States Held Hostage: Political Hold-Up Problems and the Effects of International Institutions

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Abstract

This paper argues that the benefits of international institutions accrue disproportionately to pairs of states that find cooperation most difficult. It determines which states achieve the greatest gains from these institutions by identifying a central reason that states fail to cooperate in international relations: they fear being "held up" by other states for political concessions. Political hold-up problems occur when one state fails to undertake an otherwise productive investment due to the increased ability it would give another state to extract political concessions. Focusing on the WTO, I demonstrate that political hold-up problems are pervasive in international relations due to links between economic and political policies, but that international institutions can solve hold-up problems by helping to enforce agreements. I first formalize this argument and then empirically test the implications derived from the model, finding that the WTO increases trade most for politically dissimilar states by reducing the ability of states to hold up their trading partners for foreign policy concessions. I provide evidence of the causal mechanism by showing that WTO membership increases trade in contract-intensive goods and boosts fixed capital investment. I conclude that by solving political hold-up problems, international institutions can normalize relations between politically asymmetric states that differ in terms of capabilities, regime types, and alliances.

Keywords: GATT, hold-up problem, international institutions, investment, trade, WTO

Theories of international institutions typically contend that these institutions support cooperation among all members. This claim has been criticized by some scholars who emphasize that because institutions are created by powerful states, benefits accrue most to these states, potentially at the expense of weak states.[1] In this paper, I argue that the distribution of institutional benefits can most productively be understood by examining the effects of institutions on the relationships between certain types of states. States have more trouble cooperating with some partners than with others, and pairs that find cooperation difficult benefit most from membership in international institutions.

To analyze how membership in international institutions affects particular types of states, I examine the specific case of the World Trade Organization (WTO) and its predecessor, the General Agreement on Tariffs and Trade (GATT).[2] The distribution of benefits from WTO membership depends on the types of problems that the WTO can solve. Existing theories contend that the WTO can ameliorate time inconsistency problems, which occur when a country's ex ante incentives differ from its ex post incentives, but these theories offer ambiguous predictions about the differential impact of WTO membership.[3] In contrast, I identify a specific type of time inconsistency problem which is pervasive in international relations: the "political hold-up problem," which I use to determine the pairs of states that benefit most from WTO membership. Hold-up problems occur when one party fails to undertake an otherwise productive investment due to the increased bargaining power it would give another party. When one party's investment is only profitable if another party cooperates, the investor can be held hostage by the second party. "Political hold-

[1] The literature on the benefits of institutions was pioneered by Keohane (1984). The view that benefits tend to fall disproportionately to powerful states has been advanced by, for example, Krasner (1991) and Mearsheimer (1994).

[2] In 1995, the WTO replaced the GATT. Throughout the paper, I use the term WTO to refer to both the GATT and the WTO unless otherwise specified.

[3] Although see Gowa and Kim (2005) for an argument that large, powerful states are the main beneficiaries.

up problems" are hold-up problems that involve trade-offs between political and economic concessions. In this paper, I demonstrate that by solving political hold-up problems, the WTO can mitigate the impact of a variety of political asymmetries between countries, thus providing the largest benefits for politically dissimilar country-pairs. Political dissimilarities can cause inefficient trade and investment due to a lack of trust that dissimilar trading partners will uphold trade agreements, leading politically dissimilar countries to trade less with each other in general (Gowa and Mansfield 2004; Mansfield, Milner and Rosendorff 2000). I demonstrate that by helping to enforce agreements, the WTO allows countries to choose trading partners based on their economic incentives, rather than for primarily political reasons. I first formalize this claim and then empirically test the implications derived from the model, finding that the WTO increases trade most between politically asymmetric country-pairs, including country-pairs that differ in terms of capabilities, regime types, and alliances, by reducing countries' abilities to hold up their trading partners for foreign policy concessions.

To understand how political hold-up problems form, consider the historical trade relations between the United States and Hawaii. In 1876, the U.S. signed a trade agreement with the Kingdom of Hawaii which eliminated high U.S. sugar tariffs. Hawaii responded by ramping up sugar production for export to the United States, such that Hawaiian sugar exports to the U.S. increased from 21 million pounds in 1876 to 114 million pounds in 1883 and 224.5 million pounds in 1890 (Croix and Grandy 1997). Increasing sugar production requires a large investment: sugar producers adopted new sugar processing technology, bought government and private land, undertook large-scale irrigation projects, and invested in fertilizers. The Hawaiian government signed the treaty expecting other markets for its sugar exports to open up by the time of the treaty's renewal (Croix and Grandy 1997). However, when the renewal came in 1883, Hawaii had no viable alternative to exporting to the U.S.[4] Thus,

[4]Australia had become a sugar exporter, Britain had already repealed its sugar tariff so the market could

during negotiations for renewal, the United States demanded exclusive rights to Pearl Harbor; otherwise, the U.S. threatened to reinstate the high sugar tariff. The Hawaiian government conceded.

Why didn't the United States demand access to Pearl Harbor when the treaty was initially signed? At that point, the Hawaiian government would have weighed the cost of giving up Pearl Harbor plus the cost of the sugar investment against the economic gains from increased sugar exports. By the time the treaty was up for renewal, however, the sugar investment was already made. Thus, the government weighed only the cost of giving up Pearl Harbor against the economic gain from sugar exports. The United States was therefore able to "hold up" Hawaii for the value of the sugar investment.

In general, I show that countries anticipate possible hold-up problems and therefore under-invest in the production of goods that are vulnerable to hold-up problems. While the Hawaiian government was aware that it could be held up when it chose to sign the initial agreement, it hoped that it could open other markets for its sugar by the time the treaty was up for renewal.[5] A less optimistic country could have refused to undertake the investment in the first place. Because countries cannot commit not to hold up other governments for political concessions, under-investment can occur, decreasing the welfare of both countries.[6]

Note that the opportunity to extract political concessions dramatically increases the incentive for countries to use trade policy opportunistically. In the aforementioned example, if the U.S. government had no interest in Pearl Harbor, it may have had no reason to hold

not be easily expanded, and the Canadian population was too small to serve as a substitute.

[5]Croix and Grandy (1997, 177) quote Charles de Varigny, the Foreign Minister of the Kingdom of Hawaii, explaining that "seven years [the length of time before the treaty renewal] would give us time to establish our sugar production on a solid basis. After all, we would have an opportunity through similar negotiations to open up other markets."

[6]The argument presented here differs from ordinary issue linkage, or the "simultaneous discussion of two or more issues for joint settlement" (Poast 2012, 2). Unlike issue linkage (or the closely related concept of conditionality), wherein both countries can be made better off through the bargain (Davis 2004, 2009; Dreher, Sturm and Vreeland 2009; Koremenos, Lipson and Snidal 2001), hold-up problems can result in both countries being made worse off due to underinvestment.

up Hawaii. Because imports of Hawaiian sugar benefited U.S. consumers, it is not clear that the U.S. government would have wanted to raise its sugar tariffs. The opportunity to link economic and political policies, however, meant that the U.S. government had a large incentive to hold up Hawaii to gain access to Pearl Harbor.

Because of the strong temptation to hold up trading partners, countries often cannot commit to maintain low tariff rates, and often must rely on short-term trade agreements to govern their trade relations. Short-term agreements are easier to enforce than long-term agreements because of uncertainty over future states of the world. Leaders are most certain about the future the closer it is to the present, and thus can often effectively commit to actions in the near term. But what is to prevent a leader from breaking an agreement signed years ago by her predecessor? Or why should a country stick to an agreement when the state of the world has changed such that it no longer finds the agreement advantageous? If the agreement expires in the near term, the country may be better off waiting until the expiration rather than angering its treaty partner by actively terminating it. But if the treaty will remain in force for years to come, the country may decide to terminate the treaty once the country no longer benefits from it. If long-term agreements were perfectly enforceable, hold-up problems could be avoided since countries could simply commit to specific tariff rates. However, since long-term agreements can be difficult to enforce, countries often must rely on short-term agreements.

Luckily, international institutions can help to enforce long-term agreements, allowing countries to commit not to use their trade policies for political leverage. Tying their hands in this manner is beneficial to countries in order to boost trade and investment. Institutions can help to enforce agreements through a variety of mechanisms. Institutions such as the WTO promote cooperation because, as argued by Axelrod and Keohane (1985, 235): "(1) players can identify defectors; (2) they are able to focus retaliation on defectors; and (3) they have sufficient long-run incentives to punish defectors." The WTO in particular

provides transparency and a loss of reputation for violators through its Dispute Settlement Body (DSB), which adjudicates disputes between WTO members. The DSB provides WTO participants with "a guarantee for the right to negotiate, a common standard for evaluating outcomes, the option for several countries to join a dispute, and incentives for states to change a policy found to violate trade rules" (Davis 2006). By developing norms and behaviors that states are expected to follow and by specifying which states are non-compliant, the DSB impacts members' reputations, which has been shown to be an effective restraint in many settings (Tomz 2007). By publicizing which countries cooperate with agreements, the WTO allows members to establish reputations for cooperation, which encourages continued cooperation in the future. Conversely, if countries are known to be frequent violators of agreements, partner countries may reduce cooperation with them by withdrawing trade concessions, becoming more reluctant to enter agreements, or becoming less cooperative in related areas (Maggi 1999). WTO rulings can also give countries domestic political cover for adhering to agreements (Allee and Huth 2006) and violations can negatively impact defectors' reputations domestically (Mansfield, Milner and Rosendorff 2002). Additionally, if a country frequently violates the rules, what is to prevent its trading partners from frequent violation? This could cause a breakdown in the system as a whole, an outcome which many states have a strong incentive to avoid.

The loss of reputation before the large audience of WTO members appears to be a strong deterrent, as there are many examples of the WTO helping to enforce agreements between powerful and weak countries. First, powerful countries have high rates of compliance with WTO rulings. When weak countries accuse strong countries of violating WTO agreements, strong countries often come into compliance (Busch and Reinhardt 2003, 2004; Davis 2006; Wilson 2007). Additionally, Busch, Raciborski and Reinhardt (2009) show that market size does not strongly predict WTO rulings and that the U.S. is less likely to raise trade barriers against WTO members. Because of the compelling incentives for countries to preserve their

reputations to ensure that other countries continue to cooperate with them, the WTO can effectively improve the enforcement of commitments by member countries. I show that this enforcement mechanism can help countries to decouple trade and politics by limiting hold-up problems.

