"Currency Wars" By Other Means?
Exchange Rates and WTO Dispute Initiation

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ABSTRACT

Recent controversies over "currency wars" in the global economy highlight the inextricable link between exchange rates and international trade. Yet while scholars and policymakers are well aware of the impact of exchange rates on the terms of trade, the existing literature on the political economy of the WTO has overlooked their importance as a determinant of trade disputes. In this paper, we argue that both exchange rate levels and regime choices are key determinants of WTO dispute initiation. Using a dyadic dataset of all WTO members from 1995 to 2006, we find that countries with more appreciated and overvalued exchange rates compared to their trading partners are more likely to initiate WTO disputes. We also find that flexible exchange rates are associated with WTO dispute initiation: within dyads, countries with more flexible exchange rate regimes are less likely to initiate disputes and less likely to be targeted by their trading partners. These results strongly suggest that exchange rates play a key role in determining the frequency of trade disputes between countries within the WTO. More broadly, our findings speak to the importance of more carefully exploring the complex relationship between trade and exchange rate policies in the contemporary global economy.

Introduction

The financial press is awash in reports of the emerging "international currency war."[1] As the Great Recession persists, tensions have risen in the global economy over the trade-related consequences of key countries' exchange rate and monetary policies. In the fall of 2010, the Japanese government intervened in foreign exchange markets for the first time since 2004, spending approximately $20 billion in an effort to drive down the yen's value from its 15-year highs against the dollar in order to bolster the country's export competitiveness.[2] In Brazil – whose Finance Minister, Guido Mantega, was the first to warn of the impending currency war – the government has imposed capital controls and threatened direct foreign exchange intervention in order to suppress further appreciation of the real.[3] Other countries, including Korea, Taiwan, and Thailand, have contemplated or adopted similar measures in response to large capital inflows and currency appreciation. In Europe, the German finance minister, Wolfgang Schauble, has criticized the US Federal Reserve's strategy of quantitative easing as a protectionist measure designed to "steer the dollar exchange rate artificially lower with the help of their printing press."[4] Thus, despite verbal commitments among the G-20 countries to refrain from engaging in Great Depression-style beggar-thy-neighbor policies, there is widespread belief that many governments are employing "exchange rate protection" in order to alter the terms of trade and enhance domestic producers' competitiveness in global markets (Corden 1982).

These tensions between exchange rates and international trade are most clearly evident in the strident debate over China's currency peg against the dollar. Although China has recently allowed the renminbi (RMB) to appreciate slightly, most analysts estimate that it remains 20-

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[1] Arvind Subramanian, "American Cannot Win the Currency Wars Alone," *Financial Times*, October 20, 2010.
[2] Lindsay Whipp and Peter Garnham, "Tokyo Currency Move Surprises Markets," *Financial Times*, 15 September 2010.
[3] Jonathan Weasley, "Brazil Raises Taxes on Foreign Inflows to 4%," *Financial Times*, 4 October 2010.
[4] Ralph Atkins, "Germany Attacks US Economic Policy," *Financial Times*, 7 November 2010.

25% undervalued; moreover, the Chinese government continues to spend more than $1 billion per day in order to artificially increase demand for dollars and prevent further RMB appreciation.[5] As Fred Bergsten of the Peterson Institute recently noted, China's exchange rate intervention is tantamount to both a 20-25% export subsidy and a corresponding tariff on imports – a policy that "represents the largest protectionist measure maintained by any major economy since the Second World War."[6] American and European officials, including the US Treasury Secretary, Tim Geithner, have criticized China for creating a "dangerous dynamic" of "non-appreciation" that has lead to "serious distortions" in the world economy.[7] Other US policymakers – most notably Senator Charles Schumer (D-NY) and Representative Sander Levin (D-MI) – have gone further, labeling China a "currency manipulator" and urging the Obama administration to unilaterally impose retaliatory trade protection in order to offset China's "predatory exchange rate policies."[8] Still others have argued that the US should pursue a case against China within the World Trade Organization (WTO), on the grounds that China's exchange rate policies constitute an export subsidy and/or violates Article XV of the WTO Charter, which forbids countries from "frustrating the intent of the provisions of this Agreement by exchange rate action."

At this point, few serious observers question whether China is manipulating its exchange rate.[9] As Martin Wolf recently noted in the *Financial Times*, "If a decision to invest half a

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[5] See C. Fred Bergsten, "A Proposed Strategy to Correct the Chinese Exchange Rate," Testimony before the Hearing on the Treasury Department's Report on International Economic and Exchange Rate Policies, United States Senate Committee on Banking, Housing, and Urban Affairs," September 24, 2010 (http://www.iie.com/publications/testimony/bergsten20100916.pdf).
[6] http://economix.blogs.nytimes.com/2010/10/08/biggest-protectionism-since-world-war-ii/. While a 20-25% appreciation of the RMB would not eliminate the US trade deficit entirely, estimates do suggest that this would reduce China's global surplus by $350-500 billion and reduce the US current account deficit by $50-120 billion.
[7] "Currency Wars: Fumbling Toward a Truce," *Economist*, October 14, 2010.
[8] Sewell Chan, "Geithner to Signal Tougher Stance on China Currency," *New York Times*, 15 September 2010.
[9] Whether or not RMB appreciation would solve the US balance of payments problems remains open to debate. See David Leonhardt, "The Long View of China's Currency," *New York Times*, 21 September 2010; Matthew Higgins

country's gross domestic product in currency reserves is not exchange rate manipulation, what is?"[10] Nevertheless, the Obama administration has thus far declined to pursue aggressive unilateral trade policies or direct exchange rate measures, and their legality and effectiveness remain open to debate.[11] However, in September 2010, the US Trade Representative (USTR) did file two new WTO cases against China: one concerning Chinese restrictions on foreign suppliers processing credit/debit card payments, and a second against China's imposition of tariffs on US steel exports.[12] Although USTR officials denied that these cases were filed in response to pressure from lawmakers or domestic firms concerned about the level of the RMB, the timing was particularly curious.[13] Indeed, these filings coincided closely with both Congressional hearings on China's exchange rate policies and the passing of a bill in the House Ways and Means committee permitting the US to impose countervailing duties on countries that engage in currency manipulation.[14] Furthermore, each of the disputed Chinese policies had been in place for some time. In the case of the credit card dispute, China had been in violation of its commitment to liberalize its market since 2006.

To what extent were these decisions influenced by the dollar/RMB exchange rate? More generally, to what extent are exchange rates a key determinant of trade disputes within the WTO? In this paper, we argue that both exchange rate levels and regime choices are key determinants of WTO dispute initiation. Using a dyadic dataset of all WTO members from 1995

and Thomas Klitgaard, "Would a Stronger Renminbi Narrow the US-China Trade Imbalance," July 7, 2011 (http://libertystreeteconomics.newyorkfed.org); as well as the excellent series of posts by Menzie Chinn at http://www.econbrowser.com.
[10] Martin Wolf, "How to Fight Currency Wars with Stubborn China," *Financial Times*, October 5, 2010.
[11] See, for example, Marc L. Busch and Philip I. Levy, "The Case Against a China Currency Case," *The American*, October 7, 2010 (http://www.american.com/archive/2010/october/the-case-against-a-china-currency-case); Joel P. Trachtman, "Yuan to Fight About It? The WTO Legality of China's Exchange Rate Regime," April 30, 2010 (http://www.voxeu.org/index.php?q=node/4880).
[12] Alan Beattie and Geoff Dyer, "US Raises Pressure for Renminbi Rise," *Financial Times*, September 15,2010.
[13] Mark Drajem and Peter Eichenbaum, "US Goes After China at WTO as Pressure Mounts from Congress," *Bloomberg*, September 16, 2010.
[14] Alan Beattie and Geoff Dyer, "US Congress to Attack Renminbi Valuation," *Financial Times*, September 23, 2010.

to 2006, we find that countries with more appreciated and overvalued exchange rates compared to their trading partners are more likely to initiate WTO disputes. We also find that flexible exchange rates are associated with WTO dispute initiation: within dyads, countries with more flexible exchange rate regimes are less likely to initiate disputes and less likely to be targeted by their trading partners. These results strongly suggest that exchange rates play a key role in determining the frequency of trade disputes between countries within the WTO. More broadly, our findings speak to the importance of more carefully exploring the complex relationship between trade and exchange rate policies in the contemporary global economy.

The remainder of the paper begins with a discussion of the relationship between trade and exchange rate policies – a relationship that has received relatively little attention in the traditional international political economy (IPE) literature and which is conspicuously overlooked by past studies on the political economy of WTO disputes. We then explore why policymakers may have stronger incentives to file WTO disputes in times of currency appreciation. We subject our hypothesis to a large-N statistical test, which provides robust support for our argument linking exchange rate levels to WTO filings. We conclude with some thoughts on future research avenues that could more clearly illuminate the broader trade-exchange rate relationship.

Trade politics, exchange rates, and the politics of WTO disputes

Although a rich literature has developed within IPE on the politics of the WTO dispute settlement system in recent years, it has, to our knowledge, completely overlooked the importance of exchange rates as a determinant of international trade disputes. Broadly, the literature has focused instead on two key factors as the primary determinants of patterns of WTO disputes. One the one hand, some scholars emphasize "gravitation effects," arguing that country

size and trade ties increase the likelihood of being both a respondent and a complainant in the dispute settlement process (Sattler and Bernauer 2010; Allee 2008; Horn et. al. 2008). On the other, many scholars instead focus on "discrimination effects," presenting evidence that developing countries are less likely to file WTO disputes due to a lack of resources, legal capacity, or fear of retaliation by rich countries (Busch et. al. 2009, Kim 2008, Bown 2005, Guzman and Simmons 2005, Shaffer 2003). Recent work has also identified several other key determinants of WTO dispute initiation, including levels of democracy and relative power within dyads (Sattler and Bernauer 2008, Rosendorff 2005, Busch 2000, Reinhardt 1999), past participation in the dispute settlement system by individual member-states (Conti 2010, Davis and Bermeo 2009), and lobbying by domestic firms (Davis and Shirato 2007).

