Does trade prevent or promote interstate conflict initiation?

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Abstract

Competing theories argue, respectively, that more trade reduces, increases, or does not affect interstate military conflict. We offer a new general theory on how trade affects conflict, which encompasses the liberal logic and the neo-Marxist/neo-mercantilist mechanism of asymmetric dependence and offers alternative explanations to the effects predicted by the bargaining and classical realist approaches. If a country expects its conflict toward a target to reduce the price of its import from or increase the price of its export to a target, it has an economic incentive to initiate conflict, and vice versa. These expectations can vary across trade flow directions and economic sectors. Using our model, we predict the effects of increases in exports and imports in five sectors on military conflict initiation. Statistical analysis of directed dyads from 1970 to 1997 largely supports our predictions. Rises in the initiator’s imports of agriculture/fishery, energy, and chemical/mineral goods and exports of miscellaneous consumption goods reduce the likelihood of conflict initiation; rises in the initiator’s exports of energy and both imports and exports of manufactured goods increase the likelihood. We evaluate implications for the literature and public policy.

Keywords

bilateral trade, conflict initiation, interstate conflict

Introduction

The view that trade promotes peace dates from the 18th century (e.g. Kant, 1795) and finds explanations today in the liberal and bargaining theories. The antithesis that trade generates military conflict also has a long intellectual history (e.g. Lenin, 1916; Waltz, 1970) and finds explanations today in the neo-Marxist and a neo-mercantilist/realist perspectives. In a third view, classical realism maintains trade does not affect conflict. The evidence is mixed. More importantly, no single theory has explained the conditions under which trade reduces, increases, or does not affect conflict. We offer a theory that does just that.

All the prevailing theories of trade and conflict seem plausible given their assumptions, though none fully examines the role of market forces and heterogeneity across trade flow directions and economic sectors. Contemporary studies largely ignore the heterogeneity, relying instead on total trade. Incorporating these issues, we show that the predicted pacifying, conflict-promoting, and nil impacts of more trade on conflict in the literature, respectively, are special cases of a more general theory, which we propose in this article.

Simply put, our theory shows that an actor country does not initiate conflict against a target country if it expects that this would reduce its profit from trading with that country. This liberal idea is not new. As formalized by Polachek (1980), a rise in trade reduces conflict toward a target if the actor assumes that...
conflict would increase the price of its imports from the target and reduce the price of its exports to the target, *ceteris paribus*. However, we go beyond this argument.

Our theory also predicts that an actor initiates conflict toward a target if it expects that this would increase its profit from trading with that target. This occurs if conflict is expected to reduce the price of the actor’s imports from the target or increase the price of its exports to the target, *ceteris paribus*. This conflict-inducing effect is consistent with the prediction of the neo-Marxist or neo-mercantilist mechanism of asymmetric trade dependence, which our theory incorporates. The classical realist outcome of no effect is also possible in our theory.

We show that the effect of more bilateral trade on conflict initiation depends on certain export-, import-, and sector-specific parameters. Calibrating these parameters based on published estimates, we predict how the likelihood of militarized interstate dispute (MID) initiation will be affected by bilateral exports and imports in the agriculture/fishery, energy, chemical/mineral, manufactured products, and miscellaneous consumption goods sectors.

We examine these predictions statistically in a large-N sample of all directed dyads from 1970 to 1997, for which data are available. The evidence largely supports our predictions. Increases in the initiator’s imports of agriculture and fishery goods, energy goods, and chemical and mineral goods, and exports of miscellaneous consumption goods reduce the likelihood of MID initiation. In contrast, increases in the initiator’s exports of energy goods and manufactured goods and imports of manufactured goods increase the likelihood of MID initiation.

Taking a broader view, this research sheds new light on a longstanding debate and offers an opportunity to rethink the logic of how trade affects conflict. Our theory encompasses the liberal logic and the neo-Marxist/neo-mercantilist mechanism of asymmetric trade dependence and offers alternative explanations to the pacifying impact predicted by the bargaining argument and the nil impact predicted by classical realism.

**Previous studies**

The relevant literature is too large to fully review here. Liberalism argues that trade promotes peace because conflict hurts trade (e.g. Polachek, 1980, 1992; Russett & Oneal, 2001). Maoz (2009) and Dorussen & Ward (2010) extend this logic to include indirect ties between countries through trade with third parties. The bargaining approach argues that since trade is valuable, countries can manipulate trade to send a costly credible signal to others, facilitating bargaining over disputed issues (e.g. Gartzke, Li & Boehm, 2001). The neo-Marxist view (e.g. Choucri & North, 1975; Ashley, 1980) and the neo-mercantilist derivative of realism (e.g. Waltz, 1970; Borus & Zysman, 1992) argue that asymmetric dependence on trade promotes a sense of insecurity and enables countries to use trade for influence, which causes conflict. In classical realism, conflict arises not from trade but political causes (e.g. Buzan, 1984; Ripsman & Blanchard, 1997). Many empirical studies find that total trade reduces conflict, but some find to the contrary or no effect.

The lack of theoretical cohesiveness, we believe, reflects overly stringent assumptions about the nature of trade and market forces in previous explanations. The liberal and bargaining explanations assume that conflict always harms trade. The neo-Marxist and neo-mercantilist explanations assume that asymmetric dependence on trade leads to conflict. We argue trade could be heterogeneous enough across flow directions and sectors to generate peace, conflict, or even no effect at all.

Previous studies that apply some of these theories to disaggregated trade produce conflicting conjectures. In one view, trade in sectors in which nations have a large comparative advantage pacifies because conflict reduces exports and thus economic benefits. A second view argues that imports of energy and machines pacify since they promote economic growth, which would be hindered by conflict. In a third, related, view, consumers seek peace with countries that supply imports, which increase the variety of consumer total goods and reduce their prices, and such benefits would be lost to conflict.2

In a fourth view, some studies focus on strategic imports, typically identified as minerals, chemicals, steel, fuels, and high-technology. When strategic imports lack appropriate substitutes, importers may resort to conflict to mitigate their vulnerability. Exporters may exploit the importers’ vulnerabilities for political influence, which may either lead to importer resentment and conflict or to importer cooperation in order to secure its supply, though this forced cooperation may lead to bad feelings.

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1 For literature survey articles, see, for example, Mansfield & Pollins (2003); Schneider, Barbieri & Gleditsch (2003); Polachek & Seiglie (2007).

and thus be unstable.\(^3\) Doubting the usefulness of this concept, some scholars argue that any good is strategic if it is needed and has no substitutes, and warn it is hard to identify \textit{a priori} if a good is strategic (e.g. Baldwin, 1985; Forland, 1991).

Finally, studies on international competitiveness argue that trade in high-technology goods creates positive spillovers for economic growth and, therefore, for increasing military power. States wishing to excel in these areas seek to maximize their relative gains from such trade (e.g. Tyson, 1992). The attempt of one country to gain relatively more from trade can, in turn, lead to political conflict among trade partners (e.g. Mastanduno, 1992).


