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Antidumping Use and Its Effect on Trade Liberalization. Evidence for the European Union.

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Abstract

In this paper we examine the hypothesis that antidumping actions may contribute to trade liberalization by serving as a 'safety valve' for protection-seeking pressures. Using micro-level trade and tariff data at the HS 8-digit level for the European Union, we investigate whether the use of antidumping measures has acted as a catalyst in subsequent multilateral tariff negotiations. Our findings tend to suggest that the use of antidumping policies may have reduced the resistance of domestic protectionist forces towards major tariff reforms, as they show significantly larger tariff cuts for products previously involved in an antidumping investigation.

JEL classification: F13, F14

Keywords: External tariff liberalisation, anti-dumping protection, European Union.

Outline

1. Introduction

Contingent and temporary trade policy measures, such as antidumping, countervailing or safeguard duties represent an increasingly important component in most countries' portfolio of trade defence instruments. As one of the fastest growing forms of contingent protection measures, antidumping actions have attracted particular interest in recent years with increasing concerns over their role as alternative protectionist instruments (Blonigen and Prusa, 2003; Bown and Tovar, 2011; Ketterer, 2014). Contrary to most of the existing antidumping literature, which by and large, highlights potential inefficiencies and harmful effects on trade flows and welfare resulting from the use of antidumping, we investigate in this paper the potential role of antidumping actions may serve as a 'safety valve' for protectionist pressures. Using antidumping actions as some kind of pressure release for protectionist forces by temporarily increasing trade barriers for a limited number of products may mitigate opposition to more comprehensive trade reforms resulting in an overall increase in trade openness. As a result, if the safety valve argument holds, the rise in contingent protectionist measures may, in some cases, be less of a concern and may even, under certain conditions, contribute to the prospects for future trade reforms.

Although embedded in the multilateral trading system's framework, the use of antidumping actions tends to be much less regulated compared to other forms of import protection.[1] Originally conceived as a trade policy device to counteract unfair pricing behaviour, antidumping procedures are, in most cases, subject to a considerable degree of government discretion and hence are prone to be influenced by protection seeking industries and political-economy considerations.[2] Antidumping investigations are usually firm-specific and launched against a very narrow selection of goods imported from a particular exporting country. Given their product- and country-specific character, they represent a trade policy tool in their own right and can be clearly distinguished from the use of external MFN tariff duties which are imposed on all trading partners. Despite their detailed nature, antidumping actions are nevertheless often considered to exert a much stronger trade-distorting effect than their narrow scope may suggest (Prusa, 2005; Vandenbusche and Zanardi, 2010),[3] and many

[1] The WTO's antidumping legislation is based on Article VI of the General Agreement on Tariffs and Trade (GATT) and the Antidumping Agreement (ADA). The WTO's Antidumping Agreement (ADA) mainly refers to three alternative calculation methods to compute the difference between a calculated normal value and the foreign firm's export price.

[2] For a detailed overview over the political economy – antidumping literature and the latter's role as a particularly subtle trade policy instrument see Nelson (2006).

[3] Vandenbusche and Zanardi (2010) provide results which suggest that AD measures also affect sectors not directly involved in the investigation. Vandenbusche and Zanardi (2010) also find evidence that the use of antidumping actions has reduced aggregate trade flows on the part of new AD users.

economists have argued that antidumping measures lead to more economic distortions than benefits representing a particularly subtle trade policy instrument with often very complex investigation and implementation procedures.[4]

Given the high numbers of antidumping cases launched in the EU and other developed economies and now also in many developing countries, it is important to evaluate the potential consequences of antidumping actions, in particular in the context of other trade reform programmes. In fact, many countries have implemented ambitious trade liberalization reforms while using antidumping actions at the same time. As a result, some economists have, in this context, pointed to a potential benefit of antidumping use and the possibility that it may contribute to more aggressive tariff cuts. Destler (1996) and Finger and Nogués (2005) provide suggestive and interview-based evidence that antidumping actions may help to manage trade frictions by temporarily cushioning the effects of ambitious trade reforms on the domestic industry. Studying the patterns of antidumping use in Latin America, Miranda, Torres and Ruiz (1998) argue that the introduction of an antidumping legislation may have contributed to trade liberalization in several countries in Latin America by committing governments to follow more 'rule-based', rather than arbitrary, protectionist approaches. Moore and Zanardi (2009) represent, to our knowledge, the only empirical study that analyses the 'safety valve' argument for a selection of developing countries by focusing on applied tariffs and antidumping measures at a 3-digit ISIC industry level, using panel data techniques and controlling for a range of alternative influences. Using a newly developed database provided by Bown (2007) those authors do not find evidence of antidumping measures leading to more trade liberalization. Indeed, their econometric results suggest that antidumping actions may have hindered, rather that encouraged, tariff liberalization in some countries. Moore and Zanardi (2009) conclude that the safety valve hypothesis finds no support for the group of countries subject to their analysis.[5]

Contrary to earlier research our paper examines antidumping measures of a large and developed economy with powerful, rent-seeking industries in the context of a coordinated multilateral trade reform – the Uruguay Round. Moreover, given a potential bias when analysing product-level antidumping investigations at rather broad industry-levels, we use micro trade and bound tariff data at the 8-digit HS product level. Examining antidumping

[4] For an extensive survey on trade distortion and inefficiencies caused by antidumping measures and their, in parts, complex implementation practises, see Bloningen and Prusa (2003).

[5] Moore and Zanardi's (2009) selection of countries is based on data availability of the dependent variable (i.e. the applied MFN tariff rate). Their analysis includes Argentina, Bangladesh, Bolivia, Brazil, Chile, China, Colombia, Ecuador, Hungary, India, Indonesia, Malaysia, Mexico, Paraguay, Peru, Philippines, South Africa, Thailand, Trinidad and Tobago, Tunisia, Turkey, Uruguay, and Venezuela.

actions at the sector level may be too broad to investigate the effects of product-level antidumping investigations on product-level tariff changes. Most sector classifications include several hundreds of individual product lines, and sector-level analyses may give rise to bias in the presence of industries with a large variation in product-level tariff reductions and potentially small average tariff cuts.