Previous work on hold-up problems in the context of the WTO is rare and focuses largely on the determinants of institutional design, rather than on state behavior. For example, Yarbrough and Yarbrough (1992) and Goldstein and Gowa (2002) use the logic of economic hold-up problems to explain the selection of trade institutions.[7] Other work on the WTO focuses on different types of time inconsistency problems. For example, the WTO can also resolve a terms-of-trade prisoner's dilemma, where governments of large countries have a short-term incentive to set tariffs at inefficiently high levels due to their ability to pass some of the cost onto their trading partners through the impact of their tariffs on world prices (Bagwell and Staiger 1999). Additionally, the WTO can allow countries to avoid succumbing to domestic political pressures (Büthe and Milner 2008; Maggi and Rodriguez-Clare 1998; Mansfield and Pevehouse 2008; Staiger and Tabellini 1999). Although alleviating hold-up problems is an important role of the WTO, this is by no means the only time inconsistency problem that the WTO can help to solve. But while other theories often offer ambiguous empirical predictions, the logic of hold-up problems generates clear, testable predictions.

In the next section, I present a formal model which shows that hold-up problems occur most frequently when one country has the ability and the incentive to hold up a partner country. The model demonstrates that powerful countries have a greater ability to hold up weaker countries, since weaker countries are less able to retaliate against them. If a weak country tries to hold up the United States, for example, the United States can threaten it

[7]Other work on hold-up problems between governments tends to remain outside of the context of the WTO. See Davis and Meunier (2011) for an application to trade and conflict, Lake (1999) for an application to alliances, Wallander (2000) for hold-up problems in the context of NATO, Cooley and Spruyt (2009) for hold-up problems in sovereign transfers, McLaren (1997) for an application to trade agreements, and Rector (2009) for an application to federations.

with military, financial, economic or political penalties, while a weak country would find it more difficult to punish the U.S. The model also implies that countries have greater incentives to hold up non-allies and countries with dissimilar regime types, since these countries have more dissimilar policy goals.[8] Because these types of politically dissimilar countries are most susceptible to hold-up problems, trade and investment should be inefficiently low among these countries in the absence of the WTO. The main benefit of WTO membership, increased trade, should therefore accrue most heavily to these country-pairs. In what follows, I formally derive these predictions and then substantiate these claims empirically, finding that the WTO increases trade most for politically dissimilar pairs of countries, which are most vulnerable to hold-up problems. Finally, I provide evidence of the causal mechanism driving the results, demonstrating that WTO membership increases fixed capital investment and that WTO members are more likely to trade goods which rely on contract enforceability.

Model

I present a model in which I show that the WTO most benefits politically dissimilar countries by improving contract enforcement. I demonstrate that long-term agreements solve hold-up problems, but are difficult to enforce outside of the WTO, particularly for dissimilar country-pairs. By contrast, WTO membership permits countries to sign enforceable long-term agreements, allowing countries to commit to low enough tariffs to induce efficient investment.

While all bilateral trade agreements signed within the WTO are long-term agreements, which have an unlimited duration, many agreements signed outside of the WTO expire after a set term. Short-term agreements outside the WTO are common; I coded the duration of all current United States trade agreements as well as all current Australian trade agreements

[8]Many scholars have shown that allies (Gowa and Mansfield 2004) and similar regimes (Mansfield, Milner and Rosendorff 2000; Russett and Starr 2000) have more similar interests and therefore trade more in general.

and found a large number of short-term agreements in both cases.[9] Almost half of the United States' trade agreements, 116 out of 236, have a limited duration and 32 out of 73 of Australia's agreements have a limited duration.[10] Additionally, before the creation of the WTO, many trade agreements were short-term, as is apparent when examining the treaties listed in the League of Nations Treaty Series. A few examples include: the 1920 one-year Treaty of Friendship, Commerce and Navigation between Great Britain and Muskat, the 1921 four-month MFN agreement between Bulgaria and Sweden, the 1922 five-year Commercial Treaty signed by Greece and Ethiopia, the one-year 1922 Treaty of Commerce between Latvia and Czechoslovakia, etc.

It is important to note that renewal of these short-term agreements has often been tied to political concessions, both today and historically. Consider a few examples: the renewals of India and Nepal's short-term trade treaties of 1991 and 1996 have been contentious due to Indian opposition to Nepal's 1988 acquisition of Chinese weapons (Heitzman and Worden 1996); non-preferential trade agreements concluded by the EU with Mongolia, Sri Lanka, Vietnam and Nepal make respect for human rights a key condition for yearly renewal; China often ties the renewal of short-term agreements to support for Taiwan (Dumbaugh 2008); Russia would only renew the Anglo-Russian Treaty of Commerce of 1797 if Britain provided a military diversion that Russia had requested and stopped harassing Russia's navy (Roach 1983). I show that reliance on these short-term agreements can cause underinvestment and therefore inefficiently low trade, which can be alleviated by WTO membership.

[9] I obtained the texts of these agreements from a variety of sources including the US Trade Compliance Center website and the Australia Government Department of Foreign Affairs and Trade website.

[10] This pool of agreements includes bilateral free trade agreements (FTAs), bilateral investment treaties (BITs), trade relations agreements, intellectual property rights agreements, friendship commerce and navigation treaties, and agreements covering specific goods or policies such as the Japan Distilled Spirits Agreement, the Korea Understanding on Telecommunications, and the Ukraine Textile Agreement. The point here, however, is not about the nature of the agreement, but rather to demonstrate that short-term agreements are common outside of the WTO.

Set up

Consider a world that consists of one period and two countries, home H and foreign F, to be indicated by superscripts. Country F is able to produce good g. Good g is only demanded by H, but F may export g to H. Good g can only be produced if F makes an investment $i \in \{0, 1\}$, such as developing new technology or infrastructure. If $i = 0$, g is not produced. If $i = 1$, F incurs cost i, so that i represents both the investment decision and the cost of the investment.

Additionally, if $i = 1$, the amount of g produced depends on H's import tariff $\tau \in [0, \bar{\tau}]$ where $\bar{\tau}$ is the prohibitive tariff beyond which no g is traded.[11] H receives utility from the consumption of g and F receives utility from the export of g. Since the amount of g available for export and consumption depends on τ, it is convenient to denote utility over g as a function of τ, or $\Omega^k(\tau)$ where $k = \{H, F\}$ and $\Omega^k(\cdot)$ is a general functional form that can represent both welfare and political economy concerns.[12] $\Omega^H(\tau)$ is assumed to have an interior maximum of τ^N and $\Omega^F(\tau)$ is assumed to be concave in τ and monotonically decreasing in τ.

H's utility function is

$$u^H(\tau, f, i) = i\Omega^H(\tau) + f$$

where $f \in [0, \bar{f}]$ represents F's foreign policy concessions to H such as human rights improvements, democratization, technology sharing, etc.[13] F's utility function is

$$u^F(\tau, f, i) = i\Omega^F(\tau) - i - \gamma f$$

where the parameter γ represents H and F's foreign policy preference dissimilarity, such

[11] An export tax or subsidy could be modeled equivalently, but I focus on tariffs for simplicity.

[12] For example, the government could care only about national welfare, or it could weigh certain interest groups more heavily as in Grossman and Helpman (1994).

[13] $\bar{f}$ represents the maximum amount of concessions that F can make. For example, a fully democratic country that perfectly respects human rights could not make any further concessions in this area.

that a large γ indicates that F strongly dislikes making concessions f.

Short-term and long-term trade agreements are available to governments, in which governments select policies f^j and τ^j, where $j \in \{st, lt\}$, through Nash bargaining. H's bargaining power is denoted by α. If a long-term agreement is chosen, H and F bargain over f^{lt} and τ^{lt}, after which F chooses whether to invest.[14] If a short-term agreement is chosen, F first chooses whether to invest, and then countries bargain over f^{st} and τ^{st}. Thus the timing is as follows:

1. Countries choose whether to sign a long-term agreement specifying τ^{lt} and f^{lt}.

2. F chooses whether to invest.

3. Countries choose whether to sign a short-term agreement specifying τ^{st} and f^{st} if they did not previously sign a long-term agreement.[15]

I make two key assumptions. First, I assume that in the first-best solution, countries trade g; otherwise, investment would be inefficient and hold-up problems would not occur. Second, I assume that parties can not contract over F's investment decision, as is standard in models of hold-up problems, because investment cannot be verified. For example, suppose F agrees to invest in its agricultural sector. If F fails to invest, H may observe that agricultural output is low, but can not tell if low output is the result of lack of investment or, say, adverse weather conditions.

[14]The timing represents in reduced form the intuition of a dynamic model in which investment is made periodically, such that the countries' commitments to future policies influence current investment levels. In a more dynamic model, investment would need to be made periodically to sustain the industry. The timing is meant to capture the idea that without periodic investment, the industry would collapse. The interpretation should not literally be that countries bargain over tariffs before any good is produced.

[15]In this model, there is no scope for the renegotiation of a long-term agreement, as both parties would have to be made better off by the renegotiation. This could not occur since parties can correctly anticipate the size of the surplus, which they divide when the original agreement is signed. Since the size of the surplus would be identical after the investment decision as before, any renegotiation would involve one country benefiting at the expense of the other.

Short-term Trade Agreements

Suppose first that in the absence of the WTO, only short-term agreements are available. Short-term agreements allow countries to bargain over specific policy levels once the investment has been undertaken. The threat point, or the outcome if bargaining breaks down, is the non-cooperative equilibrium in which countries play their preferred policies, such that if $i = 1$, H selects τ^N and F selects $f = 0$.[16] I show that in this case, hold-up problems arise, and are particularly severe for politically dissimilar pairs of countries.

Proposition 1. *When only short-term agreements are available, hold-up problems are more severe when H's bargaining power, α, is large.*

Proposition 1 is proven in the appendix, but the intuition is straightforward. Consider two special cases. First, suppose $\alpha = 1$, so that H has full bargaining power. If $i = 1$, the outcome of the agreement maximizes H's utility, which occurs when $\tau^{st} = \tau^N$ and $f^{st} = \bar{f}$. However, F obtains a higher utility from not entering a short-term agreement since then H still plays τ^N but F plays $f = 0$. F therefore opts out of the agreement, and when $\Omega^F(\tau^N) - 1 < 0$, F does not invest. This scenario represents the standard hold-up problem, whereby F undertakes the entire cost of the investment but shares the surplus and therefore does not find the efficient investment profitable. If $i = 0$, H should lower its tariff to induce F to invest, but because H cannot commit to maintain a low tariff once the investment has been undertaken, there is no way to entice an investment if only short-term agreements are available.

