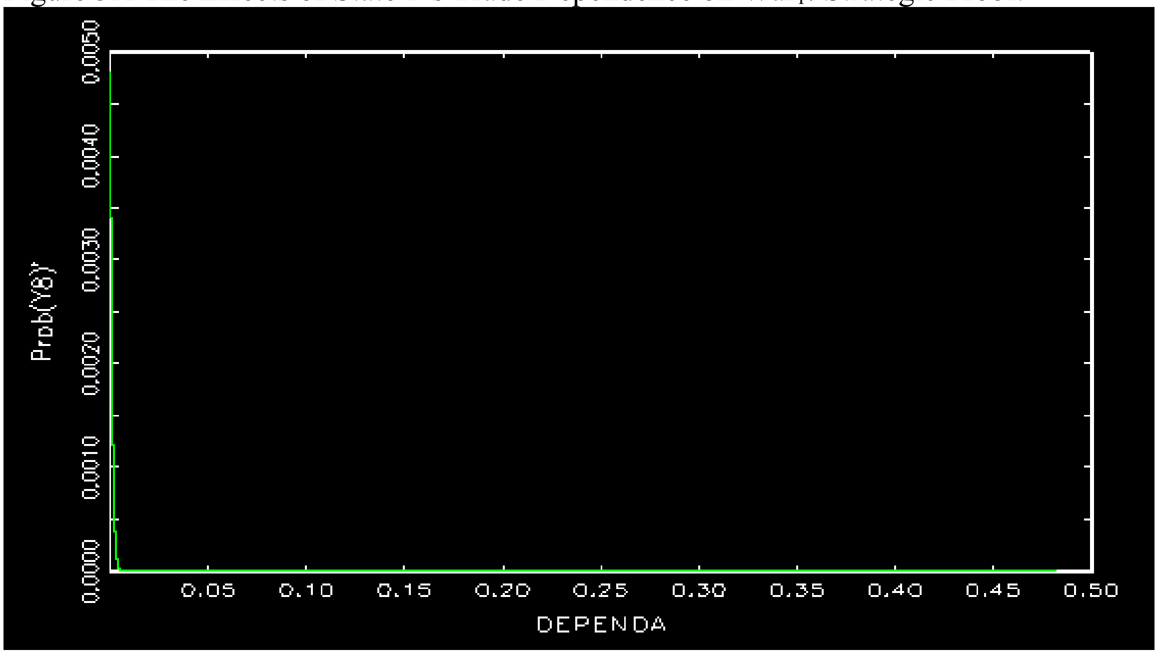


Figure 3A The Effects of State 1's Trade Dependence on War_1: Strategic Probit



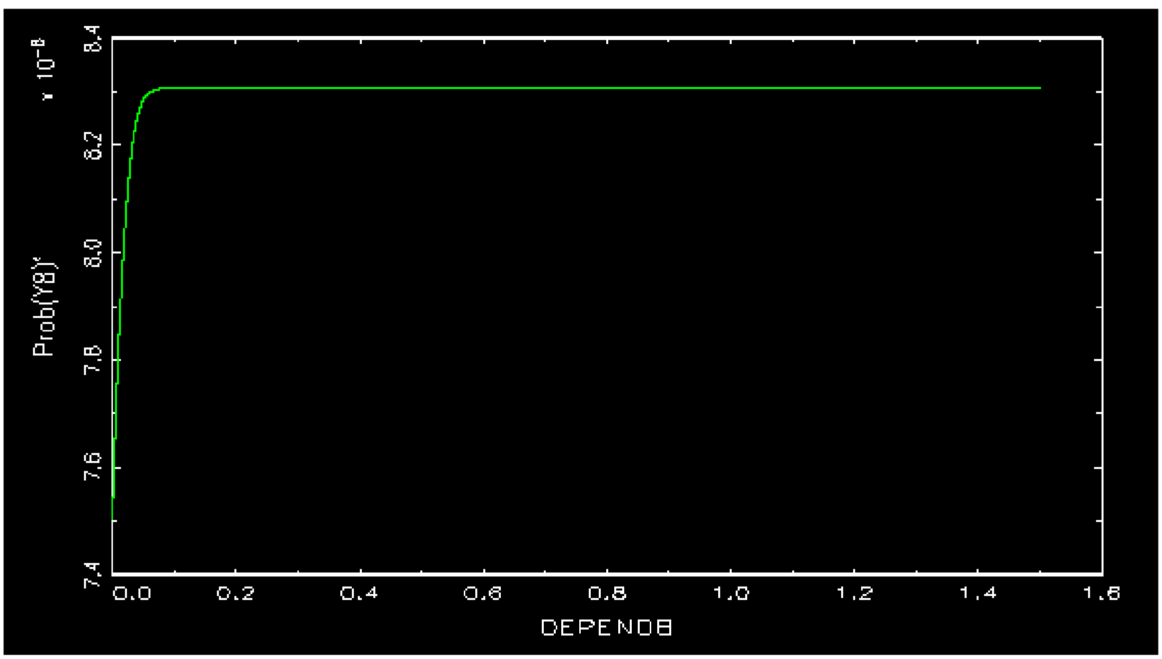


