

TRADING FOR SECURITY:
MILITARY ALLIANCES AND ECONOMIC AGREEMENTS*

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ABSTRACT

The authors appraise a well-known argument connecting economics and security in international relations; military allies are likely to trade more with one another than non-allies. A review of alliance treaties and diplomatic history suggests that under certain conditions states may tie together alliance agreements and economic agreements. When states explicitly link alliance agreements with economic cooperation, one would expect to see increased economic exchange coinciding with coordinated security policies. This article evaluates whether the linking of economic and security agreements accounts for a positive relationship between alliances and trade among European states before WWII, and produces evidence in support of this argument. Trade among allies who have specified economic cooperation in their alliance agreements is higher than trade among non-allied states and higher than trade among allies who have not promised economic cooperation. In contrast, trade among allies without specific economic provisions in their treaties is statistically no different from trade among non-allies. Thus, the positive empirical relationship between alliances and trade that the authors find in Pre-WWII Europe is a result of only a specific subset of all military alliances, namely those treaties that stipulate economic cooperation between the allies. This study advances our understanding of the alliance-trade relationship by focusing attention on the joint negotiation of cooperation in different issue areas.

Linking Bargains on Trade and Security

A number of studies have found that military alliances affect trade (e.g., Gowa & Mansfield, 1993, 2004; Gowa, 1994; Mansfield & Bronson, 1997). From a realist perspective, these studies theorize that allies trade more than non-allies because states are wary of the security externalities that arise through bilateral economic exchange. Trade produces a security externality for states because there is no guarantee that the gains from trade will not be used to bolster military strength and, in turn, to threaten trade partners. Military alliances implicitly enforce cooperation in trade by creating incentives for allied governments to value their trade partners' gains, as wealth gained from trade increases the potential military power of the alliance.

We argue that government negotiators sometimes link trade and security agreements to overcome both bargaining and enforcement problems. Issue linkage may allow leaders to surmount the dilemmas of cooperation by increasing the type and range of distributed benefits and by limiting incentives for opportunism. As a result, military alliances may be particularly likely to have economic consequences for their members if the treaty is specifically linked to commercial cooperation. When alliance agreements are explicitly linked to economic cooperation, we should expect to see increased economic exchange coinciding with coordinated security policies. In cases in which economic cooperation was not a part of the alliance, the influence of alliances on trade may be much smaller.

In order to evaluate the claim that coordinated negotiation over trade concessions and military alliances helps to account for an observed increase in trade associated with alliances, we have identified alliance treaties that contain content explicitly requiring economic cooperation. We compare levels of trade among states with alliance treaties that include provisions specifying

economic cooperation to trade among states that are allied but do not require economic cooperation in their alliance and to trade among states that are not allied. In our analysis of trade among European states between 1885 and 1938, we find evidence in support of our argument. First, trade among allies who have specified economic cooperation in their alliance agreements is higher than trade among non-allied states *and* higher than trade among allies who have not promised economic cooperation. Second, trade among allies without specific economic provisions in their agreements is statistically indistinguishable from trade among non-allies.

The article proceeds as follows. In the next section, we review prior arguments and empirical evidence regarding relationships between alliances and trade patterns. Then, we offer an alternative argument based on issue linkage. Next we provide an empirical evaluation of the links between jointly negotiated military and economic treaties and increased levels of trade. We provide evidence of the inclusion of economic bargains in the text of military alliance agreements and demonstrate the frequency with which this linkage occurs, and we present a statistical analysis of European trade that compares the trade of non-allies, allies, and allies with economic provisions in their alliance agreements. In the final section we evaluate the conclusions to be drawn from this study and the most fruitful areas for future research.

The Trade-Alliance Relationship

The most prominent argument concerning a relationship between military alliances and trade suggests that bilateral commercial exchange produces security externalities.¹ International trade

¹. Following Leeds et al. (2002: 238), we define alliances as ‘written agreements, signed by official representatives of at least two independent states, that include promises to aid a partner in the event of military conflict, to remain neutral in the event of conflict, to refrain from military

leads to greater absolute wealth for trade partners, and states may apply additional wealth from trade to the provision of military capabilities, threatening trade partners. However, states' political/military ties can reduce security externalities. Trade between members of a military alliance, instead of posing a threat, contributes to the potential military power of the entire coalition.

Consequently, security externalities from trade may alter behavior by states and firms. Governments could manage trade policy to direct trade toward allies and away from actual or potential adversaries. Further, the causal mechanism behind a positive relationship between alliances and trade could be a reaction by firms to positive political relationships between states (e.g., Morrow, Siverson, & Tabares, 1998; Long, 2003; Gowa & Mansfield, 2004). When firms feel secure that conflict between their state and that of their trading partners is unlikely to occur and that the states will work together to promote commerce between their respective businesses, they are more likely to invest in trade. Investments to serve export markets are often relation-specific, which forces firms to guard against future opportunistic behavior by trading partners. As a result, firms are more likely to establish business relationships with the firms of a state that is allied to their government.² Allied governments have political/military incentives to enforce trade contracts between their firms because trade increases the potential military power of the alliance (Gowa & Mansfield, 2004).

conflict with one another, or to consult/cooperate in the event of international crises that create a potential for military conflict.'

². Gowa and Mansfield (2004) point out that this argument applies especially when goods exchanged are subject to increasing returns to scale.

We agree that alliances function to reassure firms that their trading relationships will remain safe into the future and that they can count on cooperation between their governments to ensure this. Yet, implicit issues of enforcement may not be the only factors encouraging trade among allies, and we may be able to distinguish the cases in which alliances provide greater enforcement for economic deals by the explicit reference to such issues in alliance agreements. In addition, stronger commercial ties may be a “carrot” used to encourage acceptance of an alliance by a reluctant partner. Perhaps paying attention to the explicit linkage of these issues will help us to understand more fully why alliances encourage commercial interaction.

Issue Linkage and International Cooperation

Why would government negotiators link security cooperation to economic cooperation? A number of scholars have argued that linking agreements covering different issues can sometimes facilitate cooperation. Fearon (1998) develops a compelling framework for thinking about the dilemmas faced by leaders attempting to negotiate cooperative agreements. Leaders first face a bargaining problem (deciding what agreement to implement) and then an enforcement problem (creating incentives for participants to comply with the agreement). The two are inextricably linked in that failure to solve either prevents successful cooperation. Under certain circumstances, linking issues together can help leaders to overcome both bargaining and enforcement dilemmas.

Bargaining failures occur when two or more parties are unable to agree on a mutually acceptable division of costs and benefits associated with cooperation. Sometimes bargaining failures occur even when a set of agreements exists that both sides would prefer to no agreement because negotiators have incentives to misrepresent their ‘bottom line’ in attempting to get a

better deal (e.g., Fearon, 1995, 1998). Sometimes, however, there is no cooperative agreement that both sides prefer to the status quo. In these cases, linking issues may pave the way for cooperation by creating zones of mutual benefit that might not have existed on a single issue dimension (Tollison & Willett, 1979; Hoekman, 1989; Morgan, 1994; Davis, 2004). Negotiating agreements on two or more issues simultaneously and tying the fulfillment of these agreements together can produce cooperative outcomes that both sides prefer to the status quo.

