



The Stabilizing Effects of International Politics on Bilateral Trade Flows¹

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Trade volatility can do serious harm to a country's economic and political stability. Research suggests that international trade agreements can reduce such volatility by reinforcing extant trade commitments, improving transparency, promoting policy convergence, and strengthening investor confidence. Drawing on this logic, we posit that international political ties can also produce notable reductions in export volatility. Specifically, we argue that diplomatic missions and military alliances signal lower discount rates, increase political transparency, and enhance issue linkages among trading partners. These enhancements in turn work to stabilize trade flows. To test this argument, we use a gravity model to evaluate the effects of directed diplomatic relations and alliances on bilateral export volatility. Controlling for confounding variables and exploring a wide array of model specifications, we find that the establishment of diplomatic relations or alliances can significantly reduce trade volatility.

The past half-century of globalization has generated an unprecedented increase in international trade flows. While the advantages to this process are many, the rise in economic openness that has accompanied globalization has also made countries more vulnerable to international economic volatility and to trade volatility in particular (Rodrik 1998; Mansfield and Reinhardt 2008). Such instability is a major cause for concern. Research finds that—through its contributions to import and price instability, low growth rates, unemployment, and civil conflict—trade volatility can and does cause serious harm to societies and states.² These potential misfortunes have led many politicians and interest groups to sound the alarm against rising trade volatility. In a critique of rising protectionism, one US port official flatly stated that, “[t]he one thing that matters most in international trade is stability, or at least, lack of instability.”³ More recently, a chairman of the Japan Steel Information Center reacted to potential US steel sanctions by emphasizing that “unwarranted trade actions will cause havoc to world steel

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²For example, Rodrik (1998, 1999), Aizenman (2003), Grimes (2006) and Mansfield and Reinhardt (2008).

³“Hong Kong Woos Washington State,” *Journal of Commerce*, March 23, 1987.

trade stability and significant damage to our traditional American customers.”⁴ Chinese President Hu Jintao echoed similar sentiments in recent visits with Korean and Croatian leaders, stressing in both cases that China and its trading partners must respond to the current economic crisis by working to “maintain trade stability.”⁵ Hence, trade volatility is viewed as a serious threat to nation-states, and ameliorating this threat has accordingly become a major line of inquiry among academics and policymakers alike.

Scholars have recently recognized that international institutions possess a number of unique features that work together to help states manage international volatility (Martin and Simmons 1998; Mansfield and Reinhardt 2008). For instance, Mansfield and Reinhardt find that international trade institutions—such as the GATT/WTO—reduce trade volatility by (i) constraining member-states from introducing new trade barriers, (ii) diversifying the composition of trade and foreign direct investment (FDI) flows, and (iii) increasing transparency in policy, expectations and trade standards and policy instruments (2008:622). Drawing on this logic, we argue below that two forms of international political ties—alliance agreements and diplomatic missions—exhibit a similar set of trade-stabilizing qualities. Alliances encompass all formal military-security agreements that commit member-states to provide military (defense, neutrality, or entente)⁶ support to other members in the advent of a military attack. We posit that these ties will reduce trade volatility by extending private traders’ time horizons, lowering the information problems that exacerbate to trade disputes, and aiding in the settlement of existing disputes. Our second international political “institution” of interest is the diplomatic mission, which we define as the formal existence of diplomatic relations between countries at the level of *chargé d’affaires*, minister, or ambassador (Singer and Small 1973). We contend that diplomatic missions reduce trade volatility by increasing transparency in trade-policy and business practices, serving as informal and auxiliary channels for trade dispute settlement, and providing pro-trade “pressure-points” that constrain foreign leaders from engaging in trade-destabilizing behaviors.

To test these arguments, we analyze the effects of alliances and diplomacy on bilateral export volatility. Using a wide range of controls, random and fixed effects estimators, and alternate operationalizations of our independent and dependent variables, we demonstrate that our results are robust and support our claims that diplomatic ties and alliances each independently reduce trade volatility. Specifically, we find that diplomatic missions can reduce a country’s bilateral export volatility by up to 16% over a 25-year period, while having alliance ties with a trading partner reduces a country’s export volatility over a comparable period by as much as 12%. These findings imply that international political ties have a sizable *stabilizing* effect on bilateral trade volatility. Thus, even in the era of globalization, wherein scholars and pundits often claim alliances and diplomatic missions to be obsolete (Talbot 1997; Haftendorn 2011), international political ties continue to play a critical role in the global political economy.

This paper proceeds in four parts. In the following section, we draw upon the institutional design literatures pertaining to international organizations, alliances, and diplomacy in order to identify the mechanisms that we expect to enable alliance agreements and diplomatic missions to reduce trade volatility, leading us to derive two key hypotheses. We next describe the data, estimation

⁴ “US Steel Companies File 84 Foreign Trade Charges,” *Washington Post*, July 1, 1992.

⁵ “Chinese President Hu Jintao Meets with Croatian Prime Minister Sanader,” *Ministry of Foreign Affairs, People’s Republic of China* 20 June 2009. <http://www.fmprc.gov.cn/eng/wjlb/zjzg/xos/gjlb/3155/3157/t572559.htm>. “Chinese President Hu Jintao Meets with this ROK Counterpart Lee Myung-Bak in London,” *Ministry of Foreign Affairs, People’s Republic of China*. <http://www.chinaconsulatesf.org/eng/xw/t556362.htm>.

⁶ For a detailed explication of these three alliance types, see Long (2003:539).

model, variables, and research design that we use to test these hypotheses. Our analysis section then presents several empirical tests of our hypotheses, interprets the substantive significance of our findings, and subjects these findings to a battery of robustness tests. We conclude with a summary of our results and a discussion of their implications.

Theory

Trade volatility is defined as temporal deviations in the price or amount of a country's traded goods, measured as per-period standard deviations in either real exports (and imports) relative to GDP (Rose 2005; Engel and Wang 2011) or terms of trade (the ratio of export prices to import prices) (Baxter and Kouparitsas 2006; Grimes 2006). Because relative price changes in traded goods lie at the heart of such volatility, scholars have established that low trade diversification (in goods or trade-partners), export dependence on commodities or fuel (and subsequent price shocks to these products), and cross-country price divergences in similar goods all positively contribute to trade volatility (Easterly and Kraay 2000:2022; Baxter and Kouparitsas 2006). In each regard, however, political factors have been found to play key moderating roles. For example, mismanagement of economic shocks by the public sector, poor fiscal decision making, an inability to make credible commitments to investors, and a lack of policy transparency have all been suggested to exacerbate trade volatility, while volatility in government trade policy itself—including reversions to protectionism and the frequent use of temporary trade barriers—has similarly been identified as a major contributor to export volatility (Hausmann 1999; Mansfield and Reinhardt 2008).

When trade volatility does arise, it harms countries through several interrelated channels. Most notably perhaps, volatile trade flows can significantly undermine a country's domestic economic stability. Herein, trade volatility has been found to (i) threaten workers' employment and wages (Scheve and Slaughter 2004), (ii) reduce firm profits and market competitiveness (Aizenman 2003), and (iii) depress or destabilize economic growth (Rodrik 1998, 1999). The latter effect—that of trade volatility on aggregate economic growth—has been found to be particularly acute (Rodrik 1998, 1999; Grimes 2006). For instance, in a multi-decade study of New Zealand, Grimes reports that “[a]pproximately half the variance in annual GDP growth over 45 years can be explained by the level and volatility of the terms of trade” (2006:583), while others find that these adverse effects of trade volatility may be even more severe for developing countries (Razin, Sadka, and Coury 2003:302–303; Blattman, Hwang, and Williamson 2007). As a related consequence, trade volatility can often lead to civil conflict. Hereof, the harm done to growth, investment, and employment by trade volatility has been argued to lead to increased social and distributional conflicts between groups and governments, especially in countries with weak domestic institutions (Rodrik 1999). Finally, because trade volatility increases uncertainty, it also threatens the profitability of international commerce and hence reduces the actual size of trade flows between countries (Mansfield and Reinhardt 2008:630).