Focusing on the European Union's tariff concessions agreed upon in the Uruguay Round, we investigate whether antidumping measures may have reduced domestic industry pressures and resulted in larger bound tariff cuts for products previously subjected to an antidumping investigation. We use the antidumping dataset developed by Bown (2007), tariff data from the WTO's schedule of tariff concessions, and control for a series of other factors which may have affected tariff cuts in the Uruguay Round negotiations, including political economy forces and the GATT's reciprocity principle. Our empirical results show a statistically significant effect of past antidumping actions on the final MFN tariff outcome of the Uruguay Round with, larger bound MFN tariff cuts agreed upon for products that were previously involved in an antidumping investigation. Our empirical findings hence tend to provide support for the argument that antidumping measures may have encouraged overall more aggressive tariff cuts. We ensure that these results are robust to reverse causation as a potential source of endogeneity by employing an IV-GMM estimator, and by testing for the exogeneity of different variables and the validity of our instruments.

The paper is structured as follows. Section 2 provides some descriptive statistics, while section 3 provides a simple analytical framework to guide the empirical analysis. Section 4 introduces the empirical identification strategy, highlights potential endogeneity concerns and discusses the data used. Section 5 reports the empirical results and section 6 concludes.

2. Descriptive statistics

Table 1 illustrates the EU's bound ad-valorem (MFN) tariff rates before and after the UR including the agreed percentage point reductions per ISIC 3-digit industry. It also reports the total number of product-lines involved in antidumping investigations per industry between 1988 and 1994. On average, total tariff protection amounted to 8.4 before and 5.2 percentage points after the Uruguay Round, with average UR-negotiated tariff cuts amounting to 3.2 percentage points and considerable variation at the sector level. While the tobacco industry stands out as the most protected sector before and after the agreement, with

an average protection of 51.8 and 31.7 percentage points respectively, the processed food, beverages and wearing apparel industries are close followers with tariff rates of up to 14.3 and 10.2 percentage points, before and after the Uruguay Round respectively. The largest tariff cuts in percentage points were born by the tobacco industry with an absolute average reduction of 20.1 percentage points, followed by average tariff cuts of 5.1 and 4.3 percentage points in the iron and steel, and furniture industries. Extending the descriptive analysis to an examination of the EU's MFN tariff reductions in percent rather than percentage-points (table 1, column 5) reveals that the average reductions (in percent) in the iron and steel, and furniture industries considerably exceeded the informal reduction aim of one third (with 93.6% and 80.6%, respectively), while the percentage-reductions of the wearing apparel and footwear industries clearly fell short of the informal 'one third' reduction objective (with 14.2% and 7.9%, respectively). With an overall tariff reduction of 44.7% (excl. agriculture) the EU, however, clearly fulfilled the informal UR reduction target for developed countries.

Column 5 in table 1 lists the total number of product lines which were part of an antidumping investigation per industry over the considered time horizon. It is important to note that the number of reported product lines only reflects the amount of launched investigations and not the number of industry complaints. The number of affected product lines may be interpreted as a rough measure for domestic firms' access to the antidumping protection technology. The total number of antidumping-targeted product lines between 1988 and 1994, included in our dataset, amounts to 257.[6] The textiles industries emerge as the heaviest user of antidumping actions with 78 different product lines involved in an investigation, followed by the iron and steel industry (68) machinery (35), and the industrial chemicals industries (35). While the iron and steel sector was subjected to above-the-average tariff cuts during the Uruguay Round, the textiles, machinery, chemicals and textiles industries faced rather moderate average tariff reductions.

In light of the much disaggregated nature of antidumping investigation and the large variation in terms of tariff concession within the here considered industries, investigating aggregated tariff cuts may be too broad to adequately assess a potential relationship between bound tariff cuts and product-level antidumping investigations. Comparing simple mean reductions for products previously subjected to an antidumping investigation with those that were not part of an antidumping procedure reveals interesting insights. The results illustrated in annex figure 1 show larger bound tariff concessions for products previously targeted by an

[6] Note that 8-digit HS concordance tables from the EU's Ramon database were used when matching the annual antidumping and product-level trade data with the EU's bound tariff concessions agreed upon during the Uruguay Round.

EU-antidumping investigation. The unconditional mean reduction in MFN tariffs by the EU during the UR was 3.6 percentage points for AD-targeted goods but only 2.7 for goods not involved in an antidumping investigation before the end of the Uruguay Round.

Table 1: European bound tariff reductions agreed upon in the Uruguay Round and preceding antidumping investigations