Figure 3B The Effects of State 2's Trade Dependence on War_1: Strategic Probit

Figure 4A Effects of State 1's Dependence on Cap_1

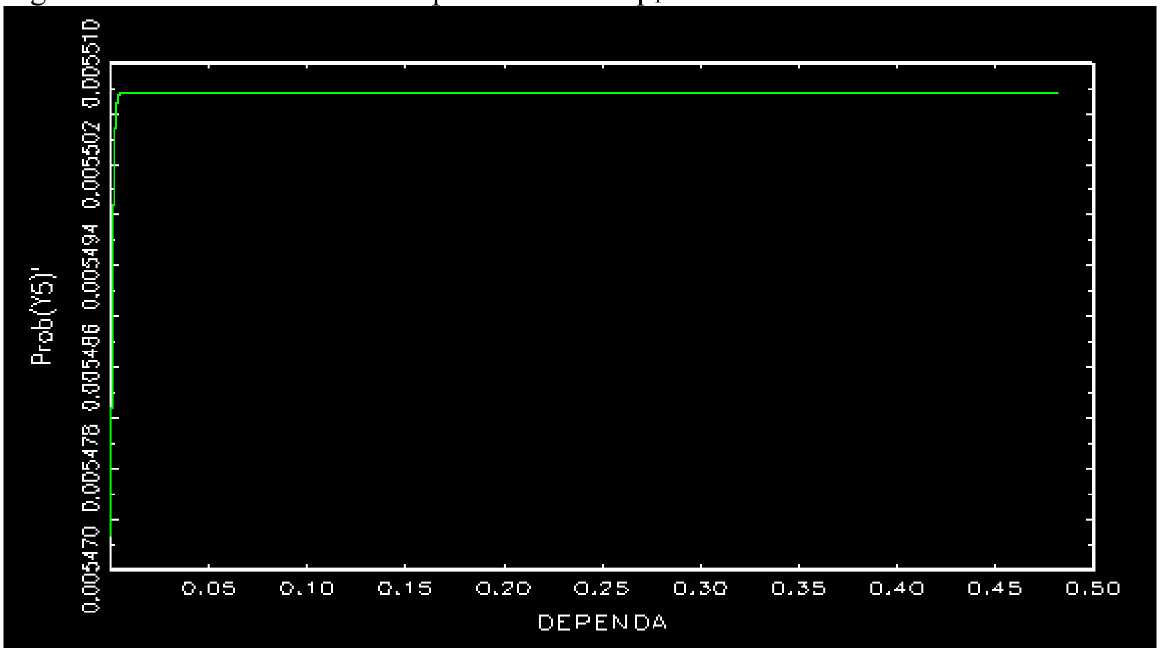