\section*{Formal model}

We begin with the ground-breaking model of Polachek (1980, 1992), which provides a formal micro-foundation for liberalism. Consider countries A and B that trade and have political relations. A and B are unitary rational actors whose utilities rise with their consumption and the conflict they send toward each other. The unitary actor assumption is an often-used simplification. The assumption that conflict raises utility may seem counter-intuitive, but since our actors are rational, when they initiate conflict they expect to gain from it. Conflict activities may also yield a certain amount of national security, benefiting citizens and politicians.\(^4\)

Countries A and B are assumed to be price takers in the world economy: they cannot change the market price of any good by selling or buying it worldwide. However, they can change the price of traded goods in their bilateral market by changing the quantities they buy or sell. Their abilities to substitute each good they trade bilaterally by buying or selling in the world economy vary from no substitution to perfect substitution.

A’s utility is \(U(ECA, CAB)\). \(ECA\) is A’s economic consumption, and \(CAB\) is A’s conflict against B, defined as a positive number. Next, we make the following assumptions: \(U_{ECA} > 0\), the marginal utility of consumption is positive, as noted above; \(U_{ECA} < 0\), the positive marginal utility of consumption declines with more consumption; \(U_{CAB} > 0\), the marginal utility of conflict is positive, as noted above; and \(U_{CAB} < 0\), the positive marginal utility of conflict declines with more conflict.

A exports \(NX\) goods to B and imports \(NM\) goods from B. The quantity of good i exported by A to B is \(Xi\) and its price is \(PXi\). The quantity of good j imported by A from B is \(Mj\) and its price is \(PMj\). The partial derivative of \(PXi\) with respect to (w.r.t.) the conflict A sends toward B is \(PXiCAB\), indicating the change in A’s export price when conflict rises. The partial derivative of \(PMj\) w.r.t. the conflict A sends toward B is \(PMjCAB\), indicating the change in A’s import price when conflict rises. The second order derivatives w.r.t. conflict are \(PXiCABCAB\) and \(PMjCABCAB\), indicating the effects of more conflict on the export and import price changes, respectively.

A’s maximization problem is:

\[
\max U(ECA, CAB) \text{ by choice of } CAB \text{ s.t.} \\
TB = \sum_{i=1}^{NX} Xi \cdot PXi(CAB) - \sum_{j=1}^{NM} Mj \cdot PMj(CAB). \tag{1}
\]

That is, A maximizes its utility by choosing the conflict against B, taking its economic consumption and the quantities of its trade with B as given, subject to (s.t.) its need to maintain some trade balance, TB. Shown in web appendix I (available at http://www.prio.no/jpr/datasets), the solution of (1) gives the optimal conflict A chooses against B, \(CAB\).

The relevant question for this analysis is: Suppose A’s import from B of good j (\(Mj\)) rises, or A’s export to B of

\(^3\) See, for example, Hirschman (1980); Gilpin (1984); Sen (1984); Gasiorowski (1986); Borrus & Zysman (1992); Reuveny & Kang (1998); Reuveny (2001); Goenner (2010).

\(^4\) The idea that actors expect to gain if they initiate conflict is implicit or explicit in all conflict models (e.g. Bueno de Mesquita, 1981).
good i \((X_i)\) rises, ceteris-paribus, what will be the effect on \(C^*_{AB}\) in each case? Derived in web appendix I, Equations (2) and (3) provide answers to this question. We get:

\[
\frac{\partial C^*_{AB}}{\partial X_i} = \frac{-\lambda \cdot PX_{iCAB} + \sum_{j=1}^{N_X} X_j \cdot PX_{jCAB} - \sum_{j=1}^{N_X} M_j \cdot PM_{jCAB} C_{iAB}}{U_{ijCAB} + \lambda \sum_{j=1}^{N_Y} X_j \cdot PX_{jCAB} - \sum_{j=1}^{N_Y} M_j \cdot PM_{jCAB} C_{iAB}}; \\
i = 1, 2, \ldots N_X \text{ and } \lambda > 0
\]  

(2)

and

\[
\frac{\partial C^*_{AB}}{\partial M_j} = \frac{-\lambda \cdot PM_{jCAB} + \sum_{j=1}^{N_M} X_j \cdot PM_{jCAB} C_{iAB}}{U_{ijCAB} + \lambda \sum_{j=1}^{N_M} X_j \cdot PM_{jCAB} C_{iAB} - \sum_{j=1}^{N_M} M_j \cdot PM_{jCAB} C_{iAB}}; \\
i = 1, 2, \ldots N_M \text{ and } \lambda > 0.
\]

(3)

The effect of increases in A’s export or import in a particular good on its optimal conflict toward B hinges on the sign of (2) or (3), respectively. In the liberal view, a rise in exports and imports always pacifies. This is so because under Polachek’s assumptions (i.e. \(U_{iCAB} < 0, PX_{iCAB} < 0, PM_{jCAB} > 0, PX_{jCAB} C_{iAB} < 0, \) and \(PM_{jCAB} C_{iAB} > 0\), the signs of (2) and (3) are always negative. We believe that instead of assuming the signs of the effects of conflict on A’s export and import prices, these effects should be modeled endogenously in the marketplace.

Economics tells us prices are determined by demand and supply. The condition that demand equals supply sets the equilibrium price. In our case, for each bilateral trade price, the importer’s demand determines how much to import and the exporter’s supply determines how much to export. As the price rises, demand falls and supply rises. In equilibrium, A’s demand for good j from B equals B’s supply of good j to A. If B does not send enough good j to A, A’s demand is larger than B’s supply and good j’s price will rise, prompting B to increase its supply. If B’s supply of good j is larger than A’s demand, the price will decline and B will reduce the supply. The same logic applies to export in sector i from A to B.

A’s import demand function for good j from B \((M^D_{jA})\) is modeled by:

\[
M^D_{jA} = \beta_{j0} - \beta_{j1} PM_{j} + \beta_{j2} Y_{A} - \beta_{j3} C_{AB}.
\]  

(4)

\(Y_A\) is A’s income, \(PM_{j}\) is the price A pays B, \(C_{AB}\) is the conflict A sends toward B, and all the \(\beta_i\) parameters are positive. As usual, we assume \(M^D_{jA}\) rises with \(A\)’s income and falls with j’s price. The effect of conflict on \(M^D_{jA}\) is assumed to be negative (e.g. Pollins, 1989; Reuveny, 2001; Li & Sacko, 2002). For example, the importer may buy less in order to punish a hostile exporter, depend less on a foe that may stop selling, or influence a foe by denying it revenue. Conflict may also raise the cost of doing business (e.g. costlier insurance, longer routes), reducing the willingness to import.

B’s export supply function of good j to A \((M^S_{jB})\) is given by:

\[
M^S_{jB} = \alpha_{j0} - \alpha_{j1} Y_{B} - \alpha_{j2} C_{AB},
\]  

(5)

where \(\alpha_{j0} < 0, \alpha_{j1}, \alpha_{j2}, \) and \(\alpha_{j3} > 0, Y_B\) is B’s income, and \(PM_{j}\) and \(C_{AB}\) are defined above. As usual, we assume export supply rises with price and income. As in (4), \(M^S_{jB}\) falls with the conflict of A against B. For example, the exporter may sell less to punish a hostile importer, seek to depend less on a foe that may stop buying, or influence a foe by denying it needed goods. As before, conflict may also raise the cost of doing business, reducing exports.