This is especially likely to be the case when the negotiating parties have different priorities across the two issues and/or when agreement on the two issues will have offsetting distributional consequences. In other words, if side A cares most about issue one, and side B cares most about issue two, side A might be willing to make concessions on issue two in return for B's concessions on issue one. Similarly, if the proposed resolution to issue one is more favorable to A and the proposed resolution of issue two is more favorable to B, the combined agreement might be acceptable to both even if neither agreement individually would be mutually acceptable. As Tollison & Willett state, 'Through the formal or informal linking of issues . . . the possibility emerges of indirectly paying compensation' (1979: 426).

Thus, if a leader sees great benefit from a military alliance with another state, but the desire for the alliance is not equally shared, it is possible that sweetening the pot, for instance, by offering to reduce trade barriers, would make the deal more attractive. A leader may not be willing to agree to economic concessions alone, but will open her state's market in return for an alliance commitment. Similarly, the leader of the potential partner may not be willing to sign an alliance absent the linked economic deal, but obtaining benefits in the economic sphere might make the alliance worthwhile. While neither an economic nor a security agreement is mutually

acceptable on its own, the joint agreement appeals to both sides.³ Issue linkage can help states to solve bargaining dilemmas and find agreements that improve upon the status quo for both parties.

As Fearon (1998) notes, however, leaders will only bargain seriously when they believe that there is a reasonable probability that the parties will have incentives to uphold the agreement. Many issues over which leaders might value cooperation produce incentives for opportunism. Trade and alliance politics certainly fall into this category. Scholars have often argued that international trade is a good example of the classic prisoners' dilemma (e.g., Conybeare, 1984). While leaders prefer mutual cooperation to mutual defection, they most prefer to be able to protect their own markets while having access to that of their partner, an outcome that imposes costs on the party that cooperates without reciprocation. Leaders who prefer open trade to protectionism if equally practiced might be unwilling to form an agreement

³. Morrow (1991) argues that alliances sometimes represent security/autonomy trade-offs between states, in which some alliance members increase their security and others gain support for their international policies (see also Schroeder, 1976). This broader argument is commensurate with the issue linkage argument presented here. Morrow argues that these trade-offs are particularly likely to occur in asymmetric dyads (i.e., between major powers and minor powers), with the major power offering security to the minor power in return for political support. Negotiating power on an individual agreement, however, may not reflect overall power relations between two states, but rather may be a function of the relative salience of the agreement at stake and the availability of outside alternatives. Morrow's argument about security-autonomy trade-offs may be broader than originally claimed.

if they feel vulnerable to cheating. Similarly, while both participants might value an alliance for the deterrence it produces and the economies of scale in defense provision, each might prefer not to fulfill the agreement if it is invoked by attack on the partner. Leaders who prefer alliance formation to increased individual security expenses might nevertheless be reluctant to cooperate due to fear of abandonment (e.g., Snyder, 1997).

Scholars have often considered issue linkage as one way to overcome enforcement problems like these in international relations. Value for the long term benefits of a cooperative relationship can outweigh the short run gains from cheating and violation; this is the logic of cooperative solutions to the iterated prisoners' dilemma (e.g., Axelrod, 1984; Taylor, 1987). Linking issues helps to make cooperative behavior self-enforcing by increasing the value of future cooperation, thus lengthening the 'shadow of the future' (e.g., Axelrod & Keohane, 1986; McGinnis, 1986; Keohane & Martin, 1995; Abbott & Snidal, 2000).

Thus, to increase the value of the alliance or trade agreement and provide the needed assurance that a promise will be kept, leaders can make beneficial economic exchange and continued security cooperation contingent upon one another. Tying economic and security agreements together can reduce incentives to defect from either agreement and facilitate cooperative relationships that were previously viewed as too risky. Failing to fulfill military obligations would put commercial exchange in danger, and failing to adhere to trade agreements could lead to alliance termination, making unilateral defection on either less attractive. When incentives exist to defect unilaterally from agreements on economic and security issues, linking the two may change these incentives and make the joint agreement self-enforcing. Firms,

witnessing such agreements, are likely to feel more confident about the future of political relations between the states.

For some sets of states, tying preferential trading arrangements and other economic agreements to promises of military cooperation may open a range of agreements that would not be mutually acceptable without explicit linkage. By increasing the type and range of benefits to be distributed and by reducing incentives for opportunism, issue linkage can help state leaders overcome bargaining dilemmas, enforcement dilemmas, or both, and facilitate cooperation. Incentives for leaders to link negotiations for preferential trade arrangements and military alliances together may shed light on the debate about the effects of alliances on trade. If what accounts for increased trade among allies are the trade agreements linked to an alliance, then we can distinguish those alliances most likely to affect economic exchange from those alliances unlikely to affect economic exchange.⁴ This in turn could pave the way for an improved understanding of the causal mechanism behind any correlation between alliances and trade.⁵ In the following section, we discuss the identification of alliances involving economic negotiations. Then, we evaluate the hypothesis that linked agreements account for increased trade among allies.

⁴. It is well established that trade agreements have a positive impact on trade levels (e.g., Linnemann, 1966; Pollins, 1989; Mansfield & Bronson, 1997).

⁵. Mansfield & Bronson (1997) argue that both alliances and preferential trading arrangements should lead to increased commerce. They find that states that belong to both an alliance and a PTA together have higher levels of trade than states that share membership in only one or the other.

Explicit Linkages Between Trade Policy and Alliance Formation

How often are economic negotiations linked to negotiations over military alliances? A careful reading of the treaty content of the 213 alliances included in version 1.0 of the Alliance Treaty Obligations and Provisions (ATOP) dataset reveals that 39 of the treaties, 18%, either include articles requiring specific acts of economic cooperation (for instance, the removal of certain trade barriers), or include statements requiring general economic cooperation and/or declaring that commercial agreements will be negotiated in the near future.⁶

Article 7 of the 1913 Treaty of Alliance between Greece and Serbia, for instance, states ‘His Majesty the King of the Hellenes covenants that his government shall grant all the necessary facilities and guarantee for a period of fifty years the complete freedom of the export and import trade of Serbia through the port of Salonika and the railway lines from Salonika to Uskup and Monastir...’ (Hurst, 1972: 846-852). The 1863 alliance agreement signed by Peru and Bolivia includes statements on both monetary policy and trade. In Article 14, ‘The Republic of Bolivia binds itself not to issue light coin...’ and in Article 23, the states ‘agree to give the most ample freedom for the reciprocal commerce of both countries, and to establish full exemption from duties on the national products of both’ (Great Britain, Foreign Office, 1864-65: 837-843). The 1921 alliance between France and Poland specifies that it does not become effective until a commercial agreement is in force (Wandycz, 1962: 393). The 1934 treaty signed by Austria, Hungary, and Italy specifies that bilateral trade agreements must be concluded within two months, and that in these agreements, the states will ‘take the necessary steps to remedy the difficulties encountered by Hungary as a result of the fall in the price of wheat’

⁶. Data are available at www.ruf.rice.edu/~leeds/atop.html (Leeds et al., 2002).

(League of Nations, 1934: 295). In all, sixteen agreements include specific economic commitments, and twenty-three additional alliances include general promises of economic cooperation, often combined with statements promising the quick negotiation of companion economic agreements.

These statistics and examples demonstrate that there is variation in whether economic cooperation is explicitly linked to military cooperation. Not every alliance in the ATOP dataset includes economic obligations. It seems reasonable to infer that a treaty with provisions addressing more than one issue is the manifestation of explicit linkage in the negotiation of these issues. The inclusion of a promise to cooperate economically is not coincidental when it occurs; leaders intended to make economic cooperation and security cooperation contingent upon one another. Historical accounts of alliance negotiations further support this view.