This gap in the WTO literature is striking, given that both economists and IPE scholars have otherwise focused extensively on the trade implications of exchange rates (Frankel 1999, Rose 2000, Frieden and Broz 2001 and 2006, Ghosh, et. al. 2002, Levy-Yeyati and Sturzenegger 2003). Indeed, the canonical economics literature on exchange rates emphasizes the reduction of currency risk as one of the keys reason why countries choose fixed exchange rates over more flexible regimes (Mundell 1961, McKinnon 1962, Kenen 1969). Pegging the exchange rate reduces or eliminates exchange rate risk and facilitates cross-border trade and exchange. In contrast, currency volatility creates uncertainty about cross-border transactions, adding a risk premium to the price of traded goods and international assets (Frieden 2008). Thus, fixed exchange rates enable a government to enhance the credibility of its commitment to international integration, thereby encouraging greater trade and investment. The level of the exchange rate also has important trade-related implications, as it affects the relative price of traded goods in both domestic and foreign markets. Fluctuations in exchange rates can have substantial effects

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on domestic producers' competitiveness in world markets: "In the case of a real appreciation, domestic goods become more expensive relative to foreign goods; exports fall and imports rise as a result of the change in competitiveness. Real depreciation has the opposite effects, improving competitiveness" (Frieden and Broz 2001, 331). Consequently, exchange rate movements have significant domestic distributional consequences: exporters and import-competing industries lose from currency appreciation, while the nontradables sector and domestic consumers gain (Frieden 1991). Conversely, currency depreciations have the opposite effect, helping exporters and import-competing firms at the expense of consumers and the nontradables sector (Frieden and Broz 2001).[15]

While the WTO dispute settlement has overlooked the importance of exchange rates, a number of existing studies have shown exchange rate levels and movements to be an important determinant of *national* trade policies. In particular, several scholars have found that real exchange rate appreciations have led to increases in anti-dumping filings in the United States and other industrialized countries since the 1970s (Broz 2010, Oatley 2010, Irwin 2005, Knetter and Prusa 2003, Grilli 1988, Bergsten and Williamson 1983). Niels and Francois (2006) find similar evidence in Mexico, which suggests that this relationship between exchange rates and trade protection is not simply an advanced country phenomenon. Other scholars have found that protectionism has been greatest at the regional level during periods of sharp intra-regional exchange rate fluctuations, such as the 1992-93 European Monetary System (EMS) crisis and the 1999 Brazilian real devaluation within Mercosur (Fernandez-Arias et. al. 2002, Eichengreen 1993, Pearce and Sutton 1985). Similarly, Frieden (1997) shows that protectionist demands in the US during the 19th century correlated closely with the strength of the dollar. Finally, Eichengreen and Irwin (2009) have shown that protectionism during the Great Depression was

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[15] See Frieden and Broz 2006 for an overview of the extensive literature on the political economy of exchange rates.

most extensive in countries that remained on the Gold Standard while their trading partners went off gold and devalued their currencies.

While these studies clearly illustrate that exchange rates have been a key determinant of national trade policies, they do not take into account the fact that policymakers' ability to employ the full arsenal of protectionist policies (tariffs, quotas, export subsidies, etc.) is substantially constrained if the country is a member of the WTO.[16] In the absence of these unilateral trade policies, we argue, governments may pursue WTO cases as an alternative way to address domestic protectionist pressures in times of currency appreciation. In short, we argue that the WTO provides a forum for governments facing the adverse consequences of exchange rate appreciation or overvaluation to fight currency wars by other means.

Analytic framework and hypotheses

In line with the aforementioned studies in the existing literature, our argument begins with the assumption that changes in the level of the exchange rate increase domestic political pressure on governments to adopt protectionist trade policies. As illustrated by the rich literature on endogenous protection, political economy scholars have long recognized that politicians face a tension between pursuing free trade – in order to maximize aggregate social welfare – and responding to pressure by organized firms/sectors to provide protection against competition from foreign producers. Consider the classic "political-support" function by Grossman and Helpman (1994):

$$G = \sum_{i \in L} C_i(\mathbf{p}) + aW(\mathbf{p}) \qquad a \geq 0 \tag{1}$$

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[16] The same is true of membership in preferential trading agreements (PTAs). This relationship is explored in Copelovitch and Pevehouse 2011. In this paper, however, we only explore the WTO side of this constraint.

where *W* represents aggregate welfare, comprised of aggregate income plus trade tax revenue plus total consumer surplus; *C* represents the sum total of campaign contributions from the set of organized economic sectors (*L*) lobbying for protection; and *a* is the relative weight that the policymaker places on aggregate welfare/free trade. In this "endogenous protection" model, an office-seeking government trades off "votes" (gained by implementing free trade policies aimed at maximizing *W*) against "campaign contributions" (gained by providing protection to organized sectors lobbying for protection), in order to maximize its prospects of re-election.[17] Kono (2006) presents a revised version of the model that introduces the idea of multiple avenues of protection: tariffs, quality non-tariff barriers (NTBs) or core NTBs (such as quotas). Our own theory proceeds in this spirit, but adds the possibility of WTO filings as a way to provide support to import-competing industries. While importers may have specific preferences on the form of relief given, we note that the WTO places limits on the ability to enact some of these methods of protection and raise the risks of others.

Thus, our central argument is that both exchange rates and international trade commitments – specifically, in this paper, WTO membership – alter the decision-making calculus of a government in this framework. First, exchange rate appreciation undermines domestic producers' competiveness in world markets and increases sectoral lobbying for protectionist trade policies. This means that the government has stronger incentives to cater to organized sectors lobbying for protection. Returning to equation (1), this logic can be stated more formally: $a_{apprec} < a_{deprec}$, where the subscripts refer to the relative level of the exchange rate. In other words, governments should, all else equal, place less weight on aggregate social

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[17] The endogenous protection literature embodying this type of approach is vast. See, e.g., Stigler 1971, Hillman 1982, Baldwin 1985, Brock et. al. 1989, Trefler 1993, and Gawande and Krishna 2003.

welfare and more on sectoral demands for protectionism when the exchange rate is more appreciated and a larger number of sectors face competition from foreign producers. Second, since appreciation also increases consumers' purchasing power (by lowering the price of imported goods in local currency terms), it becomes possible for the government to increase the weight assigned to campaign contributions/trade protection (C) without reducing aggregate welfare (W) by an equal amount. In other words, increased trade protection reduces the consumer surplus portion of W, but this decline is – at least partially – offset by the positive wealth effect on aggregate income resulting from exchange rate appreciation. Consequently, the government can reduce the value it places on a (the weight assigned to free trade policies) without reducing aggregate social welfare by an equal amount. In less formal terms, a government will find it easier to increase sector-specific trade protection when the exchange rate is more appreciated, since consumers are less likely to notice the resulting price increases on specific goods when these increases are offset by the general wealth effect of a more appreciated currency.

Exchange rate appreciation thus increases the *willingness* of the government to provide sector-specific trade protection at the expense of aggregate welfare-enhancing free trade policies. Of course, such appreciation will obviously increase the demand for protection from import competing industries, which find themselves less competitive due to exchange rate issues. In the terms of the model, C should be increasing in the relative appreciation of the exchange rate. This increase in the demand for protection, however, becomes problematic if the government's ability to supply protection to organized domestic interests is constrained by its commitments to trade liberalization through membership in international institutions. In Grossman and Helpman terms, the "menu of protection" offered to contributors by politicians is limited. In particular, if the country is a member of the WTO, a wide variety of national trade policies – including tariffs,

non-tariff barriers, and export subsidies – become potentially far more costly to the government.

Consequently, even if policymakers are willing to provide protection at the expense of voters'

aggregate welfare, their ability to do so – either in the form or amount desired – may be highly

constrained.[18]

Faced with this constraint on its ability to meet domestic demands for protection, an

office-seeking government has several options. First, it can seek alternative unilateral policies as

substitutes. For example, if policymakers can no longer employ industrial tariffs at previous

levels, they may impose anti-dumping measures (AD), regulatory barriers, or other domestic

policies that are either authorized under WTO rules or outside the scope of the multilateral trade

regime. Of course, adoption of these policies risks retaliation within the WTO framework. AD

and countervailing duties (CVDs) often bring claims at the WTO by the targets of these policies,

in addition to setting off rounds of potential retaliation. Second, the government could

deliberately flout its WTO obligations by pursuing illegal trade policies, such as raising tariffs on

select goods. But, similar to the use of safeguards or standards to create protection, the country

faces a risk of finding itself accused of violations by its trading partners within the WTO's

dispute settlement mechanism.[19]

Finally, the government can pursue trade policy at the international level by filing cases

within the WTO's dispute settlement mechanism in an attempt to offset the negative effects of

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[18] Grossman and Helpman (1994) anticipated this tension between endogenous protection and international commitments to free trade, though its implications have not, to our knowledge, been explored in the literature: "One can easily imagine changes in the international rules of the game that would affect government's willingness and ability to protect particular sectoral interests but would not affect politicians' weighting of campaign contributions relative to general voter dissatisfaction" (834).

[19] We note that the line between these first two options in often unclear. For example, the March 2002 steel tariffs imposed by the Bush administration were justified under Section 201 of Trade Act of 1974, which allows the government to temporarily protect a domestic industry that is suffering from a surge in imports. While Section 201 is a legal opt-out under the GATT/WTO system, the tariffs were deemed illegal by the WTO in 2003 on the grounds that they were not imposed during an import surge. The Bush administration subsequently lifted the tariffs in December 2003.

currency appreciation on the international competitiveness of domestic producers. Of course, WTO filings take time to prepare and can much longer to work their way through the WTO dispute system. In that time, exchange rates may adjust or global macroeconomic conditions might change. For these reasons, filing a WTO case is not necessarily a perfect *economic* substitute for immediate and direct unilateral protectionism. WTO filings, however, may yield similar *political* benefits for the government, which can credibly claim to be pursuing the interests of organized domestic sectors to the best of its ability under the constraints imposed by the country's international trade commitments. Indeed, by having this on the menu of options for contributors, politicians can accomplish two goals.

First, consistent with Grossman-Helpman, WTO filings allow politicians to "do something" about the exchange rate issue. Again, even a victory in the WTO filing would not diminish the overall economic effects of an appreciate exchange rate and would only directly help the specific industries targeted in the WTO filing, it is a broader political act, signaling to firms that the government is aware of the problem and is taking action. Second, such an action can represent something of a "steam valve" for a state. That is, rather than undertake significant unilateral policy initiatives that will lead to retaliation by other states, WTO filings, while still costly, legalize the dispute process over exchange rate policy. This legalization avoids run-away retaliation on tariffs, safeguards, or competitive devaluations. By shifting the dispute to the WTO dispute settlement procedure, states signal their displeasure with policy, yet do so in a way does not threaten the underlying fabric of economic cooperation. In this vein, our argument is consistent with those who have championed the idea of legalism in international institutions (Goldstein, Kahler, Keohane, and Slaughter 2000). By legalizing a dispute through a formal institution, one can simultaneously signal to domestic and international audiences one's

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displeasure towards policy, yet also avoid a spiral of conflict that can undermine cooperation. In the WTO-currency case, that is an especially important dynamic since there is no international institution regulating currency policy.

In sum, exchange rate appreciation, because it puts firms in the tradables sector at a competitive disadvantage internationally, leads to domestic pressure on politicians to respond with some form of protection. For WTO members, options to respond with unilateral protection are limited and bring some international risk. Thus, to simultaneously placate domestic demands and maintain their multilateral trade commitments, governments in such situations will be more likely to file a WTO dispute.

In the remainder of this paper, we explore whether governments do pursue such substitution of WTO trade disputes for unilateral protection in the face of exchange rate appreciation. Specifically, we test the following hypothesis linking exchange rates to the initiation of WTO disputes.