Now suppose $\alpha = 0$, so that F has full bargaining power. If $i = 1$, F chooses $\tau^{st} = 0$ and $f^{st} = 0$, whereas if $i = 0$, F plays $f = 0$ and receives no utility since g is not produced. Since F retains the entire surplus, and I have assumed there are gains from trade, $i = 1$ in this case. These two special cases illustrate that the more powerful H is relative to F, the

[16] In the non-cooperative equilibrium, if $i = 0$, τ is irrelevant since no good is produced, and F plays $f = 0$.

more likely F is held up such that efficient investment does not take place.

Proposition 2. *When short-term agreements are used, hold-up problems are more severe when H and F's foreign policy preference dissimilarity, γ, is large.*

Proposition 2 is proven in the appendix. Intuitively, the more dissimilar the countries' policy preferences, the less F is willing to make the concessions that H desires. Since a higher value of γ means that F's concessions are more costly, H must set τ^{st} lower to induce F to invest, but can not commit to do so. Thus, higher γ makes hold-up problems more likely.

Long-Term Trade Agreements

Suppose that when only short-term agreements are available, $i = 0$, but now H and F are able to sign a long-term agreement prior to F's investment decision. Since investment is efficient but does not take place without a long-term agreement, both countries' reservation utilities are zero because if bargaining breaks down, g is not produced. The hold-up problems that arise under short-term agreements can be remedied by long-term agreements, if these agreements can be enforced.

Proposition 3. *Perfectly enforceable long-term agreements solve hold-up problems.*

Proposition 3 is satisfied by construction because in order to ensure that F undertakes the investment after the agreement is signed, the bargaining problem is now subject to the constraint that F's utility from investing must be greater than its utility from not investing, or $\Omega^F(\tau^{lt}) - 1 \geq 0$.[17] Since the outcome is guaranteed to satisfy F's investment constraint, the efficient investment will be undertaken. H gives F a better deal than F would receive under a short-term agreement so that F has an incentive to invest. In other words, τ^{lt} is

[17] f^{lt} does not enter the constraint because once F signs the agreement, it must play f^{lt} regardless of its investment decision.

lower than τ^{st} (shown in the proof of Proposition 4 in the appendix), solving the hold-up problem. H is willing to make these extra concessions because otherwise $i = 0$ and H receives nothing. Thus, if H can commit to give F more concessions, F chooses to invest, making both parties better off.

If long-term trade agreements solve hold-up problems and increase the welfare of both parties, why don't countries always sign long-term agreements? The problem is that agreements between sovereign nations can be difficult to enforce in an anarchic world, as the incentives to cheat can be large and the punishments for cheating are often small since cheating can be difficult to detect and many countries have few resources to use to punish their partners. Thus, I now consider the more realistic case of imperfect enforceability.

Proposition 4. *When agreements are not perfectly enforceable, H has a greater incentive to deviate from long-term agreements than from short-term agreements.*

Proposition 4 is proven in the appendix, but I present the intuition here. Suppose countries face costs to deviating from trade agreements, where H's cost is denoted C^H and F's cost is denoted C^F. These costs are determined outside of the model and represent the ability and credibility of one country to punish the other.[18] For example, countries could punish their partners militarily, by raising tariffs on other goods, by cutting off foreign aid, etc. The cost of deviating from an agreement is higher the more effectively the violator can be punished.

I have shown that hold-up problems occur when H is large relative to F. In this case, H faces a relatively low cost of deviation, C^H, since a weak F can do little to punish a powerful H. Since H is most likely to deviate when hold-up problems are present, I focus on H's incentives to deviate. If H deviates, it deviates to τ^N. H does not deviate when the utility from deviating is less than the utility from abiding by the agreement, or

[18] One way to think of C^H and C^F is that they capture in reduced form the maximum credible punishments that the countries could enact in a larger, repeated game that is not modeled here.

$\Omega^H(\tau^j) \geq \Omega^H(\tau^N) - C^H$.[19] The appendix shows that under a long-term agreement, F receives a lower tariff than it does under a short-term agreement, which implies that the left hand side of H's constraint is lower under a long-term agreement. Thus, H has a greater incentive to deviate from a long-term agreement. If F expects a deviation, it may not undertake the investment, and hold-up problems remain.

Luckily, the WTO can help to enforce long-term agreements. The WTO raises the penalty for violating an agreement, increasing C^H to $\hat{C^H}$, because violations are more easily detected and instead of being punished solely by F, H is punished by the entire WTO community through a loss of reputation. As discussed in the introduction, adverse DSB rulings can negatively impact the reputations of WTO members. Other members may reduce cooperation with violators in trade and other areas, providing strong incentives for members to abide by their agreements. For large enough $\hat{C^H}$, long-term agreements become enforceable since H does not deviate when $\hat{C^H} \geq \Omega^H(\tau^N) - \Omega^H(\tau^j)$.

Deriving Testable Implications

The model generates several testable predictions. First, in the absence of the WTO, countries often rely on short-term agreements due to the lack of enforceability of long-term agreements. The model indicates that when long-term agreements are not enforceable, hold-up problems occur, but that membership in the WTO permits the enforcement of long-term agreements, reducing hold-up problems. The WTO therefore increases trade and investment between members, particularly for pairs of countries for which hold-up problems are more severe outside of the WTO, which generates several testable hypotheses.

Hypothesis 1. *Membership in the WTO increases trade more for pairs of countries with dissimilar bargaining power.*

[19] Similarly, since F receives the same tariff level regardless and deviates to $f = 0$, F does not deviate when $C^F \geq \gamma f^j$.

The model shows that, in the absence of the WTO, powerful countries are most able to hold up weak countries. When countries have dissimilar capabilities, two dynamics come into play. First, H can extract more from F in a short-term agreement due to H's large bargaining power, α, giving H the incentive to hold F up. Second, H's cost of reneging on an agreement, C^H, is lower since weak countries have less effective means of retaliation. Therefore, larger power disparities increase hold-up problems.

Since weak states anticipate the ability of powerful states to hold them up, they fail to undertake investments in goods for trade with their more powerful partners, such that trade between powerful and weak states is inefficiently low in the absence of the WTO. Once countries become WTO members, powerful states can commit to long-term agreements, since the WTO raises H's cost of deviating from a long-term agreement, C^H. Because the WTO allows powerful states to commit to long-term agreements, weak states need not fear being held up. Thus, when states join the WTO, trade should increase most between powerful and weak states since weak states will undertake new, productive investments in the production of goods for trade with powerful states.

Hypothesis 2. *Membership in the WTO increases trade more for non-allied pairs of countries.*

The model also predicts that hold-up problems are more common when H's and F's foreign policy interests are more dissimilar. A larger γ indicates that F is less willing to make the concessions desired by H. F is then less likely to invest in relationship-specific goods, and trade between H and F is inefficiently low.[20] Since non-allies have more dissimilar policy preferences, they should under-invest in the absence of the WTO to a greater extent than allies should because non-allies fear being held up by their partners for policy concessions. Since the WTO enforces agreements between non-allies by raising C^H, joining the WTO should increase trade more for non-allies relative to allies.

[20]This hypothesis comports with Gowa and Mansfield (2004), who argue that allies fear hold-up problems less than non-allies do, which promotes trade among allies.

Hypothesis 3. *Membership in the WTO increases trade more for pairs of countries with dissimilar regime types.*

Pairs of states with similar regime types tend to have more similar policy interests, or low γ, relative to pairs with dissimilar regime types. Countries may worry that partners with dissimilar regimes will hold them up for policy concessions and therefore under-invest in goods for trade with dissimilar regimes. For example, OECD countries have expressed strong ideological commitments to "market economies backed by democratic institutions" (*OECD* 2011), and have used a variety of carrots and sticks to promote similar regime types in partner countries. Withholding or extending trade privileges to encourage policy reforms, such as human rights improvements or democratization, is common and firmly entrenched in many OCED countries' policies, so trading partners with dissimilar regimes may worry about being held up for these concessions. Since the WTO allows countries to commit not to hold up their partners, I expect trade among countries with dissimilar regime types to increase most upon joining the WTO.

An Example: U.S. MFN Designation

The insights generated by the theoretical model can be observed in the real-world dynamics between trading partners. Examples of countries holding up asymmetric trading partners for political concessions outside of the WTO abound. For example, the United States has frequently used the threat of raising its tariff levels to extract political concessions from partners that are not WTO members. When these trading partners violate human rights, or enact other foreign policies that the U.S. Congress disapproves of, the U.S. Congress has often traded the renewal of most favored nation (MFN) status for policy concessions. While all WTO members must grant each other MFN status, which entitles them to nondiscriminatory trade policies such that a country can not lower tariffs for one partner with MFN status without lowering tariffs for all countries with MFN status, granting MFN status to non-members

of the WTO is optional.[21] Members of the U.S. Congress have explicitly acknowledged that the renewal of MFN status is a valuable tool for extracting political concessions from non-members of the WTO. For example, Rep. Loretta Sanchez advocated threatening not to renew MFN status for Vietnam in order to extract human rights concessions, stating, "If we insist that Vietnam improve its human rights record as a condition to trading with America, we would gain human rights advances in Vietnam, so I think it is a tragic mistake for the United States to decline to use this tool that is available to us" (*The Congressional Record* 2001, 14673). As predicted by the model, the U.S. typically has relied on these short-term MFN agreements to govern trade with Communist countries, which, at the time, were non-allies with dissimilar regime types.[22] Additionally, there is considerable evidence that "the votes [over MFN]...discouraged investors" (C. Devereaux and Watkins 2006, 243) since the U.S. could not commit not to use its MFN policies to hold up its non-member partners.

As a more detailed illustration, consider the case of U.S.-China trade relations. In 1979, China signed a bilateral trade agreement with the United States, granting China short-term MFN status, which was renewed yearly by the U.S. The fall of the USSR created a unique point in U.S.-Chinese history when the U.S. had considerable leverage over China (Kissinger 2011), such that U.S. bargaining power, α, was large due to several factors. First, the potential impact of raising U.S. tariffs on the Chinese economy was severe, as the U.S. was China's most important export market. No other market was large enough to absorb

[21]There are many exceptions to this rule. Under the GATT, exceptions include: Article I:2-4 based on Historical Preferences, Article IV(c) for Cinematographic Films, Article XX for General Exceptions such as those relating to morals or the environment, Article XXIV:3 for Frontier Traffic, Article XXIV:5 for FTAs and Customs Unions, Article XXI for Security Exceptions, the 1979 Enabling Clause (1979 Decision) and the Marrakesh Agreement Article IX:3 Waiver. Many of these exceptions, such as the security clause, are rarely used, while others, such as the FTA exception, are used frequently. Similar MFN exceptions exist under the General Agreement for Trade in Services (GATS) and Trade-Related Aspects of Intellectual Property Rights (TRIPS).