Brawley (1998), for instance, claims that the liberalization of German trade policy through a number of bilateral agreements in the early 1890's was motivated in part by a desire to maintain important alliances; Austria-Hungary, in particular, demanded improved access to the German market for agricultural products in return for political loyalty. Newnham (2000) notes the role of Germany's willingness to liberalize trade and make loans to Russia in encouraging Russia to sign the 1887 Reinsurance Treaty. One of the most clear cases of linked economic and military negotiations, however, occurred between France and Belgium after the first world war. After World War I, French leaders were motivated by their fear of another German attack. They pursued a combined strategy of working to keep Germany weak, and of strengthening their bonds to other states with incentives to oppose German attack (e.g., Langsam, 1948: 173-199; Parker, 1969: 56-93; Albrecht-Carrie, 1973: 406-411). A crucial part of their defensive plan was

alliance with Belgium, which had so recently served as the conduit for German aggression. The Maginot line defense required Belgian cooperation, and to the French it seemed obvious that the Belgians needed a defensive commitment from France also (Helmreich, 1964; Kieft, 1972; Marks, 1981: 247-248).

French leaders succeeded in signing an alliance treaty for mutual defense with the United States and Great Britain, but the treaty was not ratified by the United States, and Great Britain refused to accept defensive obligations to France without the concurrent commitment of the United States. While Belgium saw value in being tied to a coalition involving the USA, the UK, and France, when the USA and UK withdrew from the tripartite plan, Belgian leaders questioned whether alliance with France offered more benefits or more costs. It was not clear to Belgian leaders even after their neutrality had been brutally violated that abandoning that longstanding policy in favor of alliance with France would improve Belgian security. In fact, it seemed potentially more risky to create a clearly antagonistic relationship with their large German neighbor than to remain uncommitted. By allying with France, Belgium would ensure its involvement in any Franco-German war (Helmreich, 1964; Rothstein, 1968: 72-88; Kieft, 1972).

But Belgium did have a desire for a stronger, and more equal, commercial relationship with France. With Germany weakened, French economic power was likely to dominate the Western part of the continent. Belgian leaders found this a matter of great concern and expressed their fears of French economic domination. The Belgians were particularly interested in the future of the Grand Duchy of Luxembourg, which prior to the war was economically linked to Germany. Because of its minuscule size, Luxembourg needed an economic union with a neighbor. Belgium depended on the Luxembourg railroad system for much of its most

profitable trade, and thus, the Belgians wanted the French to pave the way for economic union between Belgium and Luxembourg, which would include Belgian control over the Luxembourg railroads. Belgium also wanted a reduction in French tariffs (Gathorne-Hardy, 1938: 19-20; Langsam, 1948: 174; Helmreich, 1964; Marks, 1981; Reiter, 1996: 128-132).

Luxembourg and many in the French leadership preferred union between Luxembourg and France and French control over the railroads. The French resisted linking discussion of the Luxembourg question and economic union with military cooperation. Belgium responded by breaking off talks on a military accord in February, 1920, claiming that their continuation would be contingent upon an economic bargain involving Luxembourg (Helmreich, 1964).

Two months later, France extended occupation of the Ruhr as a result of German government activities in response to leftist uprisings. Britain disapproved of this action and refused to participate. French leaders found themselves alone and without western allied support. Belgian leaders decided that it was not in their interest to allow France to face Germany alone, and suggested that they would send troops to assist the French if progress were made on the Luxembourg question. The French agreed to Belgium's proposal for linked talks on the Luxembourg railroad and a military accord. One month later, France advised Luxembourg to form an economic union with Belgium, and a formal alliance between France and Belgium was signed the following autumn (Helmreich, 1964; Marks, 1981: 340-344). The alliance was followed by a reduction of French tariffs on foreign goods transported through Antwerp (Gathorne-Hardy, 1938: 20).

In the French-Belgian case, the leaders of a smaller power believed they had choices about whether and how tightly to commit themselves to their major power partner (Reiter, 1996:

128-132). The major power saw enough utility in the alliance to make concessions on contentious economic issues in exchange for the alliance. The result was a much stronger trading relationship between France and Belgium during their period of alliance, as one can see in Figure 1.

Figure 1 in here

In 1936, Belgium unilaterally terminated its alliance with France. While there were a number of sources of Belgian dissatisfaction with the military relationship with France, one source was what Belgium viewed as France's failure to continue to provide adequate access to the French market for Belgian exporters. As a result of the Depression, France had imposed import quotas and high tariffs, as well as a quota on Belgians permitted to work in France. Figure 1 shows the decrease in trade levels corresponding to this period. Repeatedly unsuccessful attempts to negotiate a new commercial agreement created increasing Belgian dissatisfaction with the Belgian-French relationship, and was one cause of the Belgian decision to terminate the alliance. Belgian defection on the military alliance was linked to French defection on commercial agreements (Kieft, 1972: 49).

There seems to be evidence that in some cases, economic and security agreements are explicitly linked. If governmental economic agreements have an effect on levels of trade between states, and if agreements on trade are sometimes linked to agreements for security cooperation, then a relationship between alliances and trade might be observed as a result of this linked negotiation. In the following section, we discuss our empirical evaluation of this relationship.

European Alliances and Trade Before World War II

Does explicit bargaining linking economic cooperation with military alliances result in increased trade between alliance partners? If so, we would expect the following relationships to hold:

Hypothesis 1: Trade levels between members of military alliance treaties that include provisions for economic cooperation are higher than trade levels among non-allied states.

Hypothesis 2: Trade levels of members of military alliance treaties that include provisions for economic cooperation are higher than trade levels among members of alliance treaties that do not include provisions for economic cooperation.

We have designed a statistical test to evaluate these hypotheses. Our unit of analysis is the dyad-year in a time series-cross section research design. We analyze bilateral trade flows between all pairs of states (dyads) in the region of Europe from 1885-1938. The dependent variable is the annual level of dyadic trade in millions of constant US dollars. More detailed information on the sample, the variables in the model, and the sources utilized to construct the variables, where relevant, can be found in the Appendix. The statistical model we estimate is:⁷:

$$\begin{aligned} \ln(DT_{ijt}) = & \ln(\alpha_i) + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(POP_{it}) + \beta_4 \ln(POP_{jt}) + \\ & \beta_5 \ln(\text{Distance}_{ijt}) + \beta_6 \text{Border}_{ijt} + \beta_7 \text{Linked Alliance}_{ijt} + \beta_8 \text{Non-Linked Alliance}_{ijt} + \beta_9 \\ & \text{Joint Democracy}_{ijt} + \beta_{10} \text{Hegemony}_{ijt} + \beta_{11} \ln(\text{Similarity})_{ijt} + \beta_{12} \text{MID}_{ijt-1} + \ln(\epsilon_{ijt}) \end{aligned}$$

⁷. The functional form of the gravity equation is multiplicative (Bergstrand, 1985). Therefore, we take the natural log of all interval level variables to make the equation linear. The final model is semi-logarithmic because of the inclusion of dichotomous variables that take values of one and zero in the estimated model.