- *H1:* Countries with more appreciated/overvalued exchange rates are more likely to file WTO disputes

Although we expect this logic linking exchange rate appreciation to WTO filings to hold generally, two important caveats are in order. First, we acknowledge that the degree to which we should observe a link between exchange rates and trade protection will certainly vary cross-nationally and over time, based on a variety of factors including: overall trade dependence, the political importance of different sectors, and industry-specific sensitivities to exchange rate movements. For example, as Broz (2010) illustrates, firms are more likely to increase demands for protection when they produce standardized products for which exchange rate pass-through is high. We find this initial evidence compelling and believe that it suggests some governments

will face greater protectionist pressures during episodes of exchange rate appreciation than others. Our point is simply that, regardless of the precise degree of industry-specific sensitivity to exchange rates in a particular country, *aggregate* protectionism should increase in all countries when the currency appreciates.

Second, as indicated above, we note that our argument is *not* a claim that filing a WTO case is a perfect substitute for unilateral trade policy. Indeed, WTO filings do not provide timely relief to domestic producers hurt by exchange rate appreciation, given the long duration of many cases and the questionable material effects of any relief measures authorized in the wake of a victory in the WTO adjudication process. This concern about the degree to which WTO cases and unilateral protectionism are substitutes is valid, since governments may not reap the political benefits of trade protection if the firms or sectors favoring it do not themselves reap the material economic benefits, or if they have to wait a substantial period of time to realize these gains. Nevertheless, we believe that this is not a problem that is unique to WTO filings: even domestic trade policies such as anti-dumping measures or tariffs may not provide interested domestic producers with the expected benefits, either because of retaliatory policies of a country's trading partners or because protectionist policies may have indirect effects (e.g., inducing changes in the inward direct investment decisions of international producers) that offset the material gains of trade protection (Broz 2010, Grilli 1988). Moreover, given the fact that the alternative unilateral policy options available (e.g., anti-dumping provisions, deliberate violations of WTO rules) may be equally or more unattractive or ineffective, governments may view filing a WTO case as a "least worst" option given the circumstances. Finally, we note that these shortcomings of WTO filings actually work against our argument, which strengthens rather than weakens our empirical findings in the remainder of the paper.

Empirical analysis

Research design

In designing our empirical analysis, we follow the recent empirical literature on WTO dispute initiation in adopting a directed dyad "gravity model" approach (e.g., Bernauer and Sattler 2010, Blodgett Bermeo and Davis, 2009, Busch 2000). Our dataset includes all directed WTO member-state dyads from 1995 to 2006. Each dyad appears twice in the dataset, since the dependent variable, *Complaints*, measures not only the number of trade disputes within the dyad, but also which country was the complainant and which was the respondent (defendant). We restrict the analysis to this period, given missing data on our key explanatory variables from 2007 onward. As in past studies, we treat the European Union as a single actor, because its members pursue a common trade policy within the WTO. We also follow the existing literature in our coding of a WTO dispute: a dispute initiation is coded as such if a formal request for consultations under the WTO dispute settlement mechanism was made, and multi-country are split into dyads.[20]

In this dyadic analysis, we estimate both negative binomial and zero-inflated Poisson (ZIP) regression models using a cross-sectional dataset of 1995-2006 averages for the explanatory variables and the cumulative sum of disputes within each dyad for that period.[21] As Bernauer and Sattler (2010) demonstrate, a cross-sectional approach alleviates the severe "excess zeros" problem – the large number of non-events – one confronts when analyzing WTO dispute data. The excess zeros problem arises for two reasons: 1) many WTO member-states don't trade

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[20] See www.wto.org/english/tratop_e/dispu_e/dispu_e.htm.
[21] Our results are substantively identical using a standard negative binomial model. However, diagnostics indicate that the ZIP model is a better fit. We also tested a zero-inflated negative binomial (ZINB) specification and found that the ZIP was a superior fit, given that nearly all of the overdispersion in the dependent variable was the result of the excess zeros problem. For reasons of space, these diagnostics and alternative specifications are omitted here but included in the reviewer's appendix.

with each other (i.e., dyadic trade equals zero), and 2) most WTO member-states have never participated in a WTO dispute. In the time-series cross-sectional data, WTO disputes occur (i.e., *Complaint*>0) in only 570 country-year directed dyads out of 337,732 observations (0.17%). Collapsing the data into a 1995-2006 cross section alleviates but does not entirely eliminate the excess zeros problem: disputes occur in 135 directed dyads of 7,971 observations (0.80%).

The ZIP model further addresses the excess zeros problem statistically by analyzing the data in two stages. The first stage of zero-inflated models (the inflation equation) uses a binary logit model to estimate whether a dispute is possible (i.e., whether there is a positive probability of a dispute) within a dyad. The second stage (the count equation) accounts for variation in the number of disputes initiated among those dyads that have a nonzero probability of a dispute. This approach has statistical and theoretical advantages over a standard event count model, such as the Poisson or negative binomial. Statistically, the ZIP model distinguishes between "zero dyads" in which the probability of a dispute is "always" zero – either because the countries do not trade with each other or because they are not active participants in the WTO dispute settlement system – and those in which a dispute is possible but not realized. Theoretically, the ZIP model more closely fits with the literature's current understanding of the politics of WTO dispute initiation, in which many WTO member-states simply do not participate in the dispute settlement system because they lack the resources/capacity or trade very little with other member-states.

Variables

Our dependent variable, *Complaints*, is a count of the total number of disputes within each directed dyad during the 1995-2006 period. In our sample, disputes occur in 135 of 7,971

directed dyads (4585 undirected dyads), with the maximum number of disputes totaling 31 (European Union – United States).   As Table 2 illustrates, these cases are extremely skewed toward a small set of advanced industrialized and large emerging market countries. Indeed, the top twenty directed dyads (ranging from five to 31 WTO complaints) all involve either the United States or European Union and include only nine countries (European Union, United States, Canada, Japan, Brazil, India, Mexico, South Korea, Argentina) in total.

[Table 2 about here]

In our sample, 71 of the 135 nonzero directed dyads experienced only one dispute during the 1995-2006 period, while 17 directed dyads experienced two disputes, and the remaining 47 experienced three or more disputes.

Our key independent variable of interest is *Exchange rate level*, the level of the real exchange rate between the potential complainant ("country A") and the potential defendant ("country B") within each dyad. We measure the level of the exchange rate in three different ways. First, we calculate *Real exchange rate*, which is an index of the bilateral real exchange rate (country's A's currency in terms of country B's, controlling for inflation in each country) within each dyad, normalized such that the 1995 level equals 100. The variable enters the regressions as a natural log. In our cross-sectional analysis, this variable therefore measures the percentage appreciation or depreciation of the real exchange rate within each directed dyad.   We calculate *Real exchange rate* using data on nominal exchange rates (local currency per US dollar) and inflation from the World Bank's *World Development Indicators*. The advantage of *Real exchange rate* is that it is a readily available and direct measure of the exchange rate level within dyads. The disadvantage is that a particular value, on its own, does not tell one whether a currency is over- or undervalued relative to its past levels. For example, the US-China real

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exchange rate index for the 1995-2006 period is 85.25, suggesting that the US dollar is relatively depreciated while the renminbi is relatively appreciated (accordingly the China-US real exchange rate index for the period is 117.39). These values, however, do not capture the widespread belief that the renminbi would appreciate quite substantially if it were allowed to freely float against the dollar.

In short, *Real exchange rate* does not measure the degree of over- or undervaluation of a country's currency relative to its trading partners. Consequently, we calculate two additional variables, *Undervaluation A* and *Undervaluation B*, as alternative measures of the dyadic exchange rate level. Each of these variables measures whether or not a country's currency is over- or undervalued, based on deviations from long-run purchasing power parity (PPP). Following Rodrik (2008), we use data on nominal exchange rates (XR) and PPP conversion factors to calculate a country's "real" exchange rate:

$$\ln(RER_{it}) = \ln(XR_{it} / PPP_{it})$$

where i is an index for countries and t is an index for 5-year time periods. Both the nominal exchange rate and PPP are expressed as currency units per US dollar, with data taken from the Penn World Table 6.3 (Henson et. al. 2009). In this formulation, a currency is undervalued relative to PPP when RER exceeds one. We then correct this real exchange rate variable for the Balassa-Samuelson effect – the fact that price levels vary with a country's level of development, since non-tradable goods tend to be cheaper in poorer countries – by regressing it on real GDP per capita (Balassa 1964, Samuelson 1964):

$$\ln(RER\_BS_{it}) = \alpha + \beta(\ln RGDPPC_{it}) + f_{it} + u_{it}$$

where f is a time period fixed effect and u is the error term. Finally, we take the difference between the actual real exchange rate and the Balassa-Samuelson-adjusted rate:

$$\ln(\textit{Undervaluation}_{it}) = \ln(\text{RER}_{it}) - \ln(\text{RER\_BS}_{it})$$

These calculations enable us to compare values of *Undervaluation* across time and space. When the variable exceeds a value of one, the currency is undervalued, indicating that goods produced domestically are cheap in dollar terms. Conversely, when the variable is less than one, the currency is overvalued. Once again, the dollar-renminbi comparison is illustrative: the 1995-2006 average value of *Undervaluation* for the dollar is 0.63, while the corresponding value for the renminbi is 1.56. Thus, while the RMB has appreciated in real terms since 1995, it remains significantly undervalued relative to PPP.

In addition to testing the separate, country-specific levels of *Undervaluation*, we also calculate a final measure of the exchange rate level, *Undervaluation gap*, which is the difference between *Undervaluation B* and *Undervaluation A*. Within dyads, this variable most directly measures the degree of trade-related exchange rate tensions between countries, since it gauges the degree to which exchange rate levels affect the price of each country's tradable goods in global markets.

In order to ensure that our models capture the effect of "normal" movements exchange rate levels – rather than severe shifts in levels caused by financial/currency crises or hyperinflation – we exclude observations in which a country's exchange rate is "freely falling" according to the Reinhart-Rogoff *de facto* classification of exchange rate regimes (Reinhart and Rogoff 2004). In this framework, a currency is classified as freely falling if a country is experiencing hyperinflation (a twelve-month annualized inflation rate in excess of 40%), or if the currency has "crashed" (a 12.5 percent monthly depreciation that is at least 10 percent above the

previous month's depreciation) during any month in the past year (Reinhart and Rogoff 2004;

Frankel and Rose 1996). We also exclude cases in which a country employs multiple exchange

rates or has substantial parallel ("black") market exchange rate activity.[22] Finally, we exclude

cases where the real exchange rate takes values lower than 10 (i.e., a 90% decline in the real

exchange rate from 1995 to 2006) and higher than 1000 (i.e., a 1000% increase in the real

exchange rate). While our results are substantively unchanged when including these outlier

observations, our goal is to isolate as clearly as possible the effects of changes in the terms of

trade resulting from exchange rate fluctuations from more severe pressures stemming from

financial crises, inconvertible currencies, and hyperinflation.