[22]In 1972, Senator Jackson sponsored a bill known as the "Jackson-Vanik amendment," which blocks MFN status for countries that disallow freedom of emigration. The amendment requires the president to grant a yearly MFN waiver to countries disallowing emigration and for Congress to renew MFN agreements every three years. In practice, the amendment has been applied mainly to Communist countries (Lilley and Willkie 1994, 124).

such a high volume of Chinese goods. Second, China had acquired a diminished strategic importance due to the end of the Cold War (Lilley and Willkie 1994, 127). Policy preference dissimilarity, γ, was also high because the Tiananmen Square incident increased the salience of differences in preferences regarding human rights policies in China.

Due to this dip in China's power relative to that of the U.S., the U.S. Congress repeatedly threatened China with tariff increases unless China addressed the U.S.'s concerns regarding human rights, weapons proliferation and trade (Lilley and Willkie 1994, 24). China made many policy concessions in exchange for low U.S. tariffs. Between 1990-93, China released 881 Tiananmen prisoners, lifted martial law, released information on high profile political prisoners, agreed not to export products made with prison labor, allowed the Red Cross to visit prisoners, sent two human rights delegations to the U.S., and gave passports to many families of political exiles (Lilley and Willkie 1994, 86). Investment in China declined over this period (Walmsley, Hertel and Ianchovichina 2006), indicating that while the U.S.'s bargaining power, α, and foreign policy preference dissimilarity, γ, were high and while China was not a WTO member, hold-up problems increased. Membership in the WTO was recognized as a means to increase investment in China. U.S. Senator Wellstone argued, "I think the evidence is pretty clear. [Permanent MFN status] will result in...more investment" (*The Congressional Record* 2000, S8676). Indeed, once China joined the WTO, investment and capital stocks increased dramatically (Walmsley, Hertel and Ianchovichina 2006) as hold-up problems were alleviated. The systematic nature of this anecdote is now examined empirically.

Empirical Setup

To test whether the WTO increases trade between country-pairs most vulnerable to hold-up problems, I follow the convention in the trade literature and employ a gravity model (Goldstein, Rivers and Tomz 2007; Gowa 1995; Mansfield and Bronson 1997; Mansfield,

Milner and Rosendorff 2000). In all specifications, I use year and directed dyad fixed effects, as fixed effects are robust to many types of misspecification and endogeneity. The model is estimated using OLS with robust standard errors, clustered at the directed dyad level, and the data cover the five year intervals from 1950-2000 following Subramanian and Wei (2007) and Liu (2009).[23]

The dependent variable, *Log Imports*, is the log of imports to the first country in a pair from the second (in constant U.S. dollars) and comes from the IMF's "Direction of Trade Statistics."[24] The key independent variables in the analysis are three measures of political dissimilarity and their interactions with WTO membership. First, *Large Power Difference* is an indicator of whether the difference in power between two countries is greater than the median difference in power in the sample.[25] This variable is constructed from the Correlates of War's Composite Index of National Capability (CINC) (Singer 1988), a widely used indicator of bargaining power (Geller 1993; Reed et al. 2008), which is derived from six variables: iron and steel production (thousands of tons), military expenditures (thousands of current year U.S. dollars), military personnel (thousands), primary energy consumption (thousands of coal-ton equivalents), total population (thousands), and urban population (population living in cities with population greater than 100,000; in thousands).[26] A second key independent variable, *Non-Allies*, indicates whether both members of a country-pair are

[23]I use OLS since it provides easily interpretable average effects as the minimum mean square error linear approximation to the conditional expectation function (Angrist and Pischke 2008, 102), although the results are robust to alternative specifications, shown in the sensitivity analysis.

[24]Import data was generously supplied by Liu (2009), who supplements Rose (2004)'s widely used trade dataset. As is common in the literature (McCallum 1995; Raballand 2003), the dependent variable is log(imports+1). Summary statistics for all variables are presented in an online appendix to save space.

[25]I divide the sample into two parts since the CINC index is a relatively rough indicator of power, subject to potential measurement error. However, in the robustness checks, I show that the results are robust to a continuous measure of power difference, and to cutting the sample in different places.

[26]The game theoretic literature shows that a key determinant of bargaining power is a party's reputation for toughness (Fudenberg and Tirole 1991). The CINC measure captures this intuition, as we might expect countries with more material capabilities to be able to back up their threats more credibly. The measure is computed by adding all observations for each of the 6 capability components each year, converting each state's absolute component to a share of the international system, and averaging across the 6 components.

not members of a political-military alliance (Leeds et al. 2002), where an alliance is defined as a defense pact, neutrality or non-aggression treaty, or entente agreement. Third, *Dissimilar Regime Type* indicates whether one country in a country-pair is a democracy while the other is not, using Cheibub, Gandhi and Vreeland (2010)'s coding of democracies.

The hypotheses state that the effects of *Large Power Difference*, *Non-Allies*, and *Dissimilar Regime Type* are conditional on whether states are members of the WTO. Thus, I interact each key independent variable with *Both in WTO*, an indicator of whether both countries in a dyad are members of the WTO (Tomz, Goldstein and Rivers 2007), including both formal and informal WTO participation.[27] Since membership in the WTO may change a country's trade policies overall, I also include *One in WTO*, which indicates whether only one country in a pair is a WTO member. Since a WTO member can still hold up a non-member partner, only *Both in WTO* is interacted with the key independent variables. Additionally, countries that receive special trading privileges from their trading partners tend to trade more, so I include several indicators of preferential trading arrangements and colony status: *Currency Union* indicates joint membership in a currency union, *PTA* indicates pairs that are part of a preferential trade agreement (PTA), GSP_i indicates whether an importing country gives its partner tariff preferences under the Generalized System of Preferences (GSP), and GSP_j indicates whether an exporting country gives its partner GSP status. Since colonizers often accord special trade privileges to their colonies, I also include an indicator of whether the importer is a *Current Colonizer* of its partner and another indicator of whether the importer is a *Current Colony* of its partner. Finally, I control for *Log GDP* and *Log GDP Per Capita*, measured in logged constant U.S. dollars.[28]

[27]Informal members are entitled to the majority of the rights and responsibilities of WTO membership (see Tomz, Goldstein and Rivers (2007) for more detail), though the results are robust to the inclusion of only formal members.

[28]In the robustness checks, I show that the results are robust to the exclusion of the indicators of preferential trading arrangements.

Main Empirical Results

Table 1 presents strong evidence that the WTO increases trade most for politically dissimilar country-pairs. The table shows that as predicted, the effect of the WTO is considerably greater for country-pairs with large differences in capabilities, as the WTO increases trade 167% more for countries with a large power difference relative to those with a small power difference (calculated by exponentiating the coefficients and subtracting one). (column 1). The results also support the hypotheses that WTO membership increases trade most among non-allies and dissimilar regime types. Membership in the WTO increases trade 109% more for non-allies relative to allies (column 2), and it increases trade for pairs with dissimilar regime types 119% more than for similar regime types (column 3). Figure 1 displays these results graphically, plotting the marginal effect of WTO membership on logged imports for similar versus dissimilar country-pairs, along with the associated 95% confidence intervals. The effects of WTO membership are statistically significant for each type of country-pair.

TABLE 1 ABOUT HERE

FIGURE 1 ABOUT HERE

Across the three specifications, the coefficients on the other covariates in the model lend credence to these findings, as all show the expected magnitudes and signs. The results demonstrate that WTO members trade more on average, along with larger, wealthier countries, members of an RTA, recipients of GSP, members of a currency union and countries that were in a colonial relationship in the year of observation. These estimates are statistically and substantively significant.[29] Additionally, the model explains over two-thirds of the variation in trade flows, as expected from a gravity model.

The finding that the WTO increases trade most for politically dissimilar country-pairs is robust to many alternative specification and coding decisions, presented in the supplemental

[29]The positive and significant coefficient on GSP is consistent with Busch and Tobin (2011), who argue that GSP is a precursor to WTO entry for many countries, thereby raising trade in anticipation of joining the WTO.

appendix to save space. In each of the following tests, I find strong and statistically significant support of the theory. First, I check that the results are not sensitive to particular measures of my key independent variables. Table A4 shows the results of redefining *Large Power Difference* as an indicator of the two-thirds of dyads in the sample with the largest differences in capabilities (column 1), an indicator of the one-third of dyads with the largest power differences (column 2), and as a continuous, ordinal ranking of power difference (column 3).[30] Table A5 presents the results using alternative measures of power differences, alliances and regime dissimilarities. Power differences are measured using the differences in the total military personnel (Geller 1993; Reed et al. 2008), alliances are measured using Bueno de Mesquita (1975)'s coding of shared security interests,[31] and different regime types are measured using polity scores.[32]

Next, I demonstrate that the results are not driven by the particular model specification or sample selection. Table A6 ensures that the results are not an artifact of the specific covariates included in the model by presenting a basic gravity model with no additional covariates. Table A7 demonstrates the robustness of the findings using a Tobit model with year and directed dyad random effects. Table A8 presents the results of dropping all dyads from the sample that had zero trade flows in the first year of the sample, analyzing the effect of joining the WTO among dyads with positive trade when the sample begins. Table A9 shows that the results are not driven by particularly influential dyads by dropping observations for which the residuals are greater than five times the standard deviation (columns 1-3), and observations for which the residuals are greater than three times the standard deviation (columns 4-6).

Finally, since I argue that the WTO solves hold-up problems through a reputation mech-

[30] I choose an ordinal measure because *Large Power Difference* is highly skewed.

[31] Bueno de Mesquita (1975) measure the similarity of alliance profiles for country-pairs

[32] Polity scores are computed from measures of executive recruitment, constraints on executive authority, and political competition and range from -10 to 10 (Marshall et al. 2004). For ease of comparison with other results, I normalize the scores on a scale from 0 to 1, from least to most democratic.

anism, the results should be stronger for those countries that are better able to bring disputes before the DSB. Table A10 demonstrates that the results are strongest among countries with higher capacity, measured here using GDP, by dropping countries with GDPs that are more than two standard deviations below the mean.

Causal Mechanism

I have empirically demonstrated that the WTO increases trade most for politically dissimilar country-pairs. According to the formal model, this occurs because the WTO allows countries to enforce long-term contracts, which enables them to solve political hold-up problems. Since WTO members need not worry that they will be held-up by their trading partners, they increase their investments in fixed capital such as infrastructure, roads, and factories which are needed to produce traded goods. I provide three empirical tests to evaluate this mechanism. First, since trade increases due to countries' enhanced abilities to enforce contracts, I show that WTO membership increases trade in goods that require such contracts by using industry-level trade data that varies in contract intensity. Second, I show that WTO membership increases fixed capital investment by using country-level investment data. Third, since WTO membership increases fixed capital investment in order to produce traded goods, I demonstrate that WTO membership increases trade particularly in capital-intensive goods.