			(1)		(2)		(3)		(4)		(5)
		HS-8 tariff lines per industry	Pre-Uruguay Round (tariff rate)		Post-Uruguay Round (tariff rate)		Uruguay Round tariff cuts (percentage points)		Uruguay Round Tariff cuts (% of initial tariffs)		Antidumping Investigations (1988-1994)
ISIC	Sector name		Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	HS-8 Products
311	Food products	429	14.3	9.9	10.2	8.1	4.0	2.6	34.8	22.6	0
313	Beverages	9	10.4	12.6	7.6	9.9	2.8	2.9	29.3	7.4	0
314	Tobacco	5	51.8	27.2	31.7	17.7	20.1	10.3	38.9	6.2	0
321	Textiles	889	9.3	3.5	6.7	2.6	2.6	2.1	25.9	17.9	78
322	Wearing apparel except footwear	380	12.5	2.8	10.8	2.7	1.7	0.8	14.2	10.8	0
323	Leather products	91	4.7	2.5	3.2	2.4	1.5	1.0	35.7	23.1	0
324	Footwear except rubber or plastics	37	9.5	4.8	8.7	4.0	0.8	1.2	7.9	12.3	2
331	Wood products except furniture	89	4.8	2.8	1.7	2.4	3.1	1.6	72.5	30.5	0
332	Furniture except metal	34	5.5	1.5	1.2	1.6	4.3	1.7	80.6	25.7	0
341	Paper and products	189	7.7	3.4	3.9	2.2	3.9	2.1	50.7	19.4	5
342	Printing and publishing	32	6.1	5.2	3.1	2.9	3.1	2.6	52.7	18.7	1
351	Industrial chemicals	810	7.6	3.3	5.2	1.9	2.4	2.7	25.7	24.3	35
352	Other chemicals	271	6.4	2.2	2.9	3.0	3.5	2.9	56.7	43.4	2
353	Petroleum refineries	53	3.7	2.6	2.4	2.0	1.2	1.0	39.6	24.8	0
354	Miscellaneous petroleum and coal products	11	3.6	2.5	2.4	3.3	1.2	1.1	60.6	50.9	0
355	Rubber products	65	4.3	2.9	2.7	2.4	1.6	1.1	44.1	31.8	0
356	Plastic products	109	10.0	5.7	7.5	5.0	2.5	1.8	25.8	16.4	4
361	Pottery china earthenware	21	7.8	2.7	6.0	2.5	1.9	1.1	24.1	14.4	0
362	Glass and products	128	7.2	3.2	4.7	3.2	2.5	1.3	39.8	17.4	0
369	Other non-metallic mineral products	101	4.3	2.3	2.0	1.7	2.3	1.0	58.7	23.1	5
371	Iron and steel	468	5.5	2.1	0.3	1.1	5.1	2.3	93.6	19.0	68
372	Non-ferrous metals	235	4.5	3.4	2.9	2.9	1.5	1.5	43.4	35.3	4
381	Fabricated metal products	408	5.4	2.2	2.9	1.7	2.5	1.4	46.8	19.6	2
382	Machinery except electrical	842	4.2	1.7	1.9	1.4	2.3	1.4	56.6	22.5	35
383	Machinery electric	381	5.2	3.3	2.8	2.3	2.4	1.8	46.9	16.4	10
384	Transport equipment	253	6.7	5.1	4.6	4.9	2.1	1.9	37.2	21.5	1
385	Professional and scientific equipment	293	5.3	2.5	2.4	1.8	2.9	1.7	55.4	22.9	1
390	Other manufactured products	240	6.0	2.2	2.7	1.6	3.2	1.9	53.3	20.7	4
	Total	6873	8.4	4.5	5.2	3.6	3.2	2.0	44.7	22.1	257

Source: Authors' own calculation based on 8-digit HS product level data from the WTO's schedule of Uruguay Round Tariff concessions. The displayed tariffs cuts are based on a sample of 6,873 observations. Antidumping data for the period before the end of the Uruguay Round refers to the years 1988 to 1994.

3. Conceptual Framework

In this section we present a very simple conceptual framework to guide our intuition for the empirical investigation. The purpose of this is to formulate some intuitive predictions on how the use of antidumping actions may contribute to multilateral trade liberalisation. Going back to Viner's (1923) seminal contribution, we consider a setting in which governments have a goal of liberalization - i.e. the welfare maximizing policy in a context of two countries of similar size - but must however also deal with residual demands for protection. Thus, liberalization-minded governments promise to ensure 'fair trade' in the context of their liberalization. In the period prior to the trade reform they chose to set up a mechanism that will provide protection against 'unfairly' traded imports. To understand the mechanism through which an antidumping policy may affect Home's equilibrium external tariff, we first briefly define the political economy structure of tariff formation.

Home's objective function, U, is defined as consumer and producer surplus, denoted by the term W, which also includes the provision of public goods financed by tariff revenue, plus aggregate domestic industry profits Π, and hence $U(t) = W(t) + \Pi(t)$. Following Maggi and Rodriguez-Clare [1988], the equilibrium external tariff, which we define as the political tariff t^p, is the result of a bargaining process between the government and the domestic import-competing industry. Given that this political tariff maximizes the joint payoff function, $W(t)+\Pi(t)$, it is identified by $t^P = \arg\max [W(t)+\Pi(t)]$, where the incentive for the industry to lobby for protection stems from the protectionist benefit of a higher external tariff t, captured by $d\Pi(t)/dt>0$. In the absence of the government's political bias, the optimal tariff would be the socially optimal tariff t* which maximises social welfare.

Consider now the impact of an antidumping policy on the government's optimal political tariff equilibrium. The introduction of an antidumping measure will provide an alternative protection channel to the domestic import-competing industry, and may affect the level of the government's optimal political tariff given scope to substitute between antidumping and tariff sources of protection. We thereby assume that the antidumping instrument reduces the sensitivity of domestic industry profits to changes in the external tariff – i.e. $\frac{d\pi_{AD=1}}{dt} < \frac{d\pi_{AD=0}}{dt}$, where $\Pi_{AD=1}$, and $\Pi_{AD=0}$ denote the domestic industry's profit in the presence and the absence of an antidumping investigation. The intuition is that in presence of an additional protection parameter (which ensures a sufficiently high Π), the domestic import-competing industry, and associated producer rents, are less dependent on lobbying for

a high external tariff. Prior to the trade reform the government may therefore provide an alternative channel of import protection to mitigate opposition to more comprehensive tariff reforms. If this is optimally calibrated, the government provides only the amount of protection needed to support the goal of trade liberalization. As a result, this will reduce the importance of the 'political element' in the government's optimal tariff function, thereby allowing the setting of a tariff closer to the social optimum.

Describing the optimal political tariff in the presence of an antidumping measure with t^{P}_{AD} and the corresponding social welfare maximizing tariff with $t^{*}_{AD,}$ we denote our main theoretical relationship as:

$$t^{P}_{AD} - t^{*}_{AD} < t^{P} - t^{*}. \quad (1)$$

The presence of antidumping actions diminishes the level of the politically determined external tariff thereby reducing the difference between political and socially optimal tariffs. Denoting the observed reduction in MFN tariffs in the presence of a preceding antidumping policy as $\Delta t^{p}_{AD} \equiv t^{p}_{AD} - t^{p}$, equation (5) implies that $\Delta t^{p}_{AD} < t^{*}_{AD} - t^{*}$. Given that $t^{*}_{AD} - t^{*} \leq 0$, we obtain the prediction which we will bring to the data:

$$t^{p}_{AD} - t^{p} < 0. \quad (2)$$

Equation (2) underpins our prediction that one should expect higher multilateral tariff cuts in the presence of an antidumping investigation than in its absence, ceteris paribus.