In equilibrium, A’s demand for good j from B equals B’s supply. The equation \(M^D_{jA} = M^S_{jB}\) determines the equilibrium price A pays B for good j:

\[
PM_{j} = \frac{\beta_{j0}}{\alpha_{j1} + \beta_{j1}} + \frac{\beta_{j2}}{\alpha_{j1} + \beta_{j1}} Y_{A} - \frac{\alpha_{j2}}{\alpha_{j1} + \beta_{j1}} Y_{B} - \frac{\alpha_{j3}}{\alpha_{j1} + \beta_{j1}} C_{AB}.
\]  

(6)

As usual, \(PM_{j}\) rises with \(Y_A\) and falls with \(Y_B\). Since the denominator of the expression multiplying \(C_{AB}\) is positive, the effect of \(C_{AB}\) on \(PM_{j}\) depends on the relative sizes of \(\beta_{j3}\) (the effect of conflict on A’s demand for good j from B) and \(\alpha_{j3}\) (the effect of conflict on B’s supply of good j to A). As discussed later, the differences in these parameters reflect the asymmetric trade dependence emphasized by the neo-Marxist or neo-mercantilist arguments.

The models of A’s export of good i to B, and B’s import of good i from A resemble (5) and (4), respectively. We use \(\delta\) for B’s import demand and \(\gamma\) for A’s export supply. B’s import demand for good i from A is:

\[
X^D_{iB} = \delta_{i0} - \delta_{i1} PX_{i} + \delta_{i2} Y_{B} - \delta_{i3} C_{AB}.
\]  

(7)

A’s export supply of good i to B is:

\[
X^S_{iA} = \gamma_{i0} - \gamma_{i1} PX_{i} + \gamma_{i2} Y_{A} - \gamma_{i3} C_{AB}.
\]  

(8)
The condition $X_{iB} = X_{iA}$ determines the equilibrium price $P_{x_i}$ for good $i$: 

$$
P_{x_i} = \frac{\delta_{i0}}{\gamma_{i1} + \delta_{i1}} - \frac{\gamma_{i0}}{\gamma_{i1} + \delta_{i1}} + \frac{\delta_{i2}}{\gamma_{i1} + \delta_{i1}} Y_b
- \frac{\gamma_{i2}}{\gamma_{i1} + \delta_{i1}} Y_A + \frac{\gamma_{i3} - \delta_{i3}}{\gamma_{i1} + \delta_{i1}} C_{AB}.
$$

(9)

The effects on $P_{x_i}$ in (9) resemble those in (6), except that A is exporter and B is importer, and the effect of A's conflict initiation on the trade flow from A to B depends on the relative sizes of $\delta_{i3}$ and $\gamma_{i3}$, which similarly reflect the asymmetric dependence of both sides on this flow.

Given (6) and (9), the first and second order partial derivatives of trade prices w.r.t. the conflict A sends toward B are:

$$
P_{x_{iCA'B}} = \frac{\gamma_{i3} - \delta_{i3}}{\gamma_{i1} + \delta_{i1}}; \quad P_{x_{iCA'B}} = 0;
$$

$$
PM_{jCA'B} = \frac{\alpha_{j3} - \beta_{j3}}{\alpha_{j1} + \beta_{j1}}; \quad PM_{jCA'B} = 0.
$$

(10)

Substituting these derivatives into (2) and (3), we obtain the solutions in (11) and (12) for the effects of increases in the sectoral export and import flows on A's optimal conflict toward B, respectively.

$$
\frac{\partial C^*_{AB}}{\partial x_i} = \frac{-\lambda \cdot \gamma_{i1} - \delta_{i3}}{U_{CA'BCA'B}}; \quad i = 1, 2, \ldots, N_X
$$

(11)

$$
\frac{\partial C^*_{AB}}{\partial m_j} = \frac{-\lambda \cdot \alpha_{j3} - \beta_{j3}}{U_{CA'BCA'B}}; \quad j = 1, 2, \ldots, N_M
$$

(12)

In (11), the sign of the effect of an increase in A's export of good $i$ to B on the optimal conflict A sends against B, \textit{ceteris-paribus}, depends on $\delta_{i3}$ and $\gamma_{i3}$. Recall that $U_{CA'BCA'B} < 0$ and $\lambda > 0$. When A's export to B rises: if $\gamma_{i3} > \delta_{i3}$, A's optimal conflict against B rises; if $\gamma_{i3} < \delta_{i3}$, A's optimal conflict falls; if $\gamma_{i3} = \delta_{i3}$, conflict does not change. In (12), the sign of the effect of an increase in A's import of good $j$ from B on the optimal conflict A sends against B, \textit{ceteris-paribus}, depends on $\alpha_{j3}$ and $\beta_{j3}$. When A's import from B rises: if $\alpha_{j3} < \beta_{j3}$, A's optimal conflict against B rises; if $\alpha_{j3} > \beta_{j3}$, A's optimal conflict declines; if $\alpha_{j3} = \beta_{j3}$, conflict does not change.

Our model thus indicates that a rise in bilateral trade may pacify, or promote, or have no effect on conflict. The effect can vary for A's exports or imports (as it depends on $\alpha_{j3}$ and $\beta_{j3}$ for imports, and $\gamma_{i3}$ and $\delta_{i3}$ for exports), and across goods (as $\alpha_{j3}$, $\beta_{j3}$, $\gamma_{i3}$, and $\delta_{i3}$ may differ across goods). Empirical studies of trade and conflict that use the sum of total exports and imports in a dyad cannot differentiate these effects, which may generate misleading results.\footnote{We assumed linear demand and supply. See, for example, Bond (1985) and Nicholson (2005) for similar linear models, though without conflict. One may assume nonlinear forms where curves also rotate in response to conflict. While this would considerably complicate the math, it would basically maintain the qualitative nature of our predictions.}

**Graphical illustration and theoretical implications**

Solutions (11) and (12) identify the conditions under which increases in country A's exports to and imports from B in some goods reduce, increase, or do not affect the optimal conflict A sends toward B. Figures 1 and 2 demonstrate these possibilities graphically.

Holding their incomes constant, Figure 1 presents A's import demand curve for good $j$ from B (MD$_{A1}'$), and B's export supply curve of $j$ to A ($MS_{B1}'$). We begin at equilibrium $E_1$, where MD$_{A1}'$ and $MS_{B1}'$ intersect. A imports $M_{i1}$ units of $j$ from B and pays $PM_{i1}$ per unit. We assume A can find a substitute for $j$ in the world economy at a price $PM_{i1}'$, and B can find a substitute buyer, but they happen to trade with each other.