Contract Intensity

I first demonstrate that WTO membership increases trade in contract intensive goods. The model is estimated using OLS with year and directed dyad-industry fixed effects from 1989-2000, with robust standard errors clustered at the directed dyad level. The dependent variable, *Log Imports*, denotes the natural log of the value of imports from one country to another in a particular industry. For industry-level dyadic trade data, I use updated data from Feenstra (1996). The key independent variables are a measure of contract intensity

and its interaction with WTO membership. *Contract Intensity* is an indicator of whether a particular industry is more contract-intensive than the median industry in the sample, which is coded using the proportion of contract-intensive goods imported by one country in a country-pair from the other. The data come from Nunn (2007), who determines the degree to which each good requires a relationship-specific investment. For each final good, the proportion of intermediate goods required is computed. These intermediate goods are then categorized according to whether they are sold on an organized exchange or not, as goods requiring inputs that are sold on an organized exchange are less contract-intensive than other goods. Country-pairs in which both countries are WTO members should trade more contract-intensive goods than other pairs due to their enhanced ability to enforce these contracts.[33] Since bigger, richer countries tend to have more resources available for contract enforcement, and countries with higher economic growth can maintain that commitment in the future, I control for *Log GDP*, *Log GDP Per Capita* and *Economic Growth*, measured in logged constant U.S. dollars, and again include *One in WTO*.[34]

TABLE 2 ABOUT HERE

Table 2 provides strong evidence that WTO members trade more contract intensive goods. The results are statistically significant and indicate that while WTO membership increases trade in goods requiring low contract intensity by about 5%, it increases trade in highly contract-intensive goods by 24%.

[33]The industry-level trade data is classified according to the 4-digit Standard International Trade Classification (SITC) Revision 2 system, while the contract intensity data is classified according to the Bureau of Economic Analysis (BEA)'s Input-Output (I-O) system. To match the data, I first convert the 4-digit SITC codes into the 10 digit Harmonized System (HS) codes, using the concordance provided by Feenstra (1996). I then convert the 10 digit HS codes into I-O codes using the concordance available from the BEA. The SITC codes do not match perfectly with the I-O codes, however, because SITC codes are at a higher level of aggregation. To deal with SITC industries that map into multiple I-O industries, I follow Nunn (2007) and choose the I-O industry for which the greatest number of HS industries link the two. If an equal number of links arise, which occurs rarely in the data, I make the choice manually. Thus, each SITC code is mapped onto only one I-O industry.

[34]Economic growth is defined as the log of the change in real GDP per capita.

Fixed Capital Investment

To estimate the effect of membership in the WTO on fixed capital investment, I regress a measure of gross fixed capital investment on an indicator of WTO membership using OLS with year and country fixed effects from 1970-2006, with robust standard errors clustered at the country level. The dependent variable, *Fixed Capital Investment*, is logged and measured in constant U.S. dollars and includes "outlays on additions to the fixed assets of the economy plus net changes in the level of inventories" (*World Bank* 2011). Unlike ongoing operating expenses, fixed capital investments are sunk costs in physical infrastructure, which are precisely the investments that are most affected by hold-up problems.

The key independent variable, *WTO Member*, is an indicator of whether a country is a member of the WTO (Tomz, Goldstein and Rivers 2007). Since investment should be higher in richer, growing economies, I again control for *Log GDP*, *Log GDP Per Capita*, and *Economic Growth* measured in logged constant U.S. dollars. Incentives to invest depend on the cost of capital, so I also control for the *Real Interest Rate* (*World Bank* 2011).

TABLE 3 ABOUT HERE

Table 3 presents large and statistically significant results in support of the claim, as WTO membership increases fixed capital investment by about 15%.

Capital Intensity

By increasing fixed capital investment in goods for trade, WTO membership should increase trade in goods that require such investment. I examine this by testing whether membership in the WTO increases exports of capital intensive goods in particular. I use the same specification as in the first test of the mechanism, simply replacing *Contract Intensity X Both in WTO* with *Capital Intensity X Both in WTO*, and controlling for the interest rate, since fixed capital investment depends on the cost of capital.

To construct *Capital Intensity*, I first calculated Balassa's Revealed Comparative Advan-

tage (RCA), or $\omega_j^i = \frac{X_j^i}{\sum_{j^i} X_j^i}$ where j^i is the set of goods exported by country i and X_j^i is the export of good j by country i. This was computed using updated export data from Feenstra (1996). Next, capital intensity was computed as $k_j = \sum_{i^j} \omega_j^i K^i$ where K^i is the capital stock of country i. For capital stock data, I obtained a measure of capital stock per worker from Heston and Aten (2006) and multiplied it by the number of workers in the country, from *World Bank* (2011). Multiplying by the RCA provides a measure of the revealed capital intensity of each good j.

The model is estimated using OLS with year and dyad-industry fixed effects from 1989-2000, with robust standard errors clustered at the dyad level. Table 4 reports the results of the regression, showing that WTO membership increases trade in goods with high capital intensity by 6.1% more than in goods with low capital intensity. Taken in sum, these findings provide strong evidence of the underlying causal mechanism.

TABLE 4 ABOUT HERE

Conclusion

This paper demonstrates that international institutions benefit politically dissimilar countries by reducing the ability of countries to hold up their partners for foreign policy concessions. It uses the example of the WTO to illustrate the argument, demonstrating that WTO membership increases trade most between countries most susceptible to hold-up problems. This paper develops a formal model to show that countries are most likely to hold up their partners when they have the ability and incentive to do so. Countries have the greatest ability to hold up weaker partners, and the greatest incentive to hold up non-allies and dissimilar regimes. These predictions are tested using bilateral trade data over a 50-year time span. The empirical analysis strongly supports the theoretical predictions along with the mechanism driving the results.

The findings add to our understanding of the WTO's benefits. The canonical justification for the existence of the WTO focuses on the WTO's ability to solve a terms-of-trade prisoner's dilemma. This focus on economics has led previous researchers to overlook important political benefits of membership. By depoliticizing trade relations, the WTO can facilitate trade among countries that would otherwise face large political impediments to trade due to political dissimilarities.

Additionally, the theory has important implications for institutional design. I demonstrate that the WTO can solve hold-up problems by helping to enforce long-term trade agreements, and that such enforcement is possible because the WTO publicizes transgressions, leading to a loss of reputation for violators. This implies that for the WTO to be most effective at solving hold-up problems, it should maximize the ability of countries to publicize violations, which means increasing the ability of countries to bring cases before the dispute settlement body. Larger states have begun efforts to increase the capacity of smaller states, such as providing legal assistance. To best solve hold-up problems, creating more efficient trade and investment, these efforts could be intensified and expanded.

Finally, this paper has implications for the recent rise in RTAs. The multilateral nature of the WTO ensures that violating agreements causes a loss of reputation for the violator in the eyes of all WTO members, who then can reduce cooperation with the violator in many areas. However, in a bilateral setting, violations may only be publicized to a specific trading partner, weakening the reputational incentive to comply with the agreement. Thus, the collapse of the most recent WTO round of multilateral negotiations, the Doha round, and the corresponding rise of RTAs may mean that trade and politics will be more intertwined in the future, and that political dissimilarities may become more important for trading relationships going forward.

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Tables

	1	2	3
Lg Power Diff X WTO	0.417***		
	(0.102)		
Large Power Diff	-0.375***	-0.200*	-0.194*
	(0.101)	(0.088)	(0.088)
Non-Allies X WTO		0.557***	
		(0.144)	
Non-Allies	-0.487***	-0.875***	-0.479***
	(0.125)	(0.163)	(0.125)
Dissimilar Reg X WTO			0.296***
			(0.075)
Dissimilar Regime Types	0.126**	0.120**	-0.040
	(0.042)	(0.042)	(0.061)
Both in WTO	1.169***	0.903***	1.247***
	(0.131)	(0.166)	(0.129)
One in WTO	1.132***	1.133***	1.139***
	(0.111)	(0.111)	(0.111)
Log(GDP)_i	2.071***	2.034***	2.040***
	(0.148)	(0.148)	(0.148)
Log(GDP)_j	2.828***	2.792***	2.796***
	(0.152)	(0.153)	(0.153)
Log(GDPPC)_i	0.063	0.103	0.103
	(0.138)	(0.138)	(0.138)
Log(GDPPC)_j	-0.773***	-0.733***	-0.731***
	(0.144)	(0.144)	(0.144)
Current Colony	1.666***	1.688***	1.676***
	(0.372)	(0.372)	(0.370)
Current Colonizer	2.649***	2.672***	2.663***
	(0.559)	(0.560)	(0.558)
PTA	0.473***	0.500***	0.479***
	(0.089)	(0.089)	(0.089)
GSP_i	0.519***	0.499***	0.512***
	(0.104)	(0.104)	(0.104)
GSP_j	0.488***	0.467***	0.480***
	(0.102)	(0.102)	(0.102)
Currency Union	2.671***	2.677***	2.690***
	(0.397)	(0.395)	(0.396)
Constant	-39.986***	-39.158***	-39.509***
	(1.712)	(1.723)	(1.714)
Year and Directed Dyad FE	Yes	Yes	Yes
R-Squared	0.683	0.683	0.683
N	170845	170845	170845

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 1: OLS regression estimates of the effect of WTO membership on logged imports conditional on having a large power difference, dissimilar regime type and not having an alliance. Unit of observation is the directed dyad. Robust standard errors clustered by directed dyad.

Contract X Both in WTO	0.162*
	(0.064)
Both in WTO	0.052*
	(0.026)
One in WTO	-0.171*
	(0.082)
Log GDP$_i$	0.217***
	(0.033)
Log GDP$_j$	0.257***
	(0.035)
Log GDP per Capita$_i$	0.258***
	(0.055)
Log GDP per Capita$_i$	0.305***
	(0.046)
Economic Growth$_i$	-0.002
	(0.002)
Economic Growth$_j$	-0.005*
	(0.002)
Constant	-11.051***
	(1.330)
Year and Directed Dyad-Industry FE	Yes
R-Squared	0.581
N	3173652

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 2: OLS regression estimates of the effect of contract intensity on logged industry-level imports conditional on WTO membership. Unit of observation is the directed dyad-industry. Robust standard errors clustered by directed dyad.