Thankfully, a number of international and domestic institutions have been found to reduce trade volatility or to safeguard countries against the dangers that such volatility poses.⁷ Regarding international institutions in particular, scholars have recently demonstrated that international trade institutions—specifically the GATT/WTO and Preferential Trading Areas (PTAs)—markedly decrease the volatility of international trade. Here, Mansfield and Reinhardt (2008) argue that these institutions do so through three related mechanisms. First, trade agreements reduce future volatility in trade flows by “locking-in” exist-

⁷ Rodrik (1998) and Mansfield and Reinhardt (2008).

ing trade commitments and deterring new protectionist barriers (Mansfield and Reinhardt 2008:626). Second, Mansfield and Reinhardt (2008:626–629) note that trade agreements increase policy transparency and promote policy convergence among member-states, which reduces trade volatility by stabilizing the expectations of traders, providing these actors with clearer avenues for trade dispute resolution and settlement. Third, international trade institutions signal long-term predictability and low-credit-risk environments to international investors (Mansfield and Reinhardt 2008:629). This in turn (i) reassures investors that governments will not engage in predatory behaviors, (ii) increases FDI-flows, (iii) shifts FDI composition more toward vertical and export-platform FDI, and (iv) helps to diversify export portfolios; all of which decrease volatility (Mansfield and Reinhardt 2008:629).

We argue that many of these trade-stabilizing features hold as strongly, if not more strongly, for two types of international political ties—diplomatic missions and alliance agreements—as they do for international trade institutions. Diplomatic missions and alliances are often explicitly constructed for the purposes of enhancing and stabilizing trade among member-countries. Alliances, for instance, not only implicitly encourage trade flows and vertical FDI (Mansfield and Bronson 1997; Long 2003), but may also (i) establish institutions to integrate the markets and political-military apparatuses of member-countries, (ii) explicitly encourage economic cooperation among alliance-members, and (iii) adjudicate political disputes (Long, Nordstrom, and Baek 2007). For example, in surveying one of the most comprehensive alliance data sets to date, Long and Leeds report that “the Alliance Treaty Obligations and Provisions (ATOP) data set reveals that 39 treaties, 18%, either include articles requiring specific acts of economic cooperation (for instance, the removal of certain trade barriers) or include statements requiring general economic cooperation and/or declaring that commercial agreements will be negotiated in the future” (2006:437). Thus, although alliances are primarily designed for security purposes, they often include intuitional features that promote economic cooperation and economic stability.

The evidence for diplomatic missions is even more pronounced. The very origins of diplomacy during the second and third millenniums BC were rooted in the coordination of trade and economic relations between ancient city-states (Cohen 1999:5–6), and trade promotion has continued to be an explicit objective of foreign diplomatic missions (Afman and Maurel 2010). Frequently, such missions house export promotion authorities, commercial services departments, or trade departments that, in conjunction with diplomatic missions themselves, “have been widely used to promote export activities of countries, with the goal of increasing export volumes, the number of firms that engage in export activities, the number of countries reached by domestic firms, and the diversification of those exporting activities in markets and goods” (Segura-Cayuela and Vilarrubia 2008:9). Consider, for example, the US State Department, which now includes among its main operating strategies: (i) “Promoting peace and *stability* in regions of vital interest,” (ii) “Creating jobs at home by *opening markets abroad*,” and (iii) “Helping developing nations establish *stable economic environments that provide investment and export opportunities*” (emphasis added).⁸

Hence, trade promotion is a central component to the US foreign services, and anecdotal evidence suggests that this is also the case for numerous other countries including the United Kingdom, Canada, Germany, Australia, and Spain (Rose 2007:24–26; Gil, Llorca, and Martínez Serrano 2008). Accordingly, scholars have widely reported a positive link between diplomatic missions and trade flows (Rose 2007; Gil et al. 2008; Segura-Cayuela and Vilarrubia 2008; Afman and Maurel 2010). Alliances and diplomatic ties also generate a range of additional policy

⁸ Cited from <http://www.state.gov/r/pa/ei/rls/dos/436.htm>, and Rose (2007:24).

and security externalities that can increase trade and trade stability indirectly. Together with the explicit tools for trade stabilization outlined above, alliances and diplomatic missions thereby counteract trade volatility, and the harms that it causes. Many of these mechanisms parallel those found within international trade institutions, while others are quite novel. What follows is a more detailed explication of the evidence and causal mechanisms underlying the relationships between these two forms of international political ties and trade stability.

Positive Reinforcement Mechanisms

Alliance agreements and diplomatic missions reduce trade volatility through several positive reinforcement mechanisms. One way that these institutions do so is by increasing policy transparency and promoting convergence in states' trade-policy practices. As Mansfield and Reinhardt argue, "[t]ransparency and convergence in policy instruments reduce the volatility of trade flows by stabilizing the expectations of private traders" (2008:629). By reducing information problems and uncertainty—as well as by extending states' time horizons of interaction—improved transparency and policy convergence give private actors positive incentives to (i) deepen their interstate trade and investment commitments and (ii) maintain these commitments when uncertainty does arise. These processes ameliorate trade instability by underpinning interstate economic exchange with trade and investment commitments that are less prone to capital flight and protectionist interests. There are several specific mechanisms in place that allow for such processes to arise among alliance-members and diplomatically tied states.

Alliances, for example, are often explicitly designed to increase and stabilize trade among member-states. Many alliances are accompanied by interlinked economic and trade agreements that oblige alliance-members to engage in various forms of economic cooperation such as trade integration (Long and Leeds 2006). As argued above, economic agreements of this sort directly increase trade stability between alliance-members by reducing the information problems and policy discontinuities that—when left unaddressed—can produce volatile cycles of trade and investment (Mansfield and Reinhardt 2008). Alliances are often accompanied by "Defense Trade Cooperation Treaties," which directly promote cooperation through the facilitation of trade in military technologies and goods. These security agreements are often explicit in their intentions for promoting trade stability among members. For example, in providing a statement on Defense Trade Cooperation Treaties to the Senate Foreign Relations Committee, a US Assistant Secretary for Political-Military Affairs plainly stated, "[w]e must recognize the economic and strategic importance of facilitating legitimate and secure trade between our nations. The Treaties help to accomplish this objective."⁹ Thus, alliances harmonize and stabilize members' trade practices by binding alliance-members to economic agreements that foster deeper and more lasting trade-ties.

Alliances also promote transparency and policy convergence through indirect channels, such as creating permanent organizations to alleviate information problems among member-states, and requiring allied militaries to integrate and institutionalize their military activities and command structures for the purpose of coordinating defense and security policies (Long et al. 2007:1107–1108). These accompaniments stabilize trade flows among member-states by increasing transparency and reducing information problems in trade policy and trade dispute settlement. Increases in transparency and policy convergence then directly reduce trade volatility by enhancing the ability of private traders to monitor foreign governments (Mansfield and Reinhardt 2008:629). Indeed, by serving as

⁹ Statement before the Senate Foreign Relations Committee Washington, DC, December 10, 2009. <http://www.state.gov/t/pm/rls/rm/133366.htm>.

information focal points that credibly signal long-term security stability, alliances extend future cross-national capital investment returns, thereby stabilizing future investor expectations and any resultant trade flows. Moreover, security policy coordination devices often spill-over to other policy areas, and foster the development of deeper and more secure trade-ties by increasing the probability of future cooperative agreements between alliance-members. In the event that trade disputes do arise, integrated security apparatuses provide governments and private actors with additional informational-resources and political pressure-points for seeking a cooperative outcome, which again has been found to reduce trade volatility (Mansfield and Reinhardt 2008:629). Thus, the transparency and policy convergence that alliances promote together help to (i) stabilize trader expectations, (ii) deepen trade-ties, and (iii) promote successful (trade-)dispute settlement. These three qualities in turn reduce trade volatility among member-states.