4. Empirical Methodology

4.1 Identification Strategy

The choice of econometric identification strategy and the selection of variables to be included in the empirical analysis are guided by the theoretical prediction above, and our focus on multilaterally binding tariff concessions.[7] Modelling MFN tariff concessions in a multilateral trade setting, we hence employ an empirical identification strategy used in earlier empirical research on the determinants of tariff changes in multilateral trade negotiations.[8]

[7] If the safety valve argument holds and antidumping actions indeed help to manage trade frictions, this may be of particular relevance in the context of legally binding coordinated tariff concessions, given their non-reversible nature.

[8] A similar empirical approach to analyse negotiated bound MFN tariff cuts has been used by Limão and Karacaovali (2008) and Ketterer et al. (2014), who both analyse the effect of trade preferences on bound MFN tariff rates in different settings.

Given that the safety valve argument implies larger tariff reductions in the presence of antidumping actions than in the absence of the latter form of contingent protection (equation 2), we expect more aggressive tariff cuts in the presence of a product-level antidumping investigation. However, since it is not possible to observe external tariff cuts, had a particular product not been involved in an antidumping investigation, we use tariff changes for non-AD targeted goods as the counterfactual for tariff changes in the absence of product-specific antidumping actions. The intuition is that temporarily cushioning the effects of ambitious trade reforms on the domestic industry may enable governments to commit to larger tariff cuts in a coordinated multilateral settings than would otherwise have been the case. We hence define an indicator variable AD_i which takes the value one if product i was involved in an antidumping investigation during the Uruguay Trade negotiations (i.e. 1988 – 1994), and zero otherwise. Comparing bound MFN tariff cuts in the presence and in the absence of preceding product-level antidumping investigations we hence anticipate larger cuts on products which were previously involved in an antidumping investigation. Apart from identifying treatment-effects at the detailed HS-8 digit product level the empirical model also takes into account other factors affecting multilateral coordinated tariff negotiations. Using heteroscedasticity robust ordinary-least square (OLS) and IV-GMM modelling techniques, as well as clustering at the industry level, our econometric specification is given by:

$$\Delta t_i = \alpha + \psi AD_i + \beta \Delta x_I + \gamma R_i + \delta \Delta P_i + \varepsilon_i \qquad (1)$$

where Δt_i represents the absolute percentage change in bound mfn tariffs at the 8-digit HS product level agreed upon in the Uruguay Round by the EU.[9] AD_i denotes our main variable of interest - the AD-indicator variable. We additionally introduce an alternative definition of the antidumping indicator variable in an attempt to proxy the importance of the antidumping measure for the domestic industry. We interact the AD indicator with a significant imports dummy variable using HS 8-digit import data for 1988.[10] This may provide some information if the impact of AD measures on external bound tariff cuts was larger for products with significant pre-UR import shares. Political economy forces are taken into account by including the variable Δx_I which has been calculated as the change in the

[9] The large majority of bound mfn tariffs prior to the Uruguay Round have been negotiated during the Tokyo Round.

[10] In our baseline specification the significant imports indicator variable takes the value one if the 1988 HS 8-digit import value was larger than the 40th percentile. Employing 50th or 60th percentile thresholds leads to qualitatively similar findings. The results are available upon request.

elasticity weighed inverse import penetration ratio at an ISIC 3-digit industry level between 1992 and 1978.[11]

The GATT's reciprocity principle is taken into account by introducing the variable ΔR_i which has been computed by multiplying import weighted percentage tariff concessions, aggregated over all products j ($\sum_j w_j^k \Delta t_j^k / t_j^k$) for each trading partners k, with the 1992 EU-import share in good i of the EU's top-5 trading partners (s_{it}^k).[12] Potential free-riding effects based on the reciprocal tariff reductions coupled with the GATT's 'most-favourite-nation' clause are accounted for by introducing the variable ΔP_i which takes the value one if the change in the number of non-top 5 exporters per product line i was above the median change between 1989 and 1994.[13] The intuition is that countries may be less willing to commit to substantial tariff cuts in the presence of a large number of smaller trading partner which do not have to offer reciprocal trade barrier reductions in return.

4.2 Endogeneity concerns

A potential endogeneity concern is reverse causality when estimating equation (1) given that the incentive to lodge an antidumping complaint may depend on expected multilateral tariff cuts. If a sector, for example, expects a large tariff cut for a product it may be more likely to lobby for an antidumping investigation in order to receive alternative import protection. To address this we additionally use instrumental variable techniques. To predict whether a product was more likely to be subject to an antidumping investigation we use the growth of product-level import flows and of unit values, both in percentage terms, between 1988 and 1994, as instrumental variables, which are both strongly linked to the probability of the EU authorities initiating an antidumping investigation.[14] We expect these instruments to be uncorrelated with the error term, since the bound MFN tariff cuts entered into force

[11] 1992 marks the start of the final phase regarding the Uruguay Round tariff concessions, while 1978 reflects the end of the Tokyo Round in which most of the pre-UR bound MFN tariffs were agreed. The reason of choosing a slightly lagged expression for political economy forces is based on potential endogeneity concerns due to the fact that the elasticity weighed inverse import penetration ratio strongly depends on domestic prices and therefore also on current MFN tariffs.

[12] Since information direct negotiation partners of the EU is not available the reciprocity variable is based on the WTO's principle supplier rule granting principle suppliers of good i the right to ask for reciprocated tariff reductions. Defining the EU's 'principal supplier' as the top 5 exporters of each product-line we rank all Uruguay Round participants according to their product-specific export shares to the EU in 1992 (i.e. s_{it}^k) and assume that the EU only engaged in direct trade talks with the latter top-5 suppliers.

[13] It has been argued that if the change of small exporters to the EU per product line i was large enough between 1994 and 1989, and therefore mirrors a longer term change between 1978 (end-Tokyo) and 1994 (end-Uruguay), the constructed proxy variable is a valid instrument for the MFN externality effect.