WTO Member	0.136*
	(0.056)
Log GDP Per Capita	0.651***
	(0.177)
Log GDP	0.524**
	(0.199)
Economic Growth	.007
	(0.007)
Real Interest Rate	0.001
	(0.001)
Constant	10.360***
	(0.946)
Year and Country FE	Yes
R-Squared	0.992
N	2017

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 3: OLS regression estimates of the effect of WTO membership on fixed capital investment. Unit of observation is the country. Robust standard errors clustered by country.

Capital Intensive X Both in WTO	0.024*
	(0.012)
Both in WTO	0.058***
	(0.017)
One in WTO	-0.203
	(0.111)
Economic Growth$_i$	0.005***
	(0.001)
Economic Growth$_j$	-0.001
	(0.001)
Real Interest Rate$_i$	0.002***
	(0.000)
Real Interest Rate$_j$	0.001
	(0.000)
Log GDP$_i$	-0.150
	(0.098)
Log GDP$_j$	0.554***
	(0.142)
Log GDP per Capita$_i$	0.944***
	(0.124)
Log GDP per Capita$_i$	0.335
	(0.177)
Constant	-16.094***
	(3.106)
Year and Directed Dyad-Industry FE	Yes
R-Squared	0.825
N	3758513

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 4: OLS regression estimates of the effect of capital intensity on logged industry-level imports conditional on WTO membership. Unit of observation is the directed dyad-industry. Robust standard errors clustered by directed dyad.

Figures

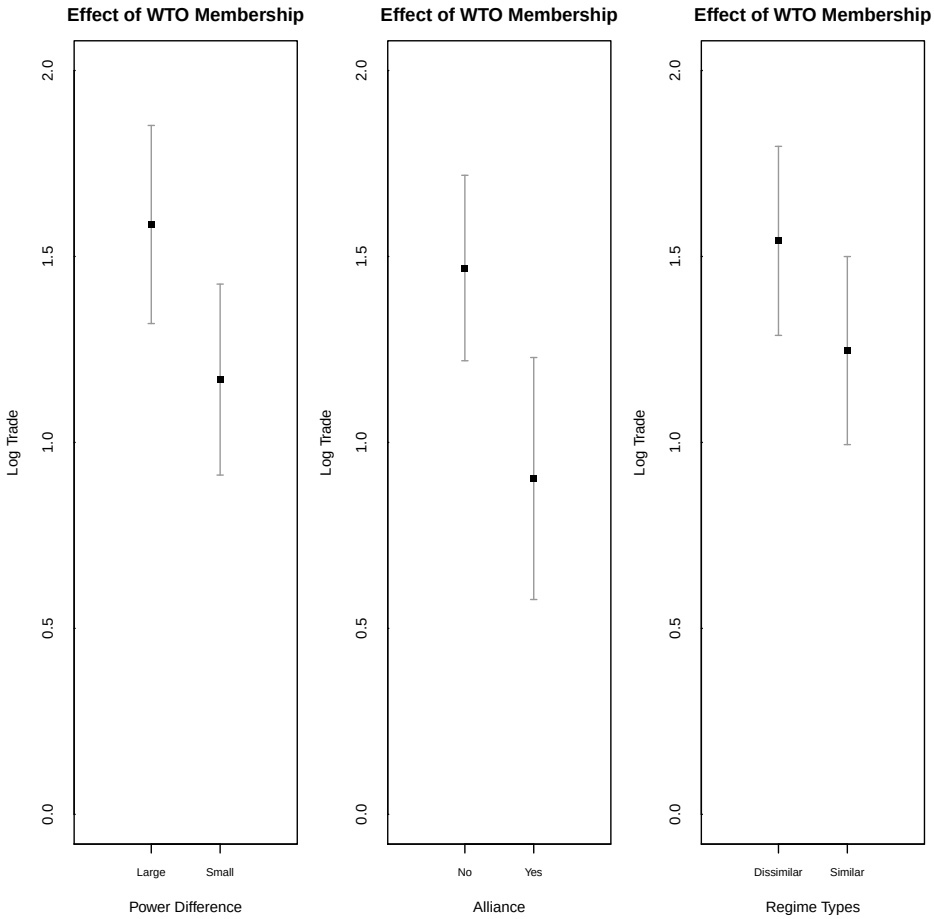

Figure 1: OLS regression estimates of the effect of WTO membership on logged imports conditional on having a large versus small power difference, dissimilar versus similar regime type and not having an alliance versus having an alliance. Estimates presented with 95% confidence intervals.

Appendix

Proof of Proposition 1.

I first demonstrate that investment is efficient by considering the first-best solution to the bargaining problem with complete contracts and cash transfers available. The first-best solution maximizes the joint surplus. Countries select the first-best tariff, foreign policy and investment levels, τ^{fb}, f^{fb} and i^{fb} such that $\tau^{fb}, f^{fb}, i^{fb} = \text{argmax}\, u^H(\tau, f, i) + u^F(\tau, f, i) = \text{argmax}\, i[\Omega^H(\tau)+\Omega^F(\tau)]-i+f-\gamma f$. $f^{fb} = \bar{f}$ if $\gamma \geq 1$, and $f^{fb} = 0$ otherwise. The first-best tariff solves $0 = \Omega^H_\tau(\tau) + \Omega^F_\tau(\tau)$. By assumption, $\max_\tau \Omega^H(\tau) + \Omega^F(\tau) \geq 1$, so investment takes place.

I next demonstrate the threat point of the bargaining problem by characterizing the non-cooperative equilibrium. The model is simple to solve. Since neither party is bound by an agreement, each plays its preferred policy. If $i = 0$, F plays $f = 0$ and any value of τ can be supported since no good is produced. Both countries receive a payoff of 0. If $i = 1$, F plays $f = 0$ and H plays $\tau = \tau^N$, which is the Nash tariff level, or the tariff that maximizes H's utility: $\tau^N = \text{argmax}_\tau\, u^H(\tau, f, i) = \Omega^H_\tau(\tau)$. In this case, F receives $\Omega^F(\tau^N)$ and H receives $\Omega^H(\tau^N)$. The level of investment undertaken by F maximizes its utility, given that H plays τ^N if F invests, so that F invests if $\Omega^F(\tau^N) - 1 \geq 0$.[35] A short=term agreement is only signed if $i = 1$, so the threat point for H is $\Omega^H(\tau^N)$ and the threat point for F is $\Omega^F(\tau^N)$.

I now characterize the solution of the short-term bargaining problem. Suppose F has invested. The bargaining problem is

$$\max_{\tau,f}[\Omega^H(\tau) + f - \Omega^H(\tau^N)]^\alpha[\Omega^F(\tau) - \gamma f - \Omega^F(\tau^N)]^{1-\alpha}.$$

[35]Note that when F's utility from selling g is very low, investment is inefficient. This does not represent a case of hold-up, because the first-best solution includes $i = 0$ in this case. However, I have assumed that $i = 1$ in the first-best scenario, so this case never occurs here.

Differentiating with respect to f, the first order condition is

$$\alpha[\Omega^H(\tau) + f - \Omega^H(\tau^N)]^{\alpha-1}[\Omega^F(\tau) - \gamma f - \Omega^F(\tau^N)]^{1-\alpha} -$$
$$\gamma(1-\alpha)[\Omega^F(\tau) - \gamma f - \Omega^F(\tau^N)]^{-\alpha}[\Omega^H(\tau) + f - \Omega^H(\tau^N)]^{\alpha} = 0.$$

Differentiating with respect to τ, the first order condition is

$$\alpha[\Omega^H(\tau) + f - \Omega^H(\tau^N)]^{\alpha-1}\Omega^H_\tau(\tau)[\Omega^F(\tau) - \gamma f - \Omega^F(\tau^N)]^{1-\alpha} +$$
$$(1-\alpha)[\Omega^F(\tau) - \gamma f - \Omega^F(\tau^N)]^{-\alpha}\Omega^F_\tau(\tau)[\Omega^H(\tau) + f - \Omega^H(\tau^N)]^{\alpha} = 0.$$

With two equations and two unknowns, an expression for τ^{st} and f^{st}, the solution to the short-term bargaining problem, can be found. Combining first order conditions:

$$\frac{-\Omega^H_\tau(\tau)}{\Omega^F_\tau(\tau)} = \frac{1}{\gamma}. \tag{1}$$

Rearranging equation 1, it is apparent that with short-term agreements, $-\frac{\Omega^F_\tau(\tau)}{\gamma} = \Omega^H_\tau(\tau)$, rather than $0 = \Omega^H_\tau(\tau)$ as in the no trade agreements case. $-\frac{\Omega^F_\tau(\tau)}{\gamma}$ is weakly positive since F has negative marginal utility with respect to the tariff and since γ is positive, so $\tau^{st} \leq \tau^N$. By inserting τ^{st} back in to the derivative, we can find f^{st}:

$$f^{st} = \frac{\alpha}{\gamma}(\Omega^F(\tau^{st}) - \Omega^F(\tau^N)) - (1-\alpha)(\Omega^H(\tau^{st}) - \Omega^H(\tau^N)). \tag{2}$$

Hold-up problems still occur if $\Omega^F(\tau^{st}) - \gamma f^{st} - 1 < 0$, as $i = 0$, whereas in the first-best case, $i = 1$.[36] Examining the equation for f^{st}, we see that f^{st} increases as α increases. Since α is continuous from zero to one, as H's bargaining power increases, the hold-up problem becomes more severe.

[36]There are many parameter values for which $i = 1$ in the first-best case, and $i = 0$ in the short-term agreement case. This occurs anytime $\Omega(\tau^{fb}) \geq 1 + f^{fb}$ and $\Omega(\tau^{st}) < 1 + f^{st}$.

Proof of Proposition 2. As shown in the proof of Proposition 1, a hold-up problem occurs when $\Omega^F(\tau^{st}) - \gamma f^{st} - 1 < 0$. Substituting for f^{st} and simplifying:

$$\Omega^F(\tau^{st}) - [\alpha(\Omega^F(\tau^{st}) - \Omega^F(\tau^N)) - \gamma(1-\alpha)(\Omega^H(\tau^{st}) - \Omega^H(\tau^N))] - 1 < 0. \tag{3}$$

Examining equation 1, it is clear that as γ increases, τ^{st} increases, so the first term in equation 3 is decreasing in γ. Because H derives less utility under the short-term tariff than under the Nash tariff, the third term in equation 3 is negative, and therefore decreasing in γ. Thus, the higher γ, or the more different H's and F's foreign policies, the more likely it is that hold-up problems occur.