While at first glance, these stabilizing features may appear suboptimal to those found within trade institutions, there are several reasons why states may nevertheless prefer to use alliances to manage trade volatility, rather than formal trade agreements. First, the formation and ratification of trade agreements often entails significant domestic costs for governments. Whether these costs arise from political cleavages between labor and industry or the changes brought about by increasing trade exposure among traditionally protected factors, domestic pressures are extremely salient concerns for governments when signing trade agreements, as such instances afford concentrated groups the opportunity to use a highly visible focal point (that is, a potential trade agreement) to mobilize opposition against the government. By contrast, the domestic costs of signing a military alliance are less severe because alliances only *implicitly* liberalize trade flows and hence explicitly affect fewer constituent groups.

Reducing trade volatility is also more tenable under alliances due to these agreements' abilities to minimize the collective action problems that arise under multilateral trade arrangements such as the WTO. Because alliances tend to be bilateral, governments will find it easier to monitor and cooperate under these agreements and to deter free riding. Indeed, fewer parties imply increased observability, which helps reduce members' incentives to cheat and exploit agreement partners. Hence, trade-motivated states may prefer alliances to multilateral trade agreements because joining the former entails fewer collective action problems than the latter, which in turn enables members to more efficiently use agreement-mechanisms to monitor and stabilize trade. Thirdly, because global preferences for free trade are a relatively new phenomenon, alliances (and diplomatic ties) likely served as *feasible* historical substitutes for international trade agreements among countries that were unable to pursue free trade due to policy constraints. Prior to the 1980s, free trade was relatively limited, especially within the developing world, due to the development policies pursued by policymakers, economists, and other elite (for example, import substitution industrialization). In such cases, alliances and diplomacy were likely one of the few options for managing trade volatility among governments that were wedded to autarkic development policies.

Interestingly, these positive externalities do not stop with reinforcing alliance ties. Either independently or through the trade promotion and intelligence services that they often house, diplomatic missions extensively gather "on the ground" information on a host-country's business practices and political-economic peculiarities. This information is then disseminated to home-country actors through private consultations with domestic firms and publicly available country reports. Such practices exist to provide industries and international entrepreneurs with technical and market expertise about a foreign country's laws and regulations as well as to assist these private actors in both (i) navigating the

nuances of existing trade agreements and (ii) seeking recourse when these agreements are violated. As Segura-Cayuela and Vilarrubia note, “The most repeated justification for the role of international promotion activities is that of imperfect information...In this case, promotion activities may help eliminate, or at least, reduce these uncertainties that abound in both sides of the market” (2008:9). Through such services, diplomatic missions enhance bilateral trade transparency by reducing the informational challenges that firms often face when navigating (i) the politics of foreign governments and (ii) the legal requirements of any existing trade agreements. With these information problems abated, there is less uncertainty and more predictability surrounding trade and investment.

As alliances and diplomatic missions reduce economic volatility through these positive externalities, they also indirectly curtail states’ incentives for engaging in future conflict. This in turn boosts trade flows and encourages further economic and security integration among members, thereby engendering a virtuous circle of economic stability. Evidence for these arguments has found extensive empirical support at the international level within PTAs (Mansfield and Peevehouse 2000; Powers 2005, 2006), where most importantly, participation in PTAs is found to promote and integrate security cooperation among members for the sake of efficiency and trade harmonization (Powers 2005:319). More generally, scholars have noted that such agreements reduce political uncertainty among member-states, thusly ensuring that bargaining is more efficient and sincere and that security cooperation is achievable (Mansfield and Peevehouse 2000; Powers 2005). Herein, Powers (2005, 2006) finds strong support for this process at work on the continent of Africa within regional economic institutions (REIs), noting that “the purpose of REI military alliances is to prevent conflict and deter aggression, so that trade and economic development among member states may occur” (Powers 2006:468). In conjunction with the positive externalities highlighted above, economic and political agreements thereby together create positive externalities within the other’s sphere, generating virtuous cycles of cooperation, and reducing political-economic volatility.

Diversification represents another channel of positive reinforcement through which alliances and diplomatic missions work to improve trade stability. In many countries, trade volatility arises from a reliance on single outputs or commodities for trade (Blattman et al. 2007), and diversifying exports is one way for a country to overcome this sensitivity to trade volatility (Mansfield and Reinhardt 2008:629). Similarly, increases in FDI-flows, and their diversification toward vertical and export-platform FDI, reduce trade volatility by encouraging less risky, long-term international investment that (i) is less likely to flee countries in the event of a financial panic and (ii) gives international investors a stake in seeing a host-country’s government resist protectionist policies (Mansfield and Reinhardt 2008:629). There are several features by which alliances and diplomatic ties help to encourage trade and FDI diversification and hence trade stability.

The ability of alliances to extend private actors’ time horizons of interaction is a source of FDI diversification. Alliances are costly signals by member-governments as to the durability of their relationship(s). Investors know that by signing onto an alliance, states commit to help one another in times of crisis, which signals to domestic actors that alliance-members’ markets are likely to exhibit long-term stability. To this end, “defense pacts provide information to firms seeking to establish commercial exchange relationships that are less likely to be hindered by conflict in the future; firms realize that a state with allies promising to defend it is less likely to be attacked. If defense pacts deter attack by a challenger, firms should use this information in making decisions to establish trade” (Long 2003:542–543). Hence, alliances communicate long and stable time horizons of interaction to investors, thereby prompting these actors to invest more, and

more deeply. For these reasons, alliances are in turn argued to encourage relation-specific and vertical FDI between alliance-members, and hence more FDI diversification (Mansfield and Bronson 1997:95). Because relation-specific or vertical FDI are long-term investments, they are pursued by investors only if their investments can be guaranteed in the future. Alliances increase the likelihood that such investments are guaranteed by signaling to investors that relationships between home and host countries are stable and lasting Mansfield and Bronson (1997:95). Therefore, alliances promote diverse and stable investment, which protects alliance-members against trade volatility.

Diplomatic corps also contribute to the diversification of international economic flows. An explicitly stated aim of diplomatic missions, and the trade promotion authorities that they often contain, is the diversification of a host-country's trade and investment portfolios. Indeed, "[e]xport promotion agencies, foreign missions, and foreign service have been widely used to promote export activities of countries, with the goal of increasing export volumes, the number of firms that engage in export activities, the number of countries reached by domestic firms, and *the diversification of those exporting activities in markets and goods*" (9, Segura-Cayuela and Vilarrubia 2008:emphasis added). Anecdotal evidence supports this claim. After a 2004 state-visit to Kenya by then-Vietnamese Foreign Minister Dao Viet Trung, a Vietnamese newspaper noted that "[Kenya] relied on a few export commodities, namely, coffee, tea, sisal and pyrethrum but [Vietnam] has been implementing various policies aimed at promoting nontraditional exports over the past few years in order to minimize the vulnerability of the economy to any trade instability."¹⁰ Regarding FDI, Thailand's ambassador to Laos recently emphasized his goal of encouraging more verticalized FDI-flows (into Laos) in stating that the "Thai business council in Laos still wants quality businessmen and well-established companies to invest in Laos to help alleviate the country's problem of trade instability."¹¹ Thus, diplomatic missions are committed to the promotion of trade and FDI diversification, often with the intended aim of reducing trade volatility between home and host countries.

