Tariff Bindings, Tariff Overhang, and Trade Remedies: Policy Flexibility at the WTO in Tough Political Times

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The GATT/WTO's main accomplishment since the Uruguay Round is widely thought to have been the successful binding of nearly all traded products. Here, we examine a possible caveat to this view. We show how WTO Members' commitments are not as constraining as is often thought. Bound rates are often set much higher than applied duties, leaving much "unused protection". Secondly, we find that when countries *do* commit to tight bindings, affected firms become likely to turn to alternative means of protection, and they rely increasingly on trade remedies such as antidumping and safeguards. In this way, we find some support for early beliefs underlying the "law of constant protection". Third, industries' shift to trade remedies appears to be overcompensatory: once the binding is implemented, even those products that still benefit from tariff flexbility become more likely to see trade remedy action. These findings yield considerable implications for the study of international organizations (IOs). Most clearly, the depth of commitment varies among Members of the same organization. Secondly, tightening country commitments by reducing flexibilty in one area appears to lead to increased reliance on flexibility in other areas. Overall, scholars should be cautious in how they assess progress in the level of commitment of states within IOs.

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I. Introduction

Nearly all tariffs in the global economy are bound by international obligation. It might thus seem that there is little left to explain about the political economy of tariffs. Yet, nothing could be further from the truth. This is because tariff *bindings* are widely expected to increase the use of escape clause provisions in trade agreements, the logic being thatcaps on tariffs will be agreed to only if elected officials can act on protectionist demands with other measures. For example, Bagwell and Staiger argue that governments are more likely to consent to upper bounds on tariffs if trade agreements include escape clauses, in which case they will tend to impose lower applied tariffs.[1]Focusing on anti-dumping (AD) duties, in particular, Kucik and Reinhardt find substantial support for this view.[2]Limão and Tovarcaution that non-tariff barriers are not a perfect substitute for tariffs, but nonetheless agree that theydo enable governments to sign on to bindings.[3]Indeed, this"flexibility" hypothesis is so widely accepted that Goldstein, Rivers and Tomz, who find that opt-out clauses do notboost trade, cast doubton their own result.[4]This paper asks two questions: do industries with more tightly bound tariffs petition more for trade remedies—AD and countervailing duties and safeguards? And if so, is this effect observable through time for a given product?

The literature has seldom evaluated the flexibility hypothesis at the point at which it would seem most relevant: namely, when the tariff binding actually takes

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[1] Bagwell and Staiger 2005.
[2] Kucik and Reinhardt 2008.
[3] Limão and Tovar 2009.
[4] Golstein, Rivers and Tomz 2007.

effect.[5]Indeed, for many countries, tariff bindings take years to come on line. As a result, these governments are unlikely to feel the kind of political pressure that can lead others to turn to substitute means of protectionism. But moreover, even when these tariff bindingsdo come due, some governments enjoy so muchroom between their bound and applied rates—or what is called "tariff overhang"—that they are doubtful to feel overly constrained. The average tariff overhang for WTO members is 18%, but for some it is as high as 89%. In other words, most states have at least a small amount of cap room to spare, and some have a lot, in which case the incentive to turn to substitute means of protectionism may not be as great. Taking these two considerations into account, we offer a more direct test of theflexibility hypothesis, examining whether states are especiallylikelyto usetrade remediesonce abinding goes into effect, controlling for tariff overhang. Our findings indicate that less tariff overhang is associated with a greater likelihood of petitions for trade remedies. In the case of individual products, petitions for trade remedies surge at the time of the tariff binding, irrespective of tariff overhang.