In all the panels, if A sends more conflict against B, MD$_{A1}$' shifts to MD$_{A1}'$ (A demands less $j$ from B) and $MS_{B1}$' shifts to $MS_{B1}'$ (B supplies less $j$ to A). As a result, the market moves to equilibrium $E_2$, where A imports $M_{i2}$ units from B and pays $PM_{i2}$ per unit. The sizes of the demand and supply shifts depend on $\alpha_{j3}$ and $\beta_{j3}$. In other words, it is not necessarily true that A's conflict toward B reduces A's incentives to buy from B as much as it reduces B's incentives to sell to A.

In Panel I, if A raises conflict toward B, B's supply declines less than A's demand ($\alpha_{j3} < \beta_{j3}$). This indicates that A depends less on B as a supplier than B depends on A as a buyer, or A is more able to find a substitute seller than B is able to find a substitute buyer. In $E_2$, B buys less from B ($M_{i2} < M_{i1}$) and pays less per unit ($PM_{i2} < PM_{i1}$). Recalling that A consumed $M_{i1}$ units in $E_1$, it purchases the difference $M_{i1} - M_{i2}$ in the world economy. Since A is a price taker in this market, it pays $PM_{i1}$ per unit for the remaining $M_{i1} - M_{i2}$ units. The amount A pays for $M_{i1}$ in $E_2$ is $PM_{i1}(M_{i1} - M_{i2}) + PM_{i2}M_{i2}$, which is smaller than the amount A paid in $E_1$, $PM_{i1}M_{i1}$, as $PM_{i2} < PM_{i1}$. Since A expects to profit, it has an incentive to raise the optimal conflict toward B when its import of $j$ from B rises on the margin in (12), \textit{ceteris paribus}. 

5 We assumed linear demand and supply. See, for example, Bond (1985) and Nicholson (2005) for similar linear models, though without conflict. One may assume nonlinear forms where curves also rotate in response to conflict. While this would considerably complicate the math, it would basically maintain the qualitative nature of our predictions.
In Panel II, if A increases conflict toward B, B’s supply shifts inward more than demand shifts down ($\alpha_j > \beta_j$). A depends more on B as a supplier of j than B depends on A as a buyer. Since A pays more per unit to B ($PM_{j2} > PM_{j1}$), the amount it pays for j by buying $M_{j2}$ units from B and $M_{j1} - M_{j2}$ units in the world economy increases. A
expects a greater cost and so it has an incentive to reduce the optimal conflict toward B when its import of \( j \) from B rises on the margin in (12), \( \text{ceteris paribus}. \)

In Panel III, \( \gamma_{13} = \beta_{13} \), so \( PM_{1i} = PM_{1j} \). A has no incentive to either increase or decrease the optimal conflict toward B when its import from B rises in (12) on the margin. Trade has no effect because A depends on B as a supplier as much as B depends on A as a buyer.

The effect of a rise in A’s export to B on its optimal conflict toward B in (11) works similarly. Holding their incomes constant, Figure 2 presents A’s export supply curve of good i to B (\( X_{A}^{i} \)), and B’s import demand curve of good i from A (\( X_{B}^{i} \)). In E1, A can find a substitute buyer for j and B can find a seller, but they happen to trade with each other.

In Figure 2, when A sends more conflict towards B, its incentives to sell to B does not necessarily decline as much as B’s incentives to buy from A decline. In Panel I, if A increases conflict toward B, A’s export supply of good i to B declines less than B’s import demand (\( \gamma_{13} < \delta_{13} \)). A depends more on B as a buyer of good i than B depends on A as a supplier. In E2, the price A gets from B for good i, \( PX_{2} \), and the quantity it sells to B, \( X_{2} \), fall. Since \( PX_{2} < PX_{1} \), the overall amount A expects to make from selling i in the bilateral and world markets, \( PX_{1}(X_{1} - X_{2}) + PX_{2}X_{2} \), declines when conflict rises. Thus, A has an incentive to reduce the optimal conflict when its export to B rises on the margin in (11), \( \text{ceteris paribus}. \)

In Panel II, A’s supply of good i to B declines more than B’s demand for this good (\( \gamma_{13} > \delta_{13} \)) because A depends less on B as an outlet than B depends on A as a supplier. If A increases conflict toward B, \( PX_{1} \) rises. Since A expects a higher price for each unit of i exported to B (\( PX_{1} > PX_{1} \)), it has an incentive to increase conflict when its export to B rises on the margin in (11), \( \text{ceteris paribus}. \)

In Panel III, \( PX_{i} \) does not change (\( \gamma_{13} = \delta_{13} \)) and so A has no incentive to either increase or decrease conflict toward B when its export of good i to B increases in (11); trade has no effect.

In sum, the effect of trade on conflict depends on the relative sensitivities of import demand and export supply to conflict. While bilateral trade declines when conflict rises, the size of the decline may differ across sectors and trade flows, depending on A’s and B’s abilities to trade less with each other and more with others when conflict rises. The issue is one of relative dependence on bilateral commerce. If A depends on B as a supplier less (more) than B depends on A as a buyer, it has an incentive to increase (decrease) conflict toward B when its import from B rises. If A depends on B as a buyer less (more) than B depends on A as a supplier, it has an incentive to increase (decrease) conflict toward B when its export to B rises.

Our theory has several implications in relation to previous theories. First, it encompasses the liberal and neo-Marxist/neo-mercantilist causal mechanisms as special cases. In the liberal theory, trade reduces conflict since conflict is costly for trade. In the Polachek formalization, conflict is assumed to raise the price of A’s import from B and reduce its price of export to B, leading A to reduce conflict toward B. We show that this occurs if A depends on B as a buyer more than B depends on A as a supplier, or if A depends on B as a supplier more than B depends on A as a buyer. In the neo-Marxist/neo-mercantilist theory, trade brings conflict due to asymmetric dependence. We show this occurs if conflict reduces the price of A’s import from B and raises the price of its export to B. In this case, A depends on B as a buyer less than B depends on A as a supplier, or A depends on B as a supplier less than B depends on A as a buyer.

Second, our model includes the classical realist outcome, though not its logic. In classical realism, trade does not impact conflict because in initiating conflict, leaders focus on the high politics of power and national security, not the low politics of economic relations. In our theory, trade has no effect on conflict when A depends on B as a trade partner the same as B depends on A, removing the economic incentive to initiate conflict.

Third, our model poses challenges to the bargaining explanation. Acting under incomplete information, traders are less likely to fight in this view because they can signal resolve to each other by resorting to trade sanctions or dissociation. This logic assumes that conflict always harms trade, modeled by one commonly known opportunity cost. We show this is not always the case; the opportunity cost depends on market conditions. Exports or imports in some sectors may profit from conflict. States may thus contemplate these economic benefits as factors motivating conflict initiation, a possibility absent from the bargaining approach. Next, to identify the opportunity cost per good, one has to know the bilateral demand and supply curves and their sensitivities to
conflict. These forces are not included in the bargaining model. The opportunity costs of different sectoral trade flows are not necessarily common knowledge, as the bargaining view assumes, and states may not share this valuable information with rivals. If the trade of one side may gain from conflict, unknown to the other, this raises

Figure 2. Bilateral trade equilibrium; Flow of good i from country A to country B
uncertainty rather than reducing it, and can thus lead to conflict, rather than peace, in the bargaining approach.