Figure 4B Effects of State 2's Dependence on Cap_1

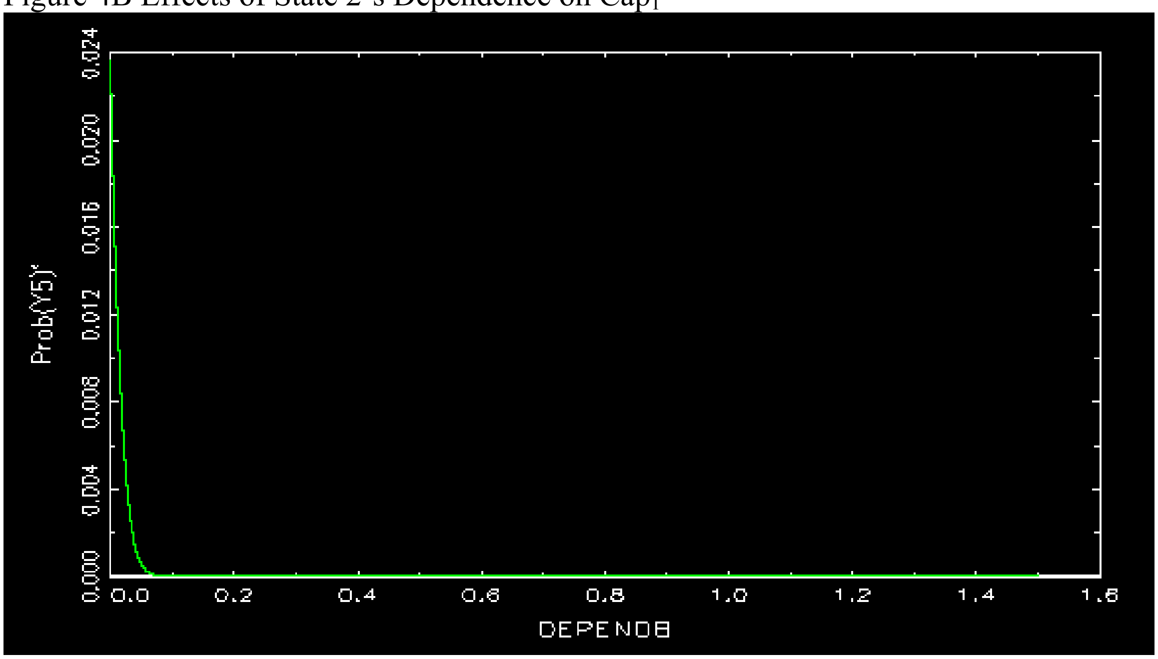


Figure 5A Effects of State 1's Dependence on Cap_2

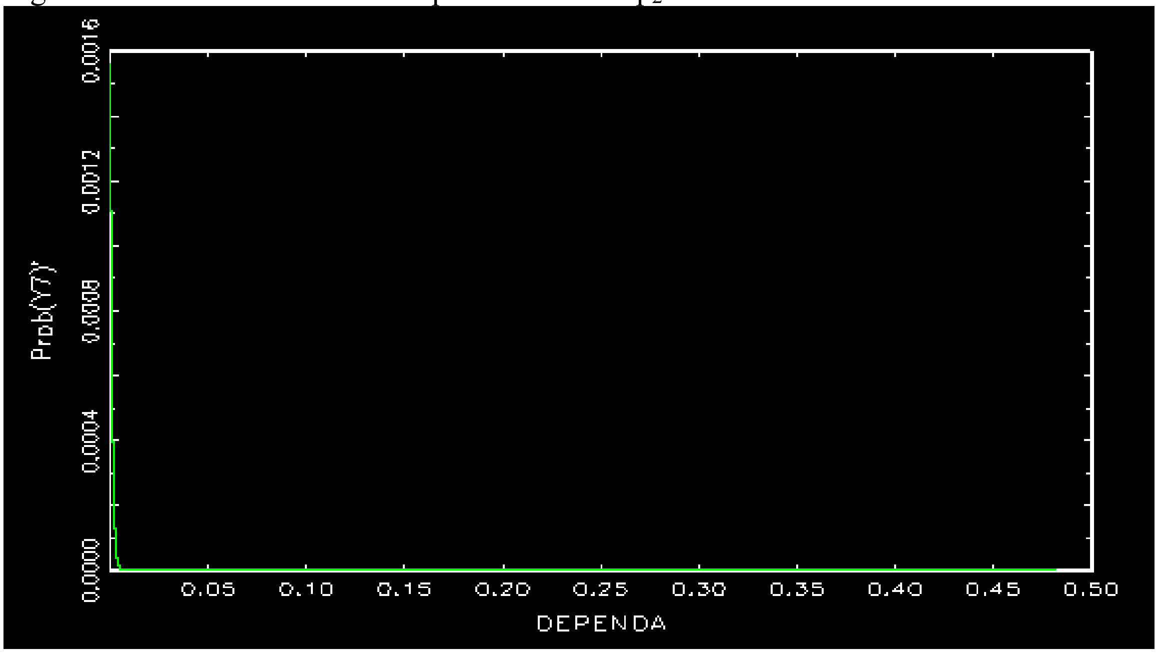