By testing the flexibility hypothesis more directly, the paper's results speak to the literature on institutional design. Looking at the multilateral trade regime, in particular, scholars have called for various "safety valve" mechanisms to relieve the political pressure of complying with international obligations. Along these lines, Goldstein and Martin argue that too much legalizationmay undermine the WTO.[6]Similarly, Rosendorff and Milner, and Rosendorff, explain that institutions need to

[5] But see Bown and Tovar 2009.
[6] Goldstein and Martin 2000.

strike a balance between legalism (i.e., rigidity), which aims at furthering compliance, and flexibility (i.e., stability), which helps attract and retain members.[7] Bagwell and Staiger, Kucik and Reinhardt, and Limão and Tovar all concur that havingsubstitute means of protectionism available iskey if the WTO is to attract and retain members willing to give compliance a chance. But whereas these studies are about the *potential* use of substitute means of protectionism, we show that governments actually use this flexibility, particularly once a tariff binding takes effect.

Our paper proceeds in four sections. Section II sets out our argument. Section III details our data and methodology. Section IV reports our results. Section V concludes.

II. Argument

Long before it succeeded in lowering tariffs, the WTO's predecessor, the General Agreement on Tariffs and Trade (GATT), sought to bind them. This was the institution's *modus operandi*: to convert all nontariff barriers to bound tariffs, apply them on a most-favored nation basis while adding no additional restrictions on foreign versus domestic business, and then to reduce these bound tariffs over time.[8]WTO obligations on tariffs, in short, concern bindings; when scholars talk of governments using international trade rules to "tie their hands," this is what they mean.

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[7] Rosendorff and Milner 2001; Rosendorff 2005.
[8] See, for example, Mavroidis 2005. In this sense, the document boils down to GATT Articles I, II, III and XI.

And by this yardstick, the multilateral trade regime has been a success. The simple fact is that agricultural tariffs are all bound, as are the vast majority of industrial tariffs, even in developing countries.[9] Of course, this is not to say that tariffs no longer matter; some tariffs remain high, especially in agriculture, and even bindings on lower rates can have a sizable influence on commerce.[10]But the point is that the WTO's membership has agreed to upper bounds on nearly all tariff lines.

The endogenous protection literature has long anticipated that tariff bindings would lead to greater use of nontariff barriers. Bhagwati famously called this the "law of constant protectionism."[11] Along these lines, Marvel and Ray urged that the extent of trade liberalization negotiated under the Kennedy Round of the GATT was overstated because nontariff barriers filled in where tariffs had beencapped.[12] Dick,[13]Schmittt and Anderson,[14] and Hirsch[15] also find that nontariff barriers have picked up the slack for bound tariffs.[16]

This should hardly be surprising. Governments are doubtful to join institutions like the WTO and bind their tariffs if they lack alternative means of responding to political pressures in economic crises. Milner and Rosendorff, for example, argue that free trade obligations are easier to achieve in the first place if there exist escape

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[9] In particular, 100% of agricultural tariffs are bound, as are 98% of industrial tariffs in developed countries and 73% of industrial tariffs in developing ones.
[10] Small tariff reductions under the Canada-US Free Trade Agreement (1989) resulted in double-digit gains in US market share for Canadian exporters, for example.
[11] Bhagwati 1982.
[12] Marvel and Ray 1982.
[13] Dick 1994.
[14] Schmitt and Anderson 2000.
[15] Hirsch 2008.
[16] Other studies find that tariffs and nontariff barriers are complementary. See, for example, Lee and Swagel (1997) and Busch and Reinhardt (1999).

clauses that allow for temporary deviations when faced with unexpected political pressure.[17]Similarly,Bagwell and Staigerexplain that, in looking to negotiate a self-enforcing trade agreement,governments are likely to prefer upper bounds on tariffs with the possibility of seeking temporary increases through escape clauses, rather than exact rates to be levied under all circumstances. Indeed, where governments are uncertain about the future, and hold private information about their domestic political economy, this flexibility is key to responding to exogenous shocks, which might otherwise risk the compliance of self-interested members.[18]

A growing body of empirical research lends support to this view. Focusing on AD duties, in particular, Kucik and Reinhardt find that those governments with access to a functioning domestic AD regime are more likely to join the WTO, bind more of their tariffs, and implement lower applied rates.[19]Limão and Tovar ask about the efficiency of nontariff barriers as substitutes for tariffs more generally, and conclude that while these are less efficient, their use is more likely, and their effects more restrictive, the greater the tariff constraints. In short, flexibility is a prerequisite to signing trade agreements that require the binding of tariff lines.