Negative Reinforcement Mechanisms

Alliances and diplomatic missions also exhibit a number of auxiliary negative reinforcement mechanisms that *constrain* governments and private actors from engaging in activities that increase volatility. We identify three complementary negative reinforcement mechanisms below: those that "lock-in" states' existing commitments, those that prevent predatory state behaviors, and those that steer states away from engaging in, or exacerbating, international trade disputes. Regarding the first mechanism, Mansfield and Reinhardt (2008:626–627) argue that—by committing states to trade openness in a manner that ties governments' hands against domestic pressure groups—international institutions reduce the probability of future protectionist barriers; and as a result, help states avoid the trade shocks that reversion to protectionism can cause. We argue that alliances and diplomatic missions also help to "lock-in" states' existing trade commitments and therefore similarly increase the prospects of long-term trade stability among allied or diplomatically tied countries.

Alliances and diplomatic ties reinforce states' commitments to trade openness in several manners. A pair of countries linked by only a trade agreement incurs lower costs from breaking off or violating that agreement than a pair of countries additionally bound by an alliance or diplomatic ties. For these latter

¹⁰ Diplomatic Visit Boosts Ties with Congo, Kenya. May 6, 2004 *Vietnam News Brief Service*.

¹¹ Thailand: Laos optimistic about Thai investments. September 12, 2008 *Thai News Service*.

countries, as Long and Leeds note, “failing to fulfill military obligations would put commercial exchange in danger, and failing to adhere to trade agreements could lead to alliance termination” (2006:437). Consequently, the costs of violating a trade agreement will be compounded by domestic concerns that such actions may lead to a severing of alliance ties or diplomatic relations. Indeed, newspapers cautioned in response to one US-Japan trade dispute that “it remains to be seen whether the political and military alliance between the two countries can survive the constant pounding from this series of trade collisions over principles that both countries increasingly regard as vital.”¹² Due to such concerns, America’s Pacific alliances have historically led domestic interest groups to “trade off marginal economic costs to themselves in return for perceived security gains to their nation,” wherein, “American labor unions such as the AFL-CIO were willing, for example, to accept some marginal domestic job losses from import competition...as the necessary price for eliciting security cooperation from America’s Asian allies during the 1960s and 1970s” (Calder 2004:147). For domestic actors with vested interests in maintaining political and security ties with allies—such as military elite, diaspora networks, and business communities—broken trade promises can thus be perceived as a credible threat to countries’ broader relationships, and actively prevented by such groups. Diplomatic missions can similarly function within foreign countries as pro-trade lobbyists, maneuvering at the behest of home-industries to counterbalance any protectionist sentiments within host countries. To the extent that alliance agreements include Defense Trade Cooperation Treaties, alliances may compel members’ domestic military industries to behave in a similar manner.

A second negative reinforcement mechanism arises from embassies and alliances’ abilities to constrain government predation upon foreign investments. Many governments—especially those with weak institutional constraints—have the incentives and capabilities to break existing agreements with firms in efforts to extort more rents (Stevens and Cooper 2010:588). Such behavior increases a country’s trade volatility through two channels. First, actual instances of predation can compel foreign firms to flee host countries, leading to boom-and-bust cycles of international investment and divestment. Second, persistent threats of predation also lead to lower or shallower ex-ante levels of foreign investment (Stevens and Cooper 2010), which ensure that any FDI that does enter a country is easily moved and prone to capital flight under the very same boom-and-bust cycles mentioned above. In these instances, it is in the interests of firms and governments to use institutions to constrain government actors from engaging in such predation. Scholars have shown that alliances serve as one such institution (Mansfield and Bronson 1997; Long 2003). As Mansfield and Bronson argue, “[a]lliances can help regulate opportunism by foreign governments. Because open trade among allies promotes the security of members, governments have less incentive to behave opportunistically toward their allies’ firms than toward firms of other states. Private agents reduce the likelihood of opportunism—and enhance the expected profitability of investments—by investing in relation-specific assets to service allies’ markets” (1997:95). Consequently, alliances abate the harm that government opportunism does to FDI, and help members stabilize and deepen investment flows.

The foreign service also constrains government opportunism. Diplomats monitor host governments for predatory behaviors against home-country investments and punish such behaviors through three complimentary channels. First, diplomatic missions help to disseminate and publicize instances of government predation through trade promotion authorities and published “country-reports,” thereby increasing the costs of government predation by signaling to host gov-

¹² Kodak’s Trade Compliant, May 24, 1995. *Washington Post & The International Herald Tribune*.

ernments that such actions can lead to public shaming and lower subsequent FDI. Second, through their political arrangements with host governments, diplomatic missions also furnish direct lines of access to local politicians. Often, these ties create pressure-points that can be used by foreign firms to directly lobby host governments against engaging in opportunistic behavior. Where these efforts do not succeed, diplomatic missions also provide a direct, immediate, and discrete line of contact back to a *home-country's* national government, which in the most serious of cases can be used as an additional, high-level venue for lobbying host governments against predation. This channel thereby provides foreign firms facing predation with instant and confidential access to key actors and resources within the highest levels of their home governments. Hence, embassies provide international firms with both bottom-up and top-down protection against predation. By constraining predation in this manner, diplomatic missions curtail the trade-destabilizing effects of opportunism.

The third negative reinforcement mechanism discussed here is that of dispute settlement provisions (DSPs), which constrain governments' conflictive behaviors by providing a venue for cooperative dispute settlement (Yarbrough and Yarbrough 1997:135). DSPs function as "pressure valves" and induce trade stability by preventing countries from (i) escalating trade disputes to the level of a full-scale trade war or (ii) breaking from a trade agreement's provisions entirely (Rosendorff 2005). DSPs thereby help countries address areas of specific trade dispute where they arise, rather than letting such issues "spill-over" into other areas of economic and political exchange, which in turn helps to minimize the likelihood that a given dispute will lead to widespread trade volatility. Alliances frequently establish formal DSP rules, institutions, and mechanisms to peacefully resolve *political* disputes that arise between alliance-members. As Long, Nordstrom and Baek note, alliances often "explicitly require that any disputes arising between the alliance-members will be settled through peaceful mechanisms" (2007:1107). These contagion effects are further reinforced by alliance externalities. The US-Australia security alliance, for example, has been utilized by the Australian government "less in terms of using the defense relationship to exercise leverage on trade disputes than to prevent the trade disputes from spilling over into the alliance relationship and spreading the damage into Australia's key security alliance" (Dalrymple 2003:79).¹³ Because international disputes arising within one area often spread to others, alliances thereby help to prevent trade instability by ensuring that political-security disputes do not expand into economic areas.

While diplomatic missions do not establish DSPs of their own, they facilitate the use of existing trade DSPs through information provision and technical assistance, via the provision of the details of host countries' markets and trade practices. When trade disputes do arise, such information provides aggrieved countries and industries with the incentives, evidence, and capacity to bring cases of trade dispute before international DSP bodies; reducing the likelihood that countries address such disputes through political channels. Because DSPs solve information and coordination problems between disputing states (Yarbrough and Yarbrough 1997), taking such an avenue for dispute settlement will help to ensure that states find a mutually agreeable outcome, rather than escalating a product-specific dispute to broader areas of trade and politics. Even when DSPs are not used, diplomatic missions often constrain dispute escalation. Disputing states are frequently limited in their abilities to publicly negotiate and make trade-concessions to other governments, due to domestic public opposition (Busch 2000). In these instances, embassies allow for secure negotiating channels which in turn provide a venue for governments to find an acceptable settle-

¹³ Analogously, the "US-Japan postwar security alliance, cemented in the Treaty of Mutual Cooperation and Security (1960), lowered the decibel level of US trade complaints"(Hufbauer, Wong, and Sheth 2006:76).

ment absent any interference by domestic actors seeking to spoil the deal. Thus, diplomatic missions facilitate less costly dispute settlement by giving states better resources to engage in third party DSPs and find more efficient bilateral settlements. Accordingly, for countries with diplomatic relations, fewer trade disputes will escalate into the types of protectionist measures and trade wars that are known to exacerbate bilateral trade volatility.

