Abstract: This paper uses trade data disaggregated by industrial sector, within a “gravity model” using relatively sensitive explanatory variables, to help clear up three ambiguities in the international trade flow literature: (1) uncertainty whether states work to hamper the financial or just military capacity of enemies; (2) uncertainty whether trade patterns are determined directly through national policy; and (3) uncertainty whether observed patterns are contingent on the particular configuration of interests that characterized the Cold War. Our findings are as follows: (1) States do appear to regulate trade directly based upon strategic considerations, but only when hostilities are particularly severe or goods have relatively direct military significance; (2) Otherwise, what appears to be a political effect on trade actually results in large part from indirect market decisions made by individual economic actors, as well as domestic political decisions not related directly to foreign policy; (3) Even restrictions on trade in high-value-added goods, which may have been valuable during the Cold War, appear unattractive now that alliances are less sharply defined. In sum, foreign policy generally only influences trade at the margins.


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States exchange goods more frequently when they share political interests. Repeated confirmation of this pattern constitutes a major strain in the study of international political economy, because it attests to the important role that domestic and international institutions play in shaping world markets. Design limitations, though, have hampered the existing literature’s theoretical precision. Most of the empirical evidence concentrates only on showing that overall trade flows are greater within rather than across political blocs, however defined. Researchers either must assume which underlying process generates the aggregate data, or allow the process to remain a black box.¹

At least three ambiguities result: (1) uncertainty whether states work to hamper (enhance) the financial capacity, or just the immediate military capacity, of their enemies (friends); (2) uncertainty whether trade patterns are determined directly through national policy, or indirectly through individual market decisions; and (3) uncertainty whether observed patterns are contingent on the particular configuration of interests that characterized the Cold War, or theoretically more general. Clearing up these three ambiguities is critical for a complete understanding of how and whether political forces shape trade, but doing so requires more complex data than are usually available.

One convenient means for moving beyond current theoretical imprecision would be to estimate political effects on international trade flows within specific industrial sectors. This article takes advantage of previously unavailable U.N. trade data for that purpose, broken down for 1962-1997 across the following industries: agricultural commodities and raw materials, manufacturing, textiles, and high technology. Theories that are not empirically separable within general trade figures do offer distinct observable implications once data are disaggregated across

¹ We do not claim that studying overall trade flows gives researchers no leverage at all. Morrow, Siverson and Tabares (1998), in a major recent addition to the literature, are able to distinguish among a few competing hypotheses by including alternate explanatory variables in one model.
various types of goods. When combined with relatively sensitive explanatory variables, these sectoral data contribute toward clearing up the literature’s uncertainties.

Briefly stated, our findings are as follows: (1) States do appear to regulate trade directly based upon strategic considerations, but only when hostilities are particularly severe or goods have relatively direct military significance; (2) Otherwise, what appears to be a political effect on trade actually results in large part from indirect market decisions made by individual economic actors, as well as domestic political decisions not related directly to foreign policy; (3) Even restrictions on trade in high-value-added goods, which may have been valuable during the Cold War, appear unattractive now that alliances are less sharply defined. In sum, foreign policy generally only influences trade at the margins.

To develop this argument, we proceed in 5 steps. The next section lays out a theoretical framework for considering how politics might affect trade. In particular, it divides hypotheses according to their observable implications in sectoral data. The second section introduces our model for predicting exports, a continuation of the adapted “gravity model” estimated by Morrow, Siverson and Tabares (1998). We add to their adaptation four explanatory variables of our own, intended to capture indirect effects on national trade: two cultural variables to proxy decentralized transaction costs and/or consumer preferences, and two measures of institutionalized democracy to capture domestic influences on the exchange of goods. Then we present findings for data from 1962-1989, the late Cold War era, followed by a section adding in the 1990s. Finally, we justify in more detail the above three conclusions drawn from these empirical results.

**International Politics and the Implications for Sectoral Trade**

High levels of trade reportedly characterize states with similar governmental systems, with similar alliance structures, and with mutual diplomatic agreements, whereas trade may dry up
when states descend into a militarized dispute.\(^2\) The explanation for these aggregate correlations is not exactly clear, because they leave numerous causal steps unexplored. In particular, three ambiguities remain unsettled in the international trade flow literature:

1. **Economic vs. Military Capacity:** whether likely enemies trade less (a) because they do not wish to improve each other’s financial status (Gowa 1989, 1994; Gowa and Mansfield 1993), or simply (b) because they restrict specific goods that have more immediate military value (Morrow 1997; Morrow, Siverson and Tabares 1998, 659).

2. **Direct vs. Indirect Political Effects:** whether governmental restrictions drive trade patterns, as opposed to the strategic decision making of independent actors within each national economy (Morrow, Siverson and Tabares 1998, 650; Pollins 1989b). The literature also cannot clarify the extent to which nations that are similarly governed trade more (a) directly, out of mutual trust, (b) indirectly, because individual firms are better able to negotiate across the two political systems (both from Morrow, Siverson and Tabares 1998, 651), or (c) indirectly, because democracies export or import more regardless of their potential trading partner (Voss, Murray and Bartilow 2000).

3. **Effect of International System Structure:** whether the polarity of the international political system determines how politics will affect trade patterns. More specifically, it is not clear the extent to which findings about international trade flows are unique to the Cold War bipolar system (Liberman 1996, 150), unique to the multipolar world that preceded it (Morrow, Siverson and Tabares 1999), or portray a more general relationship between politics and trade (Gowa and Mansfield 1993).

Of course, the truth might fall somewhere in between the sharp conceptual distinctions set up here, with the observed aggregate patterns reflecting a combination of forces (e.g., both direct and indirect political effects).

Answering these lingering questions is either difficult or impossible using overall trade flow statistics. Some more complex form of data is necessary. One possibility would be to look at “lower levels of analysis than aggregate trade flows” (Morrow, Siverson, and Tabares 1998, 659), exploring the behavior of numerous individual firms or policy agencies. What this microeconomic approach would gain in detail, however, it could sacrifice in generality or parsimony. Policy mechanisms could differ sharply across political systems, as could the specific role of independent economic actors.