[14] Note that EU law directly refers the investigating authorities to a consideration of a potential increase in allegedly dumped products as well as to an examination of a potentially depressing effect on domestic prices.

starting in 1995. We also include an alternative non-tariff-barrier (NTB) indicator variable reporting whether an NTB was set on a good in 1993. We argue that companies may be less likely to ask for alternative antidumping protection if a product was subject to an alternative NTB in the past or expect to be in the future. We use data for 1993 as a proxy for past and future NTB use.[15]

The political economy variable, may also give rise to reverse causation concerns since the elasticity-weighted production-import ratio is affected by domestic prices and hence external tariff rates. In case the political economy variable exhibits some persistency over time using a slightly lagged expression may not fully address potential reverse causality concerns. We therefore include the change in industry scale economies (valued added/number of firms) between 1981 and 1992 and its interaction with unit-value instrument.[16] The rationale for the political economy instruments is that higher fixed costs, (i.e. large scale economies) industries may be characterized by a larger production-import ratio.

The reciprocity variable may also give rise to potential endogeneity concerns due to reverse causation. We therefore use instruments based on information regarding the timing and mode of the Uruguay Round. Since it remained until 1992 unclear whether the UR could be brought to a successful end (Steward, 1999; Finger et al., 2002) several countries engaged in unilateral tariff cut between 1986 and 1992, without knowing whether the latter would finally be reciprocated. Finally, during the final phase of the UR – (i.e. 1992-1994), these unilateral tariff reduction were explicitly taken into account when agreeing upon the final reciprocal tariff reductions. Unilateral tariff cuts may therefore serve as a valid instrument for reciprocity-based tariff cuts.[17]

4.3 Data

Annex table 1 provides an overview of the variables used, their exact definitions and data sources, while annex table 2 provides some summary statistics. In this section we report some of the most important features of the dataset. Our analysis employs 8-digit Harmonised

[15] We also interact the NTB indicator instrument with an 1993 import dummy variable and include the calculated interaction as an additional instrument. The intuition is that an NTB would be even more relevant if the good was also imported in 1993.

[16] Δx_I has been introduced as the change in the elasticity weighed inverse import penetration ratio between 1992 and 1978. Import prices (i.e. unit values) are likely to affect all components of the political economy proxy and tend to be uncorrelated with the error terms given the timing of the UR tariff cuts' implementation.

[17] Finger, Reincke and Castro (2002: 121) note that "according to delegations, the informal practice was more or less to count from applied rates in 1986 to the bound rate agreed at the Uruguay Round. By this practice, countries that had, after 1986, unilaterally reduced their tariffs would be given 'credit' at the round to the extent that they bound these cuts at the round."

System (HS) data on negotiated bound MFN tariff cuts from the WTO's schedule of concessions and antidumping information from the Global Antidumping Database (Bown, 2007). Data on Non-Tariff Barriers (NTBs), which has been used to instrument the antidumping indicator variable stem from the Trade Information Department of UNCTAD.[18] Import weighted bound UR tariff reductions used to calculate the reciprocity variable have been provided by Finger et al. (2002) and were combined with supplier-specific 8-digit HS European import data using information from the COMEXT database. COMEXT was also used as the source for the import flow and unit value instruments. The political economy variable was introduced as the elasticity-weighted inverse import penetration ratios at an ISIC (rev.2) 3-digit level. Industry-level production and import data were extracted from the UNIDO and UN-COMTRADE databases, respectively, while industry-level import demand elasticities were taken from Kee et al. (2009).[19] UNIDO also provided information on sector-level value added and on the number of establishments, which were used to calculate a scale economies based instrument employed for the political economy variable. To account for different level of aggregation of our control variables we cluster the standard errors at the sector level.

5. Results

5.1 Main findings

Table 2 reports the estimation results of equation (1) using heteroscedasticity-robust OLS and two-step efficient generalized methods of moments (IV-GMM) estimators. The standard errors are clustered at the ISIC 3-digit industry level. The findings tend to provide empirical support for the safety valve hypothesis with bound MFN tariff cuts for AD-targeted products being larger than those of their counterparts, and controlling for a series of other influences. The regression results show statistically significant coefficients for the antidumping indicator variable that vary between -0.005 and -0.102 (columns 1 and 3) which points to a consistent negative effect but some variation in terms of magnitude for the model's baseline specification. Using OLS estimation techniques delivers results indicating larger MFN tariff cuts of around 0.5 percentage points for previously AD-targeted product

[18] Note that product-level NTB data is not publicly available, but was very kindly provided by a member of Trade Analysis Branch at UNCTAD.

[19] We use an industry-level elasticity measure based on the average across all European member states at the time of the UR (i.e. 1994).

lines, while the IV-GMM results show a much larger effect of some 10.2 percentage points.[20] Given the persistent negative and statistically significant coefficients of the antidumping indicator variable, these results tend to suggest that antidumping actions may have contributed to bound MFN tariff cuts in a context of multilateral trade negotiations. Hence, our may point to a potential role of antidumping measures to act as some kind of pressure release for protectionist forces by temporarily increasing trade barriers, thereby reducing domestic industry opposition to more aggressive subsequent or ongoing multilateral tariff reforms. The above findings are confirmed when taking into account the relative importance of product-level import flows by inter-acting the antidumping indicator variable with the pre-UR significant imports dummy. The estimates reported in columns (2) and (4) point an in magnitude slightly larger impact of antidumping measure on bound MFN tariff cuts for product lines which were involved in an antidumping investigation and characterised by significant import flows in 1988. Estimated coefficients for the antidumping-import interaction variable of 0.007 and 0.131 when using OLS and IV-GMM, respectively, may hence, under certain conditions, suggest that the impact of AD actions on external tariff cuts may even be larger where foreign import competition, and hence protection, is more important.[21]

Moreover, table 2 does not provide support for tariff cuts based on the GATT/WTO's principle of reciprocity, in a European context, when measured as the product-level import weighted percentage tariff concessions of the most important trading partners, given the statistical insignificance of the respective variable in all model specifications. Tariff reductions based on the potential free-riding of smaller counties also seem to be less important in a European context, since the repective parameter estimates are shown to be statistically insignificant at the usual levels. The influence of political economy forces, measured by in the change in the elasticity-weighed inverse import penetration ratio, on the other hand, is reported to exert a highly signficant impact on the bound MFN tariff cuts providing some evidence for smaller tariff cuts in politically influential industries.