Having identified the specific mechanisms that enable alliances and diplomatic missions to reduce trade volatility, we hypothesize the following

Hypothesis 1: *Countries holding military alliances will have lower levels of trade volatility than those that do not.*

Hypothesis 2: *A country with a diplomatic mission in another country will have lower trade volatility with that country than with other, non-diplomatically linked countries.*

Analysis

The cross-sectional unit for our sample is directed dyad, and it encompasses all (directed) pairs of countries (i and j) in the world with available data for the years 1950–1999. Trade volatility is by definition the second moment (that is, the variance or standard deviation) of trade flows, and ergo any measure of trade volatility must be calculated over (at least $t + 1$) periods of time. We accordingly follow Rose (2005:9) and measure trade volatility over two mutually exclusive and jointly exhaustive periods within our sample-frame: 1950–1974 and 1975–1999. Our analysis thereby employs a time series cross-sectional (TSCS) data set with two 25-year temporal-periods (t_{25}) and up to 10,424 directed dyads per a 25-year period. In our robustness section, we examine comparable data sets that utilize shorter temporal aggregations of trade volatility. In keeping with Rose (2005), we then use a “gravity” model to estimate the effects of our covariates on bilateral export volatility. Gravity specifications are commonplace in empirical models of bilateral trade flows (Anderson 1979; Bergstrand 1985; Rose 2004) and have gained prominence in studies of the effects of alliances and diplomatic missions on such trade flows (Mansfield and Bronson 1997; Long 2003; Long and Leeds 2006; Rose 2007; Afman and Maurel 2010). However, to our knowledge, Rose (2005) presents the most comprehensive application of a gravity model to bilateral trade *volatility*, and we therefore build upon his approach here.

The dependent variable for our gravity model is $Export\ Volatility_{ijt_{25}}$. This variable captures the volatility of country i 's exports to country j over the two 25-year periods described above. To create $Export\ Volatility_{ijt_{25}}$ we follow Rose (2005) in measuring trade volatility as the per-(25-year)-period coefficient of variation of country i 's yearly exports to country j ;

$$Export\ Volatility_{ijt_{25}} = \frac{\sigma(Exports_{ijt})_{t_{25}}}{\mu(Exports_{ijt})_{t_{25}}} \quad (1)$$

where $\sigma(\cdot)_{t_{25}}$ and $\mu(\cdot)_{t_{25}}$ are the standard deviation and mean operators computed over time t_{25} . In this manner, equation 1 not only operationalizes trade volatility, but also accounts for countries' overall trade levels; which ensures that the variation in our trade volatility measure is comparable across dyads even if their overall *trade levels* are drastically different. $Exports_{ijt}$ is measured as the natural logarithm of real bilateral exports from country i to country j in year t .¹⁴

¹⁴ The trade data used to create $Exports_{ijt}$ are taken from Rose (2005) and the International Monetary Fund's “Direction of Trade” data set.

Dropping the subscripts hereafter for notational convenience, higher values on this dependent variable (*Export Volatility*) thus denote less stable—that is, more volatile—bilateral export flows from country i to country j .

We create two separate independent variables to test our Hypotheses. The first is *Alliance*, which captures the (per-period) average number of years that countries i and j have held formal alliance ties with each other. To create *Alliance*, we first used the ATOP data set (Leeds, Ritter, Mitchell, and Long 2002) to code a binary variable equal to one if a country (i) has an alliance with country j in year t , and zero otherwise. We then aggregate this yearly alliance indicator to per-period levels by taking its 25-year period, directed dyad mean. The average alliance-duration for our sample is 17 years with a standard deviation of 14 years. To test Hypothesis 2, we construct the variable *Diplomacy_{exp}*, which captures the extent of diplomatic relations held by country i in country j . To operationalize *Diplomacy_{exp}*, we began by utilizing the Correlates of War's (COW) Diplomatic Exchange data set (Bayer 2006) to create a variable equal to 1 if country i had established some level of diplomatic representation¹⁵ in country j for year t , and 0 otherwise. This measure is then aggregated to 25-year periods by taking the average number of years within a given 25-year period that country i had diplomatic representation in country j . We then create and include the reverse—that is, the level of diplomatic relations held by country j in country i (*Diplomacy_{imp}*)—in our models to further isolate the hypothesized direct (trade-stabilizing) effect of having a foreign mission on a trading partner's soil. Among our diplomatically linked dyads, the average duration of diplomatic relations is 21 years, with a standard deviation of 16 years.

We add a number of political controls to our gravity model. Diplomatic ties and alliances are inextricably linked to interstate conflict (Bremer 1992; Long et al. 2007), and conflict also affects trade flows (Anderton and Carter 2001; Mansfield and Reinhardt 2008). Accordingly, we use the dyadic COW militarized interstate dispute (MID) data set (Ghosn and Bennett 2003) to code the average number of years within each 25-year period in which countries i and j were involved in a MID with one another (*MID*). Ideologically similar regimes are more likely both to hold alliances and to establish diplomatic relations with one another (Lai and Reiter 2000; Neumayer 2008). We therefore use Cheibub, Gandhi, and Vreeland's (2010) binary democracy-autocracy measure to construct *Joint Democracy_t*, which is equal to one if countries i and j each were democracies in year t . *Joint Democracy_t* is then aggregated to 25-year periods by taking the average number of years in which countries i and j were recorded as being a *Joint Democracy*. Finally, to account for domestic instability, we include the natural logs of the per-period sums of (i) exporter and importer regime transitions and (ii) exporter and importer experienced coup attempts (Cheibub et al. 2010; Powell and Thyne 2011).

Our specifications also include the traditional assemblage of gravity model regressors. Following Rose (2005), we first calculate and add to our models per-period averages of yearly binary indicators (1 = true, 0 = false) for exporter-country membership in the GATT/WTO (*GATT_{exp}*), importer-country membership in the GATT/WTO (*GATT_{imp}*), dyadic generalized system of preference ties (*GSP*), joint free trade agreement membership (*Regional FTA*), and currency unions (*Monetary union*). We also add to our model the core set of gravity model controls, including the natural logarithm of the distance between i and j (*Log Distance*), the period-averaged natural logarithms of countries i and j 's real GDP (*GDP_{exp}* and *GDP_{imp}*), period-averaged natural logarithm of countries i and j 's populations (*Pop_{exp}* and *Pop_{imp}*), the logged product of a dyad's area (*Product area*), dummy variables for common language and shared borders, and ordinal

¹⁵ Such as a *chargé d'affaires*, minister, or ambassador.

variables measuring whether none, one, or both countries in a dyad are *Land-locked* or *Island* nations. Given our focus on export volatility, we additionally include the per-period standard deviations of the natural logarithm of each directed dyad member's real GDP ($SD\ GDP_{exp}$ and $SD\ GDP_{imp}$). Finally, we control for colonial ties by including (i) a binary variable equal to one if dyads shared a *Common colonizer* and (ii) a binary variable equal to one if either member of a dyad was ever a colonizer of the other (*Ever colony*).