In order to evaluate our argument, we need to identify the linking of trade with security issues in alliance agreements. The ATOP dataset serves this purpose well because it includes detailed information about the content of military alliance agreements. We consider alliances to be ‘linked’ in cases where the primary documents outlining the agreement: (1) propose formation of an additional economic agreement between the members, (2) require specific acts of economic cooperation or economic aid, or (3) refer to a companion economic agreement between the states. We code treaties including these provisions as instances of issue linkage where joint negotiation of security and trade issues occurred. We then create two dichotomous variables coded either one or zero. The first ($\text{Linked Alliance}_{ijt}$) is coded one for dyad-years where the countries are allied and the treaty includes provisions for economic cooperation (zero otherwise); the second ($\text{Non-Linked Alliance}_{ijt}$) is coded one for dyad-years where the countries are allied by an agreement without linkage to economic issues in the text of the treaty (zero otherwise). The two dichotomous alliance variables allow us to represent three types of dyads: non-allied dyads as the reference category, allied dyads that have not linked security with trade, and allied dyads forming military agreements explicitly linking security and trade.

The first thing we learn is that while a number of European alliances in the inter-war period include provisions explicitly specifying economic cooperation, these provisions were virtually non-existent in Europe prior to WWI. Because of these differences, we present analysis of the full time period, but also analyze the pre-WWI period and the interwar period separately. Since there is only one observation in which alliances and economic cooperation are linked in the same treaty in the pre-WWI period of our sample (and this observation is lost in estimation because of missing trade data), we cannot include a variable representing linked alliances in the

analysis of the 1885-1913 time period. In the analysis of the 1885-1938 and 1920-1938 time periods, we expect the coefficient for the variable representing alliances linked to economic agreements to be positive. We also expect alliances that include economic cooperation to have an effect on trade that is greater than the effect from alliances that do not include provisions for economic cooperation.

To test our hypotheses about the influence of alliances on trade, we first specify a ‘gravity’ equation of bilateral trade and control for other political factors that may also influence trade levels. Gravity formulations are both tractable and consistently successful in providing a base empirical model of dyadic trade, and one can derive the core properties of this model from many standard trade theories (Deardorff, 1998). The gravity model predicts aggregate trade levels between countries by their national incomes, capital-labor ratios, and the cost of transporting goods between them (e.g., Anderson, 1979; Bergstrand, 1985). Theoretical micro-foundations of a gravity equation predict an inverse relationship between transportation costs and trade, and a positive relationship between national income and trade. The capital-labor ratio of a country should have a positive relationship to trade when capital intensive goods prevail and most traded goods are luxury items, but negative relationship to trade when labor intensive goods prevail and most traded goods are necessities (Bergstrand, 1989).

In our gravity model, the Gross Domestic Products (GDP_{it} and GDP_{jt}) of the two countries measure their national incomes, their total populations (POP_{it} and POP_{jt}) measure the capital-labor ratios, and the distance between the pair of states ($Distance_{ijt}$) and whether or not they are contiguous by land ($Border_{ijt}$) proxy the transportation costs of trade. We expect positive coefficients on the GDP variables and the Border variable, and a negative coefficient on

the distance variable. If trade between states is primarily in capital-intensive, luxury goods the coefficient of the population variable will be negative, but if trade is primarily in labor-intensive, necessity goods, the coefficient for the population variable will be positive. Data on Gross Domestic Product are unavailable for some states during the time period of our study, but following the example of Russett and Oneal (2001), we utilize data on energy production to predict missing GDP values.⁸

Scholars also argue compellingly that other political factors influence aggregate trade flows among states. We include variables in our analysis to represent similarity in regime type, foreign policy similarity, hegemony, and military conflict. Several scholars demonstrate that trade among democratic states is higher than trade in other types of dyads (Bliss & Russett, 1998; Mansfield, Milner, & Rosendorff, 2000; Dixon & Moon, 1993; Morrow, Siverson, & Tabares, 1999). Following their research, we include a dichotomous variable for joint democracy ($\text{Joint Democracy}_{ijt}$) in our model. A state is considered democratic if it scores six or higher on the institutionalized democracy score in the Polity III data (Jagers & Gurr, 1995).

Morrow, Siverson & Tabares (1998) argue that it is also important to control for the influence of common foreign policy interests in analyzing the trade-alliance relationship, since states with common foreign policies are less likely to experience militarized conflict in the future, and the potential for military conflict should depress trade levels. We include a measure of the degree to which the states have similar foreign policy interests in our model-- the global

⁸. The results are similar when we estimate the model after excluding these predicted GDP values.

weighted Similarity (S) score for the dyad (Signorino & Ritter, 1999).⁹ We also control for differences in the international system that may affect international trade flows across different time periods. Specifically, British hegemony before WWI is likely to have contributed to greater trade in the international system (e.g., Krasner, 1976; Kindleberger, 1981). Therefore, we include a dichotomous variable coded one for the years 1885-1913. We expect the signs on the coefficients for Joint Democracy, Similarity, and Hegemony to be positive.

We anticipate that direct military conflict will decrease trade between states. To control for this, we include a dichotomous variable representing the occurrence of a COW Militarized Interstate Dispute (MID_{ijt-1}) between the states (Jones, Bremer, & Singer, 1996). Since other studies report that international trade has a significant deterrent effect on militarized conflict (e.g., Russett & Oneal, 2001), we lag the militarized interstate dispute variable one year to minimize simultaneity bias in the analysis.¹⁰

Analyzing time series, cross-sectional data requires special consideration of the error terms. We suspect, given that the data are measured over time and across different units, that estimation by Ordinary Least Squares (OLS) regression would violate assumptions with regard to the error structure of the model. The error variances for each cross-section (dyad) are most likely heteroskedastic and/or contemporaneously correlated while the errors within cross-

⁹. Because the range of the Similarity variable includes negative values (-1 to 1) and the natural log of a negative value is undefined, we rescale this variable by adding two so that its range is one to three.

¹⁰. The Joint Democracy, Similarity, and MID variables were all computed using the EUGene program (Bennett & Stam, 2000).

sections are probably correlated (autocorrelation) due to the measurement of the trade data over time. If the 'panel error' assumptions are violated, the regression coefficients are unbiased but their standard errors are inefficient. Contemporaneous correlation, panel heteroskedasticity, and/or serial correlation will produce inconsistent standard errors and thus inhibit our ability to draw the correct inferences from our analysis. We conduct an F test for serial correlation in linear panel-data models developed by Wooldridge (2002) and can easily reject the null hypothesis of no first-order auto-correlation ($F = 68.634$, $p\text{-value} < .0000$).

Therefore, we use a form of Feasible Generalized Least Squares (FGLS), specifically Prais-Winsten regression, and adjust the standard errors for panel heteroskedasticity and contemporaneous correlation. Prais-Winsten regression transforms the model to account for a first-order autoregressive (ar1) process. The standard errors are calculated from a variance-covariance matrix that corrects for heteroskedasticity and correlation in the residuals across dyads. The results are unbiased coefficients and consistent panel-corrected standard errors (PCSE's) (Beck & Katz, 1995, 1996). The appendix presents a more detailed discussion of the issues surrounding estimation of time-series, cross-section data.