Finally, the competing effects predicted by the liberal/bargaining and neo-Marxist/neo-mercantilist logics do not change across sectors and flow directions. In contrast, our model indicates that the effects of more trade on conflict can differ across goods and flow directions. Empirical analyses should take that into account.

**Empirical design**

To formulate sector- and flow-specific hypotheses, we need to know the values of $\alpha_{ij3}$, $\beta_{ij3}$, $\gamma_{ij3}$, and $\delta_{ij3}$. Like all demand and supply parameters, they are not readily observable but can be estimated using price and quantity data on disaggregated bilateral trade. For the large sample discussed below, such data are unavailable. We thus calibrate these parameters based on existing estimates in the literature.

Only a few studies estimate sectoral bilateral import demand and export supply equations. They use data developed by Italianer (1986) for the European Commission, but unfortunately these studies exclude conflict. The only exception to our knowledge is Reuveny (2001). He estimates a system of six equations (A’s export to B, A’s import from B, A’s conflict to B, B’s export to A, B’s import from A, and B’s conflict to A), for each of the five Italianer sectors, which together offer a complete breakdown of the total bilateral trade: agriculture/fishery, energy, chemical/mineral, manufactured products, and miscellaneous consumption. The coefficients of conflict in his demand and supply equations are estimates of $\alpha_{ij3}$, $\beta_{ij3}$, $\gamma_{ij3}$, and $\delta_{ij3}$. We use the averages of the estimates across dyads to compute $(\alpha_{ij3} - \beta_{ij3})$ and $(\gamma_{ij3} - \delta_{ij3})$ to formulate hypotheses for each sector. It is worth noting that while these estimates are imperfect (as in all empirical models), the issue is empirical, not theoretical.

We get $\alpha_{ij3} - \beta_{ij3} > 0$ for agriculture/fishery, energy, and chemical/mineral, $\alpha_{ij3} - \beta_{ij3} < 0$ for manufactured products and miscellaneous consumption products, $\gamma_{ij3} - \delta_{ij3} > 0$ for energy, chemical/mineral, and manufactured products, and $\gamma_{ij3} - \delta_{ij3} < 0$ for agriculture/fishery and miscellaneous consumption products. Table I presents the expected effects of increases in A’s sectoral import from B and export to B on the conflict it sends against B. First, an increase in A’s imports of agriculture/fishery, energy, or chemical/mineral should reduce A’s conflict against B. Second, an increase in A’s imports of manufactured products or miscellaneous consumption products should increase A’s conflict against B. Third, an increase in A’s exports of agriculture/fishery or miscellaneous consumption products should reduce A’s conflict against B. Finally, an increase in A’s exports of energy, chemicals/minerals, or manufactured products should increase A’s conflict against B. Since Table I anticipates A’s conflict against B, we use directed dyads.

We examine two dependent variables. One variable assumes all MIDs reflect similar logic. It is coded 1 if A initiates any MID against B and 0 otherwise, where MIDs include threat of force, display of force, use of force, or war. Since use of force and war seem relatively more likely to shift market expectations, our second dependent variable includes only these MIDs. Data are from EUGene (Bennett & Stam, 2000a).

Conflict is a continuous variable in our model, but our empirical measures are binary. Scholars study MIDs since they produce the most serious consequences, but no one argues conflict is really binary. Rather, the 1–0 signal is strong, reducing ambiguity. To compensate, we employ the probit estimator, predicting the probability of a latent continuous variable – conflict initiation. The MID data code initiators as the side first taking action, which may not represent who started the quarrel and overlooks the possibility that the target may not respond. Nevertheless, scholars generally agree these issues are not crucial (e.g. Bennett & Stam, 2000b, 2004; Reiter & Stam, 2003).

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9 Goenner (2010) takes this general approach for a different model.
10 This calibration has its limitation, since it is based on events data for conflict and cooperation among major powers in 1963–1994. Events data include MIDs as a subset, but most studies prefer to use MIDs since they are coded based on more sources than events data and thus are arguably more inclusive, and are stronger signals and thus less noisy (Reuveny, 2003).
11 These expectations follow from the model’s calibration, but one may argue they seem intuitive. For example, since energy or chemicals/minerals importers may find it harder to substitute suppliers than exporters to substitute buyers, ceteris-paribus, conflict may harm importers and benefit exporters.
12 Table I reflects bilateral import demand and export supply shifts. The difference in the ability of A and B to substitute their bilateral trade is one possible cause of the differential supply and demand shifts. Since our analysis is confined to the dyad (as in virtually all conflict and trade studies), we cannot estimate the substitution element in our theory. We defer the very complicated task of estimating the rates of substitution for future research.
13 As usual, when several MIDs occur in a year, we code the highest intensity MID. Only MID originators are coded as initiators. Dyad-years with an ongoing MID are dropped (not initiations). When A initiates a MID against B, the $B \rightarrow A$ dyad is dropped if no new MID occurs.
The key independent variables are the conflict initiator’s sectoral imports and exports. The raw trade data, expressed in current US dollars for ten Standard International Trade Classification (SITC) one-digit sectors, are from the World Trade Flows database (Feenstra, Lipsey & Bowen, 1997; Feenstra, 2000). We include all the directed dyads among 140 countries in 1970–1997, for which data are available (see web appendix II).14 We convert the data to millions of 1995 constant US dollars and group them into the five Italianer sectors.15 This creates the variables Agriculture_fishery_import, Agriculture_fishery_export, Chemical_mineral_import, Chemical_mineral_export, Energy_import, Energy_export, Manufactured_import, Manufactured_export, Miscellaneous_consumption_import, and Miscellaneous_consumption_export.16

Our theory predicts the effect of more trade on conflict, holding the incomes of the trade partners constant. We therefore include the two national incomes in the dyad. Initiator_GDP and Target_GDP are the logged real GDPs expressed in millions of 1995 constant US dollars. The data come from the United Nations (2009) and Heston, Summers & Aten (1994). The remaining controls are standard in studies of directed dyads and come from EUGene (Bennett & Stam, 2000a). Contiguity is coded 1 when two states in a dyad are contiguous on land or are separated by up to 150 miles of water, and 0 otherwise. Contiguous states are more likely to fight one another. Distance, indicating logged distance between the state capitals, should reduce the probability of conflict initiation. Alliance indicates the presence (coded 1) or absence (0) of dyadic defense pacts, neutrality pacts, or ententes. Minor_power is coded 1 if both states in a dyad are not China, France, USA, UK, and USSR/Russia, and 0 otherwise.

Following Bennett & Stam (2000b, 2004), we include two capability variables based on the COW composite index of national capabilities. Power_balance is the larger state’s capabilities divided by total dyad capabilities, ranging between 0.5 (equality) and 1 (dominance). It tests whether MID initiation is less likely for dyads of more balanced capabilities. Initiator_capability_ratio is the initiator’s capabilities divided by total dyad capabilities, testing whether a rise in the initiator’s capabilities encourages MID initiation.