Along with the three measures of our key explanatory variable, *Exchange rate level*, we

also include variables to capture each country's exchange rate regime choice, in order to ensure

that our measures of the exchange rate level are not simply capturing differences in regimes

within dyads. As our measure of *Exchange rate regime*, we employ the widely-used *de facto*

classification developed by Reinhart and Rogoff (2004), who utilize deviations from official

announcements, data on parallel (black market) and official dual exchange rates, reserve

movements, and detailed country chronologies to code *de facto* exchange rate regimes.[23]

Specifically, we use the RR 5-point "coarse" classification as our primary dependent variable.

We do not have strong theoretical expectations on the direction of influence of the exchange rate

regime on states' WTO filing behavior. On the one hand, countries with more fixed regimes

may be less likely to initiate WTO disputes, given that trade disputes and protectionism directly

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[22] Freely falling cases correspond to a "5" on the Reinhart-Rogoff (2004) coarse classification scale, while dual/parallel rate cases correspond to a "6".

[23] Using this data, RR create a 15-point scale of exchange rate regimes, which they then aggregate into a coarse 5-point scale (fixed, narrow crawling peg/band, wide band/managed floating, freely floating, freely falling). The classification is based on the conditional probability that the exchange rate stays within a given range over a rolling five-year window. Thus, RR's index allows for a degree of monthly volatility within the same annual classification of exchange rate regimes.

undermine one of the key benefits of pegging the currency – ensuring stability in international trade and exchange. Moreover, fixed exchange rates, by definition, are associated with less exchange rate volatility, which can affect the terms of trade and trigger protectionist pressures. On the other hand, since adopting a currency peg entails relinquishing monetary and fiscal policy autonomy, governments that have adopted pegs may be more likely to resort to protectionist trade policies – including WTO dispute initiation – in an effort to address balance of payments deficits and economic stagnation. We remain agnostic on which of these potential effects will be stronger and more significant, leaving this as an empirical question to be tested below. It turns out, as we discuss below, that the latter effect predominates: countries with flexible exchange rate regimes are significantly less likely to initiate WTO disputes and significantly less likely to be filed against by their trading partners.

Control variables

In addition to the variables measuring exchange rate levels and regime choices, we incorporate a range of control variables drawn from the literature on the political economy of WTO disputes.[24] As discussed earlier, the main explanations in the existing literature on the political economy of WTO dispute initiation emphasize "gravitation" and "discrimination" effects (Sattler and Bernauer 2010, Busch et. al. 2009, Horn et. al. 2009, Allee 2008, Kim 2008, Bown 2005, Guzman and Simmons 2005, Shaffer 2003): countries that trade more with each other, along with those that are richer and more powerful, are more likely to initiate disputes within the WTO. This pattern is clearly evident from Figure 1, which graphs the most frequent WTO complainants from 1995 to 2008.

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[24] As with the exchange rate variables, each of these control variables is the period average over the 1995-2006 period.

As is evident, advanced industrialized countries and large, emerging market states have overwhelmingly initiated WTO disputes since the institution's inception in 1995. This pattern is also reflected in the dyadic data, where the vast majority of nonzero dispute dyads consist of these same countries.

In line with these findings, we incorporate several variables measuring the potential effects of both gravitation and discrimination. To control for gravitation effects, we introduce *Dyadic trade*, the log of total dyadic trade (the product of imports from A to B, and vice versa), along with variables measuring the log of economic size (*GDP A*, *GDP B*) for each country within the dyad. In addition, we include two variables (*Percent total trade A*, *Percent total trade B*) measuring the degree to which a country is trade-dependent on the other country within a dyad. These variables control for the fact that, even if absolute dyadic trade is large, two countries may not be each other's largest trading partners. These latter two variables measure the share of dyadic trade as a percentage of country A or B's total international trade. Trade data is taken from the *Correlates of War* Trade Dataset (Barbieri et. al. 2008/9). In the literature, the standard expectation is that higher values of *Dyadic trade, GDP A,* and *GDP B* will be associated with a larger number of *Complaints*. The expectation with respect to *Percent total trade A* and *B* is less clear, however. These variables may capture further gravitation effects and be associated with increased WTO disputes; alternatively, countries might be less likely to file disputes against their largest trading partners, for fear of disrupting trade flows within these key dyads.

To control for discrimination effects, we introduce *GDP per capita A* and *GDP per capita B* (expressed as natural logs) for both potential complainants and respondents. All else equal, we expect richer countries to be more likely to initiate WTO disputes. The key reason for

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this, as identified in the literature, is legal capacity: poorer states frequently lack the resources and expertise to successfully initiate and litigate WTO disputes (Horn et. al. 1999, Bown 2005, Kim 2008, Busch et. al. 2008). Following Sattler and Bernauer (2010), we also include *Power asymmetry*, the absolute value of *GDP A* minus *GDP B*. They find that *Power asymmetry* – independent of separate measures of country size based on GDP – is significantly and negatively associated with WTO dispute initiation, suggesting that larger and more powerful countries are able to "impose their will on smaller countries outside the WTO," thereby reducing the likelihood of disputes (Conybeare 1985, Guzman and Simmons 2005).[25] Data on both GDP and GDP per capita are taken from the World Bank's *World Development Indicators*.

Finally, we add three further controls drawn from the existing literature. First, we control for regime type in each country, given the robust finding in the literature that democratic institutions have a positive effect on WTO dispute initiation (Reinhardt 1999, Busch 2000, Allee 2004, Rosendorff 2005, Davis and Blodgett Bermeo 2009). As in these past studies, we control for this by introducing *Polity A* and *Polity B*, the Polity scores of each country within a dyad (Marshall et. al. 2002). Second, we include a variable, *Retaliation*, to control for the finding that countries are more likely to initiate disputes against states that have previously filed against them (e.g., Davis and Blodgett Bermeo 2009); this variable is a dummy variable that takes a value of "1" if the defendant country (country B) initiated a dispute against the complainant (country A) during the same or the previous year, and 0 otherwise. Finally, we also control for the fact that the risk of becoming involved in a WTO dispute increases the longer a country is a member of the multilateral trade regime. Following Bernauer and Sattler (2010), we include *Exposure time*,

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[25] In alternative models, we tested whether the simple difference in relative power (GDP A – GDP B) influenced disputes; similarly, we also tested whether income disparities (GDP per capita A – GDP per capita B) influenced WTO filing behavior. Like Sattler and Bernauer, these variables are insignificant in our models. Results available on request.

the log of duration (years) of the complainant's WTO membership.[26][27]

Model specifications and results

We start with a series of negative binomial models estimating the expected number of trade disputes initiated by country A in each directed dyad during the 1995-2006 period (King 1988). Table 3 presents these results in Models 1-3, which include our three different measures of *Exchange rate level*. In Models 4-6, we re-estimate the models using the two-stage zero inflated Poisson (ZIP) model to account for the extreme number of "zero dyads" in the data.

[Table 3 about here]

The first ("inflation") stage is a logit model estimating whether there is a nonzero probability of a dispute within a given directed dyad; the second-stage ("count") equation, in turn, estimates the number of *Complaints*, conditional on the probability that the dyad is not "always zero." In the inflation equation, we include all of the control variables, including *Exposure time*. This variable is omitted from the count equation, since our expectation is that WTO member-states are less likely to be part of a zero dyad over time (i.e., the possibility of a dispute exists) but not necessarily more likely to be involved in a larger number of actual disputes. Finally, we include the exchange rate variables only in the second stage of the ZIP model, since these factors are likely to be dispute-promoting factors within dyads where there is already a non-zero probability of a dispute. In all of the models, robust standard errors are clustered by dyad.

Both the standard count and zero-inflated models in Table 3 provide strong support for our argument linking exchange rate levels to variation in WTO filing behavior. Broadly the

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[26] Since this variable is not significant in any of the specifications, we omit it from the results presented in Table 3.
[27] See Table 1 for summary statistics for all of the variables included in our analysis.

results are similar across both sets of models. *Real exchange rate* is positive and significant in both the negative binomial (Model 1) and ZIP (Model 4) specifications, indicating that a more appreciated real exchange rate is associated with a higher number of WTO dispute initiations. In Models 2 (negative binomial) and 4 (ZIP), where we replace *Real exchange rate* with each country's level of *Undervaluation*, *Undervaluation B* is positive and significant, indicating that countries are more likely to initiate disputes against trading partners with more undervalued currencies. However, *Undervaluation A* is not significant in either the negative binomial or ZIP models, indicating that a country's own level of undervaluation, on its own, has no significant effect on WTO filing behavior. Finally, *Undervaluation gap* – the difference between *Undervaluation B* and *Undervaluation A* – is positive and significant in the ZIP model (Model 6). This result indicates that countries are more likely to initiate disputes against trading partners whose currencies are relatively more undervalued.

While the results are broadly consistent across both the standard and zero-inflated models, the ZIP models offer a significantly better fit than the negative binomial specification.[28] In particular, the negative binomial model significantly underpredicts "0" observations in the data, while also significantly overpredicting "1" observations (Figure 2).

[Figure 2 about here]

In contrast, the ZIP model, with its two-stage approach to treating "excess zeros," fits the data much more closely. As a result, we focus in the remainder of the analysis on the results in Models 4-6 from Table 3.

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[28] Figure 2 graphs observed vs. predicted values for Models 3 and 6 in Table 3 (the specifications including *Undervaluation gap*), along with observed vs. predicted values for a standard Poisson regression using the same variable specification.

In addition to providing strong support for our argument linking exchange rate levels to WTO dispute initiation, the analysis also suggests that exchange rate regime choices play a key role in determining states' WTO filing behavior. Across all three ZIP models, *Exchange rate regime A* is negative and significant, indicating that countries that have adopted more flexible exchange rates are less likely to initiate WTO disputes; likewise, in Model 4, *Exchange rate regime B* is also negative and significant, providing some evidence that a potential defendant's exchange rage regime choice also influences a complainant's decision to initiate a dispute. Thus, while our theoretical expectation was indeterminate on the exchange rate regime, the evidence strongly suggests that the adoption of fixed exchange rates – on both sides of WTO trading dyads – significantly increases the frequency of trade disputes. In our view, this result suggests that governments that have tied their hands on monetary and fiscal policy in order to maintain a currency peg are more likely to resort to protectionist trade policies – including WTO dispute initiation. This result also fits well with the analysis of Copelovitch and Pevehouse (2012), who find that this policy substitution between trade and exchange rate policies also operates in the other direction: countries that have tied their hands on trade policy through regional and preferential trade agreements are less likely to adopt fixed exchange rates. Together, these findings strongly suggest that governments are unwilling to completely relinquish all of their macroeconomic policy tools simultaneously. Those that have tied their hands more extensively on trade policy through international agreements are less likely to relinquish monetary autonomy, while those that have made strong commitments to fixed exchange rates are more likely to use trade policy as a policy lever.