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\(^2\) Of course, not every empirical investigation supports every claim. For example, Morrow, Siverson and Tabares (1998, 656) do not find that militarized disputes have an independent effect on trade. But we know of no recent research that discounts all forms of political influence.
We propose disaggregating the data in a different way, one that retains the generality of previous work by remaining at the same analytical level. Rather than predict overall trade levels, we break trade data into several industrial sectors, and predict each aggregate trade flow separately. Competing causal hypotheses that remain indistinguishable within general trade data result in distinct observable implications once we consider them across sectors. In particular, some of the arguments for why politics and trade correlate would lead us to expect the strongest correlation in low-value-added industries. Others would be strongest in industries with high value added. Yet a third group would impact all sectors in roughly the same way. We treat these three observable implications in reverse order.

*The Enemy’s Coffers: Regulating the Financial Capacity of Other States*

Joanne Gowa (1989; Gowa and Mansfield 1993) argues that trade can produce positive or negative security externalities for particular states. Financial capacity produced by a state’s international trade activity can help fund military expenditures, thereby enhancing the combat readiness of its military. Likely adversaries will fear what the other side might do with its economic gains, and not wish to participate in creating them. One state therefore has greater incentive to limit trade with another as the probability of future war with them increases. At the same time, since friendly states pursue similar political objectives, the opposite incentive applies; it pays to engage in mutual commerce. This logic provides no reason to expect that the pattern would be unique to particular sorts of goods. States engaged in political hostilities or likely one day to go to war will not wish to sell each other anything profitable, or to patronize one another’s industries. The nature of the good matters less than the profitability of commerce in it.

*Butter Not Guns: Regulating the Military Capacity of Other States*

Even if states normally did not worry about the finances of other countries when making their trade decisions, they would not want likely enemies to possess high-quality killing
technology. Trading in sophisticated goods such as weapons or software would enhance the trading partner’s technological capability in a direct, relatively immediate way (Morrow 1997; Morrow, Siverson and Tabares 1998, 659). Similarly, nations with overlapping political interests have notable incentive to trade with each other in high-value-added industrial sectors. The diffusion of high technology with military applications is a natural consequent of concentrating trade in high-value-added sectors. Such trade would likely enhance the war-fighting capabilities of military alliances.

It is less clear whether a state gains much from restricting trade in low-value-added goods, such as textiles or commodities. These goods might help likely enemies save a little cash, which eventually they may plow into combat readiness, but they have no short-term effect on military capacity. To put it another way: high-value-added industrial sectors produce significant security externalities, but goods generally produced by unskilled labor do not. Few armies rise or fall based upon sheer muscle, given modern weaponry, so minor improvements in a nation’s quality of life cannot matter much tactically. Potato chips are not as dangerous as computer chips. Indeed, the exchange of harmless goods might improve relations, and has the benefit of either employing unskilled labor at home (when exporting) or lowering consumer costs (when importing). It is worth noting, for example, that the Soviet Union was second only to Japan as a market for U.S. agricultural exports in the late 1980s (GAO 1991, 23-24).

The Price of Politics: Preferences, Transaction Costs and Trade Flexibility

Trade in different industrial sectors is structured by different demand elasticities, so the effect of politics on trade flows might vary across sectors in a contradictory manner from that expected by the above theories. Specifically, political similarity may matter in low-value-added sectors, for which national demand tends to be more elastic, but not in more advanced industries.

Demand for products in an industrial sector is “elastic” when a small change in price results in a large change in the quantity demanded. Demand for products in an industry is
“inelastic” when changes in price have little impact on the quantity demanded (Fusfeld 1988). Commonly, demand is more elastic when a good has numerous substitutes, or when consumers are more willing and able to do without. These terms are most often applied to individual consumers, for whom elastic goods are luxuries or other optional purchases permitting a high degree of choice on whether and what to buy, and inelastic goods are staples or other necessities permitting little flexibility.

However, the concepts are also useful when the “consumer” is one national economy, the “producer” another, and the “price” includes national security externalities as well as base cost. Low-value-added industrial sectors (i.e., agriculture, raw materials, textiles) are relatively elastic when analyzed at the international level. Basic products tend to be substitutable across countries. One needs food and clothes, naturally, but numerous countries can provide them because the technologies required for production are widespread. The raw materials are also often widely available, and the comparative advantages favoring one country over another will not be strong—at best an advantage of climate or geography. Only a rare product, such as diamonds or silk, permits a sustained near-monopoly on production.\(^3\) In general, therefore, adding security externalities into the price of a good will make significant difference in the desirability of one country’s product compared to another’s. The sacrifices necessary to penalize likely future enemies by refusing to buy from them, and to favor countries with similar political interests by patronizing their industries, will tend to be low—so even fairly remote indicators of political compatibility might influence commerce in these goods.

Evidence of direct political influence in low-value-added sectors is not hard to find. States often negotiate and manage the terms of trade in these industries. For example, the U.S. government has chiefly relied on the Long-Term Bilateral Grain Agreements (LTAs) as a

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\(^3\) Petroleum is an instructive example. Most of the world’s usable oil is fairly concentrated in a cluster of countries with relatively similar cultural and political interests, and therefore seems the type of raw material that would violate our generalization. Yet even with this concentration of resources, institutionalized into
framework within which to negotiate specific contracts to increase agricultural trade. States enter into LTAs so that they may gain access to overseas markets, minimize market uncertainty, stabilize revenues for domestic producers and strengthen political and economic ties with allies (GAO 1991, 25).

High-value-added sectors (i.e., manufacturing, high-tech goods and military technologies) are relatively inelastic. The essential attribute of the products in these industries is that they are not substitutable across countries. Technological knowledge is less widespread (Vayrynen 1978), and comparative advantages can be steep. If the Chinese have developed a particular surgical technique or diagnostic machine, then often they represent the only way to get access to the medical advance swiftly. Also, high-tech goods are a necessary ingredient for increasing productivity and promoting economic development, and often rely on components or techniques available from other advanced nations (Dahlman and Westphal 1981; Hamelink 1985). The added cost of letting political forces shape purchasing decisions will be much higher. Politics is thus less likely to shape trade in high-value-added industrial sectors such as technology and manufacturing, especially when conflict with another nation is remote.