Proof of Proposition 4. I now characterize the solution to the long-term bargaining problem. The bargaining problem is

$$\max_{\tau,f}[\Omega^H(\tau) + f]^{\alpha}[\Omega^F(\tau) - \gamma f]^{1-\alpha}$$

subject to $\Omega^F(\tau) - 1 \geq 0$.[37] Differentiating with respect to f, the first order condition is

$$\alpha[\Omega^H(\tau) + f]^{\alpha-1}[\Omega^F(\tau) - \gamma f]^{1-\alpha} -$$
$$\gamma(1-\alpha)[\Omega^F(\tau) - \gamma f]^{-\alpha}[\Omega^H(\tau) + f]^{\alpha} = 0.$$

Differentiating with respect to τ, the first order condition is

$$\alpha[\Omega^H(\tau) + f]^{\alpha-1}\Omega^H_\tau(\tau)[\Omega^F(\tau) - \gamma f]^{1-\alpha} +$$
$$(1-\alpha)[\Omega^F(\tau) - \gamma f]^{-\alpha}\Omega^F_\tau(\tau)[\Omega^H(\tau) + f]^{\alpha} + \Omega^F_\tau(\tau)\lambda = 0,$$

[37] If the constraint does not bind, so that $\lambda = 0$, the solution is the same as that of the short-term agreement case. Since $i = 1$, there is no hold-up problem when short-term agreements are signed. Therefore, I focus here on the interesting case where the constraint binds. Of course, it could be the case that the constraint binds and $\lambda = 0$, however this a very specific, trivial case and so I do not consider it.

where λ is the Lagrange multiplier. τ^{lt} and f^{lt}, the solution to the long-term bargaining problem, are found by combining the first order conditions:

$$\frac{-\Omega_\tau^H(\tau)}{\Omega_\tau^F(\tau)} = \frac{1}{\gamma} + \frac{\lambda[\Omega^H(\tau)+f]^{1-\alpha}}{\alpha[\Omega^F(\tau)-\gamma f]^{1-\alpha}}. \tag{4}$$

Since the last term in equation (4) is positive, the right hand side of equation (4) will be larger than the right hand side of equation (1). This implies that the long-term tariff is smaller than the short-term tariff.[38] Since the condition for H not to deviate from agreement j is $\Omega^H(\tau^j) \geq \Omega^H(\tau^N) - C^H$, the lower the tariff, the more likely H is to cheat.

[38]The value of f^{lt} does not enter into the constraint which determines whether F invests, as f^{lt} is essentially a sunk cost after the agreement is signed, since F must make the concessions regardless of whether it invests.

Supporting Information Online Appendix

	Mean	Std. Dev.	N
Log Imports	8.441	7.922	177192
Large Power Diff	0.5	0.5	177192
Non-Allies	0.882	0.323	177192
Dissimilar Regime Types	0.485	0.5	170921
Both in WTO	0.558	0.497	177192
One in WTO	0.37	0.483	177192
Log(GDP)_i	10.136	2.019	176853
Log(GDP)_j	10.153	2.014	176835
Log(GDPPC)_i	1.326	1.06	176853
Log(GDPPC)_j	1.324	1.063	176835
Current Colony	0	0.016	177192
Current Colonizer	0	0.016	177192
PTA	0.078	0.268	177192
GSP_i	0.101	0.302	177192
GSP_j	0.102	0.302	177192
Currency Union	0.022	0.147	177192

Table A1: Summary statistics for main analysis

	Mean	Std. Dev.	N
Log Imports	6.786	1.698	4721581
Contract Intensity	0.03	0.172	4721581
Both in WTO	0.809	0.393	4721581
One in WTO	0.987	0.113	4721581
Log GDP_i	26.11	1.701	4721581
Log GDP_j	26.936	1.482	4720767
Log GDP per $Capita_i$	9.255	0.938	4721581
Log GDP per $Capita_i$	9.553	0.778	4720767
Economic $Growth_i$	1.004	0.995	3695180
Economic $Growth_j$	0.922	1.019	3956471

Table A2: Summary statistics for mechanism test 1

	Mean	Std. Dev.	N
Fixed Capital Investment	22.251	2.221	4499
WTO Member	0.772	0.42	4499
Log GDP	10.937	1.951	4157
Economic Growth	8.710	1.055	4157
Interest Rate	6.379	20.946	2740

Table A3: Summary statistics for mechanism test 2

	1	2	3
Lg Power Diff X WTO	0.270***	0.514***	1.405**
	(0.072)	(0.120)	(0.428)
Large Power Difference	5.117***	0.102	-2.318***
	(0.071)	(0.140)	(0.659)
Non-Allies	-0.497***	-0.508***	-0.485***
	(0.125)	(0.125)	(0.125)
Dissimilar Regime Type	0.116**	0.115**	0.124**
	(0.042)	(0.042)	(0.042)
Both in WTO	0.868***	1.071***	1.064***
	(0.182)	(0.142)	(0.152)
One in WTO	1.122***	1.123***	1.131***
	(0.111)	(0.111)	(0.111)
Log(GDP)_i	2.033***	2.009***	2.110***
	(0.147)	(0.147)	(0.150)
Log(GDP)_j	2.772***	2.769***	2.868***
	(0.152)	(0.152)	(0.154)
Log(GDPPC)_i	0.110	0.124	0.034
	(0.137)	(0.137)	(0.139)
Log(GDPPC)_j	-0.714***	-0.710***	-0.802***
	(0.143)	(0.143)	(0.145)
Current Colony	1.668***	1.665***	1.675***
	(0.374)	(0.374)	(0.372)
Current Colonizer	2.677***	2.688***	2.656***
	(0.559)	(0.559)	(0.559)
PTA	0.483***	0.477***	0.473***
	(0.089)	(0.089)	(0.089)
GSP_j	0.502***	0.507***	0.472***
	(0.102)	(0.102)	(0.103)
GSP_i	0.515***	0.512***	0.504***
	(0.104)	(0.104)	(0.104)
Currency Union	2.691***	2.688***	2.666***
	(0.396)	(0.396)	(0.397)
Constant	-41.171***	-39.257***	-40.310***
	(1.696)	(1.695)	(1.726)
Year and Directed Dyad FE	Yes	Yes	Yes
R-Squared	0.683	0.683	0.683
N	170845	170845	170845

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A4: Large power difference defined as the two-thirds of dyads with the largest power difference in column 1, as the one-third of dyads with the largest difference in column 2, and as a continuous, ordinal measure in column 3. OLS regression estimates of the effect of WTO membership on logged imports conditional on having a large power difference. Unit of observation is the directed dyad. Robust standard errors clustered by directed dyad.

	1	2	3
Alliance Profile (Tau) X WTO	-0.206		
	(0.156)		
Alliance Profile (Tau)	0.872***		
	(0.200)		
Polity Diff X WTO		0.774***	
		(0.133)	
Polity Diff		-0.345**	
		(0.108)	
Lg Power Diff (Military Personnel) X WTO			0.519***
			(0.092)
Large Power Difference (Military Personnel)			-0.910***
			(0.078)
Large Power Difference	-0.198*	-0.225*	
	(0.088)	(0.092)	
Dissimilar Regime Type	0.129**		0.117**
	(0.042)		(0.042)
Non-Allies		-0.531***	-0.451***
		(0.137)	(0.125)
Both in WTO	1.394***	1.225***	1.162***
	(0.125)	(0.139)	(0.128)
One in WTO	1.124***	1.240***	1.159***
	(0.111)	(0.113)	(0.110)
Log(GDP)_i	1.996***	2.148***	2.216***
	(0.147)	(0.158)	(0.147)
Log(GDP)_j	2.753***	2.932***	2.980***
	(0.151)	(0.162)	(0.152)
Log(GDPPC)_i	0.145	0.096	-0.079
	(0.136)	(0.149)	(0.137)
Log(GDPPC)_j	-0.690***	-0.820***	-0.921***
	(0.143)	(0.154)	(0.143)
Current Colony	1.667***	1.846***	1.692***
	(0.369)	(0.412)	(0.369)
Current Colonizer	2.651***	2.625***	2.681***
	(0.559)	(0.733)	(0.564)
PTA	0.491***	0.540***	0.472***
	(0.088)	(0.094)	(0.089)
GSP_j	0.461***	0.584***	0.441***
	(0.102)	(0.108)	(0.102)
GSP_i	0.492***	0.580***	0.472***
	(0.104)	(0.109)	(0.104)
Currency Union	2.679***	2.515***	2.637***
	(0.394)	(0.415)	(0.397)
Constant	-39.126***	-42.151***	-42.322***
	(1.689)	(1.864)	(1.708)
Year and Directed Dyad FE	Yes	Yes	Yes
R-Squared	0.683	0.680	0.683
N	170845	148354	170845

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A5: Alternative measures of power, alliance and regime type. OLS regression estimates of the effect of WTO membership on logged imports conditional on having a large power difference, dissimilar regime type and not having an alliance. Unit of observation is the directed dyad. Robust standard errors clustered by directed dyad.

	1	2	3
Lg Power Diff X WTO	0.459***		
	(0.100)		
Large Power Difference	-0.438***		
	(0.099)		
Non-Allies X WTO		0.574***	
		(0.142)	
Non-Allies		-0.885***	
		(0.160)	
Dissimilar Reg X WTO			0.308***
			(0.075)
Dissimilar Regime Type			-0.049
			(0.061)
Both in WTO	1.282***	1.022***	1.257***
	(0.129)	(0.164)	(0.129)
One in WTO	1.247***	1.250***	1.127***
	(0.108)	(0.108)	(0.110)
Log(GDP)_i	1.820***	1.813***	1.779***
	(0.140)	(0.140)	(0.141)
Log(GDP)_j	2.667***	2.661***	2.549***
	(0.142)	(0.143)	(0.143)
Log(GDPPC)_i	0.296*	0.302*	0.341**
	(0.129)	(0.129)	(0.130)
Log(GDPPC)_j	-0.659***	-0.651***	-0.507***
	(0.133)	(0.133)	(0.134)
Constant	-37.018***	-36.334***	-35.828***
	(1.667)	(1.673)	(1.683)
Year and Directed Dyad FE	Yes	Yes	Yes
R-Squared	0.679	0.679	0.682
N	176496	176496	170845

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A6: Varying the covariate profiles. OLS regression estimates of the effect of WTO membership on logged imports conditional on having a large power difference, dissimilar regime type and not having an alliance. Unit of observation is the directed dyad. Robust standard errors clustered by directed dyad.