As expected, the results for the control variables in our models also reinforce past findings in the literature concerning the importance of gravitation effects on WTO dispute

initiation. Dyadic partners that trade more with each other (*Total trade*) are significantly more likely to experience trade disputes, as expected by the gravitation logic. *Total trade* is also weakly negative (90% confidence level) and significant in the inflation equation of Model 4, suggesting that more trade within dyads reduces the likelihood of being an "always zero" dyad. On the other hand, countries appear less likely to initiate disputes against their most important trading partners: *Percent total trade A*, the variable measuring country A's trade with its dyadic partner as a share of its total trade, is negative and significant in the second (count) stage of each ZIP model, indicating that countries file fewer cases against their largest trading partners. Likewise, *Percent total trade B* is positive and significant in inflation equation of each ZIP model; this might be evidence that potential defendants are less likely to adopt trade policies that provoke responses within the WTO dispute settlement mechanism. It might also be evidence that trade disputes between a country and its largest trading partners are pursued and settled outside of the WTO, particularly if outside options are available through shared membership bilateral and regional trade agreements (i.e., as in the case of the US and Canada and the NAFTA dispute settlement system).[29] In any case, the substantive effects of these latter variables is quite limited in comparison to the strong gravitational pull of higher trade levels within dyads: a one standard deviation increase in either *Percent total trade A* or *Percent total trade B* increase the probability of being an "always zero" dyad by only 0.14%, whereas a corresponding increase in *total trade* reduces the probability by 1.94%.

The results also mirror past findings in the literature on the influence of country size (GDP), democracy (Polity scores), wealth (GDP per capita), and power asymmetries on WTO dispute initiation. In the negative binomial specifications, each of these variables is significant in

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[29] Including a dummy for PTAs within dyads does not alter this basic result, however. However, the PTA dummy is negative and significant in some specifications, providing further evidence that this logic may be at work.

the expected direction. The results from the ZIP models, however, suggest that these factors matter primarily at the inflation stage rather than in the count stage. In other words, these variables play a key role in determining whether a dyad is an "always zero" dyad, but are less important as determinants of the number of disputes initiated in dyads where the probability of a dispute is greater than zero. The two exceptions to this are *Polity B*, which is positive and significant in the count stage, and *Retaliation*, which is negative and significant in the inflation equation but positive and significant in the second stage. Thus, countries initiate more disputes against democratic trading partners, while past experiences as a defendant make a country both less likely to be part of an "always zero" dyad and lead it to initiate more disputes.

In order to assess the robustness of these findings, we have conducted extensive checks of alternative model specifications. These include: the addition of dummies for dyads containing the United States or European Union; the substitution of the IMF's *de jure* measure of exchange rate regime for the Reinhart-Rogoff measure; and the re-estimation of our models using the full time-series cross-sectional sample from 1995-2006, rather than the period cross-sectional averages. In each of these specifications, the basic significance and magnitude of the coefficients on *Exchange rate level* are unchanged. For reasons of space constraints, we have confined these results to the online appendix, focusing in the remainder of the paper on the core results from Table 3.

Substantive quantities of interest

Tables 4a and 4b illustrate the substantive meaning and interpretation of these results, both for the exchange rate variables and the significant control variables. In Table 4a, we

calculate the effect of one-standard deviation changes in each significant variable in the first-

stage (inflation) equation of Model 4, the ZIP model using *Real exchange rate*.

[Tables 4a and 4b about here]

The predicted values indicate that the single largest factor determining whether a dyad has a

nonzero probability of a dispute is *Retaliation*. A one standard deviation increase in *Retaliation*

reduces the probability that a dyad has a zero probability of a dispute by 10.54%. Trade ties,

country size, and regime type also have significant effects on whether or not a dyad is "always

zero," although their effects are substantially smaller.

Table 4b presents the corresponding substantive effects of the significant variables in the

second-stage (count) equation of Model 4.[30] We first calculate the predicted number of WTO

disputes with all variables set at their sample means except for *Total trade*, which we set at its

mean, 1.5 standard deviations above its mean, and 3 standard deviations above its mean. These

levels correspond to the following dyads, in terms of trade ties: Switzerland-Mali, Brazil-India,

and China-Japan. Two facts are immediately visible from these predicted values. First, WTO

disputes are an extremely rare event in all by the largest trade dyads, as previously illustrated in

Figure 1 and Table 2; indeed, even relatively large emerging market countries, such as Brazil and

India, rarely engage in trade disputes. Second, the gravitational effects of *Total trade* are

extremely strong: moving from the mean level of dyadic trade to 1.5 standard deviations above

increases the predicted number of disputes by a factor of 85 (0.0002 to 0.017 disputes during the

1995-2006 period), while moving from 1.5 to 3 standard deviations increases the predicted

number of disputes by a further factor of 61 (0.017 to 1.04 disputes). Thus, as reflected in the

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[30] The predictions for *Undervaluation A*, *Undervaluation B*, and *Undervaluation gap* use Models 5 and 6 in Table 3, respectively.

existing literature, the bedrock gravity model of trade is an extremely useful framework for analyzing the incidence of WTO dispute initiation.

Given this severe skew in the distribution of WTO trade disputes, the high trade column of Table 4b ("China-Japan") most clearly illustrates the substantive impact of exchange rates on dispute initiation. In this column, all three measures of *Exchange rate level* have large and meaningful effects on the incidence of WTO disputes. A one standard deviation increase in *Real exchange rate*, for example, increases the predicted number of *Complaints* by 0.70, a 67% increase over the predicted number of disputes (1.04) with all variables but *Total trade* set at their sample means. Likewise, a one standard deviation in *Undervaluation B* increases the predicted number of *Complaints* by 0.38 (a 37% increase), while the corresponding change in *Undervaluation gap* increases the predicted number of *Complaints* by 0.45 (a 43% increase). Moreover, these effects of *Exchange rate level* are large not only in absolute terms, but also in relation to the other significant control variables. Indeed, only *Retaliation* stands out as a significantly more important determinant of WTO dispute initiation; as in past studies (e.g. Davis and Blodgett Bermeo 2009,, Sattler and Bernauer 2010), past experience as a defendant is the single largest determinant (aside from dyadic trade) of the frequency of dispute initiation within dyads. Finally, Table 4b also illustrates that the substantive impact of countries' exchange rate regime choices is also large: a one standard deviation increase in *Exchange rate regime A* – corresponding to a move from a "2" (soft peg) to a "3" on the Reinhart-Rogoff scale – reduces the number of *Complaints* by 0.22, while the same change in *Exchange rate regime B* has a similarly large effect (-0.28).[31]

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[31] For comparison, a full shift of *Exchange rate regime A* from a hard peg (1 on the Reinhart-Rogoff scale) to a free float (4) reduces the predicted number of *Complaints* by 0.88, an 85% reduction.

In sum, our analysis provides robust evidence that both exchange rate levels and regime choices are significant factors explaining variation in the incidence of WTO disputes. More importantly, the results indicate that the substantive impact of these variables is at least as large as many of the variables previously identified in the literature as key determinants of WTO dispute initiation. Thus, while gravitation and discrimination effects are clearly important factors shaping countries' behavior within the WTO dispute settlement mechanism, tensions arising from exchange rate movements and policy choices are also critically important. In short, the recent focus on "currency wars" in the media is not an anomaly or a new development in the wake of the Great Recession. Rather, the effects of exchange rates on the terms of trade have been a key determinant of trade tensions among WTO member-states since the institution's founding in 1995. In short, WTO disputes are simply the extension of the "currency wars" by other means.

Conclusions

Despite the clear importance of exchange rate levels on the terms of trade, models of trade policy choices in general rarely take exchange rate dynamics into account when predicting state behavior. In this paper, we have sought to address this gap in the IPE literature by exploring the relationship between exchange rate levels and regime choices and the initiation of WTO trade disputes. We argue that changes in real exchange rate levels and currency undervaluation lead to pressures on politicians to provide relief from the resulting economic pressures on firms in tradable sectors. More importantly, we note that international institutions such as the World Trade Organization constrain politicians' menu of choices concerning those relief policies, by restricting the use of traditional protectionist measures such as tariffs and quotas. The result is

that countries facing exchange rate pressures will be more likely to placate domestic demands for protection by filing WTO dispute claims. We test this conjecture on a dataset of WTO disputes from 1995-2006, and we find strong support for our argument. Using multiple measures of the exchange rate level, we find that countries are substantially more likely to file WTO complains in times of exchange rate appreciation and overvaluation.

This result strongly suggests that scholars need to pay closer attention to exchange rate dynamics when seeking to explain governments' trade policy choices – and, in particular, patterns of state behavior in WTO dispute settlement process. At the same time, our findings raise a number of important questions for future research. For example, while our findings indicate that currency appreciation increases the probability that a state will initiate a WTO dispute, they do not tell us anything about either the content of the case (i.e., sector, industry, or product) or the identity of the respondent country. Future research that focuses on such issues as exchange rate pass through and the depth/composition of trade between partners is necessary to fully understand and explain exchange rate-driven dispute patterns within the WTO. Beyond the WTO, a closer analysis of the trade-exchange rate connection could also shed light on issues related to foreign direct investment and multinational corporations. For example, persistent currency undervaluation (as in the case of China) or frequent large fluctuations in real exchange rates might strongly influence firms' production and global sourcing decisions as much – if not more – than trade barriers, differential labor costs, and variation in regulatory policies.

Finally, future work might fruitfully explore the substitutability of trade and exchange rate policies by seeking to explain why some countries have chosen to pursue retaliatory trade policies in response to currency appreciation, while others have opted instead to engage in competitive devaluations or direct "currency wars." In other words, when can effective

substitution across issue areas occur? The same broad question could be raised for institutions: when can disputes in one substantive issue area be taken to an institution (explicitly or implicitly) in another issue area, especially if no formal institutions exist in one of the issue areas? In short, more work on the complex relationship between trade and exchange rates is critical to a deeper understanding of numerous key puzzles and policy questions in the contemporary world economy.