A series of statistical robustness tests is displayed at the bottom of table 2. Testing the instruments joint significance in the IV-GMM estimations, the 'Hanson's J'-tests show that the second-stage error terms are not correlated with the excluded instruments the model

[20] Note that the respective tests, reported at the bottom of table 2, do not provide strong support of the endogeneity concerns.

[21] The import indicator variable takes the value one for product lines with import-flows higher that the 40th percentile; using the 50th or 60th percentile as a threshold for the import indicator variable results in similar findings. The results are available upon request.

specifications reported in table 2. Therefore the null of joint significance cannot be rejected. The first-stage regression results displayed in Annex Table 3 tend to confirm the latter findings showing that the F-test of joint insignificance is constantly rejected for all specifications versions. In addition, the endogeneity tests reported at the bottom of table 2 show that the null of efficiency and consistency of the OLS estimates cannot be rejected.

Table 2: The Impact of Antidumping Actions on Multilateral Tariff Reductions in the Uruguay Round

	OLS		IV-GMM	
	(1)	(2)	(3)	(4)
AD_i	-0.005*	-	-0.102***	-
	(0.003)	-	(0.031)	-
AD_i*IM_i	-	-0.007*	-	-0.131**
	-	(0.004)	-	(0.056)
R_i‡	-0.0002	-0.001	-0.003	-0.010
	(0.007)	(0.007)	(0.008)	(0.012)
Δ**x**‡	0.007**	0.007**	0.020***	0.019**
	(0.004)	(0.004)	(0.006)	(0.010)
P_i	-0.002*	-0.002*	-0.002***	-0.001*
	(0.001)	(0.001)	(0.0004)	(0.001)
Constant	-0.020***	-0.020***	-0.006	-0.009
	(0.004)	(0.004)	(0.009)	(0.014)
Observations	6873	6873	6862	6862
Number of AD-targeted goods	257	191	257	191
Hansen's J (p-val.)[a]	-	-	0.362	0.364
Endogeneity (p-val.)[b]	-	-	0.141	0.219
Heterosked. (p-val.)[c]	0.000	0.000	0.000	0.000

Notes. Columns (1) illustrates the OLS regression results, while Columns (2) reports the IV-GMM results for therespective model specifications. All regressions are based on heteroskedasticity robust standard errors and clustering at the 3-digit ISIC industry level. *, **, *** illustrate the 10%, 5%, 1% significance levels, respectively. For the IV-GMM estimations, the instruments exclusion F-tests of the first-stage regression are all rejected either at the 1 or 5 percent threshold level. (a) Sargan-Hansen test of over-identifying restrictions. Under the null hypothesis all instruments are jointly uncorrelated with the error term of the second stage regression and correctly excluded from the estimated equation (i.e. the instruments are valid instruments). (b) Endogeneity test of the endogenous regressors marked with ‡. The null hypothesis is that the marked endogenous regressors can be treated as exogenous (i.e. OLS estimation is consistent and efficient). (c) Pagan and Hall's (1983) test of heteroskedasticity for estimations using instrumental variables (IV). The null hypothesis is that no heteroskedasticity is present.

5.2 Sensitivity tests

In this section we test the robustness of our results along various dimensions such as to the introduction of initial tariffs, to the inclusion of 4-digit Harmonised System (HS) industry effects, and to the definition of the antidumping indicator variable. The findings of these robustness exercises are presented in table 3, with the estimated coefficients for the AD indicator variable reported in the respective columns, and the remaining variables

suppressed.[22] The findings for the OLS estimation approach are presented in the first row of table 3, while the IV-GMM results are reported in the second row. For illustrative reasons column (1), table 3, re-produces the main (baseline) findings from table 2 above.

We first test the robustness of our results to the introduction of initial tariffs to control for the potential use of a formulaic tariff reduction approach and the possibility that higher tariff rates may, more easily, be cut by more compared to lower ones. We find that the coefficients of the initial tariff rates are typically negative and statistically significant, indicating that products with higher pre-UR tariffs experienced slightly larger cuts. Moreover, the inclusion of initial tariffs does not affect the sign, or significance of the antidumping indicator variable (column 2).

Furthermore, we introduce an additional indicator variable at the HS 4-digit level to test the robustness of our findings when controlling for unobserved industry effects according to the Harmonised System (HS) product classification. The results presented in column (3) show that the inclusion of the indicator variable does not affect our baseline regression results as the estimated coefficient of the antidumping variable remains the same when estimated with OLS and slightly decreases to -0.105, when estimated with IV-GMM techniques. Including the level of initial tariffs together with the HS 4-digit industry indicators further confirms our previous findings. The OLS regression results remain, by and large, unaffected while the magnitude of the antidumping coefficient declines to -0.068 (significant at the 10% threshold), when using IV-GMM techniques.

Finally, we check whether our findings are sensitive to the definition of the antidumping indicator variable in regards to the time period covered. In light of potential concerns whether antidumping investigations initiated in 1994, may still have affected the final tariff outcome of the Uruguay Round trade negotiations, we re-estimate the econometric model with the antidumping indicator variable only considering antidumping targeted product-lines up to 1993. The findings are reported in column (5) and further support the hypothesis that antidumping investigations may contribute to bound MFN tariff cuts in multilateral trade negotiations. The coefficient for the OLS estimations amounts to -0.006 (significant at the 10% threshold), while its IV-GMM counterpart equals 0.096 (significant at

[22] The regression results for the suppressed covariates are available upon request.

the 1% threshold). Additionally controlling for initial tariffs confirms these findings (column 6).[23]

Table 3: Sensitivity Analysis

	OLS & IV-GMM					
	(1)	(2)	(3)	(4)	(5)	(6)
Robustness test	Baseline results	Initial tariffs	Industry effects	Industry effects & Initial tariffs	Indicator definition	Indicator definition & Initial tariffs
D_i^{OLS}	-0.005*	-0.006*	-0.005*	-0.006*	-0.006*	-0.007**
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
D_i^{IV}	-0.102***	-0.044*	-0.105***	-0.068*	-0.096***	-0.051**
	(0.031)	(0.027)	(0.030)	(0.039)	(0.027)	(0.026)
Observations	6843	6843	6843	6873	6832	6832
Number of AD- targeted goods	257	257	257	257	227	227

Notes: Column (1) displays the baseline regression results reported in Table 2 (Column 1 and 3). In all regression concordance tables have been used. Column (2)-(6) illustrate the regression results derived when subjecting the baseline findings, displayed in Column (1), to various robustness tests. All regressions use heteroskedasticity robust standard errors clustered at the 3-digit ISIC industry level. *, **, *** illustrate the 10%, 5%, 1% significance levels, respectively.