Table I in here

Table I displays coefficients from estimating the model across three different time periods; the results are largely commensurate with our hypotheses. The coefficient of the Linked Alliance variable, which represents allies who have promised economic cooperation in their alliance agreements, is positive and statistically significant in the full time period of 1885-1938 and the inter-war period of 1920-1938. In contrast, the coefficient for the variable representing allies without explicit promises of economic cooperation is statistically insignificant in both

Model 1.1 and Model 1.2, and its sign is negative for the inter-war period. These coefficients provide evidence favoring our first hypothesis. As we mentioned above, there were no cases of alliances linked to economic cooperation in the pre-WWI sample, so Model 1.3 includes only a measure of non-linked alliances. The positive, but insignificant coefficient for non-linked alliances in Model 1.3 means that we are unable to reject the null hypothesis that non-linked alliances are correlated with bilateral trade in the 1885-1913 time period. Thus, it only provides indirect evidence in favor of our argument. Failing to reject a null hypothesis with a 95% confidence interval is not the same as proving there is no relationship and we do not claim that this finding in itself falsifies any theory.

To test our second hypothesis, we conduct chi-square tests of the null hypothesis that the two coefficients (Linked Alliance and Non-Linked Alliance) are equal for Models 1.1 and 1.2. For the 1885-1938 time period, we are unable to reject this null hypothesis for a conventional level of statistical significance ($p = .12$), but we are able to reject the null in the 1920-1938 sample ($p = .03$). In other words, the test shows that the coefficient for linked alliances is greater than the coefficient for non-linked alliances in the inter-war period and this result is statistically significant at a .05 level (4.5, $df=1$). Thus, we have partial support for our second hypothesis.

Substantively, the linked alliance coefficient indicates that trade is 24% and 29% higher between allies that have explicitly negotiated economic cooperation than trade between non-allies in the 1885-1938 and 1920-1938 time periods, respectively.¹¹ When we group all allied

¹¹. Interpreting the substantive effect of a dichotomous variable in a semi-logarithmic model requires a transformation of the coefficient by a formula equal to approximately $100 \cdot (e^{\text{coefficient}} - 1)$. The resulting value is the percentage change in the dependent variable with a change in the

dyads together without distinguishing those who have promised economic cooperation in their agreements from those who have not, our alliance variable is positive, but insignificant. The formation of alliances that are linked to negotiations for economic cooperation seems to coincide with higher levels of trade among the states. Alliances negotiated without any evidence of economic issue linkage, however, show no impact on dyadic trade levels.

Our control variables also behave mostly as expected. Four of six coefficients for the GDP variables and all three coefficients for the distance variable are in the expected direction and statistically significant. Population has a statistically significant positive effect on trade in five out of six instances, which is consistent with an era characterized by labor intensive production processes and trade in necessity goods. The coefficient for the Border variable is positive in all three models, but only reaches statistical significance in Model 1.2.

The results also show that democratic states are more likely to have higher levels of trade, a finding that is consistent with others' research (Bliss & Russett, 1998; Dixon & Moon, 1993; Morrow, Siverson & Tabares, 1999). We do not find a statistically significant relationship between the similarity of two countries' foreign policies, but the presence of a hegemonic power in the international system from 1885-1913 appears to contribute to a higher level of trade in this time period, as the positive, significant coefficient on the Hegemony variable demonstrates. The impact of military confrontation on trade is mixed. In our analysis of the inter-war period, the occurrence of a Militarized Interstate Dispute in the previous year deters trade in a dyad; the coefficient on MID is negative and significant. In the full 1885-1938 time frame and the period

dummy variable from zero to one (Halvorsen & Palmquist, 1980; Kennedy, 1981; Giles, 1982).

prior to WWI, however, militarized interstate disputes have no statistically significant impact on trade.

Our argument leads to the expectation that linking economic cooperation and security within alliance agreements is associated with increased trade in a dyad. Among European dyads between 1885 and 1938 we find this to be the case; alliances that propose formation of an economic agreement, include specific provisions for economic aid or concessions, or refer to a companion economic agreement between the states are positively related to trade within a dyad. Alliances without these links to economic issues are insignificantly related to trade between the states. While our spatial temporal domain is limited, these results encourage further investigation of the bargaining links between trade agreements and alliances.

Conclusions and Directions for Future Research

Our goal in this study was to determine whether an empirical relationship between alliances and increased trade levels might be accounted for by linked bargaining over trade concessions and security commitments. Historical anecdotes and treaty texts suggest to us that issue linkage between economics and security occurs, and our evaluation of the impact of these commitments on trade levels in Europe is commensurate with our argument. Allies whose agreements include economic promises trade more than both non-allied states and allies who have not specified economic links as part of their alliance. Allies who have not addressed economic issues explicitly in their alliance treaties trade no more nor less than non-allied states. This test can be viewed as preliminary support for the claim that increased trade among allies may be a result of the joint negotiation of economic and security issues.

This initial study does not include analysis of the Cold War or post Cold War eras. We look forward to evaluating whether these conclusions are applicable to the post-1945 era once further data become available. In our study of the post-1945 years, we will also have access to more information about preferential trade agreements and trade treaties that are not linked to alliances, which will allow us to compare our argument more directly to the argument made by Mansfield and Bronson (1997). The extent to which our argument is complementary to Gowa and Mansfield's (2004) argument about the type of goods traded will also become more clear when we study the post WWII era. In the meantime, however, we find the present analysis sufficiently convincing that our argument is worthy of further consideration and exploration.

While expanding the spatial-temporal domain is one goal, at least as importantly we must design better means of determining the conditions under which economic agreements and military agreements are explicitly linked. One way to do this would be to trace the negotiation processes of alliance formation very carefully. An alternative means, however, would be to develop a theory of the conditions under which we should expect linkage to be proposed and to be successful. We prefer the latter route. With a well designed model that predicts the conditions under which we should expect issue linkage, we will be in a much better position to evaluate the empirical relevance first of our claim that linkage is occurring, and then that this linkage may account for the correlation between alliance formation and increased trade.

For the time being, however, this initial test provides reason to pursue this line of inquiry. The next step will be to establish the conditions under which issue linkage between trade and alliances facilitates cooperation in both. Are governments sometimes more willing to sign trade agreements when they are linked with military cooperation, reducing fears of negative security

externalities? Does linkage to economic cooperation sometimes help to make military alliances self-enforcing? Does linking economic and military cooperation sometimes open potential zones of agreement that did not exist for either issue area alone? If we can answer these questions, we will not only help answer further questions about the relationship between alliances and trade, but also will provide an improved understanding of when and how proposals for alliance formation and for economic agreements are likely to be successful. This will advance our understanding not only of the impact of cooperation in one issue area on cooperation in other issue areas, but also our understanding of the prospects for the design of successful cooperative agreements.

Appendix: Data and Methodology

This appendix explains our research design, data, and methodology in greater detail. First, we explain why we choose a time-series-cross section design and then describe the limits on the temporal domain of the sample. Next, we provide additional secondary information on the data used to construct the dependent and independent variables where relevant. And finally, we discuss the issues concerning the method of statistical analysis employed to test our hypotheses about the relationship between alliances and bilateral trade on TSCS data.

Research Design and Sample

We utilize a TSCS design because it allows us to capture both changes over time within individual dyads and differences across dyads. Our hypotheses are stated in primarily cross-sectional terms, though, and there is little variance in many of our independent variables over the time frame of the analyses. Thus, we are primarily analyzing differences among dyads featuring different characteristics, but we include multiple years of observation to control for differences across time. Also, a TSCS design is consistent with the approach used by others evaluating the relationship between alliances and trade because it allows the best comparison of the effects of different types of alliances.