TABLE 1 – SUMMARY STATISTICS (1995-2006 AVERAGES)

Variable	Mean	Std. Dev.	Minimum	Maximum
Complaints	0.05	0.70	0	31
Real exchange rate	115.65	97.47	10.18	999.63
Undervaluation A	1.06	0.37	0.43	2.35
Undervaluation B	1.06	0.37	0.43	2.34
Undervaluation gap (B-A)	0.01	0.53	-1.78	1.76
Exchange rate regime A	2.29	0.94	1	4.88
Exchange rate regime B	2.15	0.90	1	4.5
Total trade (imports A*import B) (log)	1.26	3.60	-23.31	12.89
Trade with B (share of A's total trade, %)	1.41	6.44	1.20E-13	76.47
Trade with A (share of B's total trade, %)	1.48	6.81	1.20E-13	76.47
GDP A (log)	17.95	1.85	13.66	23.28
GDP B (log)	17.89	1.88	13.67	23.17
Power asymmetry (|GDP A-GDP B|)	2.22	1.62	0.01	9.46
GDP per capita A (log)	8.74	1.20	5.93	11.39
GDP per capita B (log)	8.77	1.13	6.50	11.03
POLITY A	4.59	5.67	-10	10
POLITY B	4.63	5.76	-10	10
Retaliation	0.01	0.05	0	1
Exposure time (years WTO member)	1.87	0.15	1.61	2.48

N = 7971

TABLE 2 – TOP TWENTY DIRECTED DYADS, WTO DISPUTES, 1995-2006

Complaints	Complainant	Respondent
31	European Union	United States
17	United States	European Union
14	Canada	United States
9	European Union	India
8	Brazil	United States
8	Japan	United States
7	Canada	European Union
7	European Union	Argentina
7	Mexico	United States
7	United States	South Korea
7	South Korea	United States
7	Mexico	United States
7	India	United States
7	South Korea	United States
6	European Union	Japan
6	United States	Japan
6	United States	Mexico
6	Brazil	European Union
5	United States	Canada
5	European Union	Canada
5	India	European Union

TABLE 3 – REGRESSION RESULTS

Model	1	2	3	4		5		6	
Variable	Negative binomial	Negative binomial	Negative binomial	Inflation (Always 0)	Count (Poisson)	Inflation	Count (Poisson)	Inflation	Count (Poisson)
Bilateral real exchange rate AB (log, 1995=100)	0.5757** [0.2293]				0.6303*** [0.2203]				
Undervaluation A (log)		0.011 [0.3429]					-0.5026 [0.3905]		
Undervaluation B (log)		0.7981** [0.3486]					0.8653** [0.3813]		
Undervaluation (B-A)			0.3541 [0.2563]						0.6353** [0.2993]
Exchange rate regime A (Reinhart-Rogoff; 1=hard peg, 4=free float)	-0.1585 [0.1302]	-0.2716** [0.1176]	-0.3288*** [0.1174]		-0.2205** [0.1061]		-0.3597*** [0.1035]		-0.3743*** [0.0999]
Exchange rate regime B (Reinhart-Rogoff)	-0.3498** [0.1426]	-0.1009 [0.1422]	-0.1593 [0.1414]		-0.3017** [0.1354]		-0.0551 [0.1180]		-0.0884 [0.1175]
Total trade (imports A*import B) (log)	0.6975*** [0.0619]	0.7126*** [0.0607]	0.7002*** [0.0615]	-0.2752* [0.1634]	0.5180*** [0.1075]	-0.2206 [0.1788]	0.5662*** [0.1207]	-0.2504 [0.1666]	0.5379*** [0.1108]
Trade with B as a share of A's total trade (%)	-0.0228*** [0.0060]	-0.0242*** [0.0063]	-0.0242*** [0.0062]	0.0192* [0.0116]	-0.0063** [0.0030]	0.0181 [0.0117]	-0.0084*** [0.0033]	0.0186 [0.0114]	-0.0081*** [0.0030]
Trade with A as share of B's total trade (%)	-0.0338*** [0.0073]	-0.0326*** [0.0070]	-0.0328*** [0.0070]	0.0482*** [0.0119]	-0.0052 [0.0058]	0.0464*** [0.0119]	-0.0046 [0.0055]	0.0477*** [0.0118]	-0.0036 [0.0055]
GDP A (log)	0.0131 [0.0849]	0.0277 [0.0834]	0.0674 [0.0823]	-0.2283* [0.1357]	-0.1135* [0.0686]	-0.1721 [0.1313]	-0.0303 [0.0715]	-0.1824 [0.1365]	-0.0231 [0.0756]
GDP B (log)	0.2647*** [0.0691]	0.1730** [0.0684]	0.1978*** [0.0712]	-0.3996*** [0.1529]	0.0468 [0.0686]	-0.4524*** [0.1579]	-0.0714 [0.0576]	-0.4299*** [0.1556]	-0.0564 [0.0633]
Power asymmetry (|(GDP A-GDP B)|)	-0.1407** [0.0642]	-0.1358** [0.0643]	-0.1454** [0.0647]	0.2514** [0.1263]	0.0272 [0.0599]	0.2464* [0.1302]	0.0146 [0.0682]	0.2608** [0.1240]	0.0269 [0.0616]
GDP per capita A (log)	-0.3966*** [0.1452]	-0.3066* [0.1861]	-0.4093** [0.1610]	0.0957 [0.2722]	-0.2342 [0.1562]	0.019 [0.2685]	-0.3578* [0.1955]	-0.0124 [0.2703]	-0.4227** [0.1936]
GDP per capita B (log)	-0.0741 [0.1152]	0.0432 [0.1589]	-0.0832 [0.1383]	0.0609 [0.2586]	-0.0967 [0.1636]	0.0656 [0.2475]	0.0517 [0.2039]	0.1184 [0.2484]	0.0269 [0.2157]
POLITY A	0.1725*** [0.0361]	0.1878*** [0.0381]	0.1872*** [0.0396]	-0.1867** [0.0803]	0.0345 [0.0519]	-0.1758** [0.0819]	0.0567 [0.0503]	-0.1612* [0.0827]	0.0707 [0.0527]
POLITY B	0.1410*** [0.0306]	0.1403*** [0.0296]	0.1314*** [0.0283]	0.0393 [0.0621]	0.1490*** [0.0298]	0.0319 [0.0605]	0.1423*** [0.0300]	0.0238 [0.0589]	0.1322*** [0.0283]
Retaliation	3.0678*** [0.5474]	3.0500*** [0.5535]	3.0602*** [0.5484]	-4.5843*** [1.1843]	1.4648*** [0.3004]	-4.6986*** [1.1630]	1.3042*** [0.3274]	-4.6637*** [1.1783]	1.3509*** [0.2899]
Constant	-10.7627*** [3.3911]	-9.3297*** [3.5495]	-7.5473** [3.0115]	11.6157** [5.5770]	-3.0034 [3.4930]	11.4177** [5.4471]	-0.3499 [3.6070]	11.0732** [5.4977]	0.3094 [2.9838]
Observations	*7971*	*7971*	*7971*	*7971*		*7971*		*7971*	
Nonzero observations	*--*	*--*	*--*	*135*		*135*		*135*	
Number of dyads	*4585*	*4585*	*4585*	*4585*		*4585*		*4585*	
Log pseudolikelihood	*-522.272*	*-523.931*	*-524.870*	*-478.155*		*-479.795*		*-480.732*	
Alpha	*0.897*	*0.936*	*0.963*	*--*		*--*		*--*	
AIC*n	*1078.545*	*1083.862*	*1083.741*	*1012.311*		*1017.590*		*1017.464*	
McFadden's Adjusted (pseudo)R-squared	*0.420*	*0.417*	*0.417*	*0.534*		*0.532*		*0.532*	

Robust standard errors (clustered on dyad) in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%
All models include the complainant's log of exposure time (years as a WTO member)

TABLE 4A & 4B – PREDICTED VALUES, INFLATION AND COUNT STAGES (MODEL 4, TABLE 3)

Dyadic analysis, inflation equation (logit), zero-inflated Poisson (cross-sectional), 1995-2006 averages (Model 4, Table 3)
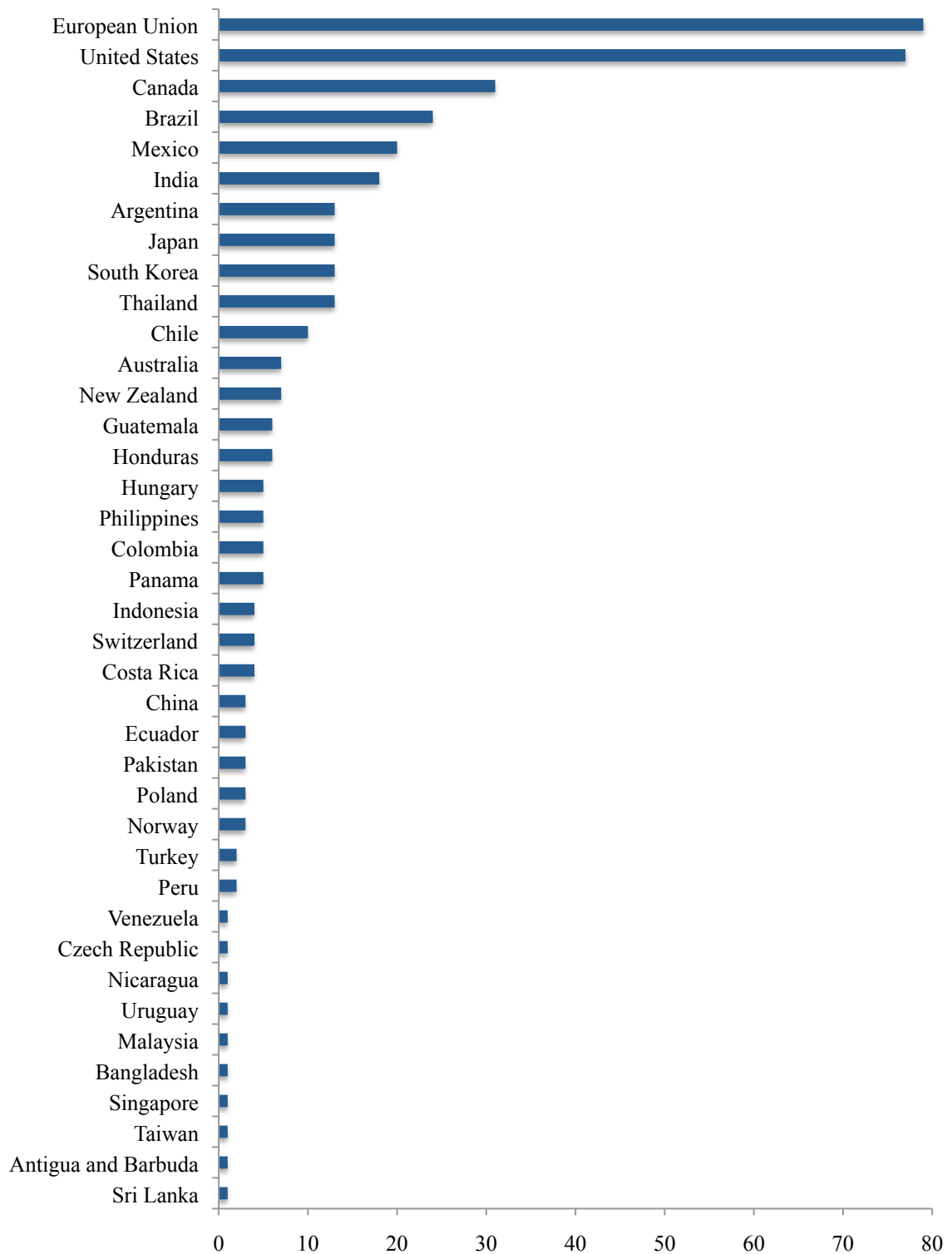
Pr(Always 0|z), all other variables at means	98.82%	
Variable	**Change in Pr(complaint=0)**	**Interpretation**
Total trade (Imports A * Imports B)	-1.94%	Australia-Bolivia to Czech Republic-Bulgaria
Percent total trade A	0.14%	1.41% to 8.05%
Percent total trade B	0.14%	1.48% to 8.28%
GDP A	-0.61%	Kenya (1998) to South Africa (1999)
GDP B	-1.30%	Kenya (1998) to South Africa (1999)
Power asymmetry (|GDP A - GDP B|)	0.39%	2.22 to 3.84
Polity A	2.00%	5 to 10
Retaliation	-10.54%	0.005 to 0.53