So far the discussion has been framed entirely in terms of the importer. Why would the exporter be more likely to trade in high-value-added goods with their enemies than they would trade in other products? Among advanced industrialized countries, at least, technology effectively constrains national sovereignty over economic matters (Blumenthal 1988). For example, skilled labor and capital-intensive industry generally enjoy greater political clout than unskilled labor—and therefore can resist attempts to limit what the industries in which they work can export.\footnote{Ferguson (1989) shows that capital-intensive industries were much better able to influence the shape of the American New Deal than were labor-intensive industries. Indeed, many corporations operating in capital-intensive sectors openly cooperated with labor reforms pushed by President Roosevelt and the Wagner Act.} The pressure for open markets is particularly steep in the most advanced industries

\footnote{an oligopoly through the OPEC cartel, attempts to inflate the going price for barrels of crude seldom succeed.}
(Simon 1991), since scientists and engineers often enjoy frequent interaction across national borders in a way that agricultural or textile workers do not (Behrman and Fischer 1980; Michalet 1979; Michel 1982; Oldham 1990; Vickery 1986). To the extent unskilled labor places political pressure on a government, it is often to raise trade barriers on low-value-added products (Wionczek 1986). Demand inelasticity thus shapes the trade flexibility a state enjoys across industrial sectors, regardless of whether it operates as exporter and importer.

When the Market Rules: Indirect Influences on Interstate Trade

The three above theories are conceptually and empirically distinct. However, they share one common trait. All three assume that foreign policy is the main determinant of international trade. They implicitly presume that trade limitations operate directly, at the level of government policy (or the incentives set up by that policy). Trade flows are strategic, meant to deny enemies and grant friends some particular benefit of commercial exchange (Hufbauer, Schott and Elliot 1990).

This approach is consistent with the emphasis found in the literature, but in fact does not comport with our sense of how most commercial decisions take place. Certainly a national government may set up incentives that encourage trade with some countries and not with others, such as when the United States grants “most favored nation” status. On occasion an outright embargo will close off all commerce. But purchasing and selling decisions typically occur within individual firms. We would expect trade to be more common with some countries than with others for reasons unrelated (or only indirectly related) to foreign policy: transaction costs, consumer preferences, worker productivity within the exporting nation, market demand within the importing nation.

Individual firms, regardless of the sector in which they operate, may be loath to create financial ties with partners in another country if they fear future conflict, since the other country could cease to honor contracts and debts. This decentralized process, with little direct connection
to foreign policy, could produce a strong correlation between trade flows and measures of friendliness between two nations—but the implications would be quite different from that of a direct process. Just to take one example, a state acting strategically could attract trade with firms in unfriendly nations by setting up guarantees for investors and traders that would be insulated from the vicissitudes of international politics.\(^5\)

Decentralized consumer decisions could produce patterns quite similar to the Trade Flexibility argument introduced above, and for roughly the same reasons: that demand for high-value-goods is less elastic. Choice of high-tech goods is constrained by supply and by necessity. Furthermore, technologically advanced products tend to be standardized across national borders, with relatively uniform vocabulary, standards and functionality (Grabe and Kaplan 1986; Voss 1995, 200-205). Consumer taste may not be particularly influential with these goods. Preferences may play a more important role in the choice among agricultural and textile products. Consumer preferences are more likely to influence whose parkas get worn or whose snack food gets eaten than they are to shape whose component appears in a domestically assembled stereo or whose surgical clamp closes off a bleeding artery.

Generally it will be difficult to distinguish between trade data patterns influenced by policy and those influenced by individual decisions unrelated to international politics. One way in which they might have distinct observable implications, however, is with the importance of militarized disputes. If trade flows are an outgrowth of military strategy, then the correlation should be greatest between trade and measures of outright conflict (Pollins 1989a). The correlation with trade should drop as measures of political similarity become less immediate (i.e., whether countries are allied, whether their alliance portfolios are similar, whether they are both democracies). Another approach would be to introduce explanatory variables that could only be capturing market incentives, those either independent of or causally prior to international politics.

\(^5\) For example, American merchants strongly supported paying off debts to British citizens after the Revolutionary War, in part because of awareness that such a new nation desiring increased commerce
We will introduce four such variables in the next section; for now it is sufficient to stress that the same observable implications could indicate direct or indirect processes, even when we break the data up by industrial sector.

The above discussion leads to the following hypotheses:

Hypothesis 1 (Financial Capacity): If states trade with friends and not with likely enemies as a means of regulating the financial capacity of other states, or alternately if firms prefer to invest or trade in countries less likely to go to war with their host nation, then trade between countries with similar political interests will be greater than trade between those with dissimilar interests. This pattern would hold in all industrial sectors, and would be strongest when militarized conflict is actually underway, weaker when indicators merely suggest that future war is more or less likely.

Hypothesis 2 (Military Capacity): If states trade with friends and not with likely enemies as a means of regulating the immediate military capacity of other states, trade in high-value-added industrial sectors will be greater between countries sharing similar political interests. Political forces should not play much role within low-value-added sectors, such as textiles or commodities.

Hypothesis 3 (Trade Flexibility): States with similar political and cultural interests will trade more with each other, plus democracies will trade more with all countries, but primarily in low-value-added industries for which elasticities are greatest. Such a pattern might represent any combination of the following forces:

Version 3a (Decentralized): If individual-decisions primarily drive trade, then population characteristics that reflect consumer taste and transaction costs will play the more important role. National traits unrelated to international politics, including the political system in which buyers and sellers must operate, also will influence the quantity of trade.

Version 3b (Centralized): If foreign-policy goals primarily drive trade, but do so more easily in low-value-added sectors, then measures of political similarity will play an important role in predicting trade flows but (after controlling for the international variables) cultural and systemic measures will not.

Applying the Gravity Model to Sectoral Data

Our purpose is to explain international trade flows among the eight major powers, following on Morrow, Siverson and Tabares (1998). We will repeat our analysis for five separate export quantities: one for each industrial sector of interest (primary commodities, manufactured goods, textiles, and high technology), and one for overall trade. The export...
figures are measured in constant dollars, smoothing out inflationary time trends or exchange-rate fluctuations. The sectoral models allow us to distinguish among the hypotheses introduced in the last section. Unfortunately, the sectoral data are imperfect. They only cover the period from 1962 to 1997, whereas overall trade figures allow analysis with a much longer time frame. But these data, collected from the United Nations’ COMTRADE database and from various volumes of the United Nations Commodity Trade Statistics, represent an unprecedented opportunity since they were previously unavailable to political scientists.