Yet, for all the attention this hypothesis receives in the literature, there is scant evidence that governments actually *use* this flexibility in response to their tariff bindings taking effect, or what we call tough political times. There are two reasons to take a closer look. First, some tariff bindings are only phased in over many

[17] Milner and Rosendorff 2001.
[18] Bagwell and Staiger 2005.
[19] Kucik and Reinhardt 2008.

years, such that a government may not feel thepinch from these commitments until much later. Ascribing any substitution effect to this international obligation would thus be something of a stretch.

Second, even when tariff bindings do take effect, the gap between the bound and applied rates can be so great that the commitment would seem almost superfluous. For example, Armenia and Pakistan both levy an applied tariff on tomatoes of 10%, but while Armenia's bound rate is 15%, Pakistan's is 100%. Pakistan thus enjoys substantial leeway to raise its applied tariff without violating its bound rate. On average, the amount of tariff overhang across WTO members is 18%, with some enjoying as much as 89%. The benefits of a tariff binding can thus be undermined by this gap. As the WTO notes with respect to Korea, for example, 90% of its tariffs are bound, but the liberalizing effects of these constraints are called into question by the difference between its bound and applied rates, which average 4.3%, but 9% for agriculture. Similarly, in a recent*Trade Policy Review*, the WTO explains that "[a]n increase in the share of tariff lines that are bound and a reduction in the gap between the bound and applied rates would improve the predictability of Nigeria's trade regime."[20] Indeed, tariff overhang, itself, can undermine trade, as Pelc demonstrates, tapping the WTO's concern about predictability.[21]

The question is thus whether, at the time of a tariff binding, governments are likely to make recourse to substitute forms of protectionism? Specifically, do those that have a large amount of tariff overhang make less use of trade remedies, and do

[20] WTO Document WT/TPR/S/147, viii.
[21] Pelc 2009.

those with little tariff overhang make more use of trade remedies?We expect this kind of substitution effect in tough political times. This is a more direct test of the flexibility hypothesis than has previously been on offer because we isolate both when the tariff binding takes effect, aswell as the extent to which the tariff binding actually constrains the applied rate.Bown and Tover also take a look at tariff overhang, but only as a robustness check, and only in the context of Indian trade policy,where the variable underperforms.[22] Interestingly, India argues that tariff overhang is of little consequence unless it is used in response to exogenous shocks.[23]Our results bear on this claim; we test the text to which tariff overhang and trade remedies are substitutes.

The above reasoning leads to the following two hypotheses:

1. If the bound tariff for a given product is far above the applied duty, resulting in considerable room for WTO-legal tariff increases, then the likelihood of observing firms petitioning for trade remedies for that product is decreased.

2. For a given country-product, the likelihood of observing petitions for protection is greater once the tariff binding is implemented, no matter how high that tariff binding, than when the binding is not yet in place.

III. Data and Methods

[22] Bown and Tover 2009, 24.
[23] WTO Document WT/COMTD/W/143.

We construct two different datasets to address our hypotheses. In all cases, our main dependent variable is a measure of trade remedy actions for a given product, expressed either as a count variable or a dummy variable. The data on trade remedies comes from Bown's recently updated Global Antidumping Database, which covers 20 countries from at least 1995 onward. Bown's data includes product-level information, which we normalize to the six-digit level. In other words, all products at a greater level of disaggregation than six digits are cut-off at the sixth digit, while all two and four digit products are expanded into all the six-digit product codes that fall under them. Importantly, our analysis is entirely monadic. This is not a concern in the case of safeguards, which are not targeted at specific trade partners, and which raise barriers on all imports of a given product, but it prevents us from differentiating between the targets of antidumping actions, which do discriminate between countries affected. Doing so would result in an impractically large dataset.