Initiator_democracy and Target_democracy indicate the levels of democracy in the dyad, ranging from –10 (highest autocracy) to 10 (highest democracy). Regime_dissimilarity is the absolute value of the difference between the democracy levels. The data come from Marshall & Jaggers (2009). Initiator_democracy tests

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**Table I. Expected effects of larger A–B trade on A’s conflict toward B**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Content</th>
<th>A’s import from B</th>
<th>A’s export to B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture/fishery</td>
<td>Agriculture/fishery products, fish, animals</td>
<td>Reducing conflict</td>
<td>Reducing conflict</td>
</tr>
<tr>
<td>Energy</td>
<td>Fossil fuels and products, electric power, radioactive ores</td>
<td>Reducing conflict</td>
<td>Increasing conflict</td>
</tr>
<tr>
<td>Chemical/mineral</td>
<td>Ferrous/non-ferrous ores/metal, minerals, chemicals</td>
<td>Reducing conflict</td>
<td>Increasing conflict</td>
</tr>
<tr>
<td>Manufactured products</td>
<td>Metal/mineral products, machines, electrical/electronics products, transport equipment</td>
<td>Increasing conflict</td>
<td>Increasing conflict</td>
</tr>
<tr>
<td>Miscellaneous consumption products</td>
<td>Meat, milk, food, beverages, tobacco, textile, clothing, accessories, leather, footwear, wood, furniture, paper, printing materials, rubber, plastics, unclassified goods</td>
<td>Increasing conflict</td>
<td>Reducing conflict</td>
</tr>
</tbody>
</table>

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14 Feenstra et al. (2005) update these data to 2000, but only for 72 countries. Future research may employ a larger sample as more data become available. Web appendix II is available at http://www.prio.no/jpr/datasets.

15 The SITC sectors are: (0) agriculture/fishery; (1) beverages/tobacco; (2) minerals/inedible materials; (3) energy/fuels/lubricants; (4) animals/vegetable oils/fats/waxes; (5) chemicals; (6) basic manufactures; (7) machinery/transport; (8) miscellaneous consumption; (9) unclassified. Italianer’s sectors are: agriculture/fishery (SITC 0), chemical/mineral (2,5), energy (3), manufactured products (6,7), and miscellaneous consumption products (1,4,9,8). Feenstra records only non-zero values. We set trade to zero for dyad-years with no values, per correspondence with Feenstra.

16 We do not use the trade/GDP ratio since it enables trade and income to change concurrently. It may also mislead. For example, if trade is constant and GDP falls, the ratio rises. Suppose we find that a rise in trade/GDP reduces conflict. One often interprets this as a rise in trade reduces conflict, but it is the GDP fall that reduces conflict. Mansfield & Pevehouse (2000) and Keshk, Pollins & Reuveny (2004) also make this point and include trade and GDP separately. Like the trade/GDP ratio, our approach controls for economic size.
whether democracies are more likely to initiate MIDs. Target_democracy tests if democracies are more likely to be targeted. Regime_dissimilarity tests the effect of political dissimilarity on conflict initiation.

To control for possible heteroskedasticity and serial correlation, we compute robust standard errors clustered over dyads. To control for the duration dependence of peace within dyads, we include the usual peace-years counter and three cubic spline variables. MID may affect trade and other independent variables, which applies to all single-equation MID models.17 We address this issue by using the popular practice of lagging the independent variables.18

In examining the effects of trade, we use the one-tailed test since our hypotheses are theoretically signed. For the size of effects, we focus on the use of force model and compute the relative risk for each significant variable – the ratio of the probability of initiation when a variable rises by one standard deviation (s.d.) above its sample mean over the probability at its sample mean, holding other variables constant (e.g. Gartzke, Li & Boehmer, 2001; Russett & Oneal, 2001; Dorussen, 2006).

Results

Table II presents the results for the all-MIDs and use-of-force models. The summary statistics and VIF scores are presented in Appendix II.19 The VIF scores indicate that multicollinearity is not a concern.

The results for the control variables are consistent between the two models and largely resemble previous findings. A state is more likely to initiate military conflict when it is contiguous with the target, its share of the dyad's capability increases, the target's regime differs more from its own, and the national income of itself or the target increases. A state is less likely to initiate military conflict when its democracy level rises, its distance from the target increases, and the capabilities are more balanced in the dyad. Changes in Minor_power, Alliance, and Target_democracy do not affect conflict initiation.20

In the all-MIDs model, as expected, increases in the initiator’s Agriculture_fishery_import and Chemical_mineral_import from the target significantly reduce the likelihood of MID initiation, whereas rises in the initiator’s Energy_export, Manufactured_export, and Manufactured_import with the target significantly increase the likelihood. Changes in the remaining trade flows have little effect.

In the use-of-force model, seven out of the ten trade flows significantly affect conflict initiation and attain their expected signs. Increases in the initiator’s Agriculture_fishery_import, Energy_import, Chemical_mineral_import, and Miscellaneous_consumption_export reduce the likelihood of use-of-force initiation, and rises in the initiator’s Energy_export, Manufactured_import, and Manufactured_export increase the likelihood, as expected. Increases in the initiator’s Chemical_mineral_export and Miscellaneous_consumption_import reduce the likelihood of conflict-initiation, rejecting our expectation, and a change in the initiator’s Agriculture_fishery_export has little effect.

Taken together, our theory and findings suggest that on average, rises in agricultural/fishery, energy, chemical/mineral, and miscellaneous consumption imports discourage conflict initiation since the initiator is less able to find other suppliers than the target can find other buyers; and rises in chemical/mineral and miscellaneous consumption exports discourage conflict initiation since the initiator is less able to find other buyers than the target can find other suppliers. In contrast, rises in energy and manufactured exports promote conflict initiation because the initiator is more able to find other buyers than the target can find other suppliers; and increases in manufactured imports promote conflict because the initiator is more able to find other suppliers than the target can find other buyers.

Column 3 shows the significant relative risks in the use-of-force model, for a minor-power, non-allied, contiguous dyad, setting other variables at their sample means. When its imports in agriculture/fishery, energy, chemical/mineral, or miscellaneous consumption imports

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17 One may wonder whether disaggregated trade is more endogenous to conflict than total trade. Rivals may control some sectors more than others, introducing endogeneity, but this intervention is shaped by partner availability and comparative advantage, which are exogenous in the short run. Future research may further study this point.
18 Keshk, Pollins & Reuveny (2004) model the endogeneity by using the Maddala-Amemiya estimator, which assumes two endogenous variables; we have 11 (5 imports, 5 exports, MID). Extending this estimator is difficult though possible, but it is beyond our scope. Martin, Mayer & Thoenig (2008) instrument the total bilateral trade under strong assumptions: dyads surrounded by small GDPs trade more and MIDs do not affect the neighboring GDPs. We would need 10 instruments, which seems impractical.
19 Available at http://www.prio.no/jpr/datasets
20 Not shown, the initiation probability declines with peace-years. The lack of pacific effect for democracy being targeted may reflect our 28-year sample (we are limited by the sectoral trade data availability). A larger sample may provide stronger support, though our result resembles Bennett & Stam’s (2000a) result for a 100-year sample without sectoral trade.
products from the target rise by one s.d. above the mean, the initiator is 9%, 4%, 6%, or 7% less likely to use force against the target, respectively. When its exports in chemical/mineral or miscellaneous consumption rise by one s.d. above the mean, the initiator is 15% less likely to use force. In contrast, when its energy exports, manufactured exports, or manufactured imports rise by one s.d. above the mean, the initiator is 5%, 25%, or 18% more likely to use force. These relative risks are sometimes smaller than, and sometimes larger than those for Initiator_democracy, Regime_dissimilarity, Distance, and Power_balance, but are always smaller than those for Initiator_GDP, Target_GDP, and Initiator_capability_ratio. Thus, changes in sectoral trade flows have