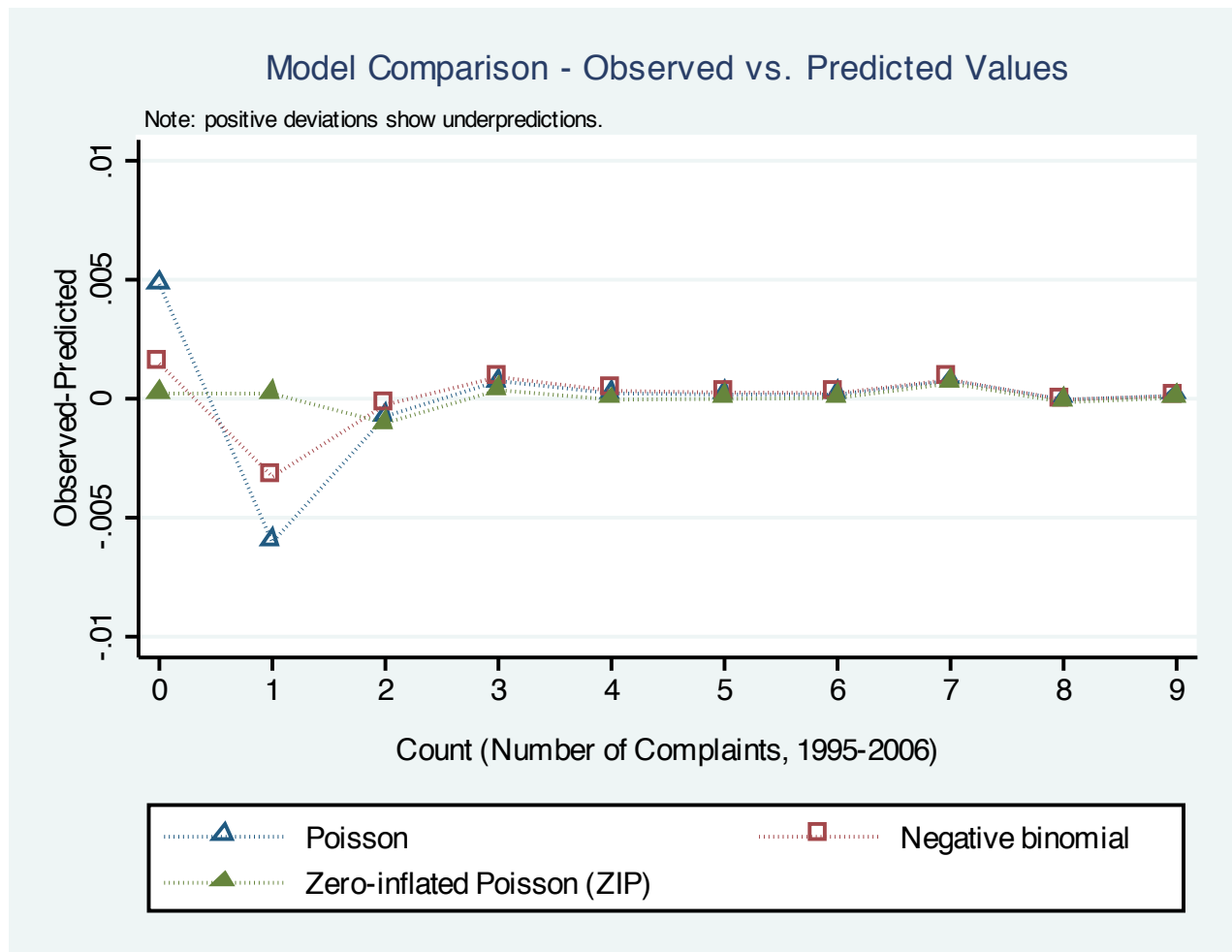**Dyadic analysis, count equation, zero-inflated Poisson (Model 4, Table 3)**

Predicted number of complaints (all variables at means)	0.002	0.017	1.04	
Trade level	**Mean (Switzerland-Mali)**	**+1.5 standard deviations (Brazil-India)**	**+3 standard deviations (China-Japan)**	
Variable	**Change in E(y)**	**Change in E(y)**	**Change in E(y)**	**Interpretation**
Exchange rate variables				
Real exchange rate index	0.0002	0.0114	0.70	85.62 to 194.42
Undervaluation B	0.0001	0.0174	0.38	1.00 to 1.41
Undervaluation B - Undervaluation A	0.0001	0.0072	0.45	0.01 to 0.54
Exchange rate regime A	-0.0001	-0.0035	-0.22	Soft peg (2) to managed float (3)
Exchange rate regime B	-0.0001	-0.0046	-0.28	Soft peg (2) to managed float (3)
*Control variables**				
Trade with B as a share of A's total trade	0.0000	-0.0025	-0.14	1.41% to 7.95%
GDP A	0.0001	0.0035	0.13	Kenya to South Africa
Polity B	0.0002	0.0131	0.86	5 to 10
Retaliation	0.0049	0.2498	7.49	0.005 to 0.53

*Calculated from Model 4, Table 3 (real exchange rate)

FIGURE 1 – MOST FREQUENT WTO COMPLAINANTS, 1995-2008

Model Comparison - Observed vs. Predicted Values

Note: positive deviations show underpredictions.

Count (Number of Complaints, 1995-2006)

Poisson   Negative binomial
Zero-inflated Poisson (ZIP)

References

Barbieri, Katherine, Omar Keshk, and Brian Pollins. 2009. "Trading Data: Evaluating Our Assumptions and Coding Rules. *Conflict Management and Peace Science* 26 (5): 471-91.

Bearce, David. 2003. "Societal Preferences, Partisan Agents, and Montary Policy Outcomes." *International Organization* 57 (2): 373-410.

Bergsten, C. Fred and John Williamson. 1983. "Exchange Rates and Trade Policy." In Trade Policy in the 1980s, pp. 99-120. Edited by William R. Cline. Washington, DC: Institute for International Economics.

Bergsten, C. Fred. 2006. "The US Trade Deficit and China." Testimony Before the Hearing on US-China Economic Relations Revisited, Committee on Finance, United States Senate, March 29 (http://www.iie.com/publications/papers/paper.cfm?ResearchID=611).

Bernhard, William, and David Leblang. 1999. "Democratic Institutions and Exchange-Rate Commitments." *International Organization* 53(1): 71-97.

Bhagwati, Jagdish. 1988. *Protectionism*. Cambridge, MA: MIT Press.

Blomberg, S. Brock, Jeffry Frieden, and Ernesto Stein. 2005. "Sustaining Fixed Rates: The Political Economy of Currency Pegs in Latin America." *Journal of Applied Economics* 8(2): 203-225.

Bown, Chad P. 2008. "The WTO and Antidumping in Developing Countries," *Economics & Politics* 20(2): 255-288.

_____. 2005. "Participation in WTO Dispute Settlement: Complainants, Interested Parties, and Free Riders." *The World Bank Economic Review,* 19**,** 287-310.

Broz, Lawrence. 2002. "Political System Transparency and Monetary Commitment Regimes." *International Organization* 56 (4): 861-87.

_____. 2010. "Exchange Rates and Protectionism." Manuscript. UCSD.

Busch, Marc. L. 2000. "Democracy, Consultation, and the Paneling of Disputes Under GATT." *Journal of Conflict Resolution,* 44**,** 425-446.

Busch, Marc. L., Reinhardt, Eric. & Shaffer, Gregory. 2008. "Does Legal Capacity Matter? Explaining Dispute Initiation and Antidumping Actions in the WTO." *ICTSD Issue Paper,* 4.

Calvo, Guillermo A. & Carmen M. Reinhart, 2002. "Fear Of Floating," *Quarterly Journal of Economics*, 117(2): 379-408.

Campa, Jose Manuel, and Linda Goldberg. 2002. "Exchange Rate Pass-Through Into Import Prices: A Macro or Micro Phenomenon?" NBER Working Paper 8934. Cambridge: NBER.

Caprio, Gerard, and Daniela Klingebiel. 2003. "Episodes of Systemic and Borderline Financial Crises." World Bank Research dataset (http://www1.worldbank.org/finance/html/database_sfd.html).

Chinn, Menzie, and Hiro Ito. 2006. "What Matters for Financial Development? Capital Controls, Institutions, and Interactions," *Journal of Development Economics,* 81(1): 163-192.

Clark, William and Mark Hallerberg. 2000. "Strategic Interaction Between Monetary and Fiscal Actors Under Full Capital Mobility." *American Political Science Review* 94(2): 323-346.

Conti, Joseph. 2010. "Learning to Dispute: Repeat Participation, Expertise, and Reputation at the World Trade Organization." *Law and Social Inquiry* 35(3): 625-62.

Conybeare, John. 1985. "Trade Wars: A Comparative Study of Anglo-Hanse, Franco-Italian, and Hawley-Smoot Conflicts." *World Politics,* 38**,** 147-172.

Corden, W.M. 1982. "Exchange Rate Protection," in The International Monetary System Under Flexible Exchange Rates -- Global, Regional, and National: Essays in Honor of *Robert Triffin*, ed. Richard Cooper, Peter Kenen, Jorge Braga de Macedo, and Jacques Van Ypersele. Cambridge: Ballinger, 17-34.

Davis, Christina, and Sarah Blodgett Bermeo. 2009. "Who Files? Developing Country Participation in GATT/WTO Adjudication." *Journal of Politics* 71: 1033-49.

Davis, Christina. L. & Shirato, Yuki. 2007. "Firms, Governments, and WTO Adjudication: Japan's Selection of WTO Disputes." *World Politics,* 59**,** 274-313.

Destler, I.M. and C. Randall Henning. 1989. *Dollar Politics: Exchange Rate Policymaking in the United States.* Washington, DC: Institute for International Economics.

Eichengreen, Barry. 1992. *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939.* New York: Oxford University Press.

_____. 1993. "The Crisis in the EMS and the transition to EMU: An Interim Assessment. CIDER Working Paper C93-022. UC-Berkeley.