The temporal domain of our statistical analysis (1885-1938) is driven by data availability. Because ATOP data are not yet available for years beyond 1944, we do not have detailed information about the provisions of alliance treaties available to us for the Post-WWII era. Trade data for years prior to 1885 and during WWI (1914-1918) and WWII (1939-1944) are sporadic and of questionable reliability; we exclude years after 1938 and from 1914-1919 as a

result. We used the EUGene program to construct a dataset of all pairs of European states, including Turkey (Bennett & Stam, 2000). Particularly prior to WWI, Europe was the center of most international political activity. Information about trade is sparse for non-European states during this era, and only 11% of the alliances included in the ATOP dataset through 1944 are alliances among non-European states (Leeds et al., 2002).

Variables and Data Sources

The two independent variables we use to test our hypotheses measure linked and non-linked military alliances. We describe the construction of these variables in the text above. Here we provide a description of their frequency for the time period and in the statistical sample after accounting for missing data. In the full sample, 9723 observations (dyad-years) are non-allied, 856 are non-linked alliance observations, and 128 are linked alliance observations. We lose 23 non-linked alliance observations and 3 linked alliance observations in the estimated model due to missing data. The inter-war period contains 6,089 non-allied observations, 524 non-linked alliance observations, and 127 linked alliance observations. Twelve non-linked alliance observations and two linked alliance observations are lost in the estimated sample due to missing values. The pre-WWI sample includes 3,634 non-allied observations, 332 non-linked alliance observations, and one observation of a linked alliance. We lose one non-linked alliance observation and one linked alliance observation in the estimation due to missing data.

We construct the dependent variable for bilateral trade from two sources. Our primary source for this variable is Russett and Oneal (2001). However, Russett and Oneal (2001) record zero values for trade when neither country in a dyad reports bilateral trade and they are unable to

find secondary information indicating that the countries traded with one another in a given year. We drop these artificial observations from the analysis in Table I. We also include an additional 774 observations of trade from Barbieri's (1998) trade data. The measures from these two sources are correlated at .96 in our sample, and the results of our analysis do not change when using only data from Russett and Oneal (2001). There are 10,707 dyad-years in the 1885-1938 time period (excluding years 1914-1919). After combining trade data from the two sources we have 9,510 observations of dyadic trade. We converted the trade and GDP data (described below) from millions of current into constant (1982-84 base year) U.S. dollars using consumer price index (CPI) data featured in Sahr (2004) and available at Sahr (2005).

In addition, the Gross Domestic Product (GDP) of each country is from Russett and Oneal (2001), although we predicted missing GDP values from the energy production of each country. These energy production variables and the population variables were collected from the COW capabilities data (Singer, Bremer, & Stuckey, 1972). These data are available at <http://www.correlatesofwar.org/>. Distance is the 'great circle' distance between the capitals of the states and Border is a dichotomous variable coded one when the states share a land border, zero otherwise. The energy production, population, distance, and border variables were acquired using the EUgene program (Bennett & Stam, 2000) and can be accessed at <http://eugenesoftware.org/>.

One of the independent variables we include to account for additional political factors that determine bilateral trade is a measure of common foreign policy interests, which we operationalize using the Similarity (S) variable developed by Signorino & Ritter (1999). We also estimate the models with an alternative measure of common interests calculated with the

EUgene program, Kendall's τ_b of alliance portfolios (Bueno de Mesquita, 1981), and find very similar results. However, a significant degree of multicollinearity exists between the τ_b measure and the alliance variables (the correlations were .7 or higher in each model). The Similarity variable is not correlated with the alliance variables above .2, and thus we are more confident in the inferences we may draw from the models that include the Similarity variable and report those results in Table I.

Estimation Technique

While we use Prais-Winsten regression, an alternative method for dealing with serial correlation entails including a lagged dependent variable in the model as an additional independent variable, and then estimating the model with Ordinary Least Squares (OLS). However, when the independent variables and/or the disturbance term are likely to exhibit significant temporal trending themselves (i.e., values of rho close to one), including a lagged dependent variable and estimating coefficients by OLS induces bias in the coefficients (Achen, 2000; Keele & Kelly 2004). Because the GDP and population variables are highly correlated over time, we estimate Prais-Winsten regression. Further, Green, Kim & Yoon (2001) argue for using a fixed effects model to account for dyadic and year specific relationships in pooled research designs. However, Beck & Katz (2001) note the tendency of this approach to overwhelm the substantive effects of dichotomous variables with little temporal variation. Our key independent variables are dichotomous with little temporal variation; thus, we choose to estimate panel-corrected standard errors rather than a fixed effects model.

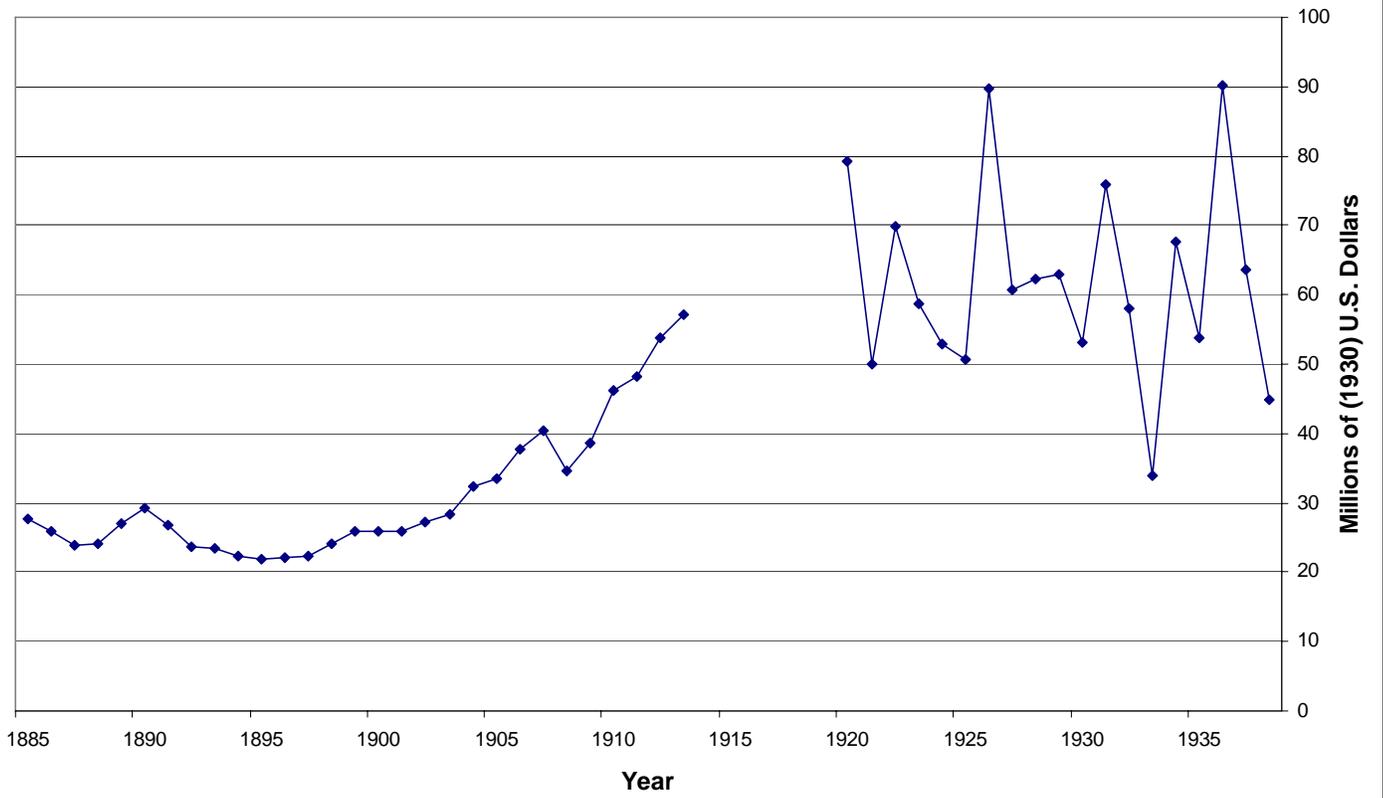
Finally, all models were estimated using the STATA SE 8.0 statistical program with the `xtpcse` command and the `corr(ar1)` and `pairwise` options. Due to the short temporal range in each analysis and/or the interruption of WWI, the calculation of ρ is restarted in the next observation where data is observed. Therefore, our panels fall short of the minimum 30 observations recommended to estimate stable rho coefficients for each individual panel (Beck & Katz, 1996). As a result, we estimate a single rho coefficient for all panels, bound between -1 and 1, to perform the Prais-Winsten transformation on the model.