Table II. Trade and MID Initiation

<table>
<thead>
<tr>
<th></th>
<th>(1) All MIDs</th>
<th>(2) Use of Force &amp; War</th>
<th>(3) Relative risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture_fishery_import</td>
<td>-0.00033***</td>
<td>-0.00018**</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>(0.00010)</td>
<td>(0.00009)</td>
<td></td>
</tr>
<tr>
<td>Agriculture_fishery_export</td>
<td>0.00002</td>
<td>0.00005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00007)</td>
<td>(0.00008)</td>
<td></td>
</tr>
<tr>
<td>Energy_import</td>
<td>0.00001</td>
<td>-0.00004**</td>
<td>0.96</td>
</tr>
<tr>
<td></td>
<td>(0.00002)</td>
<td>(0.00002)</td>
<td></td>
</tr>
<tr>
<td>Energy_export</td>
<td>0.00005***</td>
<td>0.00005***</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td>(0.00002)</td>
<td>(0.00002)</td>
<td></td>
</tr>
<tr>
<td>Chemical_minerals_import</td>
<td>-0.00007*</td>
<td>-0.00008*</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>(0.00005)</td>
<td>(0.00005)</td>
<td></td>
</tr>
<tr>
<td>Chemical_minerals_export</td>
<td>-0.00007</td>
<td>-0.00019***</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>(0.00006)</td>
<td>(0.00007)</td>
<td></td>
</tr>
<tr>
<td>Manufactured_import</td>
<td>0.00003**</td>
<td>0.00006***</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td>(0.00001)</td>
<td>(0.00002)</td>
<td></td>
</tr>
<tr>
<td>Manufactured_export</td>
<td>0.00003**</td>
<td>0.00006***</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td>(0.00001)</td>
<td>(0.00002)</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous_consumption_import</td>
<td>-0.00008</td>
<td>-0.00008*</td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td>(0.00007)</td>
<td>(0.00006)</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous_consumption_export</td>
<td>-0.00001</td>
<td>-0.00019***</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>(0.00005)</td>
<td>(0.00006)</td>
<td></td>
</tr>
<tr>
<td>Initiator_capability_ratio</td>
<td>0.23092*</td>
<td>0.37744**</td>
<td>1.40</td>
</tr>
<tr>
<td></td>
<td>(0.13649)</td>
<td>(0.16799)</td>
<td></td>
</tr>
<tr>
<td>Power_balance</td>
<td>-0.24036*</td>
<td>-0.28798*</td>
<td>0.89</td>
</tr>
<tr>
<td></td>
<td>(0.14151)</td>
<td>(0.16576)</td>
<td></td>
</tr>
<tr>
<td>Initiator_democracy</td>
<td>-0.01162***</td>
<td>-0.00983***</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>(0.00320)</td>
<td>(0.00367)</td>
<td></td>
</tr>
<tr>
<td>Target_democracy</td>
<td>-0.00386</td>
<td>0.00319</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00346)</td>
<td>(0.00411)</td>
<td></td>
</tr>
<tr>
<td>Regime_dissimilarity</td>
<td>0.01365***</td>
<td>0.01199***</td>
<td>1.24</td>
</tr>
<tr>
<td></td>
<td>(0.00303)</td>
<td>(0.00363)</td>
<td></td>
</tr>
<tr>
<td>Alliance</td>
<td>-0.04093</td>
<td>-0.01306</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.06765)</td>
<td>(0.08130)</td>
<td></td>
</tr>
<tr>
<td>Distance</td>
<td>-0.07364***</td>
<td>-0.06587***</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>(0.01354)</td>
<td>(0.01565)</td>
<td></td>
</tr>
<tr>
<td>Contiguity</td>
<td>0.77256***</td>
<td>0.78420***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.10897)</td>
<td>(0.12492)</td>
<td></td>
</tr>
<tr>
<td>Minor_power</td>
<td>-0.18430</td>
<td>-0.14956</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.14532)</td>
<td>(0.18723)</td>
<td></td>
</tr>
<tr>
<td>Initiator_GDP</td>
<td>0.08122***</td>
<td>0.05338***</td>
<td>1.34</td>
</tr>
<tr>
<td></td>
<td>(0.01941)</td>
<td>(0.02239)</td>
<td></td>
</tr>
<tr>
<td>Target_GDP</td>
<td>0.08655***</td>
<td>0.09552***</td>
<td>1.68</td>
</tr>
<tr>
<td></td>
<td>(0.02072)</td>
<td>(0.02612)</td>
<td></td>
</tr>
</tbody>
</table>

N=290,288. Robust clustered standard errors; constant, peace-years, cubic-splines not reported. Significance: *10%, **5%, ***1%. Relative-risks: model 2, minor_power, non_allied, contiguous, mean distance for contiguous dyads, continuous variables set at their sample means.
important, but not the most important, effects on the use-of-force initiation.

Our findings confirm some previous results in smaller-scale empirical studies that did not use MIDs or our specification. The finding that more Energy_export promotes conflict agrees with Polachek’s (1980) result. The finding that more Agriculture_fishery_import reduces conflict agrees with Gasiorowski & Polachek’s (1982) finding for the Warsaw Pact conflict toward the USA. The finding that more manufactured goods trade increases conflict agrees with Marlin-Bennett, Rosenblatt & Wang’s (1992) finding for the US–Japanese dyad.

Dorussen’s (2006) and Goenner’s (2010) studies come closest to ours, as they use MIDs and large-N samples. Our pacifying findings for Agriculture_fishery_import, Chemical_mineral_import/export, and Miscellaneous_consumption_import/export and Manufactured_import/export agree with Dorussen’s results. Our conflict-promoting finding for Energy_export and Manufactured_import/export and our pacifying finding for Chemical_mineral_import/export agree with Goenner’s.

Our analysis, however, contributes new insights. Dorussen argues trade pacifies if goods have large opportunity costs and induces conflict if they can be seized, while Goenner argues sectors with high trade price elasticities are less pacifying, and trade in strategic goods concentrated in production promotes conflict since it can be looted. Our theory works through the extent by which partners can substitute their bilateral trade relative to one another facing dyadic conflict and the effect on the trade prices.

Next, Dorussen does not offer sector-specific predictions, while Goenner forms sector-specific predictions based on estimates of Herfindahl-Hirschman indices and price elasticities of the US multilateral trade in his ‘strategic’ sectors, obtained from models without conflict. They both note that the effects of imports and exports may differ, though they offer no predictions. Our theory offers sector-specific and import/export-specific predictions based on estimated bilateral trade sensitivities to conflict.