Rose (2005) conducts the most exhaustive analysis of bilateral export volatility to date, and we believe that a replication of his main model specifications—in conjunction with the additional regressors described above—provides for the most comprehensive test possible of our main hypotheses. Our primary analysis therefore closely follows Rose (2005) in estimating four main gravity model specifications. For the first specification, we estimate a pooled OLS model using all of the regressors described above, but including no fixed or random effects for cross-sectional units. We next estimate a model with two comprehensive sets of country-specific intercepts—fixed importer and fixed exporter effects—in order to hold constant the effects of country-specific factors on our causal models. Next, we exchange these country-specific intercepts for country-pair (dyad) fixed effects in order to account for any unobserved bilateral confounders; and more specifically to ensure that our findings are not exclusively attributable to the subset of dyads in our sample that never (or always) hold diplomatic or alliance ties. Finally, as a sensitivity test, we examine a fourth model specification that instead includes country-pair random effects. As with Rose (2005), we add period-fixed effects to all models, report clustered-robust standard errors, and place the most confidence in the two fixed effects specifications.

However, as evidenced by the myriad of models examined in past studies of trade volatility (Rose 2005; Mansfield and Reinhardt 2008), we lack a consensus on the optimal model specification for international trade volatility. We therefore employ the use of Bayesian model averaging (BMA) as a final attempt to shore up any statistical discrepancies that have left scholars to conclude the matter unsettled.¹⁶ Among the export-volatility models that have been estimated by Rose (2005) and others (Mansfield and Reinhardt 2008), the common tendency has been to prefer models which include a variety of controls or fixed effects specifications. Though we believe, and existing literature suggests, that the fixed effects models are most likely the “true” models of this relationship, the alternative model specifications described above are still informative and should be included in this analysis.

Results

Our results appear in Table 1 and provide strong evidence for our expectations. Beginning with our first model specification in Table 1, that of the pooled OLS, our estimates for both *Alliance* and *Diplomacy_{exp}* are negative and significant at the $p < .01$ level. Simply put, these results suggest that—over 25-year periods—having longer spells of alliance or diplomatic ties with a trading partner will significantly reduce the volatility of one's exports with that partner. The second and third models presented in Table 1, which report our exporter and importer fixed effects specification and our country-pair fixed effects specification, respectively, confirm these preliminary findings. As before, the coefficient estimates for *Alliance* and *Diplomacy_{exp}* are negative and significant at the $p < .01$ level. These results therefore reaffirm our hypotheses that alliance partners and countries with diplomatic ties enjoy less volatile trade. Similarly, the country-pair random effects model reported in the fourth column of Table 1 estimates the coeffi-

¹⁶ We discuss our BMA-approach in more detail within the Appendix S1.

TABLE 1. International Political Determinants of Export Volatility, 1950–1999

	<i>Pooled</i>	<i>Exp./Imp</i> <i>FES</i>	<i>Dyad Fes</i>	<i>Dyad REs</i>	<i>Bayesian</i> <i>Model</i> <i>Averagings</i>
<i>Alliance</i>	-.015 (.006)***	-.036 (.008)***	-.015 (.005)***	-.021 (.010)**	-.021 (.011)*
<i>Diplomacy_{exp}</i>	-.028 (.005)***	-.031 (.006)***	-.019 (.004)***	-.028 (.007)***	-.025 (.007)**
<i>Diplomacy_{imp}</i>	-.019 (.005)***	-.007 (.006)	-.012 (.004)***	-.021 (.007)***	-.013 (.007)*
<i>MID</i>	.068 (.037)*	.105 (.041)**	.051 (.036)	.054 (.079)	.070 (.047)
<i>Joint Dem</i>	-.016 (.008)**	.023 (.013)*	-.011 (.005)**	-.017 (.009)*	-.003 (.018)
<i>Regime</i>	-.025 (.005)***	-.014 (.017)	-.003 (.004)	-.018 (.006)**	-.012 (.011)
<i>Trans_{exp}</i> <i>Regime</i>	-.008 (.005)	-.017 (.010)*	.014 (.004)***	-.001 (.006)	-.002 (.014)
<i>Trans_{imp}</i> <i>Coup</i>	.002 (.003)	-.021 (.006)***	.007 (.003)***	.001 (.004)	-.003 (.012)
<i>Attempts_{exp}</i> <i>Coup</i>	-.012 (.003)***	-.034 (.007)***	-.005 (.003)*	-.012 (.004)***	-.015 (.013)
<i>Attempts_{imp}</i> <i>GATT_{exp}</i>	-.023 (.006)***	.034 (.017)*	-.030 (.005)***	-.024 (.006)**	-.009 (.029)
<i>GATT_{imp}</i>	.019 (.006)***	.030 (.016)*	-.002 (.006)	.011 (.006)*	.014 (.016)
<i>GSP</i>	-.099 (.005)***	-.083 (.006)**	-.038 (.005)***	-.082 (.008)***	-.070 (.026)**
<i>Regional</i> <i>FTA</i>	-.008 (.014)	.003 (.017)	-.062 (.010)***	-.051 (.030)*	-.028 (.033)
<i>Monetary</i> <i>Union</i>	-.021 (.013)	-.030 (.017)*	.010 (.014)	-.008 (.028)	-.011 (.024)
<i>GDP_{exp}</i>	-.046 (.003)***	-.097 (.011)***	-.041 (.004)***	-.053 (.003)***	-.059 (.025)**
<i>GDP_{imp}</i>	-.037 (.003)***	-.108 (.016)***	-.030 (.004)***	-.042 (.003)***	-.055 (.035)
<i>SD GDP_{exp}</i>	.019 (.020)	.056 (.017)***	.031 (.014)**	.022 (.015)	.034 (.022)
<i>SD GDP_{imp}</i>	.008 (.017)	.089 (.019)***	.004 (.014)	-.002 (.015)	.028 (.041)
<i>Pop_{exp}</i>	-.032 (.002)***	.020 (.014)	-.007 (.007)	-.036 (.002)***	-.008 (.023)
<i>Pop_{imp}</i>	-.020 (.002)***	-.028 (.014)**	.005 (.007)	-.024 (.002)***	-.013 (.017)
<i>Log</i> <i>Distance</i>	.040 (.004)***	.035 (.004)***	—	.045 (.005)***	.024 (.019)
<i>Language</i>	-.005 (.005)	-.012 (.006)*	—	-.009 (.009)	-.006 (.007)
<i>Border</i>	-.015 (.008)*	-.023 (.009)**	—	-.016 (.023)	-.012 (.013)
<i>Landlocked</i>	.019 (.006)***	-.097 (.081)	—	.033 (.007)***	-.020 (.066)
<i>Island</i>	.005 (.005)	-.016 (.081)	—	.007 (.008)	-.003 (.044)
<i>Product</i> <i>Area</i>	.005 (.001)***	.018 (.010)*	—	.006 (.001)***	.007 (.009)
<i>Com.</i> <i>Colonizer</i>	-.062 (.008)***	-.064 (.010)***	—	-.068 (.013)***	-.040 (.031)
<i>Ever</i> <i>Colony</i>	-.010 (.007)	-.018 (.008)**	—	-.014 (.029)	-.010 (.012)

(Notes. $N = 23,918$. Time fixed effects included in all regressions. Robust standard errors, clustered on dyad in parentheses.)

*** $p < .01$; ** $p < .05$; * $p < .10$.)

cients on *Alliance* and *Diplomacy_{exp}* to be negative and significant at the $p < .05$ level, further confirming our expectations of a negative relationship between international political ties and trade volatility.

However, for a comprehensive assessment of the robustness of these findings, one must examine the BMA coefficients and standard errors for these models. As mentioned previously, we believe that we have identified a plausible set of trade volatility models for our hypotheses testing, as our four main models are motivated by the existing empirical research on this topic. Yet unlike past studies, we remain agnostic as to which model best encapsulates the true underlying relationship between our variables and trade volatility. Rather, we argue that each model contributes valuable information to this debate. The final set of

results in Table 1 reflects this theoretical belief by reporting uniform-priors BMA coefficient estimates and standard errors for the aforementioned four models. These results demonstrate that, even after accounting for the disagreement across model selection and the variability within each model, our findings remain robust to the alternative specifications espoused in the literature. Hence, the results of the BMA support our hypotheses and sustain our initial conclusions that alliance partners and countries that share diplomatic ties incur less trade volatility than those who do not share such privileges. As indicated in column 5, the coefficients for *Alliance* and *Diplomacy_{exp}* are negative and significant ($p < .10$).