To explain these five dependent variables, we will utilize a “gravity model” adopted from economics (Anderson 1979; Bergstrand 1985; C.A. Primo Braga, Raed Safadi and Alexander Yeats 1994), as is common in the literature on international trade flows (Dixon and Moon 1993, Gowa and Mansfield 1993, Morrow, Siverson, and Tabares 1998, Pollins 1989b). These models are intended to capture the gravitational pull that one country exerts on goods from another. What they have in common is an emphasis on the forces that assist or resist trade flows. They therefore usually include proxies for overall supply, overall demand, and rough transaction costs. The models conventionally take a log-linear form, assuming that explanatory variables affect trade flows multiplicatively rather than additively, a convention that we see no reason to challenge. Each observation represents a specific dyad—trade from origin country $i$ to destination country $j$—for a given year, with the observations pooled across dyad-years.

Different gravity models include different packages of control variables. We draw our gravity model from Morrow, Siverson and Tabares (1998, 653). We include a measure of the distance between each nation’s capital, since transportation costs will prompt countries that are farther apart from each other to trade less. We include GDP for the potential exporter and potential importer in each dyad, measured in constant dollars, since countries with large GDPs will have more trade between them ceteris paribus. And we include population figures for both

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8 One virtue of this time span is that it is concurrent with the Bliss and Russett (1998) study.
exporter and importer. The control variables in this baseline gravity model allow us to look at the
independent effects of political variables of interest that we might wish to evaluate.

The functional form of the gravity model, predicting sectoral exports from state \( i \) to
importer state \( j \) in current year \( t \), would look like the following:

\[
\ln(SECTORALEXPORTS_{ijt}) = \alpha + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(POP_{it}) + \beta_4 \ln(POP_{jt}) + \beta_5 \ln(DISTANCE_{ij}) + X\Theta + \ln(\epsilon_{ijt})
\]

where \( X \) represents a row vector of logged political variables for the dyad and \( \Theta \) represents the
column vector of coefficients estimated for those political variables.

**Substantive Explanatory Variables of Interest**

We also use the model presented by Morrow, Siverson and Tabares (1998) as the starting
point for our substantive explanatory variables. Those authors offer four rough measures of
international political interests (listed in declining order of strategic importance): whether the
countries are engaged in a militarized dispute against each other,\(^{10}\) whether the countries are
allied with each other, the extent to which nations share similar alliance portfolios, and whether
the two governments are democracies. The Correlates of War (COW) data set reports whether
two states were engaged in a militarized interstate dispute (MIDs) from years from 1816–1983,
using a five-point scale running from no dispute to war. We assume that after 1983 there were no
militarized disputes between the great powers, following on Morrow, Siverson and Tabares
(1998), and therefore extended the MID data up to 1997. Whether the two states shared an
alliance also comes from the COW data set, but appears as a dummy variable simply representing
whether an alliance was in place. Trading partners who share a military alliance in a given dyad
year is coded 2, or 1 otherwise. Similarity of political interests is represented by the \( \tau_b \) (\( tau-b \))

\(^{10}\) Gravity models have been applied successfully to estimate different types of flows, such as migration,
commuting, recreational traffic, and interregional and international trade.
correlation of their alliance portfolios. Global-level scores are available through EUGene, the Expected Utility Generator program, extended through 1989 following Morrow, Siverson and Tabares (1998). The higher the $\tau_b$ measure, ranging from –1 to 1, the more similar two states’ alliance structures. Finally, scores for each country’s level of democracy are available from the POLITY III data set. We use a dummy variable identifying democratic dyads, with the high value representing instances when both states are democracies (i.e., both receive scores of 6 or more on the original 11-point democracy scale).

However, we wish to expand beyond the political variables used in previous work. In particular, we make two substantial measurement adjustments to address likely omitted variable bias. In both cases the intent is to capture indirect cultural and political influences on trade, those almost entirely exogenous to international politics over the short term. These have been defended in more detail elsewhere (Voss, Murray and Bartilow 2000), but a brief explanation should suffice here.

**Political System Variables**

The evidence that democratic dyads trade together frequently is voluminous. After analyzing U.S. trade with a sample of countries between 1966 and 1983, Dixon and Moon (1993) report that exports were greater to democratic trading partners. Bliss and Russett (1998) test the effects of shared democratic political institutions on trade flows between 882 and 1,042 pairs of states during the period of 1962 to 1989. While the sample size of this study is larger and utilized

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10 Barbieri (1996) also uses the MID measurement. Pollins (1989a) uses a different, but conceptually related, measure for interstate amenity/hostility. His measure is based on annual summaries of the Conflict and Peace Data Bank (COPDAB).

11 Signorino and Ritter (1999) argue persuasively that the tau-b will not behave properly in many relevant situations. However, this measure has performed adequately in previous international trade flow research, so we stick with the current convention in the literature. Using the same measure helps clarify why our findings will differ from previous work.

12 Gurr, Jaggers and Moore (1990, 84) refer to a 10-point scale, apparently leaving out the possibility of a zero in their initial coding.
different control variables from those used by Dixon and Moon (1993), the two sets of findings are consistent.

However, explanations for the pattern vary. Democracies may be more capable of containing protectionist impulses than non-democracies, for example. Mansfield, Milner and Rosendorff (1997) contend that democratic trading partners negotiate lower tariffs barriers precisely because national legislatures tend to support protectionist policies; the threat of trade war pushes democratic negotiators to compromise. Alternatively, states may select their trade partners strategically, since “trade could enhance the political stability of their trading partners or reward them for their prior cooperative actions” (Morrow, Siverson, and Tabares 1998, 651; see also Dixon and Moon 1993, 13-14). By contrast, much of the heightened trade could reflect indirect, individualized decisions rather than state policy. Economic actors may find negotiating similar systems easier than crossing to political systems sharply different from their own (Morrow, Siverson, and Tabares 1998, 651), or generally may prefer the property protections established by democratic systems.\(^\text{13}\) Parsing out these divergent explanations, which operate at different levels and carry quite varied theoretical implications, is impossible without a more-complex set of political-system measures than previously used.

A democratic dyad variable may capture three theoretically distinct patterns: (a) democracies trade more with other countries that are democracies, as usually is presumed; (b) democracies tend to export more in general, perhaps because markets are more vibrant; and (c) democracies tend to import more in general, perhaps because consumers enjoy more political clout or because debt protection is greater. Adjudicating among these three forces would go a long way toward determining the extent to which political compatibility could be swaying trade flows, because the last two have nothing to do with the relationship between states. They would apply to a democratic country’s imports and exports regardless of the particular trading partner.