Table I. Alliances and International Trade

| | 1885-1938 | 1921-1938 | 1885-1913 |
|---|------------------|------------------|------------------|
| Variable | Model 1.1 | Model 1.2 | Model 1.3 |
| Linked Alliance _{ijt} | .223 (.125) * | .263 (.132) ** | -- |
| Non-Linked Alliance _{ijt} | .029 (.078) | -.021 (.101) | .020 (.073) |
| Joint Democracy _{ijt} | .500 (.098) *** | .598 (.107) *** | .355 (.138) *** |
| Militarized Interstate Dispute _{ijt-1} | -.064 (.043) | -.136 (.073) ** | .029 (.048) |
| Hegemony _t | 1.00 (.193) *** | | |
| Similarity (S) | -.473 (.549) | .233 (1.01) | -.373 (.443) |
| Gross Domestic Product _{it} | .427 (.063) *** | .671 (.087) *** | .180 (.077) *** |
| Gross Domestic Product _{jt} | .057 (.058) | .199 (.077) *** | -.104 (.069) |
| Population _{it} | .338 (.079) *** | .105 (.104) | .659 (.101) *** |
| Population _{jt} | .594 (.067) *** | .427 (.090) *** | .853 (.077) *** |
| Distance _{ijt} | -1.09 (.084) *** | -1.02 (.100) *** | -1.27 (.083) *** |
| Border _{ijt} | .103 (.077) | .243 (.090) *** | -.111 (.111) |
| Constant _{ijt} | -2.47 (1.22) ** | -3.84 (1.98) ** | -1.82 (1.29) |
| N | 9342 | 6005 | 3337 |
| Rho | .81 | .75 | .85 |
| R ² | .31 | .34 | .31 |
| Wald chi-square (p) | 816.7 (.000) | 504.27 (.000) | 731.83 (.000) |

Note: Estimates are Prais-Winsten regression coefficients with panel-corrected standard errors (PCSEs) in parentheses. Asterisks denote tests of statistical significance: * indicates $p < .05$ in a one-tailed test, ** and *** indicate $p < .05$ and $p < .01$, respectively, for two-tailed tests.

Figure 1. Franco-Belgian Trade, 1885-1938



References

- Abbott, Kenneth W. & Duncan Snidal, 2000. 'Hard and Soft Law in International Governance', *International Organization* 54(3): 421-456.
- Achen, Christopher H., 2000. 'Why Lagged Dependent Variables Can Suppress the Explanatory Power of Other Independent Variables', Paper presented at the Political Methodology Section Meeting of the American Political Science Association, Los Angeles, CA, July 20-22. <<http://polmeth.wustl.edu/workingpapers.php?year=2000&how=alpha>>
- Albrecht-Carrie, Rene, 1973. *A Diplomatic History of Europe Since the Congress of Vienna*. New York: Harper and Row.
- Anderson, James E., 1979. 'A Theoretical Foundation for the Gravity Equation', *American Economic Review* 69(1): 106-115.
- Axelrod, Robert, 1984. *The Evolution of Cooperation*. New York: Basic Books.
- Axelrod, Robert & Robert O. Keohane, 1986. 'Achieving Cooperation Under Anarchy: Strategies and Institutions', in Kenneth A. Oye, ed., *Cooperation Under Anarchy*. Princeton, NJ: Princeton University Press (226-254).
- Barbieri, Katherine, 1998. 'Trade and Conflict: Assessing the Impact of Interdependence on Militarized Conflict', Unpublished Codebook. Nashville, TN: Vanderbilt University. <<http://eugenesoftware.org/>>
- Beck, Nathaniel & Jonathan N. Katz, 1995. 'What To Do (and not to do) With Time Series Cross-Section Data', *American Political Science Review* 89(3): 634-647.
- Beck, Nathaniel & Jonathan N. Katz, 1996. 'Nuisance vs. Substance: Specifying and Estimating Time Series Cross-Section Models', *Political Analysis* 6(1): 1-34.

- Beck, Nathaniel & Jonathan N. Katz, 2001. 'Throwing Out the Baby with the Bath Water: A Comment on Green, Kim, and Yoon', *International Organization* 55(2): 487-495.
- Bennett, D. Scott & Allan Stam, 2000. 'EUGene: A Conceptual Manual', *International Interactions* 26(2): 179-204. <<http://eugenesoftware.org/>>
- Bergstrand, Jeffrey H., 1985. 'The Gravity Equation in International Trade: Some Microfoundations and Empirical Evidence', *Review of Economics and Statistics* 67(3): 474-481.
- Bergstrand, Jeffrey H., 1989. 'The Generalized Gravity Equation, Monopolistic Competition, and the Factor-Proportions Theory in International Trade', *Review of Economics and Statistics* 71(1): 143-153.
- Bliss, Harry & Bruce Russett, 1998. 'Democratic Trading Partners: The Liberal Connection, 1962-1989', *The Journal of Politics* 60(4): 1126-47.
- Brawley, Mark R., 1998. *Turning Points: Decisions Shaping the Evolution of the International Political Economy*. Ontario: Broadview.
- Bueno de Mesquita, Bruce, 1981. *The War Trap*. New Haven, CT: Yale University Press.
- Conybeare, John A.C., 1984. 'Public Goods, Prisoners' Dilemmas and the International Political Economy', *International Studies Quarterly* 28(1): 5-22.
- Davis, Christina L., 2004. 'International Institutions and Issue Linkage: Building Support for Agricultural Trade Liberalization', *American Political Science Review* 98(1): 153-169.
- Deardorff, Alan V., 1998. 'Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World?', in Jeffrey A. Frankel, ed., *The Regionalization of the World Economy*. Chicago, IL: University of Chicago Press (7-31).

