



Tariff binding and overhang: Theory and evidence[☆]



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ABSTRACT

Most market access commitments under the WTO are in the form of bindings on applied tariff rates. We observe two important regularities in the data. First, applied tariffs are often lower than the bound tariffs, providing governments with substantial policy flexibility. Second, the extent of flexibility varies substantially across sectors and countries. In a sharp contrast to the prediction of standard trade agreement models, we observe a strong negative correlation between tariff commitments and measures of import market power. We model the trade-off between discipline and flexibility in the design of trade agreements, and argue that recognizing this trade-off is the key to explain the observed patterns in the tariff binding commitments and applied tariffs under the WTO.

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1. Introduction

Trade agreements are generally viewed as a means of escape from an externality-driven prisoner's dilemma, where the externality is most frequently associated with the negative impact of a tariff on the exporter's terms of trade.¹ Due to the existence of the externality arising from a country's trade policy, noncooperative tariffs are too high from a global efficiency point of view. The central element of trade agreements should then be a commitment to reduce tariffs and other protectionist measures from their current levels.

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¹ The terms-of-trade externality arises in the classical optimal tariff theory. Bagwell and Staiger (1999) have shown that this terms-of-trade externality extends to a broad class of government objective functions that incorporate political economy motives. As a result of this terms-of-trade externality, both countries can gain from a reciprocal trade liberalization from the Nash equilibrium tariffs. Even in models where externalities operate through other channels, such as delocation externality (Venables, 1987; Ossa, 2011), commitments to reciprocal trade liberalization will generally result in a Pareto improvement.

In light of the importance of tariff cuts in explaining the role of trade agreements, it seems surprising that immediately following the signing of the WTO agreement in 1995, the applied Most-Favored-Nation (MFN) tariffs were below the negotiated bindings in 69% of the six-digit HS tariff lines.² It would seem a simple matter to ask countries to reduce their tariff bindings to the level of their current applied tariff, since current tariffs are observable and the adjustment could be implemented with minimal negotiation costs.

The fact that tariff commitments are not strictly binding in many sectors suggests that countries value the flexibility to adjust tariffs unilaterally.³ An optimal trade agreement will then involve a trade-off between flexibility and commitment, since a reduction in the tariff binding reduces the negative spillover on trading partners but also reduces the ability of the importer to respond to preference shocks.

Our goal in this paper is to develop and test a model of optimal trade agreements that exhibits a flexibility/commitment trade-off. We consider a theoretical model with heterogeneous countries that have private information about the magnitude of sectoral preference shocks. The externality from tariff policy results from the adverse impact of

² This figure is based on WTO tariff bindings and applied tariff rates for more than 92,000 tariff lines of original WTO members in 1996 for which data is available from the World Bank.

³ A desire for trade policy flexibility could arise if a country's preferences regarding openness to trade are subject to shocks in the future, so that there is an option value to trade policy flexibility.

tariffs on the terms of trade of trading partners. The agreements we consider provide flexibility through the use of tariff bindings, so that countries have flexibility to adjust their tariffs to preference shocks as long as the tariff is below the binding. The excess of a country's tariff binding over its applied tariff, called tariff overhang, reflects the amount of flexibility available to a country at a point in time. The model's predictions about the relationship between tariff bindings, tariff overhang, and country characteristics can then be tested empirically.

One prediction of the model is that the optimal agreement will provide less flexibility for trade policy in sectors that have greater import market power. In particular, sectors with greater market power are likely to have less tariff overhang and are more likely to be at the binding at a point in time. We also show that the applied tariffs of sectors with a sufficiently high level of import market power will always be at the binding.

The negative correlation between market power and tariff overhang results from two reinforcing effects. First, a given level of tariff binding entails less flexibility for a sector that has a higher import market power. That is because, as is familiar from the optimal tariff literature, unilaterally optimal tariffs are increasing in import market power. In addition, an optimal agreement assigns a lower tariff binding to sectors with greater import market power. This latter effect is due to the trade-off between flexibility and commitment. In particular, since trade policy flexibility involves a greater terms-of-trade externality in sectors with greater import market power, the optimal tariff binding is a decreasing function of import market power.

The predictions of our model differ in several respects from those that ignore a demand for flexibility on the part of importers. One difference is that models without a demand for flexibility do not provide an explanation of the difference between applied tariffs and bindings. Moreover, there are substantial differences across sectors and countries in the size of tariff overhang. For example, virtually all of the tariff lines in the US, EU, and Japan are at their binding and there is no tariff overhang. On the other hand, no tariff lines are at the binding for 17% of countries.