6. Conclusions

In this paper we analyse whether antidumping actions may have contributed to bound MFN tariff cuts in a major industrialised economy - the European Union. Against a sizable literature highlighting the potential trade-distorting and welfare reduction character of the use of antidumping measures, antidumping actions have also been hypothesised to work in promoting further trade liberalisation by acting as a pressure valve for releasing protectionist pressures from liberalisation-opposing industry groups. Contrary to earlier research at the ISIC 3-digit industry level, which finds no support of antidumping actions contributing to tariff liberalisation (Moore and Zanardi, 2009), our findings tend to provide support for the safety valve argument, at a detailed HS 8-digit level, for the European Union in the context of a multilateral trade setting. Using OLS as well as IV-GMM estimation techniques, our results show that products previously involved in an antidumping investigation were subjected to larger bound MFN tariff reductions in the Uruguay Round of on average at least 0.5 percentage points compared to products not involved in previous antidumping proceedings. Our findings may therefore be interpreted as providing support for the view that antidumping action may represent an effective tool for governments to fend off pressure from interest

[23] The OLS coefficient amounts to 0.007, while the IV-GMM estimation report a coefficient of 0.051, with both being significant at the 5% level. Additionally including a HS 4-digit industry indicator results in qualitatively similar findings (the results are available upon request).

groups opposing trade liberalisation measures. Our findings may however also be understood as a call for more research on the safety valve argument at a detailed product level, in the developed as well as the developing world, to gain a more comprehensive understanding on the effect of antidumping measures on external tariff cuts and trade liberalisation.

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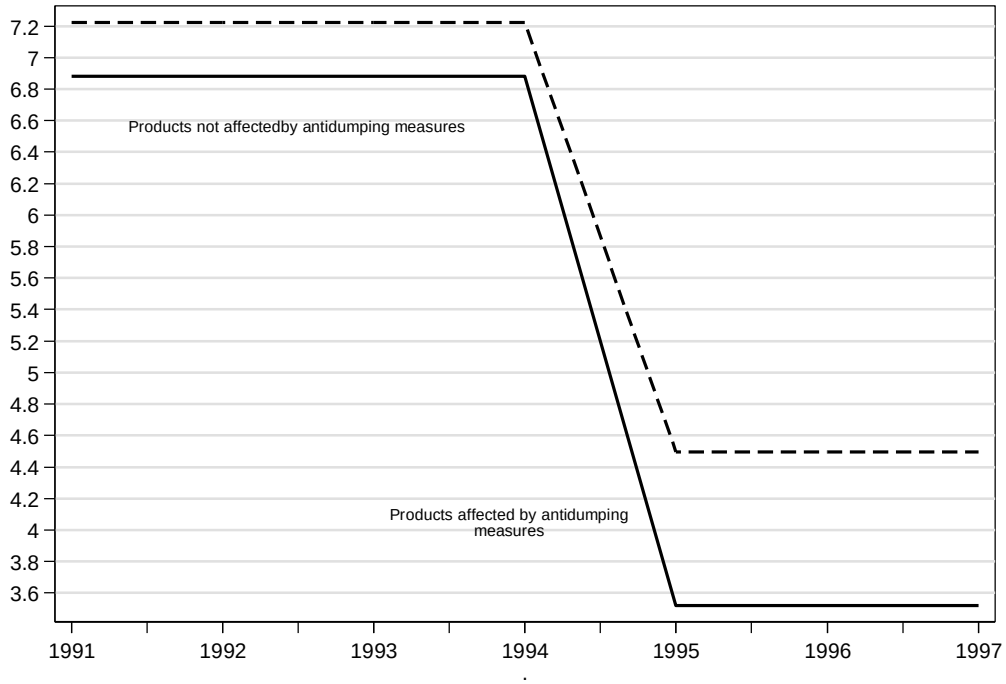
Appendix

Annex figure 1: Uruguay Round 8-digit HS tariff cuts for products with and without a preceding antidumping investigation



Source: WT0 schedule of tariff concessions

Annex table 1: Description of variables and their sources

Variable	Abbreviation	Exact definition	Source
Dependent variable			
Bound MFN tariff rate reductions	Δt_i	Reduction in bound 'Most Favoured Nation' (MFN) tariffs negotiated during the Uruguay Round and those in place before the Uruguay Round (i.e. Tokyo Round)	WTO + author's own calculations
Explanatory variables			
Antidumping indicator variable	AD_i	Indicator variable taking the value one if a particular product-line was involved in an antidumping investigation prior to the end of the Uruguay Round.	TRAINS + COMEXT
Antidumping & significant import indicator variable	AD_i*IM_i	As above and multiplied with a significant import dummy taking the value one if a product level import flows exceeds the 40^{th} percentile threshold.	TRAINS + COMEXT
Reciprocity induced changes in market access	R_i	Import weighted percentage tariff reductions of the EU's principal suppliers between 1986 and 1994 multiplied by good i's export share of each principal supplier to the EU; finally aggregation over all principal suppliers of good i.	Finger et al. (2002) + COMEXT + author's own calculations
Political economy variable	Δx_I	Change in the elasticity weighted inverse import penetration ratio at an ISIC 3-digit industry level between 1978 (final phase Tokyo Round) and 1992 (final phase Uruguay Round) [24]	COMTRADE + UNIDO + Kee et al. (2004) + author's own calculations
MFN externality variable	P_i	Change in the share of small exporters (i.e. non-top 5 exporters/suppliers) of product i to the EU between 1989 and 1994. P_i takes the value one if the above mentioned change is larger than the median change and zero	COMEXT + author's own calculations