\(^{13}\)We are particularly indebted to Matt Gabel for this insight, although his suggestions helped sharpen the theory and vocabulary throughout.
To distinguish among these three possible causes, we need three separate variables, one for each concept. The conventional dummy variable, identifying when both trading partners are democracies, will illustrate the first hypothesis—but only if we control for the independent effect of system openness in the importing and exporting countries. That is, we must capture the pressure to import and export when it is unrelated to similarity of international political interests.\footnote{Of course, on occasion international politics will cause a country’s political system to change. But it is unlikely this feedback mechanism would come close to reversing the causal hypothesis that similar political systems would tend to produce similar international behavior.}

For the latter two measures, we use the Polity III measures of institutionalized democracy, a scale (as coded here) running from 1-11, with 11 the most open and 1 the least.\footnote{Dixon and Moon (1993, 10) use this measure for the importer, but not the exporter, which makes sense in their case because they always have the same exporter. A democratic dyad variable also would not make sense in their case, since the exporter is always a democracy.} Details on the construction of these measures appear in Gurr, Jaggers and Moore (1990, 83-84) and Jaggers and Gurr (1993). Any international influence on trade is left to the democratic dyad variable, although even then some indirect effects would remain within the measure (e.g., ease of negotiating similar systems).

\textbf{Cultural Variables}

While similar international interests may shape trade flows, Srivastava and Green (1986) report that cultural similarity is also a significant determinant of trade flows between states. Similarly, Errol Henderson (1997, 1998) has illustrated that cultural similarity can help prevent war between nations, although his results vary with the particular explanatory variable used. This is an ideal way to get at influences on trade outside of international politics, since it is highly improbable for international forces to change national culture over the short term.

To operationalize the cultural similarity between trading partners, we use religion and language variables as proxies. From the \textit{CIA World FactBook}, 1994, we collected and constructed the variable Religious Percentage. This variable is intended to represent the probability that a
random person drawn from one country would hold the same religion as a random person drawn from the other. It was constructed by multiplying the percentages of common religions between exporter and importer countries, then summing these percentages. The various religions were collapsed into six groupings (Buddhism, Islam, Judaism, Eastern Christianity, Roman Catholicism, and Western Christianity) before percentages were calculated. Language is a dummy variable, coded 2 if both trading partners share a similar primary language or 1 otherwise.

In sum, the multiplicative model we will estimate includes a core gravity equation, two measures of cultural similarity (religion and language), two measures of domestic openness (one for the exporter, one for the importer), and four measures of similar interests in international politics. The latter portray the nature of political relations between the two countries in each trade dyad (listed in decreasing strategic importance): whether they are embroiled in a militarized dispute, whether they are allies, whether they share a similar alliance portfolio, and whether they are both open political systems.

**Findings**

We begin with a model for all exports, as reported in Table 1. This model differs from that reported by Morrow, Siverson and Tabares (1998, 1999) in two ways: it cuts off at 1962 rather than extending into the more distant past, so that the time period covered will match that for our sectoral data, and it includes additional explanatory variables as outlined in the previous section. In all other ways, however, our model and estimation parallel theirs.

Because our equation includes four measures of political similarity, it allows us to differentiate the independent effects of each type. Three of the measures turn up significant
coefficients in the proper direction: trade drops when two nations undergo a militarized dispute, increases when they share an alliance and when they are both democracies. Sharing a similar alliance pattern more broadly does not increase trade, however, for the 1962-1989 time period. This result is compatible with our attempt to replicate the Morrow findings (Morrow, Siverson and Tabares 1999; Voss, Murray and Bartilow 2000).

The more complex model sounds a warning for explanations of trade that place too much emphasis on international politics. The four measures of domestic context all significantly enhance the model. Nations that share a language, or contain populations with significant overlap in their religious orientation, appear more likely to trade with each other. Models that exclude these indirect cultural incentives miss part of the picture. The political openness of both importer and exporter also significantly predict trade levels. It is therefore clear that democratic dyads trade more with each other not only because of their compatible systems, but also simply because democratic populations produce more exports and purchase more imports regardless of the particular trade partner in question. Much of the enhanced trade between politically compatible countries therefore stems from indirect commercial activity and policies friendly toward the exchange of goods more generally, rather than primarily from foreign policy considerations, an insight missed by models that only recognize when both countries are allied or democracies.

The Sectoral Models

Our main interest, however, is with the sectoral models. Variation in the performance of our political similarity measures, as observed across these sectors, will tell us which theories of international trade seem most persuasive for the late Cold War era. Table 1 includes models for five sectors, the main four plus our best attempt at a model for trade in armaments. For now we restrict discussion to the first four, since the armaments model is admittedly quite flawed.

An interesting pattern emerges: as the measures of political similarity become more immediately salient, the process that determines export levels seems to change. The results
strongly call into question the role that remote international interests actually play in trade policy. Global alliance similarity never independently results in heightened trade levels. Shared political openness, meanwhile, follows the pattern predicted by our Trade Flexibility theory. It matters most for commodities such as agricultural produce, slightly less with textiles, even less with manufacturing, and has no significant impact on high-tech transfers. The most we can say, then, is that democracies tend to trade more together when markets are relatively elastic—the favoritism among similarly open systems does not extend to goods for which the cost of incorporating political motives is most steep.

The less remote measures of political similarity, by contrast, show all signs of strategic international behavior. The role of alliances fits well with Morrow’s military capacity story. Allies trade heavily in technologically advanced goods. Outside of these sectors, however, there is no sign that nations favor their allies or punish others. Only when two nations are engaged in an outright militarized dispute—when they are open enemies, rather than simply not allies—do we find a general attempt to constrain the financial capacity of potential trading partners.

The contrast between these less remote measures of political similarity and the democratic dyad measure strongly calls into question any interpretation of the shared systems variable based upon international political considerations. It is not impossible that demand elasticities constrain any tendency to reward similar political systems through foreign policy. But why would democratic governments, as a matter of direct policy, reward all democracies with low-tech trade goods without giving additional consideration to those with whom they are allied? Given the reversal of the sectoral pattern once we move to alliances, a more plausible interpretation would seem to be that the frequent exchange of low-value-added goods among major-power democracies results from indirect trade decisions.

The success of our domestic context variables only adds to this conviction. The package of cultural similarity variables significantly predicts exports in every sector. The religion variable shows up as significant in every sector, as does the language variable in all except textiles. It is
most likely that this general success results from the ease with which similar cultures trade, an indirect series of economic decisions, rather than a tactical decision to reward populations that share a similar cultural heritage.