	1	2	3
Lg Power Diff X WTO	0.250***		
	(0.064)		
Large Power Diff	-0.159**	-0.038	-0.043
	(0.054)	(0.044)	(0.044)
Non-Allies X WTO		1.007***	
		(0.096)	
Non-Allies	-1.946***	-2.549***	-1.951***
	(0.062)	(0.084)	(0.062)
Dissimilar Reg X WTO			0.227***
			(0.055)
Dissimilar Regime Types	0.201***	0.190***	0.075
	(0.029)	(0.029)	(0.042)
Both in WTO	1.461***	0.724***	1.479***
	(0.074)	(0.106)	(0.072)
One in WTO	1.039***	1.056***	1.045***
	(0.063)	(0.063)	(0.063)
Log(GDP_i	1.148***	1.149***	1.150***
	(0.014)	(0.014)	(0.014)
Log(GDP)_j	1.645***	1.646***	1.648***
	(0.014)	(0.014)	(0.014)
Log(GDPPC)_i	1.047***	1.052***	1.051***
	(0.026)	(0.026)	(0.026)
Log(GDPPC)_j	0.855***	0.860***	0.859***
	(0.026)	(0.026)	(0.026)
Current Colony	2.626**	2.671**	2.634**
	(0.860)	(0.860)	(0.860)
Current Colonizer	3.620***	3.663***	3.628***
	(0.859)	(0.859)	(0.859)
PTA	1.150***	1.196***	1.153***
	(0.057)	(0.057)	(0.057)
GSP_i	1.123***	1.097***	1.123***
	(0.059)	(0.059)	(0.059)
GSP_j	1.137***	1.111***	1.137***
	(0.059)	(0.059)	(0.059)
Currency Union	4.132***	4.122***	4.132***
	(0.156)	(0.156)	(0.156)
Constant	-21.759***	-21.355***	-21.810***
	(0.208)	(0.212)	(0.207)
sigma_u			
Constant	3.761***	3.759***	3.762***
	(0.021)	(0.021)	(0.021)
sigma_e			
Constant	4.481***	4.480***	4.481***
	(0.008)	(0.008)	(0.008)
Year and Directed Dyad RE	Yes	Yes	Yes
R-Squared			
N	170845	170845	170845

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A7: Tobit regression estimates of the effect of WTO membership on logged imports conditional on having a large power difference, dissimilar regime type and not having an alliance. Unit of observation is the directed dyad. Robust standard errors clustered by directed dyad.

	1	2	3
Lg Power Diff X WTO	0.312**		
	(0.107)		
Large Power Difference	-0.275*	-0.121	-0.121
	(0.115)	(0.097)	(0.097)
Non-Allies X WTO		0.258	
		(0.148)	
Non-Allies	-0.734***	-0.919***	-0.727***
	(0.121)	(0.165)	(0.121)
Dissimilar Reg X WTO			0.288***
			(0.081)
Dissimilar Regime Type	0.285***	0.282***	0.102
	(0.044)	(0.044)	(0.068)
Both in WTO	-0.041	-0.109	-0.022
	(0.145)	(0.179)	(0.144)
One in WTO	0.048	0.049	0.057
	(0.129)	(0.129)	(0.128)
Log(GDP)_i	2.128***	2.104***	2.104***
	(0.152)	(0.153)	(0.152)
Log(GDP)_j	2.767***	2.740***	2.737***
	(0.160)	(0.160)	(0.160)
Log(GDPPC)_i	-0.253	-0.225	-0.223
	(0.141)	(0.141)	(0.141)
Log(GDPPC)_j	-0.829***	-0.799***	-0.794***
	(0.150)	(0.150)	(0.150)
Current Colony	1.435***	1.450***	1.445***
	(0.355)	(0.356)	(0.354)
Current Colonizer	2.343***	2.359***	2.354***
	(0.555)	(0.555)	(0.554)
PTA	0.501***	0.513***	0.504***
	(0.090)	(0.090)	(0.090)
GSP_j	0.475***	0.468***	0.473***
	(0.104)	(0.104)	(0.104)
GSP_i	0.470***	0.462***	0.466***
	(0.104)	(0.104)	(0.104)
Currency Union	2.700***	2.707***	2.713***
	(0.366)	(0.365)	(0.366)
Constant	-34.072***	-33.472***	-33.521***
	(1.760)	(1.769)	(1.756)
Year and Directed Dyad FE	Yes	Yes	Yes
R-Squared	0.711	0.711	0.711
N	143988	143988	143988

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A8: Dropping dyads with no trade in 1950. OLS regression estimates of the effect of WTO membership on logged imports conditional on having a large power difference, dissimilar regime type and not having an alliance. Unit of observation is the directed dyad. Robust standard errors clustered by directed dyad.

	1	2	3	4	5	6
Lg Power Diff X WTO	0.418***			0.372***		
	(0.102)			(0.098)		
Large Power Difference	-0.373***	-0.197*	-0.192*	-0.330***	-0.170*	-0.168*
	(0.101)	(0.088)	(0.088)	(0.097)	(0.084)	(0.084)
Non-Allies X WTO		0.560***			0.638***	
		(0.144)			(0.137)	
Non-Allies	-0.486***	-0.875***	-0.478***	-0.333**	-0.788***	-0.326**
	(0.125)	(0.163)	(0.125)	(0.114)	(0.150)	(0.114)
Dissimilar Reg X WTO			0.296***			0.279***
			(0.075)			(0.073)
Dissimilar Regime Type	0.125**	0.119**	-0.041	0.139***	0.131**	-0.020
	(0.042)	(0.042)	(0.061)	(0.040)	(0.040)	(0.059)
Both in WTO	1.169***	0.902***	1.247***	1.219***	0.868***	1.278***
	(0.131)	(0.166)	(0.129)	(0.128)	(0.161)	(0.125)
One in WTO	1.131***	1.132***	1.139***	1.150***	1.160***	1.163***
	(0.111)	(0.111)	(0.111)	(0.108)	(0.108)	(0.108)
Log(GDP)_i	2.072***	2.035***	2.041***	2.228***	2.179***	2.191***
	(0.148)	(0.148)	(0.148)	(0.142)	(0.142)	(0.142)
Log(GDP)_j	2.825***	2.789***	2.792***	2.979***	2.936***	2.950***
	(0.152)	(0.153)	(0.153)	(0.147)	(0.147)	(0.147)
Log(GDPPC)_i	0.062	0.102	0.102	-0.126	-0.080	-0.085
	(0.138)	(0.138)	(0.138)	(0.131)	(0.132)	(0.132)
Log(GDPPC)_j	-0.770***	-0.730***	-0.728***	-0.928***	-0.883***	-0.891***
	(0.144)	(0.144)	(0.144)	(0.138)	(0.138)	(0.139)
Current Colony	1.668***	1.690***	1.678***	1.610***	1.631***	1.625***
	(0.372)	(0.372)	(0.370)	(0.387)	(0.387)	(0.385)
Current Colonizer	2.648***	2.671***	2.662***	3.000***	3.024***	3.018***
	(0.559)	(0.560)	(0.558)	(0.308)	(0.306)	(0.307)
PTA	0.476***	0.503***	0.483***	0.496***	0.530***	0.504***
	(0.089)	(0.089)	(0.089)	(0.085)	(0.086)	(0.086)
GSP_i	0.521***	0.501***	0.514***	0.438***	0.418***	0.438***
	(0.104)	(0.104)	(0.104)	(0.100)	(0.100)	(0.100)
GSP_j	0.489***	0.468***	0.481***	0.413***	0.395***	0.410***
	(0.102)	(0.102)	(0.102)	(0.099)	(0.099)	(0.099)
Currency Union	2.672***	2.678***	2.691***	2.959***	2.963***	2.976***
	(0.397)	(0.395)	(0.396)	(0.393)	(0.392)	(0.393)
Constant	-39.969***	-39.138***	-39.491***	-42.859***	-41.813***	-42.352***
	(1.712)	(1.723)	(1.714)	(1.633)	(1.645)	(1.637)
Year and Directed Dyad FE	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.683	0.683	0.683	0.713	0.713	0.713
N	170844	170844	170844	169525	169517	169530

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A9: Dropping Outliers. Columns 1-3 drop observations greater than 5 standard deviations from the mean and columns 4-6 drop observations greater than 3 standard deviations from the mean. OLS regression estimates of the effect of WTO membership on logged imports conditional on having a large power difference, dissimilar regime type and not having an alliance. Unit of observation is the directed dyad. Robust standard errors clustered by directed dyad.

	1	2	3
Lg Power Diff X WTO	0.431***		
	(0.104)		
Large Power Diff	-0.396***	-0.217*	-0.211*
	(0.103)	(0.089)	(0.089)
Non-Allies X WTO		0.579***	
		(0.147)	
Non-Allies	-0.541***	-0.941***	-0.531***
	(0.128)	(0.166)	(0.128)
Dissimilar Reg X WTO			0.328***
			(0.076)
Dissimilar Regime Types	0.136**	0.130**	-0.047
	(0.043)	(0.043)	(0.062)
Both in WTO	1.184***	0.907***	1.255***
	(0.134)	(0.169)	(0.131)
One in WTO	1.152***	1.153***	1.161***
	(0.112)	(0.112)	(0.112)
Log(GDP)_i	2.131***	2.092***	2.098***
	(0.151)	(0.151)	(0.151)
Log(GDP)_j	2.916***	2.878***	2.882***
	(0.155)	(0.155)	(0.155)
Log(GDPPC)_i	-0.006	0.035	0.037
	(0.140)	(0.140)	(0.140)
Log(GDPPC)_j	-0.848***	-0.806***	-0.803***
	(0.146)	(0.146)	(0.146)
Current Colony	1.781***	1.809***	1.788***
	(0.374)	(0.373)	(0.373)
Current Colonizer	2.568***	2.598***	2.579***
	(0.590)	(0.592)	(0.589)
PTA	0.485***	0.514***	0.491***
	(0.091)	(0.091)	(0.091)
GSP_i	0.498***	0.476***	0.490***
	(0.105)	(0.105)	(0.105)
GSP_j	0.485***	0.463***	0.476***
	(0.104)	(0.104)	(0.104)
Currency Union	2.516***	2.524***	2.536***
	(0.399)	(0.398)	(0.398)
Constant	-41.332***	-40.462***	-40.819***
	(1.753)	(1.765)	(1.755)
Year and Directed Dyad FE	Yes	Yes	Yes
R-Squared	0.683	0.683	0.683
N	165407	165407	165407

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A10: Dropping dyads with GDP more than two standard deviations below the mean. OLS regression estimates of the effect of WTO membership on logged imports conditional on having a large power difference, dissimilar regime type and not having an alliance. Unit of observation is the directed dyad. Robust standard errors clustered by directed dyad.