Eichengreen, Barry, and Ricardo Hausmann. 1999. "Exchange Rates and Financial Fragility." NBER Working Paper 7418. Cambridge: NBER.

Eichengreen, Barry, and Douglas Irwin. 2009. "The Slide to Protectionism in the Great Depression: Who Succumbed and Why?" NBER Working Paper 15142.

Fernández-Arias, Eduardo, Ugo Panizza, and Ernesto Stein. 2002. "Trade Agreements, Exchange Rate Disagreements." IADB Background Paper for the seminar "Looking Beyond Our Borders: Opportunities and Challenges of the New Regionalism."

Frankel, Jeffrey. 1994. "The Making of Exchange Rate Policy in the 1980s." In *American Economic Policy in the 1980s*, ed. Martin Feldstein, 293-341. Chicago: University of Chicago Press.

Frankel, Jeffrey. 1999. "No Single Currency Regime is Right for All Countries or at All Times." Department of Economics, International Finance Section, Essays in International Finance No. 215 (August). Princeton: Princeton University.

Frieden, Jeffry. 2008. "Globalization and Exchange Rate Policy." In *The Future of Globalization*, ed. Ernesto Zedillo. New York: Routledge, 344-357.

_____. 1991. "Invested Interests: The Politics of National Economic Policies in a World of Global Finance." *International Organization* 45(4): 425-451.

_____. 1993. "The Dynamics of International Monetary Systems: International and Domestic Factors in the Rise, Reign, and Demise of the Classical Gold Standard." In *Coping with Complexity in the International System*, edited by Jack Snyder and Robert Jervis. Westview: Westview Press.

_____. 1997. "Monetary Populism in Nineteenth-Century America: An Open-Economy Interpretation." *Journal of Economic History* 57(2): 367-395.

_____. 2002. "Real Sources of European Currency Policy: Sectoral Interests and European Monetary Integration." *International Organization* 56(4): 831-860.

Frieden, Jeffry A., and J. Lawrence Broz. 2006. "The Political Economy of Exchange Rates." *Oxford Handbook of Political Economy*, ed. Barry Weingast and Donald Wittman. New York: Oxford University Press.

_____. 2001. "The Political Economy of International Monetary Relations." *Annual Review of Political Science* 4: 317-343.

Frieden, Jeffry A., Piero Ghezzi, and Ernesto Stein. 2001. "Politics and Exchange Rates: A Cross-Country Approach to Latin America," in *The Currency Game: Exchange Rate Politics in Latin America,* edited by Jeffry Frieden and Ernesto Stein. Baltimore: Johns Hopkins University Press.

Ghosh, Atish R., Anne-Marie Gulde, and Holger C. Wolf. 2002. *Exchange Rate Regimes: Choices and Consequences*. Cambridge, MA: MIT Press.

Gleditsch, Kristian Skrede. 2008. Modified Polity P4 and P4D Data, Version 2.0. (http://privatewww.essex.ac.uk/~ksg/Polity.html).

Goldberg, Pinelopi, and Michael Knetter. 1997. "Goods Prices and Exchange Rates: What Have We Learned?" *Journal of Economic Literature* 35: 1243–1292.

Goldstein, Joshua, Kahler, Miles, Keohane, Robert. O. & Slaughter, Anne Marie. 2000. "Introduction: Legalization and World Politics." *International Organization,* 54**,** 385-399.

Greene, W. H. 1994. "Accounting for Excess Zeros and Sample Selection in Poisson and Negative Binomial Regression Models." *Stern School of Business, Department of Economics, Working Paper No. 94-10.*

Gowa, Joanne. 1983. *Closing the Gold Window: Domestic Politics and the End of Bretton Woods*. Cornell Studies in Political Economy. Ithaca: Cornell University Press.

Grilli, Enzo. 1988. "Macroeconomic Determinants of Trade Protection." *The World Economy* 11, 3 (September): 313-326.

Guisinger, Alexandra, and David Andrew Singer. 2010. "Exchange Rate Proclamations and Inflation-Fighting Credibility." *International Organization* 64(1): 313-337.

Guzman, Andrew & Simmons, Beth A. 2005. "Power Plays and Capacity Constraints: The Selection of Defendants in WTO Disputes." *Journal of Legal Studies,* 34**,** 557-598.

Hallerberg, Mark. 2002. "Veto Players and Monetary Commitment Technologies." *International Organization* 56(4): 775-802.

Hiscox, Michael and Scott Kastner. 2008. "A General Measure of Trade Policy Orientations: Gravity-Model Based Estimates for 76 Nations, 1960-2000. Unpublished manuscript. Harvard University (http://www.people.fas.harvard.edu/%7Ehiscox/barriers.html).

Horn, H. & Mavroidis, P. C. .2008. "The WTO Dispute Settlement System 2005-2006: Some Descriptive Statistics." *IFN Working Paper* 740.

Husain, Aasim M., Ashoka Mody, and Kenneth S. Rogoff. 2005. "Exchange Rate Regime Durability and Performance in Developing versus Advanced Economies." *Journal of Monetary Economics* 52: 35-64.

International Monetary Fund. 1997. *World Economic Outlook*. Washington, DC: International Monetary Fund.

Irwin, Douglas A. 2005. "The Rise of U.S. Anti-Dumping Activity in Historical Perspective." *The World Economy*

28 (5): 651–668.

Keefer, Philip and David Stasavage. 2003. "Checks and Balances, Private Information, and the Credibility of Monetary Commitments." *International Organization* 56 (4): 751-774.

Kenen, Peter. 1969. "The Theory of Optimum Currency Areas, in *Monetary Problems in the International Economy*, ed. Robert Mundell and Alexander Swoboda. Chicago: University of Chicago Press.

Kim, Moonhawk. 2008. "Costly Procedures: Divergent Effects of Legalization in the GATT/WTO Dispute Settlement Procedures." *International Studies Quarterly,* 52**,** 657-686.

King, Gary. 1988. "Statistical Models for Political Science Event Counts: Bias in Conventional Procedures and Evidence for the Exponential Poisson Regression Model." *American Journal of Political Science,* 32**,** 838-863.

Klein, Michael W. 2005. "Dollarization and Trade." *Journal of International Money and Finance*. 24 (6): 935-43.

Klein, Michael W. and Jay Shambaugh. 2006. "Fixed Exchange Rates and Trade." *Journal of International Economics*. 70 (2): 359-383.

Klein, Michael W. and Jay Shambaugh. 2009. *Exchange Rates in the Modern Era*. Cambridge, MA: MIT Press.

Krueger, Anne. 1999. "Are Preferential Trade Arrangements Trade-Liberalizing or Protectionist?" *Journal of Economic Perspectives* 13(4): 105-124.

Philip R. Lane and Gian Maria Milesi-Ferretti (2007), "The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004," *Journal of International Economics* 73 (November): 223-250.

Levy-Yeyati, Eduardo. and Federico Sturzenegger. 2004. "Classifying Exchange Rate Regimes: Deeds vs. Words." *European Economic Review*.

López-Córdova, Jose Ernesto, and Christopher M. Meissner 2003. "Exchange-Rate Regimes and International Trade: Evidence from the Classical Gold Standard Era." *American Economic Review* 93(1): 344–353.

Mansfield, Edward, and Helen V. Milner. 1999. "The New Regionalism." *International Organization* 53(3): 589-627.

Mansfield, Edward D., Helen V. Milner, and B. Peter Rosendorff. 2002. Why Democracies Cooperate More: Electoral Control and International Trade Agreements. *International Organization* 56 (3): 477-514.

Mansfield, Edward, Helen V. Milner, and Jon C. Pevehouse. 2007. "Vetoing Co-operation: The Impact of Veto Players on Preferential Trade Agreements." *British Journal of Political Science* 37(3): 403-432.

Marvel, Howard P., and Edward Ray. 1983. "The Kennedy Round: Evidence on the Regulation of International Trade in the United States." *American Economic Review* 73(1): 190-197.

McKinnon, Ronald I. 1962. "Optimum Currency Areas." *American Economic Review* 53: 717-725.

McKinnon, Ronald I., and K.C. Fung. 1993. "Floating Exchange Rates and the New Interbloc Protectionism," in *Protectionism and World Welfare*, ed. Dominick Salvatore. Cambridge: Cambridge University Press, 221-244.

Milner, Helen V. and Timothy Buthe. 2008. "The Politics of Foreign Direct Investment into Developing Countries: Increasing FDI through International Trade Agreements?" *American Journal of Political Science* 52 (4): 741-62.

44

Mundell, Robert. 1961. "A Theory of Optimum Currency Areas." *American Economic Review*. 51: 657-664.

Niels, Gunnar and Joseph Francois. 2006. "Business Cycles, the Exchange Rate, and Demand for Antidumping Protection in Mexico." *Review of Development Economics* 10 (3): 388–399.

Oatley, Thomas. 2010. "Real Exchange Rates and Trade Protectionism." *Business and Politics* 12 (2): 1-17.

Odell, John. 1982. *US International Monetary Power: Markets, Power, and Ideas as Sources of Change*. Princeton: Princeton University Press.

Olivei, Giovanni, P.. 2002. "Exchange Rates and the Prices of Manufacturing Products Imported Into the United States." *New England Economic Review* (First Quarter), 3-18 (http://www.bos.frb.org/economic/neer/neer2002/neer102a.pdf).

Pearce, Joan and John Sutton. 1985. *Protection and Industrial Policy in Europe*. London: Routledge & Kegan Paul.

Reinhart, Carmen, and Kenneth Rogoff. 2004. "The Modern History of Exchange Rate Arrangements: A Reinterpretation." *Quarterly Journal of Economics* 119 (February).

Reinhardt, Eric. 1999. "Aggressive Multilateralism: The Determinants of GATT/WTO Dispute Initiation, 1948-1998." Manuscript, Emory University.

Rosendorff, B. Peter. 2005. "Stability and Rigidity: The Dispute Resolution Mechanism at the WTO." *American Political Science Review,* 99**,** 389-400.

Rose, Andrew. 2000. "One Money, One Market: The Effect of Common Currencies on Trade." *Economic Policy: A European Forum* 30: 7-33.

Shambaugh, Jay C. 2004. "The Effect of Fixed Exchange Rates on Monetary Policy." *Quarterly Journal of Economics* 119 (February): 301-52.

Sattler, Thomas, and Thomas Bernauer. 2010. "Gravitation or Discrimination? Determinants of Litigation in the World Trade Organization." *European Journal of Political Research*.

Simmons, Beth. 1994. *Who Adjusts? Domestic Sources of Foreign Economic Policy During the interwar Years*. Princeton: Princeton University Press.

Valderrama, Diego. 2004. "Does a Fall in the Dollar Mean Higher U.S. Consumer Prices?" *Federal Reserve Bank of San Francisco Economic Letter*, Number 2004-21 (August 13).

Walter, Stefanie. 2008. "A New Approach for Determining Exchange-Rate Level Preferences." *International Organization* 62(3): 405-38.