The two measures of domestic political openness have identical variation (i.e., essentially identical standard errors), so the magnitude of their coefficients also corresponds to their importance. As was true with the general exports model, then, we can see that the exporter’s level of democracy matters more than the importer’s level of democracy in every sector. Indeed, the importer’s political openness produces only weak and confused results. It is thus unlikely that democratic resistance to protectionism explains heightened trade, since tariff barriers would impact imports more directly than exports. A more plausible interpretation is that open systems encourage technologically advanced, high-value-added production. The exporter’s political openness enhances trade across sectors in a manner consistent with this interpretation.

Democracies are especially likely to export high-tech goods, and are also significantly more likely to export manufactured goods and textiles. The one sectoral good that open systems are less likely to export is commodities, the sort of extractive production common in autocracies.

We are not particularly interested in the gravity model variables, but it is worth noting that they usually correspond to expectations. Large economies are consistently more likely to import and export goods, a result that achieves significance in almost every case. Countries with large populations are also generally more likely to export goods. Distance between two countries consistently limits trade, presumably because transaction costs are higher. The only puzzle comes with importer population: the variable is negative and significant for high-tech goods, but positive and significant for manufacturing and commodities. We cannot explain this noise with any certainty, but do note that the causal direction is less clear for importer population than for other gravity model variables. We might expect large populations to import less, since they will
tend to be more diverse and therefore can be self-sufficient. Or we might expect large populations to import more, since their demands are so great. Therefore this one case of unexplained variation should not detract from the confidence instilled by the gravity model’s consistency across industrial sectors.

Trade in Armaments

Our model predicting the export of armaments is fundamentally flawed. Data are unavailable for China. This prevents use of the variable for Militarized Interstate Disputes, since there is no variation left; China was involved in every such engagement to take place during the period under study. Missing data also appear for other countries at various times, curtailing the number of observations and interrupting the time series. Furthermore, it is likely that armaments figures are the least accurate, since incentive for false reporting is greatest.

It is therefore reassuring that results for the armaments model in Table 1 are fully consistent with our interpretation drawn from the other sectors. Alliances strongly help predict the exchange of military goods, despite the additional noise in our model. The effect is much greater than in other industrial sectors, underscoring the role that security policy plays in enhancing technologically advanced trade among allies. The more remote measures of political similarity—our democratic dyad and tau-b variables—cut against any interpretation based on raw strategic considerations. If anything, democracies appear less likely to trade in armaments with each other. As before, the findings do not suggest that governments base trade policy on such remote international concerns.

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16 Having an open system corresponds to slightly higher levels of exchange, although this effect only approaches significance in commodities (which a productive economy is less likely to emphasize anyway), and is strongly disconfirmed with textiles (a result for which we have no definite explanation).

17 More interruptions in the time series add to the Prais-Winsten correction’s instability as used by Morrow, Siverson and Tabares (1998, 655).
Multipolarity and the Implications for Sectoral Trade: 1990-1997

The polarity of the international political system adds another level of analysis. Realists claim that alliances are more durable in a bipolar system than in a multipolar system (Waltz 1979). Therefore, it is expected that allies in a bipolar system should trade more with each other, because the structure of the alliance is durable and the relative gains from trade will produce a positive security externality for members of the alliance. However, under conditions of multipolarity, systemic pressures are likely to make one’s ally today become one’s enemy tomorrow, especially because conflict can be economic as well as military. International ties under these conditions are neither durable nor reliable, so states will not give much weight to their preference for restricting trade with more likely enemies—trading with one’s ally today can produce negative security externalities in the future (Gowa and Mansfield 1993).

Other researchers are highly pessimistic about whether trading with allies will carry substantial security payoffs in the multipolar post-Cold War international system. John Mearsheimer, for example, contends that as Soviet and U.S. power recedes from Europe, “Western European states will begin viewing each other with greater fear and suspicion…Consequently they will worry about the imbalances in gains as well as the loss of autonomy that results from cooperation” (Mearsheimer 1990, 47-48). Samuel Huntington has argued for restrictions on trade to curb disproportionate Japanese profits (Huntington 1993, 81).

Still other researchers discount the role of multipolar systemic pressures in affecting trade flows. Instead, they emphasize the individual foreign policy preferences of states in determining the pattern of trade. Peter Liberman (1996) used two case studies to test whether security concerns guide trade choices under multipolar conditions: British trade with Germany before the First World War and U.S. trade with Japan in the decade leading up to the Second. Neither Britain nor the U.S. significantly restricted trade until war was virtually on their doorsteps.

18 A warning is necessary. The only democratic dyads in this period that did not produce an alliance were those involving demilitarized nations (Varas and Bustamante 1983). It would be inappropriate to
Liberman contends that if relative gains mattered in multipolar systems, the effects would be clearly visible in these cases. Instead, the cases show that security concerns did not lead to trade restrictions in these multipolar international systems, even though British and U.S. officials recognized that both Germany and Japan gained disproportionately from trade. British and U.S. policy makers continued trade fearing that the imposition of economic sanctions would provoke their rival/partner and risk war. The same logic applies even more strongly to the post-Cold War international system, since the current great powers have developed sufficient nuclear deterrence to ignore the security concerns of relative economic gains (Liberman 1996, 150).

Such evidence is consistent with the claim that political influences on trade operate directly through the foreign policy preferences of states. But it is not consistent with the suggestion that allies necessarily favor each other. Since individual firms make decisions to trade and to invest overseas and in free market economies these firms, according to Charles Lindblom (1977, Chap. 13), “occupy a privileged position” vis-à-vis their national governments. Corporate decisions help determine national economic growth, and therefore help solidify the popularity of incumbent democratic regimes. Governments therefore have no incentive, short of war, to impose trade restrictions with a rival/partner that would impinge on the profitability of firms engaged in international trade. This logic applies most strongly to the multipolar world, in which alliances are not an extension of an on-going “cold” war.

It is possible to repeat our analysis for the period from 1990-1997 alone. The results would be hampered by small sample size, however, and more susceptible to disruption by the Prais-Winsten correction (see Morrow, Siverson and Tabares 1998, 655). Model estimation would not be reliable without “borrowing strength” from the Cold War period. We therefore generalize findings among the major powers; they lack external validity.

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19 We did run the models for the 1990-1997 period alone. Noise in the gravity model’s control variables—those with the least reason for substantive variation across international regimes—suggested that problems with this analysis resulted from the technical flaws we list.
retain the 1962-1989 data for Table 2, simply adding in the 1990s to see whether the model deviates from its original pattern with the new information.