Finally, Dorussen and Goenner examine non-directed dyadic involvements in threats and use-of-force MIDs, and all MIDs, respectively, though Goenner uses only half of the countries in Dorussen’s and our samples. They do not distinguish between export and import and do not include a complete sectoral breakdown of the bilateral trade. We examine all MIDs and use-of-force initiations for directed dyads, and include a complete sectoral breakdown of the bilateral export and import.

Given its complexity, our exposition could benefit from stylized examples, but we must offer a caveat. Regression studies typically do not discuss examples for a good reason. Regressions predict average responses of the dependent variable to a change in an independent variable, holding other variables constant at their means, but in an actual example one observes the net effect of all the relevant variables at their current levels. We therefore cannot argue our examples are only driven by trade; rather, we use them to cautiously illustrate the plausibility of our model in explaining the cases.

Since 1979, there were several Iran–USA MIDs. Our model suggests Iran might have initiated MIDs against the USA because they raised the price of its oil export. Iran, which has sold oil to the USA directly or indirectly, profited from hostility.

Our next two examples occurred outside our sample, though we can still explain them assuming our theory is generalizable. In the 1930s, Bulgaria, Romania, and Hungary traded mostly with Nazi Germany, importing manufactured goods and coal and exporting light manufactured and agricultural goods. Since they were much less able than Germany to substitute these flows, not cooperating with Germany would have damaged their economies (e.g., Leitz, 2004; Hirschman, 1980; Arad, Hirsch & Tovias, 1983). Our model suggests that to pacify these countries, Germany could increase coal and agricultural exports but reduce manufactured exports and light manufactured imports.

As another example, in the 1930s the USA was a major supplier of energy to Japan, which did not have readily available substitutes for this supply. Consistent with our model, the USA became hostile toward Japan when it turned to expansionism in China. Our model suggests the US MIDs toward Japan may have been partly driven by its ability to charge Japan more for energy. Facing the deep depression, this policy may have seemed all the more tempting for the USA.

Next, we conduct additional analyses, which are fully reported in Appendix II to save space. First, the conventional practice of aggregating trade across sectors and flows essentially assumes the disaggregated forces have identical effects on conflict. Table AIII shows that the significant sectoral and flow effects in Table II are statistically different. Hence, aggregating sectoral exports and imports mask their differential effects.

Table AIV presents the in-sample model predictions of all MIDs and use-of-force initiations, and compares them to their sample average probabilities (0.16% and 0.10%, respectively). When the predicted probability

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21 The sample proportion of initiations is a reasonable cutoff, as a non-expert can use it to guess-estimate the probability of MID initiation.
is larger than the sample mean, the model is said to have predicted a case correctly. Both models correctly predict no initiation in 91% of the sample dyad-years and initiations in 79% of the cases, indicating good in-sample predictions.

Table AV reports the results for politically relevant dyads (i.e. include contiguous countries or at least one major power). Although this sample is much smaller than the one for all dyads, making it harder to find significant effects, the results for the trade variables are consistent with those reported for all dyads, except that the effect of increases in Energy_import and Chemical_mineral_import on the use-of-force MIDs are insignificant, and a rise in agriculture_fishery_export promotes the use-of-force MIDs.

Table AVI reports the results during the Cold War and post-Cold War periods, showing interesting differences. Increases in Agriculture_fishery_import, Energy_import, Energy_export, and Miscellaneous_consumption_import produce greater expected effects after the Cold War; increases in Chemical_mineral_export and Manufactured_import/export exert somewhat stronger expected effects during the Cold War; and increases in Energy_import and Miscellaneous_consumption_export generate somewhat conflicting effects between the periods. The end of the Cold War and the following increase in economic globalization appear to have made Agriculture_fishery_import, Chemical_mineral_import, and Energy_import/export more important in international relations, though more research is needed in this area.

**Conclusion**

We develop a theory that predicts the effects of bilateral trade on the conflict a country initiates toward its trade partner. We consider both the endogeneity of trade prices and the heterogeneity of traded goods and in so doing, relax assumptions of previous theories. Our theory indicates that in a particular sector, all else equal, if a country expects conflict to lower (or raise) the price of its import from another, it has an economic incentive to raise (or reduce) conflict toward that country when its import rises. If a country expects conflict to raise (or reduce) the price of its export to another, it has an incentive to raise (or decrease) conflict as export rises. These effects may vary across sectors and flows.

We apply the model to predict ex-ante the effects of more bilateral export and import in five sectors on conflict initiation toward a trade partner. Our results largely support our theoretical expectations: rises in a country’s imports of agriculture and fishery goods, energy goods, and chemical and mineral goods, and exports of miscellaneous consumption goods reduce the likelihood of military conflict initiation toward the trade partner, while rises in a country’s exports of energy goods and manufactured goods and imports of manufactured goods increase the likelihood.

Our theory encompasses some of the existing causal mechanisms and all of the extant expected outcomes, though we do not claim that it offers the only explanation for how trade affects conflict. Assuming that conflict reduces trade gains, the liberal and bargaining models argue that more bilateral trade always brings peace toward a trade partner. We have shown that more trade can promote peace but may also promote more conflict, since conflict can increase the trade gains for the conflict initiator. Unlike these views, we expect and find that the nature of the effect varies across trade sectors and flow directions. Our theory encompasses liberalism as a special case and offers an alternative to the bargaining explanation.

The neo-Marxist and neo-mercantilist/realist views argue that more bilateral trade promotes conflict with a trade partner because dependence on trade is asymmetric. Our theory includes this key causal mechanism as a special case. We show that in the presence of asymmetric dependence, more trade may bring about more conflict, but it can also promote peace. Once again, the nature of the effect can vary across trade sectors and flows.

The classical realist view argues that trade should have no effect on conflict because politics trumps economics. Our theory can generate this outcome, though not the classical realist causal logic. Trade, we expect, should not affect conflict when trade dependence is symmetrical.

Our theory incorporates all these effects since it more fully models the economics of bilateral trade than previous theories. In the real world of trade relations, bilateral import and export prices are determined by demand and supply and goods are heterogeneous. Our article suggests that these forces are likely to have different sensitivities to conflict, reflecting an underlying asymmetry in trade dependence between trade partners, or their ability to substitute partners.

The implications of this research are not merely academic. Expected changes in bilateral trade prices can inform states of trade-related costs and benefits of more conflict, which, in turn, should play a role in the conflict decisionmaking. The estimated effect of total trade on conflict may mislead policymakers since it consists of a multitude of competing and complementary effects of
exports and imports in different goods. Public policy that seeks peace with some country should promote bilateral exports and imports that reduce conflict and discourage those that increase conflict. Unfortunately, our article also provides guidance for public policy that seeks conflict with some country.

Replication data
The analyses reported were conducted using Stata 10. The dataset and command files for the empirical analyses in this article can be found at http://www.prio.no/jpr/datasets.

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References


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