Figure 5B Effects of State 2's Dependence on Cap_2

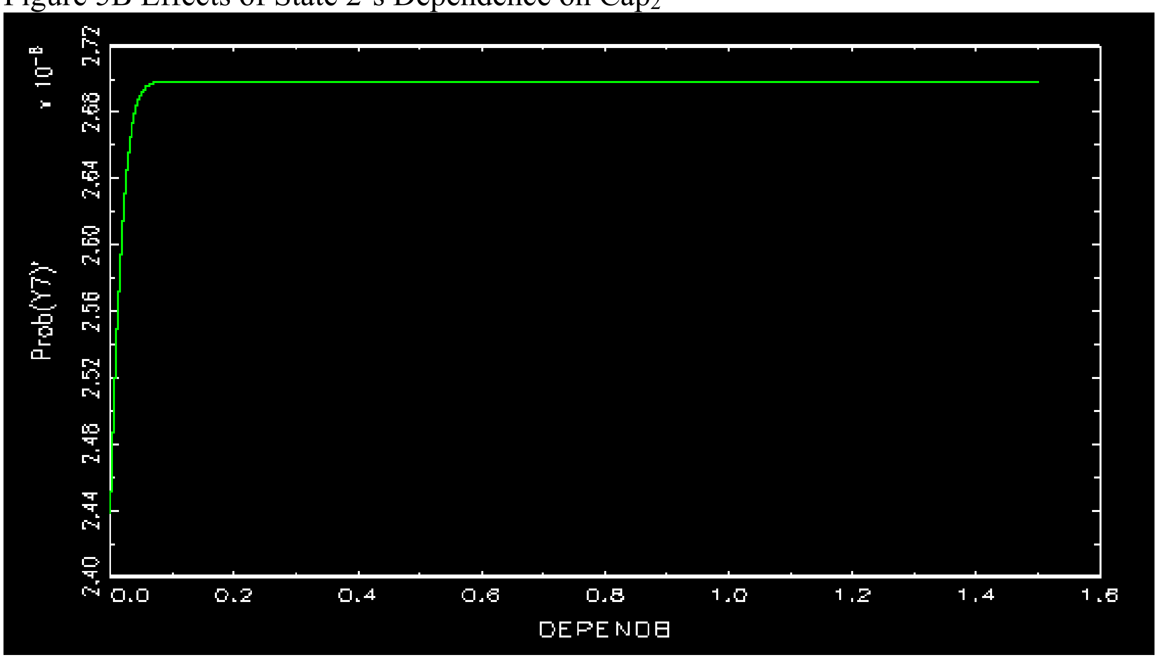


Figure 6 Effects of Trade Dependence on Conflict: Logit

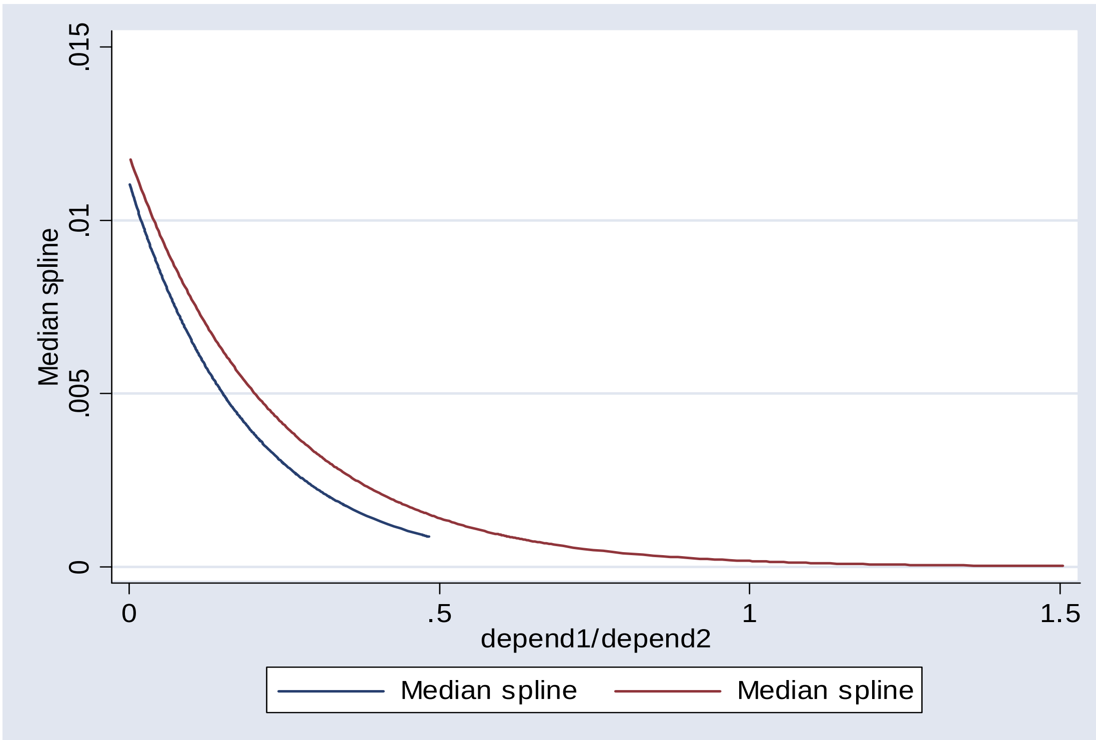