To gain a better sense of these results, we graph the mean marginal effects of a per-period change from 0 to 1 in *Alliance*, *Diplomacy_{exp}*, or *Joint Diplomacy* (that is, $Diplomacy_{exp} + Diplomacy_{imp}$) on *Export Volatility*, along with their 95% confidence intervals. As Figure 1 indicates, the effects of alliances and diplomatic missions are indeed sizable. We can first note that holding alliance ties with a trading partner is expected to reduce a country’s export volatility by a BMA-effect of approximately 12%. The effect of establishing a diplomatic mission on a trading partner’s soil for a given 25-year period has a comparable effect on a country’s trade stability, with the BMA-effects reported in Figure 1 suggesting that such diplomatic ties will reduce a country’s export volatility by roughly 16%. This effect is even more pronounced when dual diplomatic ties—that is, the presence of diplomatic missions on both trading partner’s soils—are taken into account. Indeed, as Figure 1 indicates, the effect of both trading partner’s having diplomatic missions on the others’ soil—relative to neither having such missions—is predicted to reduce an exporter’s level of export volatility by approximately 26% during a 25-year period. These relatively stronger effects for diplomacy may be attributable to the fact that diplomatic ties are most commonly formed among states with preference-harmony (Neumayer 2008), whereas alliances are frequently signed between states with at least some degree of preference-divergence (Liska 1962:12). Hence, the trade-stabilizing mechanisms described above may have a lower initial hurdle to clear among diplomatically linked states than among military allies.

Robustness Models

To evaluate the sensitivity of the above findings, we next assess the robustness of our results under eight alternative model specifications. In each of these robustness tests, we estimate the four main specifications presented above (that is,

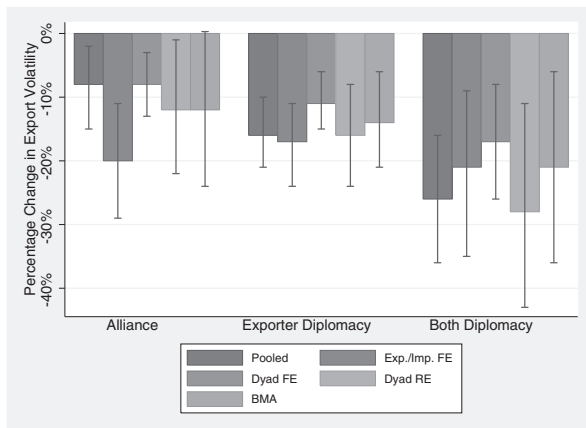


FIG 1. Effect of Independent Variables on Trade Volatility

TABLE 2. Robustness Models for Export Volatility, 1950–1999

	<i>Pooled</i>	<i>Exp./Imp. FEs</i>	<i>Dyad FEs</i>	<i>Dyad REs</i>	<i>Bayesian Model Averaging</i>
Robustness Test 1: Ordinal Alliance Measure					
<i>Alliance</i>	-.008 (.003)**	-.018 (.004)***	-.008 (.002)***	-.011 (.002)**	-.012 (.006)**
<i>Diplomacy_{exp}</i>	-.028 (.004)***	-.031 (.006)***	-.019 (.004)***	-.028 (.007)***	-.024 (.008)***
Robustness Test 2: Alliance and Diplomatic Volatility					
<i>Alliance</i>	-.015 (.006)**	-.026 (.008)***	-.014 (.005)***	-.021 (.010)**	-.018 (.008)**
<i>Diplomacy_{exp}</i>	-.028 (.005)***	-.032 (.006)***	-.013 (.005)***	-.030 (.007)***	-.011 (.009)***
Robustness Test 3: Monadic Conflict					
<i>Alliance</i>	-.016 (.006)**	-.038 (.009)***	-.015 (.005)***	-.023 (.010)**	-.019 (.009)*
<i>Diplomacy_{exp}</i>	-.028 (.005)***	-.030 (.006)***	-.020 (.005)***	-.029 (.007)***	-.023 (.006)***
Robustness Test 4: Monadic Democracy-Years					
<i>Alliance</i>	-.015 (.006)**	-.035 (.008)***	-.016 (.005)***	-.021 (.010)**	-.021 (.011)**
<i>Diplomacy_{exp}</i>	-.028 (.005)***	-.031 (.006)***	-.019 (.004)***	-.029 (.007)***	-.025 (.007)***
Robustness Test 5: Outliers Dropped					
<i>Alliance</i>	-.009 (.003)***	-.013 (.004)***	-.013 (.004)***	-.012 (.004)***	-.013 (.004)***
<i>Diplomacy_{exp}</i>	-.024 (.003)***	-.028 (.003)***	-.017 (.003)***	-.023 (.003)***	-.017 (.003)***
Robustness Test 6: 10-Year Periods					
<i>Alliance</i>	-.005 (.004)	-.015 (.005)***	-.002 (.004)	-.009 (.006)	-.001 (.003)
<i>Diplomacy_{exp}</i>	-.023 (.003)***	-.025 (.003)***	-.012 (.002)***	-.016 (.004)***	-.012 (.002)***
Robustness Test 7: 5-Year Periods					
<i>Alliance</i>	-.005 (.003)	-.013 (.004)***	-.006 (.003)*	-.011 (.004)**	-.005 (.003)*
<i>Diplomacy_{exp}</i>	-.016 (.002)***	-.017 (.002)***	-.011 (.002)***	-.010 (.003)**	-.011 (.002)***
Robustness Test 8: 1-Year Periods					
<i>Alliance</i>	-.057 (.008)***	-.046 (.009)***	-.019 (.010)**	-.023 (.009)**	-.019 (.010)**
<i>Diplomacy_{exp}</i>	-.039 (.006)***	-.035 (.006)***	-.017 (.006)***	-.018 (.005)***	-.017 (.006)***
Robustness Tests 9–11					
		<i>Heteroskedastic-Reg.</i>		<i>ARCH</i>	<i>GARCH</i>
<i>Alliance</i>		-.015 (.005)***		-.273 (.036)***	-.186 (.039)***
<i>Diplomacy_{exp}</i>		-.322 (.032)***		-.230 (.034)***	-.124 (.040)***

(Notes. Time fixed effects included in all regressions. Robust standard errors, clustered on dyad in parentheses.

*** $p < .01$; ** $p < .05$; * $p < .10$.)

pooled OLS, importer and exporter FE, dyad FE, and dyad RE) and BMA the results from each specification. Table 2 reports the corresponding coefficient estimates and standard errors for our main variables of interest; *Alliance* and *Diplomacy_{exp}* (we omit the control variables to save space).

The first model in Table 2 evaluates our findings when an *ordinal* measure of alliances is used in place of our binary alliance measure. Many of the “trade-stabilizing” alliance mechanisms identified in our theory section—such as defense pacts, standing committees, or formal DSPs—are not included within *all* alliances. We therefore create an ordinal measure that captures not just the existence of a dyadic alliance, but the strength of that alliance agreement in terms of its trade-stabilizing features. To do so, we identify several specific alliance features within the ATOP data set that correspond to the trade-stabilizing mechanisms highlighted in our theory section: defense pacts, integrated command structures, support-organizations, provisions for cooperation on non-military issues, commitments to concluding economic (for example, trade) agreements,

and formal DSPs for members (for example, mediation or arbitration provisions). We then set $Alliance_{ord}$ equal to zero if a dyad had no alliance agreement; equal to one if a dyad had an alliance that did not include any of the key components listed above; and equal to two if a dyad had an alliance that included at least one of the mechanisms listed above.