[Table 2 about here]

Results from this expanded data set are quite rewarding. Our findings suggest that unexplained noise in the 1962-1989 model was exactly that: chance sampling variation that disrupted a general pattern (see Table 1). Exporter population no longer results in a negative relationship with high-tech trade; the variable produces consistently positive coefficients. Exporter GDP now achieves statistical significance for predicting trade in textiles, also adding consistency. The importer’s democracy level no longer seems to enhance trade in commodities significantly. The increased regularity among control variables should instill greater confidence.

Meanwhile, adding the 1990s disrupts few of the substantively interesting findings from the previous section. Democracies still tend to export more high-value-added goods than other nations, but show no clear tendency toward greater imports. Democratic dyads still trade more with each other, but primarily in low-value-added industrial sectors that most take advantage of the elasticity in product demand. Cultural similarity still predicts heightened trade. Countries still appear to cut off trade when they enter into militarized disputes with each other.

The one major deviation induced by the end of the Cold War is that sharing a common alliance no longer appears to increase trade. Adding only eight years of data washed this pattern out entirely. Nor is this change simply the result of losing our tau-b measure of alliance portfolio similarity, which was unavailable for the 1990s, since removing it from the models reported in Table 1 did not have the same effect (analysis not shown). The sudden insignificance of our alliance variable instead provides rather stunning support for the finding, reported by Liberman (1996), that alliances do not increase trade outside of the Cold War era. The results also agree with the implication, drawn from Lindblom (1977) and Liberman (1996), that anything short of a militarized dispute is insufficient ground for restricting trade flow.
Interpretation

Our analysis cannot entirely clarify the three ambiguities introduced at the beginning of this piece. We used data previously unavailable to the study of international trade flows, but the rarity of this information necessarily constrained analysis to the period between 1962-1997. This limits the generality of many findings. We also restrict ourselves to the major powers, which fits with previous work but ultimately is a theoretical limitation that researchers should repair (see Voss, Murray and Bartilow 2000). What results, then, is a highly contingent analysis. For one country to shift its orientation can entirely overturn particular findings, as witnessed by disappearance of the positive trade effect for alliances after the Cold War. Finally, even our more complex explanatory model cannot separate all possible theories; some ambiguity necessarily must remain until more focused tests become possible. Nevertheless, using sectoral export data and a more complex explanatory model does let us clarify the implications of previous research, and therefore moves us toward a more precise theoretical treatment.

The greatest contribution is that we have been able to adjudicate the debate over whether states regulate all trade strategically, or only regulate trade in particular high-tech goods. The conclusion suggested by our analysis is that foreign policy considerations do affect trade in all industrial sectors, not simply in high-tech goods or armaments. However, this is only true when dispute levels are particularly high, as represented by existence of a concrete Militarized Interstate Dispute. Governments do not bother to reward their allies, let alone countries with similar alliance portfolios or merely similar political systems, when regulating trade in low-value-added industrial sectors. We see no attempt to regulate the exchange of goods with minimal military application, simply as a means for distributing security externalities based upon the likelihood of future conflict (Liberman 1996, Lindblom 1977).

Indeed, even the tendency for allies to trade high-value-added goods more frequently appears to be historically contingent, the result of a Cold War alliance structure, rather than a
general characteristic of how nation-states regulate the exchange of goods. This finding represents a second contribution of our research, since the effect of international system structure is another ambiguity left open by the literature. Communist countries were generally considered an enemy, a constant source of danger, and the other major powers were implicitly or explicitly united against them—but a less extreme arrangement of forces does not offer the same clarity.

It seems much more likely that, aside from a highly polarized international system or a particular government with known hostile intent, the best way to improve national security is to increase domestic productivity. A nation grows by attracting cheaper imports and selling expensive exports, and if that means tossing away a few security externalities to possible future enemies along the way, the potential risks would be minor relative to the certain gains. Our conclusion is more tentative here, since only eight years of data are available for the post-Cold-War period. A promising future avenue of research would be to add additional countries (see Voss, Murray, and Bartilow 2000), since the primarily bipolar international structure might not influence their policies as strongly. Until such research becomes available, however, the rapid turnaround in our alliance variable does not look good for those who argue that strategic considerations generally prompt allies to trade together.

Our contribution to the remaining ambiguity is weakest, but only because we are forced to offer a mixed message. Both direct and indirect forces apparently structure trade, as one might expect. The success of political system and cultural variables indicates that decentralized decisions, rather than centralized security calculations, must cause much of the correlation between exports and political interests (Voss, Murray and Bartilow 2000).

Similarly, the democratic dyad measure is thought to represent various policy considerations: favoritism toward similar political systems, the tendency of democracies to have lower tariffs on exports, the trust individual firms place in open political systems such that they are more willing to extend debt or sign contracts with representatives there. Yet we show that the variable does not even apply in high-value-added sectors for which security considerations should
be strongest. Rather, it operates most strongly in less-advanced sectors in which both national and personal demand is more elastic across countries, where mere price and preference would operate most strongly. Furthermore, a portion of the increased trade found among democratic dyads simply results from greater export productivity in nations with an open political system, regardless of the potential trading partner—an effect that does not comport with any of the hypotheses based upon strategic foreign policy. Future work could expand beyond the major powers, and therefore introduce greater variation in the democratic dyad variable relative to the domestic system openness controls, but as things stand we doubt that much of the credit for high levels of trade among similar systems should be attributed to foreign-policy favoritism.

Yet when we consider the less remote measures of political compatibility—alliances and militarized disputes—signs indicate that direct regulation might be at work. Trade patterns follow security interests when nations are particularly friendly or particularly unfriendly, a result that extends even to low-value-added industrial sectors when hostilities are greatest. This is a much more modest assessment of how international relations influence trade than that featured elsewhere in the literature, yet still leaves some room at the margins for political effects.

Definitively parsing out the direct and indirect influences on international trade, as well as the causal ordering for those effects, will have to wait for future research. For now our main advice for clearing up the remaining uncertainty is that future analysis, in order not to exaggerate the commercial importance of foreign policy concerns, must consider contextual influences on trade that have nothing to do with strategic calculation. The simple gravity model does not include all of these transaction costs and consumer preferences, but understanding political influences on international trade requires their presence.

\[20\] This is especially important given work that distinguishes NATO, the main alliance uniting our major powers in this analysis, with a more general pattern of democracies trading more with non-democracies (Simon and Gartzke 1996).
Data Appendix


Trading partners who share a military alliance in a given dyad year is coded 2 or 1 otherwise. This code is adopted from the Correlates of War (COW data set). Trading partners who are both democracies in any given dyad year is coded 2 or 1 otherwise. This code is adopted from the Polity III Democracy Score (Gurr, Jaggers, and Moore 1995). And since the level of democracy may also affect trade flows, we included another variable, which is adopted from the Polity III data set that measures the exporter and importer's level of democracy. These democratic levels are based on an 11-point scale that range from: 0 = low democracy; 10 = high democracy.