Figure 7A The Effects of State 1's Dependence on War: Multinomial Logit

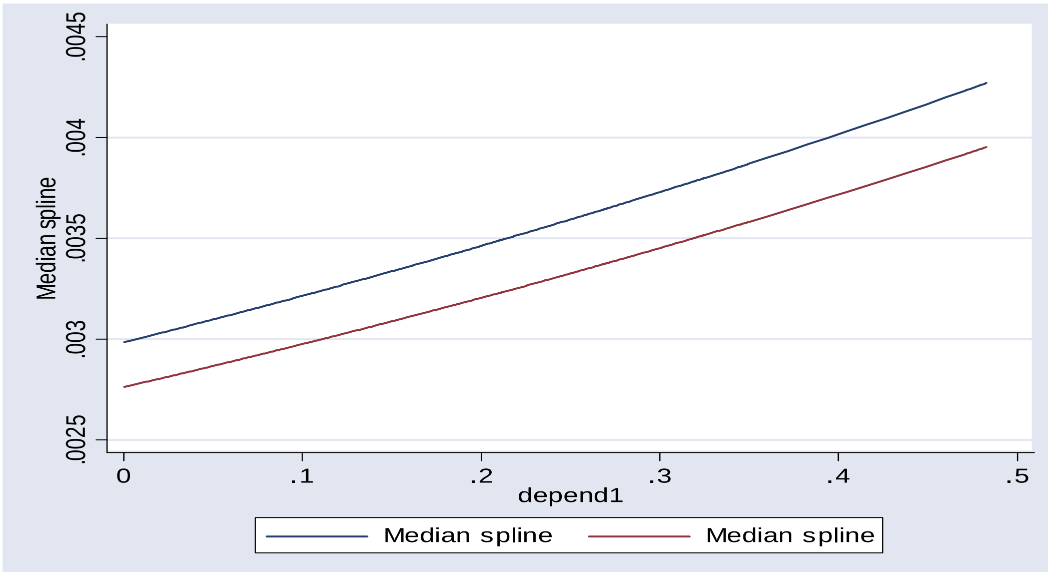


Figure 7B The Effects of State 2's Dependence on War: Multinomial Logit