In the case of the first hypothesis, we are interested in seeing whether low tariff overhang across all products and countries is associated with greater use of AD and countervailing duties, and safeguards. Since WTO members provide data on applied tariffs only every few years, to avoid excessive intrapolation, and the problems associated with it, we average across all 13 years of data and obtain a cross-sectional dataset, where the unit of observation is the country-product. The resulting number of observations is N = 89,367. For each of these country-products, we have a separate variable for the applied and the bound rate. The difference between the two corresponds to the policy space countries dispose of to raise their rates of protection, or the tariff overhang. We also aggregate our dependent variable—the count of trade remedies for a given country-product—in a

similar way, by adding all the petitions for a given product through the entire period. Importantly, we are interested in the effect of tariff overhang on demand for trade remedies, controlling for existing duties, which may have an independent effect on petitions for trade remedies. To isolate the effect of this policy space, we thus separately control for the applied rate for a given product.

To test our second hypothesis, we create a dataset with observations for every country-product-year, looking at the six-digit product level, which adds up to an N of over 1.37 million. Our main dependent variable is a count of trade remedy petitions for a given country-product in a given year, which we also subsequently collapse into a dummy variable. Our main independent variable of interest in this case is a dummy indicating whether a product is bound or not. A great majority (98% for developed countries, and 76% for developing countries) of all traded goods are currently bound under the WTO, yet the point in time at which these bindings were implemented varies a great deal. Most products bindings were phased in during the first five years of the WTO, but other products were bound much later: Korea's tariff schedule has the binding for *Fireworks* coming in only in 2009. This variation offers us an opportunity to check whether a tariff line being bound affects the demand for trade remedies for the product in question, offering a unique angle from which to assess the flexibility hypothesis.

Throughout the analysis, we control for a number of country specific-variables. The first of these is a country's logged GDP for a given year. Indeed, the exercise of trade remedies, especially in the case of antidumping duties, requires considerable domestic institutional capacity. The need to demonstrate that the criteria for the use of trade remedies are satisfied means that users of trade remedies require an "intricate domestic

legal apparatus."[24]This is the very reason offered by some developing countries for maintaining their high tariff overhang: absent the domestic legal capacity to use trade remedies (and to defend their use in dispute settlement, if challenged), greater room under the bound rate is the only viable means of answering protectionist demands.[25] As a result, we include GDP as a control for countries' ability to use trade remedies.

We also control for the number of PTAs a country is party to. This variable is a count of all PTAs a country is a member of, and that are in force for a given year. PTAs are likely to have a direct downward effect on applied rates, as they extend preferential treatment to PTA partners, but they may also affect the willingness to use antidumping.[26]We employ a comprehensive measure of states' PTA links, which comes from Baccini and Dür.[27]It counts all bilateral preferential agreement ties a country is party to, including customs unions, regardless of whether or not they have been notified to the WTO or whether the partner is a WTO member, and makes no distinction in the scope of these agreements. These data cover all Member countries from the WTO's inception to present day, for a total 3432 bilateral distinct PTA links in 2008.

The data on trade barriers come from the World Integrated Trade Services (WITS) software developed by the World Bank. Through WITS, we access data from the WTO; Comtrade, the UN trade agency; and the TRAINS database from the United Nations Conference on Trade and Development (UNCTAD). For all data on country GDP, we rely on the World Bank's *World Development Indicators*. We also control for a coun-

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[24] Reinhardt and Kucik 2008, 483.
[25] WT/COMTD/W/143
[26] Reinhardt 1999.
[27] Baccini and Dür 2009.

try's level of democracy. Regime type has been identified with lower tariffs and a higher probability of joining trade institutions to being with. Other authors have found the democracies make are more frequently targeted by antidumping duties, all things equal, and we know separately that recent targets of antidumping actions are more likely, in turn, to become users of AD.[28]

We also control for the proportion of a country's GDP made up of exports. The underlying belief is that those countries that are especially export-oriented may be less likely to offer trade remedies that may lead to increased trade barriers abroad. In line with this reasoning, studies have shown that targets of antidumping duties are more likely to subsequently become users of antidumping.