As Table 2 indicates, our core results remain robust to (the per-period average of) this more fine grained operationalization of alliance agreements. Marginal effects plots for 0–1 and 0–2 changes in $Alliance_{ord}$ are reported in Figure 2, alongside the aforementioned 0–1 change for $Alliance$ and indicate that the estimated effects of alliances become slightly stronger when one more accurately accounts for alliances’ trade-stabilizing mechanisms; with a new (BMA) estimated reduction in trade volatility of 13%. While this ordinal measure is imperfect—as each included alliance-mechanism is likely imprecisely measured, not mutually exclusive, and crudely aggregated—we believe our binary and ordinal alliance measures are together useful “first-cuts,” and ones that speak directly to existing studies of alliances and trade, for future researchers to draw upon when developing more fine grained measures of the causal mechanisms outlined above.

The second robustness model in Table 2 adds three additional control variables to our main specifications; $Alliance\ Volatility$, $Diplomacy_{exp}\ Volatility$, and $Diplomacy_{imp}\ Volatility$. We do so because one could argue that it is not lower absolute levels of alliance or diplomatic ties that are leading to findings of higher volatility, per say. Rather, pairs of countries involved in higher levels of contentious diplomatic behavior may *both* have higher trade volatility *and* have lower per-period averages of diplomatic and alliance ties. As one can see in Table 2, controlling for these volatility measures does not affect the robustness of our results.

Recent studies report that monadic measures of democracy and militarized conflict (among both exporters and importers) affect export volatility (Mansfield and Reinhardt 2008). Robustness models three and four therefore include per-period averages of monadic conflict and monadic democracy for both exporters and importers, and demonstrate that including these controls does not affect our findings. Per-period averages of (interstate or intrastate) monadic conflict (Gleditsch, Wallensteen, Eriksson, Sollenberg, and Strand 2002) were used to create $Monadic\ conflict_{exp}$ and $Monadic\ conflict_{imp}$. $Democracy_{exp}$ and $Democracy_{imp}$ are per-period averages of a country’s democracy-years according to Cheibub et al. (2010). In line with (Rose 2005), we next drop any outlying observations for which the residual was larger than three standard deviations from the mean. Table 2 demonstrates that dropping these outliers does not affect our findings.

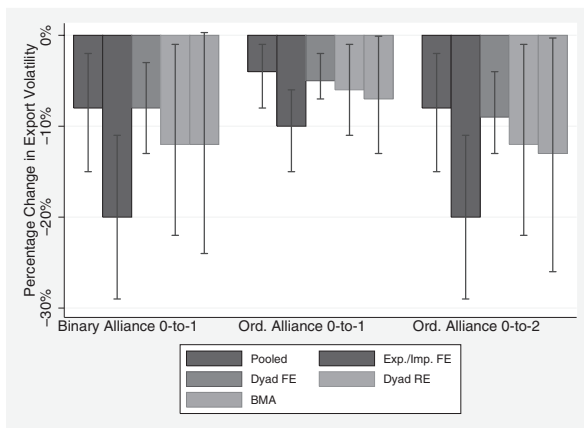


FIG. 2. Effects of Binary and Ordinal Alliance Measures on Trade Volatility

Tests six through eight assess our findings over three alternative temporal levels of aggregation; 10, 5, and 1-year periods.¹⁷ Models 6–8 thereby allow for more variation in our variables of interest (Rose 2005:15–16) and address several of the measurement-concerns raised by Mansfield and Reinhardt (2008). As can be seen in these models, *Diplomacy_{exp}* remains significant under all alternative temporal aggregations. However, *Alliance* does not fare as well, often maintaining significance but—as indicated by the BMA results—failing to achieve significance at least at the $p < .05$ level across all 10-year models.

Models 9 through 11 further evaluate the robustness of our yearly findings. To do so, we first follow Mansfield and Reinhardt (Model D, 2008) and model both the mean and variance of $\ln Exports_{ijt}$ with a heteroskedastic-regression. In line with Mansfield and Reinhardt (2008), we include all aforementioned independent and control variables as predictors of $\ln Exports_{ijt}$ and specify our $\ln Variance_{ijt}$ equation with our independent variables of interest, *Monetary union*, year fixed effects, and $\ln Exports_{ijt-1}$. We then estimate comparable ARCH and GARCH models for $\ln Exports_{ijt}$ and $\ln Variance_{ijt}$ that allow for first-order autoregressive-conditional heteroskedasticity in the variance equation, which, as above, enables us to account for the effects of our independent variables on both the mean and variance of bilateral exports. We report the coefficient estimates from the (log) variance equations of these three models in Table 2. *Alliance* and *Diplomacy_{exp}* are each negative and significant within the variance stages of our heteroskedastic-regression, ARCH, and GARCH models. Thus, holding alliances or diplomatic ties with a trading partner is associated with a decrease in the volatility of one's exports to such partners.

Conclusion

We have argued that international political institutions—specifically, alliances or diplomatic missions—reduce trade volatility by (i) stabilizing international investor expectations (ii) restricting government-acts of predation and protectionism and (iii) diversifying, reinforcing, and deepening trade-ties and FDI-flows among member-states. In support of these claims, we show that the establishment of diplomatic relations or alliances with a trading partner significantly reduces a country's bilateral export volatility. Countries holding alliance ties with one another over a 25-year period were estimated to have 15% less volatility in their exports than those that do not, whereas pairs of countries holding joint diplomatic ties over a comparable time period were estimated to have 25% less export volatility than pairs of states with no diplomatic relations.

Given the threats posed by trade volatility (Rodrik 1998, 1999; Mansfield and Reinhardt 2008), our findings have a number of important implications. The stabilizing effects of alliances and diplomatic missions imply that one of the greatest challenges faced by globalizing states today—that of trade instability or “trade shocks”—can be mitigated by the careful establishment and maintenance of international political ties. Ergo, alliances, and diplomatic missions are not simply artifacts of a bygone era but rather continue to function as critical components of the international political economy of nation-states. In this manner, this paper furthers our understanding of the role of international political institutions within the era of globalization. Second, while trade volatility, and its political determinants, is central to our understanding of the modern international political economy, we have yet to explain the bulk of the variation found within trade volatility (Rose 2005:12). By building upon existing research in this area (Rodrik 1998; Rose 2005; Mansfield and Reinhardt 2008), it is hoped that

¹⁷ Our yearly measure follows Mansfield and Reinhardt (Model A, 2008) to operationalize $Export\ Volatility_{ijt}$, as $|\ln Export\ Volatility_{ijt} - \ln Export\ Volatility_{ijt-1}|$

our study brings us one step closer toward this goal: a better understanding of trade volatility and its political roots.

In future research, our findings could be improved upon through a better explication of the specific causal mechanisms that underlie the relationship between international political institutions and trade stability. Identifying which of the many causal mechanisms identified above have the most sizable effects on trade stability would help to do so. Here, a further disaggregation of alliance-types and diplomacy—or the development of more fine grained measures of the trade-stabilizing qualities of alliances and diplomatic missions—would be excellent starting points, as our current measures fail to accurately capture the intensity of these political ties. Another interesting vein of future analysis would be an assessment of the stabilizing effects of alliances or diplomatic ties on other international economic flows, such as those associated with financial markets, foreign aid, or military assistance. Volatility in these areas—like trade volatility—has been shown to do significant harm to countries (Bulir and Hamann 2008; Nielsen, Findley, Davis, Candland, and Nielson 2011), and hence, an exploration of whether the virtuous trade-stabilizing features identified above extend to these alternative economic flows would be extremely beneficial to both theory and policy.

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Supporting Information

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Additional Analysis.