- Dixon, William & Bruce E. Moon, 1993. 'Political Similarity and American Foreign Trade Patterns', *Political Research Quarterly* 46(1): 5-25.
- Fearon, James D., 1995. 'Rationalist Explanations for War', *International Organization* 49(3): 379-414.
- Fearon, James D., 1998. 'Bargaining, Enforcement, and International Cooperation', *International Organization* 52(2): 269-305.
- Gathorne-Hardy, Geoffrey M., 1938. *A Short History of International Affairs 1920-1938*. London: Oxford University Press.
- Giles, David E. A., 1982. 'The Interpretation of Dummy Variables in Semilogarithmic Equations: Unbiased Estimation', *Economic Letters* 10(1): 77-79.
- Gowa, Joanne, 1994. *Allies, Adversaries, and International Trade*. Princeton, NJ: Princeton University Press.
- Gowa, Joanne & Edward D. Mansfield, 1993. 'Power Politics and International Trade', *American Political Science Review* 87(2): 408-420.
- Gowa, Joanne & Edward D. Mansfield, 2004. 'Alliances, Imperfect Markets, and Major-Power Trade', *International Organization* 58(4): 775-805.
- Great Britain, Foreign Office, 1864-65. *British and Foreign State Papers*, vol. 55. London: James Ridgway and Sons.
- Green, Donald P.; Soo Yeon Kim & David H. Yoon, 2001. Dirty Pool. *International Organization* 55(2): 441-68.
- Halvorsen, Robert & Raymond Palmquist, 1980. 'The Interpretation of Dummy Variables in Semilogarithmic Equations', *American Economic Review* 70(3): 474-475.

- Helmreich, Jonathan, 1964. 'The Negotiation of the Franco-Belgian Military Accord of 1920', *French Historical Studies* 3(3): 360-378.
- Hoekman, Bernard M., 1989. 'Determining the Need for Issue Linkages in Multilateral Trade Negotiations', *International Organization* 43(4): 693-714.
- Hurst, Michael, ed., 1972. *Key Treaties for the Great Powers 1814-1914*, Volume II. New York: St. Martin's.
- Jagers, Keith & Ted Robert Gurr, 1995. 'Tracking Democracy's Third Wave with the Polity III Data', *Journal of Peace Research* 32(4): 469-482.
- Jones, Daniel M.; Stuart A. Bremer & J. David Singer, 1996. 'Militarized Interstate Disputes, 1816-1992: Rationale, Coding Rules, and Empirical Patterns', *Conflict Management and Peace Science* 15(2): 163-213.
- Keele, Luke & Nathan J. Kelly, 2004. 'Dynamic Models for Dynamic Theories: The Ins and Outs of Lagged Dependent Variables', Working Paper.
(<http://polmeth.wustl.edu/papers/04/LDVApril21.pdf>)
- Kennedy, Peter, 1981. 'Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations', *American Economic Review* 71(4): 801.
- Keohane, Robert O. & Lisa L. Martin, 1995. 'The Promise of Institutional Theory', *International Security* 20(1): 39-51.
- Kieft, David Owen, 1972. *Belgium's Return to Neutrality*. London: Oxford University Press.
- Kindleberger, Charles P., 1981. 'Dominance and Leadership in the International Economy: Exploitation, Public Goods, and Free Rides', *International Studies Quarterly* 25(2): 242-254.

- Krasner, Steven D., 1976. 'State Power and the Structure of International Trade', *World Politics* 28(3): 317-347.
- Langsam, Walter Consuelo, 1948. *The World Since 1914*. New York: MacMillan.
- League of Nations, 1934. *Treaty Series: Publications of Treaties and International Engagements Registered with the Secretariat of the League*, vol. 154. London: Harrison and Sons.
- Leeds, Brett Ashley; Jeffrey M. Ritter; Sara McLaughlin Mitchell & Andrew G. Long, 2002. 'Alliance Treaty Obligations and Provisions, 1815-1944', *International Interactions* 28(3): 261-284.
- Linnemann, Hans, 1966. *An Econometric Study of International Trade Flows*. Amsterdam: North-Holland.
- Long, Andrew G., 2003. 'Defense Pacts and International Trade', *Journal of Peace Research* 40(5): 537-552.
- Mansfield Edward D. & Rachel Bronson, 1997. 'Alliances, Preferential Trading Arrangements, and International Trade', *American Political Science Review* 91(1): 94-107.
- Mansfield, Edward D.; Helen V. Milner & B. Peter Rosendorff, 2000. 'Democracies, Autocracies, and International Trade', *American Political Science Review* 94(2): 305-321.
- Marks, Sally, 1981. *Innocent Abroad*. Chapel Hill, NC: University of North Carolina Press.
- McGinnis, Michael D., 1986. 'Issue Linkage and the Evolution of International Cooperation', *Journal of Conflict Resolution* 30(1): 141-170.
- Morgan, T. Clifton, 1994. *Untying the Knot of War: A Bargaining Theory of International Crises*. Ann Arbor, MI: University of Michigan Press.

- Morrow, James D., 1991. 'Alliances and Asymmetry: An Alternative to the Capability Aggregation Model of Alliances', *American Journal of Political Science* 35(4): 904-33.
- Morrow, James D.; Randolph M. Siverson & Tressa E. Tabares, 1998. 'The Political Determinants of International Trade: The Major Powers, 1907-90', *American Political Science Review* 92(4): 649-661.
- Morrow, James D.; Randolph M. Siverson & Tressa E. Tabares, 1999. 'Corrections to "The Political Determinants of International Trade"', *American Political Science Review* 93(4): 931-933.
- Newnham, Randall E., 2000. 'More Flies with Honey: Positive Economic Linkage in German *Ostpolitik* from Bismarck to Kohl', *International Studies Quarterly* 44(1): 73-96.
- Parker, R.A.C., 1969. *Europe 1919-1945*. London: Weidenfeld and Nicolson.
- Pollins, Brian M., 1989. 'Conflict, Cooperation, and Commerce: The Effect of International Political Interactions on Bilateral Trade Flows', *American Journal of Political Science* 33(3): 737-761.
- Reiter, Dan, 1996. *Crucible of Beliefs*. Ithaca, NY: Cornell University Press.
- Rothstein, Robert L., 1968. *Alliances and Small Powers*. New York: Columbia University Press.
- Russett, Bruce & John Oneal, 2001. *Triangulating Peace*. New York: W.W. Norton.
- Sahr, Robert, 2004. 'Inflation-Adjusted Dollars in Analyzing Political Developments', *Political Science and Politics* 37(2): 273-284.
- Sahr, Robert, 2005. 'Inflation Conversion Factors for Dollars 1665 to Estimated 2015', http://oregonstate.edu/dept/pol_sci/fac/sahr/sahr.htm (March 24, 2005).

- Schroeder, Paul W., 1976. 'Alliances, 1815-1945: Weapons of Power and Tools of Management', in Klaus Knorr, ed., *Historical Dimensions of National Security Problems*. Lawrence, KS: University of Kansas Press (247-286).
- Signorino, Curtis S. & Jeffrey M. Ritter, 1999. 'Tau-b or Not Tau-b: Measuring the Similarity of Foreign Policy Positions', *International Studies Quarterly* 43(1): 115-144.
- Singer, J. David; Stuart Bremer & John Stuckey, 1972. 'Capability Distribution, Uncertainty, and Major Power War, 1820-1965', in Bruce Russett, ed., *Peace, War and Numbers*. Beverly Hills, CA: Sage (19-48).
- Snyder, Glenn H., 1997. *Alliance Politics*. Ithaca, NY: Cornell University Press.
- Taylor, Michael, 1987. *The Possibility of Cooperation*. Cambridge: Cambridge University Press.
- Tollison, Robert D. & Thomas D. Willett, 1979. 'An Economic Theory of Mutually Advantageous Issue Linkages in International Negotiations', *International Organization* 33(4): 425-449.
- Wandycz, Piotr S., 1962. *France and her Eastern Allies 1919-1925*. Minneapolis, MN: University of Minnesota Press.
- Wooldridge, J. M., 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

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