We thus first test both hypotheses using a count dependent variable of trade remedies, and then with an indicator dependent variable, which is coded as 1 if any trade remedy was exercised for the product and time period in question, and 0 otherwise. Since our dataset is made up mostly of zeros, and since there is no theoretical reason holding any given observation at zero, we run a zero-inflated poisson model for our count dependent variable, and a rare-events logit model for our binary dependent variable. We obtain similar results, however, when we run an OLS regression in the first instance (which some directed dyad studies facing a problem similar to ours have done in the past)[29] and a standardprobit in the second.

IV. Findings

[28] WTO World Trade Report 2009.
[29] Valentino, Huth, and Croco 2006.

We test our first hypothesis by examining the association between the magnitude of tariff overhang and the likelihood of petitions for trade remedies. Once again, the data are averaged across the 13 year period of interest, and the trade remedies action is added up for every product over the same period. The results, shown in Table 2, are telling. Our first column corresponds to the count dependent variable dummy, or the number of trade remedy investigations for a given product over the entire period. Note that we also add a control for average applied duties. The impact of tariff overhang is significant and strongly negative. When a product benefits from considerable tariff overhang, firms are less likely to petition for more costly trade remedies. In substantive terms, the predicted count drops by 34% when tariff overhang is raised by one standard deviation (about 18.4%). Interestingly, the effect of the applied rate is *positive* and strongly significant. This speaks to the fact that those products benefiting from high applied duties correspond to strong, highly mobilized domestic industries, and thus it is not surprising that they also get non-tariff barriers.[30] What is crucial, however, is that, controlling for the magnitude of applied duties, the headroom over and above those duties has a significant effect on the demand for trade remedies. In fact, taking the applied duties variable out of the model does not impact the coefficient on tariff overhang, or any of the controls.

The second column runs a similar test, this time collapsing the count dependent variable into a dummy variable. The rare-events logit model shows similar results as in the first column. Once again, the likelihood of seeing petitions for a given product is significantly, and negatively, related to the magnitude of tariff overhang on that product. The substantive effect is comparable to the first case: the likelihood of seeing trade remedy

[30] See, for example, Busch and Reinhardt 1999.

investigations drops by 23% with a one standard deviation increase in the magnitude of tariff overhang. The impact of applied duties is significant and positively associated with trade remedies petitions.

Other variables behave as expected. The number of bilateral PTA links a country has tends to decrease the use of trade remedies. Richer countries tend to use trade remedies more, but when those countries rely heavily on exports, they tend to exercise trade remedies less. Finally, echoing recent findings,[31] more democratic countries seem more likely to use trade remedies, perhaps because they are more exposed to pressure from politically powerful domestic industries.

We test our second hypothesis by examining the impact of the point in time at which the binding for a given product is implemented. We do this using a large dataset where all country-product-years are coded as 1 when the product in question is bound, and 0 if the binding has yet to be implemented. Our interest lies in the impact of this change on the odds of seeing trade remedy action. Using our cross-sectional time-series, we run a random-effects poisson panel model, shown in column 1 of Table 3, employing a count dependent variable. Column 2 shows the results of a random-effects logit model, where our dependent variable is whether or not there was any trade remedy action for a given country-year-product. In both cases, we run a Hausman test to verify that the coefficients obtained are consistent with the equivalent results for a fixed-effects model. The results support the belief that the constraints on tariff rates that come from the implementation of bound rates, no matter how high, lead industries to increase their demand for trade remedy action. In substantive terms, the poisson model's incidence rate ratio for the

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bound dummy is 2.31, meaning that once a given product is bound, it becomes 31% more likely to be targeted by petitions for trade remedies.

We test for this same effect in a different way, by running both models separately for those country-product-years that are bound, and those country-product-years that are not. We then generate predictions in each case, and t-test for the significant difference between these predictions for each product. In both cases, the difference is significant at 0.001, with very similar substantive effects. In other words, industries seeking import relief change their strategies once a product is bound by a tariff. Past this binding point, they tend to rely more heavily on trade remedies, since the easiest, least costly option—namely, petitioning for a tariff hike—becomes constrained by the bound rate.