Following Bueno de Mesquita (1975, 1981) and Morrow, Siverson and Tabares, we operationalize common interests in a dyad of states by the *taub* correlation of their alliance portfolios. EUGene - the Expected Utility Generator program that computes global *taub* scores using the COW data four-point classification of alliances, created *Taub* scores.

Militaryized interstate dispute is Coded 2 if a dispute exists between trade partners within a dyad year and 1 otherwise. This code is adopted from the COW data set.

Export data from 1962 to 1997 for all industrial sectors with the exception of Russia and China were extracted from the United Nations' COMTRADE database. Export data for Russia and China for the years 1962 to 1991 were taken from various volumes of the United Nations
Commodity Trade Statistics. Data for trade in the primary commodity sector were taken from SITC numbers: 04-cereals and preparations; 05-fruit and vegetables; 06-sugar and preps, honey; 07-coffee, tea, cocoa and spices; 081-animal feed; 09-misc edible products; 1-beverage & tobacco; 2-crude materials that exclude fuels; 3-mineral fuels, etc; 4-animal, vegetable oil, fat. Data for trade in textiles were taken from SITC numbers: 831-travel goods and handbags; 84-clothing and accessories; 85-footwear. Data for trade in manufacturing were taken from SITC numbers: 5-chemical and related products; 6-basic manufactured; 812-plumbing, heating and lighting equipment; 821-furniture and parts thereof; 86-instruments, watches and clocks; 87-precision instruments; 88-photo equipment and optical goods; 89-misc manufactured goods. Data for trade in high technology sector were taken from SITC number: 7-machine, transport equipment, computers, office equipment, and optical equipment. Armaments data come from SITC number 951. Export data for Russia and China for the years 1992 to 1997 were extracted from the United Nations' COMTRADE database.

Data for general exports were taken from various issues of The Direction of Trade Statistics Yearbook. The data for 1962 through 1978 were taken from The Direction of Trade Data set stored at the ICPSR (except for China and the USSR). Chinese and Soviet general trade data were gathered from Brian Mitchell's International Historical Statistics: Africa, Asia, and Oceania 1750-1993, 4th edition. Exports from the USSR to all countries except China for 1962 and 1963 were available. Therefore, imports to the USSR were used instead for the remaining dyads with China. The 1985 volume was used for data from 1979 through 1984. The 1992 volume was used for data from 1985 through 1990 (except for Soviet data where it was used from 1985 through 1991). The 1998 volume was used for data from 1991 through 1997 (except for Russian data where it was used from 1992 through 1997).
Bibliography


Table 1. International Trade among Major Powers Disaggregated by Sector (1962-1989)

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Aggregate Exports</th>
<th>Commodities</th>
<th>Textiles</th>
<th>Manufacturing</th>
<th>Hi-tech</th>
<th>Armaments</th>
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observations 1525 1477 1304 1476 1414 563
adjusted R2 0.82 0.76 0.65 0.80 0.84 0.31
RSE 0.59 0.77 0.86 0.66 0.69 1.69

*** = two-tailed test; significant at the .01 level
** = two-tailed test; significant at the .05 level
* = two-tailed test; significant at the .10 level
+ = one-tailed test; significant at the .01 level
= one-tailed test; significant at the .05 level

Note: The above five models all use a multiplicative "gravity" equation to explain export levels, measured in 1995 constant dollars. One-tailed significance tests are used when only one sign on the coefficient would be substantively meaningful; otherwise two-tailed tests are used. Sectoral export data come from the U.N. Comtrade Data Base.
Table 2. International Trade among Major Powers Disaggregated by Sector (1962-1997)

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
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<td>-0.51 ***</td>
<td>0.06</td>
<td>0.22 ***</td>
<td>1.13 ***</td>
<td>2.21 ***</td>
</tr>
<tr>
<td>Importers' Level of Democracy</td>
<td>0.18 ***</td>
<td>0.06</td>
<td>-0.33 ***</td>
<td>0.00</td>
<td>-0.09</td>
<td>0.14</td>
</tr>
<tr>
<td>Democratic Dyads</td>
<td>1.01 ++</td>
<td>3.48 ++</td>
<td>2.27 ++</td>
<td>1.82 ++</td>
<td>0.79 ++</td>
<td>-7.55</td>
</tr>
<tr>
<td>Common Alliance</td>
<td>0.02</td>
<td>-0.49</td>
<td>-0.79</td>
<td>-0.17</td>
<td>-0.22</td>
<td>4.09 ++</td>
</tr>
<tr>
<td>Militarized Interstate Dispute</td>
<td>-1.08 ++</td>
<td>-1.70 ++</td>
<td>-0.75 ++</td>
<td>-1.45 ++</td>
<td>-1.46 ++</td>
<td></td>
</tr>
<tr>
<td>observations</td>
<td>1965</td>
<td>1917</td>
<td>1743</td>
<td>1916</td>
<td>1854</td>
<td>884</td>
</tr>
<tr>
<td>adjusted R2</td>
<td>0.82</td>
<td>0.77</td>
<td>0.64</td>
<td>0.81</td>
<td>0.84</td>
<td>0.41</td>
</tr>
<tr>
<td>RSE</td>
<td>0.65</td>
<td>0.84</td>
<td>0.99</td>
<td>0.74</td>
<td>0.80</td>
<td>1.03</td>
</tr>
</tbody>
</table>

*** = two-tailed test; significant at the .01 level
** = two-tailed test; significant at the .05 level
* = two-tailed test; significant at the .10 level
++ = one-tailed test; significant at the .01 level
+ = one-tailed test; significant at the .05 level

Note: The above five models all use a multiplicative "gravity" equation to explain export levels, measured in 1995 constant dollars. One-tailed significance tests are used when only one sign on the coefficient would be substantively meaningful; otherwise two-tailed tests are used. Sectoral export data come from the U.N. Comtrade Data Base.