[24] The change in the elasticity weighed inverse import penetration ratio Δx is calculated as $x_{92} - x_{78}$.

otherwise.[25]

Instruments

Import growth	Δim_{8894}	HS 8-digit change in the value of imports between 1988 and 1994(instrumental variable for AD_i)	COMEXT + author's own calculations
NTB dummy variable	NTB_i^{ntb93}	Dummy variable taking the value one if product i was subjected to an EU-NTB in 1993 (instrumental variable forAD_i)	TRAINS + author's own calculations
Scale economies	Δscale	Change in value added/number of firms (establishments) between 1981 and 1992 (instrumental variable for the political economy variable)	UNIDO + author's own calculations
	Δscale*Δworld price	Interaction of the scale economies instrument with the average world price change per industry between 1992 and 1994 (instrumental variable for the political economy variable)	UNIDO + COMEXT + author's own calculations
Import unit-value gorwth	Δunit-value$_{8894}$, $(\Delta\text{unit-value}_{8894})^2$, $(\Delta\text{unit-value}_{8894})^3$	HS 8-digit product unit-value changes between 1988 and 1994 (instrumental variable for AD_i)	COMEXT + author's own calculations
Unilateral tariff reductions	R_i^{uni}	Reciprocity measurement as described above but this time focusing on import-weighed unilateral tariff reductions of UR participants undertaken between 1986 and 1992 only (instrumental variable for R_i)	Finger et al. (2002) + COMEXT + author's own calculations

Annex table 2: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
Δt_i	-0.028	0.022	-0.324	0
AD_i	0.037	0.190	0	1
AD_i*IM_i	0.029	0.168	0	1
Δx_I	-0.903	0.636	-6.887	2.140
R_i	-0.463	0.101	-.9321	0
P_i	0.501	0.500	0	1
R_i^{uni}	-25.895	12.193	-88.217	0
Δim_{8894}	1.674	47.953	-0.996	3048.275
Δunit-value$_{8894}$	1.023	30.388	-1	2310.916
$(\Delta\text{unit-value}_{8894})^2$	1.1e+9	6.05e+10	0	4.86e+12
$(\Delta\text{unit-value}_{8894})^3$	-1.51e+15	1.3e+17	-1.07e+19	7.89e+17
D^{ntball}	0.091	0.287	0	1
D^{ntbany}	0.271	0.444	0	1
Δscale	0.001	0.003	-0.005	0.057
$(\Delta\text{unit-value}_{8894})^{avg}$*$\Delta$scale	0.293	4.439	-5.841	273.141
R^{uni}	-0.259	0.1219	-0.882	0
t_{t-1}	7.209	4.975	0	90

The summary statistics are based on a dataset of 6,873 observations.

[25] The change in the MFN externality effect or the change in the share of small (non-top5 exporters) of product-line i to the EU is calculated as $share_{94}$-$share_{89}$.

Annex table 3: IV-GMM First stage regressions

	Antidumping (baseline)			Antidumping & Imports		
	AD_i	Δx	R_i	AD_i*IM_i	Δx	R_i
Δim_{8894}	2.71e-07	-0.0002	5.12e-06	-0.004	-0.004	0.0002
	(0.00001)	(0.0001)	(5.15e-06)	(0.0002)	(0.003)	(0.0001)
$\Delta unit\text{-}value_{8894}$	-3.49e-06	0.0002	-9.74e-06	0.002	0.003	0.0003
	(2.38e-05)	(0.0004)	(9.05e-06)	(0.002)	(0.007)	(0.0003)
$(\Delta unit\text{-}value_{8894})^2$	-2.04e-14**	7.41e-13**	3.33e-14**	-3.35e-05	9.05e-06	-2.73e-06
	(9.9e-15)	(3.28e-13)	(1.24e-14)	(4.37e-05)	(0.0001)	(5.27e-06)
$(\Delta unit\text{-}value_{8894})^3$	-7.83e-21*	2.57e-19*	1.08e-20**	1.47e-07	-1.50e-07	8.82e-09
	(4.20e-21)	(1.53e-19)	(5.22e-21)	(1.79e-07)	(5.26e-07)	(2.30e-08)
D^{ntball}	-0.003	-0.687*	-0.010	-0.010	-0.676**	-0.010
	(0.060)	(0.319)	(0.023)	(0.039)	(0.320)	(0.023)
D^{ntbany}	0.084***	0.561***	0.027	0.057***	0.549***	0.027
	(0.027)	(0.123)	(0.020)	(0.020)	(0.123)	(0.020)
$\Delta scale$	0.012	0.210	-0.001	0.004	0.131	0.00003
	(0.013)	(0.208)	(0.005)	(0.006)	(0.139)	(0.0032)
$(\Delta unit\text{-}value_{8894})^{avg}*\Delta scale$	-6.17e-05	-0.001	0.0001	-0.0002	0.004	-0.0005*
	(0.0001)	(0.002)	(0.0001)	(0.001)	(0.005)	(0.0003)
R^{uni}	-0.002	-0.368	0.700***	-0.035	-0.377	0.700***
	(0.055)	(0.240)	(0.033)	(0.050)	(0.240)	(0.033)
P	-0.001	-0.039	0.002	-0.002	-0.039	0.002
	(0.003)	(0.038)	(0.003)	(0.003)	(0.039)	(0.003)
Constant	0.011	-1.139***	-0.288***	0.006	-1.124***	-0.289***
	(0.016)	(0.153)	(0.007)	(0.014)	(0.150)	(0.007)
Observations	6861	6861	6861	6832	6832	6832
Adj. R^2	0.036	0.131	0.726	0.023	0.128	0.726
Shea's partial R^2	0.022	0.080	0.689	0.012	0.068	0.718
Partial R^2	0.036	0.131	0.724	0.022	0.128	0.724
F-test excl. (p-value)	0.080	0.006	0.000	0.000	0.000	0.000

The first-stage regression results refer to the IV-GMM estimations presented in table 2. *.**,*** respectively illustrate the 10%, 5%, 1% significance levels.