V. Conclusion

The conventional wisdom is that governments value flexibility in the design of trade institutions. Indeed, they are more likely to join, and remain members of, those pacts that give them some latitude to temporarily defect from international obligations when it is politically expedient to do so. And while previous studies show that the potential to use escape clauses matters, we offer a unique window on the flexibility hypothesis, examining whether, at the time of a tariff binding, governments actually use trade remedies to fill in for tariff overhang, or vice versa. Our results make clear that this substitution effect is very much at work, lending further weight to Bhagwati's "law of constant protectionism."

Two implications follow. First, the effect of tariff bindings is undercut by the abili-

ty of states to substitute forms of protectionism. This should hardly be surprising to students of trade policy, though we submit that our paper offers a rare glimpse at this substitution in practice. But second, our results indicate that tariff bindings do matter, in that trade remedies petitions increase markedly at their inception, controlling for the amount of tariff overhang. Rather than being superfluous, these tariff bindings trigger a political scramble to offset losses incurred by domestic firms. Following Limão and Tovar, who argue that nontariff barriers do not fully substitute for tariffs, the message is that Bhagwati's "law of constant protectionism" may be more political than economic.

Table 1. Descriptive Statistics

Variable	Observations	Mean	Standard Deviation	Min	Max
Hypothesis 1					
Mean MFN rate	106956	11.141	14.139	0.000	811.425
Mean Bound rate	100112	24.008	24.133	0.000	800.300
Mean Export Proportion	97677	26.455	13.859	10.581	69.113
Mean Regime	108476	6.786	4.281	-7.000	10.000
Mean PTAs	108476	14.881	12.221	0.000	48.000
Mean Overhang	99893	13.147	18.378	0.000	264.917
Remedies Count	110489	0.758	13.705	0.000	332.000
Trade Remedy Dummy	110489	0.042	0.201	0.000	1.000
Ln(Mean GNI per capita)	97677	27.128	1.145	25.104	29.985
Ln(Mean GDP)	97677	26.559	1.234	24.665	30.122
ln(Mean FDI)	97677	22.643	1.341	20.262	25.783
Hypothesis 2					
Bound Dummy	1576040	0.568	0.495	0.000	1.000
Remedies Dummy	1576040	0.020	0.138	0.000	1.000
Remedies Count	1576040	0.568	11.144	0.000	533.000

PTAs	1531466	14.872	12.211	0.000	48.000
ln(GDP)	1379346	26.576	1.251	24.665	30.122

Table 2. Effect of Tariff Overhang on Demand for Trade Remedies

	1	2
Mean Overhang	-0.023	-0.015
	(0.001)	(0.003)
Mean Applied Duties	0.003	0.006
	(0.000)	(0.001)
Mean PTA links	-0.012	-0.003
	(0.001)	(0.003)
ln(Mean GDP)	0.393	0.187
	(0.023)	(0.039)
Mean Export %	-0.023	-0.037
	(0.001)	(0.003)
ln(Mean FDI)	0.025	0.007
	(0.024)	(0.038)
Mean Regime	0.079	0.044
	(0.003)	(0.006)
Constant	-13.264	-8.086
	(0.267)	(0.632)
N	89367	89367

Standard Errors in parentheses. Column 1 corresponds to Poisson Model. Column 2 corresponds to Rare Events Logit Model.

Table 3: The Effect of the Binding Point on Trade Remedy Petitions

	1	2
Bound	0.835	0.797
	(0.004)	(0.028)
ln(GDP)	1.004	0.818
	(0.043)	(0.009)
PTAs	0.001	-0.004
	(0.004)	(0.002)
Constant	-31.020	-29.569
	(1.153)	(0.260)
ln(alpha)	5.455	
	(0.027)	
ln(sig2u)		1.089
		(0.010)
N	1379346	1379346
Groups	97 677	97 677
Wald chi2(3)	37867.93	8634.25

Standard Errors in parentheses. Column 1 corresponds to Random Effects Poisson Model. Column 2 corresponds to Random Effects Probit Model.