A second difference from models without a demand for flexibility concerns the relationship between tariff bindings and market power, which is negative in our model. In complete-information models with no bargaining frictions (e.g., Grossman and Helpman, 1995; Bagwell and Staiger, 1999), the only role of trade agreements is to neutralize terms of trade spillover, which implies that the negotiated tariffs should be independent of the importing country's market power. Ludema and Mayda (2013) identify a potential market power effect in trade agreements due to the free rider problem resulting from the MFN clause. They find that market power effects will be eliminated only to the extent that concentration of export interests is sufficiently large that exporters find it worthwhile to negotiate a tariff reduction. Their model suggests a positive relationship between bindings and market power, but a negative relationship between the interaction of market power and exporter concentration. The latter effect captures the notion that tariff cuts will be larger for countries with the larger market power only if the free rider problem is not too strong. Whether there is a positive or negative relationship between tariff bindings and market power, thus, depends on the correlation between a country's market power and the degree of free riding that exists among exporting countries.

Bown and Crowley (2013) also highlight the relevance of the terms-of-trade theory in practice by showing that the likelihood of using contingent protection measures such as anti-dumping and safeguard increases when there is a surge in imports, which increases the ability of the importing country to manipulate the terms of trade. While Bown and Crowley (2013) study the impact of changes in the import market power (as captured by import surges) on the use of contingent protection measures, our focus is on the effect of a country's long term import market power on the level of negotiated tariff bindings. In our setting, an increase in the import market power would increase the applied tariff under the agreement if and only if there is a positive tariff overhang.

Our theoretical model builds on Bagwell and Staiger (2005), who show that a tariff binding arrangement that allows countries to reduce tariffs below the binding is preferred to an inflexible binding when countries have private information about their demand for protection.⁴ Amador and Bagwell (2013) advance this result by finding conditions under which a tariff binding is the best mechanism among those that restrict the set of tariffs from which governments can choose. While sharing some basic elements of these two papers, our theory introduces country-specific parameters that enables us to study how the optimal bindings, the level of tariff overhang, and the probability that a tariff is at the binding vary with country and sectoral characteristics.

Our empirical analysis tests the predictions of the theoretical model using World Bank data on tariff bindings and applied tariffs at the HS six-digit level. We utilize a country's share of world imports and the elasticity of export supply as measures of a country's market power, and a measure of political instability to capture the value of flexibility to policy makers. Our empirical analysis is thus related to several recent empirical studies that find support for the role of market power in trade policy and trade agreements. Broda et al. (2008) find support for the role of market power in determining a country's applied tariff using data from 16 non-WTO members, whose tariffs are presumably unaffected by trade agreements. Bagwell and Staiger (2011) find evidence that tariff cuts of countries acceding to the WTO are largest in sectors where market power is greatest, which is consistent with the role of trade agreements in neutralizing market power effects. Our empirical work differs in that we emphasize the trade-off between these market power effects and the demand for flexibility, so that a central focus is the impact of market power on the difference between the applied tariff and the tariff binding.

We find a number of empirical results that are supportive of our theoretical predictions. First, we observe that the levels of tariff binding rates under the WTO are inversely related to measures of import market power. This relationship is both statistically and economically important. In particular, we find that increasing a country's market power in a sector (as measured by import share) from the median level to the 75th percentile reduces its binding by 15% when evaluated at the median binding. We also find a statistically-significant negative relationship between the size of tariff binding overhang and the importing country's import market power in that sector. As a related result, we find that it is substantially more likely to observe a zero overhang in sectors with greater import market power.

The political environment also plays a role in determining the size of the optimal tariff binding in our theory, such that a greater volatility in political pressure parameter increases the level of optimal binding. Using a country-level variable for political instability, we find strong cross-country evidence for this relationship.

Our empirical study also sheds light on Subramanian and Wei's (2007) finding that membership in the WTO increases a country's import volume substantially only if the member under consideration is a developed country. Their finding may be better understood in

⁴ There is an emerging theoretical literature that explores the role of tariff bindings at the presence of trade policy uncertainty and risk aversion on behalf of producers. Under various modeling assumptions, Francois and Martin (2004), Handley (2010), and Handley and Limão (2010) show that the benefit of tariff bindings is to reduce uncertainty by censoring the range of observable applied tariffs and limiting losses in the worst case scenario. Sala et al. (2010) show that while a tariff binding that is higher than the applied tariff does not affect the intensive margin of trade, it can increase trade through extensive margin as it reduces the risk of exporting, which attracts more firm to the export market. These papers, however, do not propose an explanation of why tariff overhang exists. The literature provides at least two other explanations for the use of tariff ceilings in trade agreements. Horn et al. (2010) show that at the presence of contracting costs, instead of writing a fully contingent agreement it may be optimal to specify tariff bindings to save on contracting costs. Maggi and Rodriguez-Clare (1998, 2007), on the other hand, study trade agreements when governments have a domestic commitment problem. They show that giving discretion to governments to choose a tariff below the binding reduces the inefficiency due to domestic commitment problem. In Maggi and Rodriguez-Clare (1998, 2007), however, the governments always apply a tariff equal to binding and, thus, no overhang is predicted by the theory.

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