Trade Preferences and Multilateral Tariff Cuts: Evidence for Japan

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Abstract

Using detailed product-level tariff and trade data, this paper analyses Japanese external tariff adjustments in the presence of trade preferences. The empirical literature on the impact of trade preferences on external mfn tariff changes is still scarce and characterized by significant differences in geographical focus and empirical methodologies. By focusing on Japan's external tariff protection we aim at investigating the PTA multilateral tariff nexus for an important global trader. Using product level Uruguay Round tariff data at the 6-digit HS level, our results tend to suggest that trade preferences may have hindered further Japanese external tariff liberalization during the last successfully concluded multilateral trade round.

JEL: F13, F14
Keywords: Preferences, Japan, multilateral liberalisation, stumbling block.

1. Introduction

Almost all countries are currently part of at least one preferential trade agreement (PTA). In view of the increasing number of such PTAs globally during the last 20 years, a controversy has developed about whether preferences promote or hinder further multilateral trade liberalization.[1] While multilateral tariff liberalization tends to be associated with positive welfare effects, the welfare impact of preferential trade reform is more controversial, and may result in trade diversion and declining export-prices for non-member countries (Viner, 1951; Chang and Winters, 2002).[2]

After almost two decades of theoretical contributions - providing arguments for external tariff adjustments in both ways following the formation of a preferential trade agreement - the question of whether PTAs are a "stumbling-" or a "building block" (Bhagwati, 1991) to multilateral trade liberalisation (MTL) still prevails. The scarce empirical literature, which is characterised by methodological differences as well as differences in underlying policy settings, also shows opposing results. Analysing bound mfn tariff changes for two of the world's largest traders - the US and the EU, both of which with a substantial number of PTAs concluded with smaller developing countries and a focus on concessions in non-trade areas, Limão (2006) and Karacaovali and Limão (2008) find evidence for trade preferences hindering multilateral tariff liberalization. Estevadeoral et al. (2008) and Calvo-Pardo et al. (2010), on the other hand, find evidence for the contrary when investigating the relationship between preferential and applied mfn tariff changes for several emerging economies in Latin America and South-East Asia.[3]

In this paper and in other work (Ketterer et al., 2012) we argue that the impact of preferences is likely to be affected by the type of trading partner or partners that the preferences have been offered to and the associated policy context. In the case of Ketterer et al. (2012) the impact of Canada's preferences, given to the USA under CUSFTA, on

[1] While 124 preferential trade agreements had been notified to the WTO from 1948 to 1994, more than 370 have notified between 1995 and 2011 (www.wto.org).

[2] Chang and Winters (2002) find evidence that PTAs are likely to result in lower export prices for third-party countries, while Romalis (2007) finds evidence for trade diversion. For a recent review of the literature on PTAs and the latter's welfare effects see Freund and Ornelas (2010).

[3] Limão (2006) and Limão and Karacaovali (2008) analyse bound multilateral tariff changes of preferentially and non-preferentially traded goods during the Uruguay Round, whereas Bohara et al. (2004), Estevadeordal et al. (2008), and Calvo-Pardo et al. (2010) analyse the relationship between preferential and multilateral tariff changes by regressing applied mfn tariff changes on lagged values of preferential tariff changes in panel data settings using OLS and IV estimators. The former two authors find evidence for preferences hindering further multilateral tariff reductions, whereas the latter studies find evidence for the opposite. In addition, using a cross-sectional regression approach Bohara et al. (2004) estimate the influence of Brazil's exports to Argentina on the latter's external tariffs in the presences of Mercosur and find that increasing preferential imports resulted in lower Argentine external tariffs.

Canada's mfn tariff offer is hypothesised to be a building bloc in nature because of the size, importance and competitiveness of the US relative to Canadian producers. There was therefore scope for a rent-destruction effect in Canada associated with these specific preferences, one that could be expected to reduce resistance to MFN tariff cuts in the subsequent Uruguay Round (UR).[4] These conditions are less likely to apply however when non-reciprocal preferences are offered by an industrial country to developing countries. Indeed the objectives of such preferences are likely to be very different to these associated with regional trade arrangements involving reciprocated preferences between industrial countries.

This paper aims to extend the current empirical literature by analysing the impact of trade preferences on external tariffs set by a developed Asian economy. Providing theory based support for the importance of a PTA's policy objective, we examine the impact of Japan's preferential trade concessions on the latter's Uruguay Round tariff cuts. Using an empirical strategy similar to Limão (2006) and Karacaovali and Limão (2008) to identify subgroups of preferentially traded products, our results provide evidence for a "stumbling block" effect of Japanese preferences in place at the time of the Uruguay Round. Our findings may be rationalized in the context of Japan's strong focus at the time on non-reciprocal GSP trade preferences. In this PTA policy setting, PTAs in which a large and developed trader grants preferential market access to a less developed trading partner, in exchange for closer political ties, may result in less aggressive tariff cuts for preferentially traded goods. Valuating the smaller trading partner's closer political cooperation, Japan subsequently faces an additional constraint on lowering its external tariffs in order to preserve PTA-negotiated preference margins and thus to maintain incentives to cooperate. As a result, Japanese policy makers may have been less aggressive in reducing UR bound external tariffs in the presence than in the absence of trade preferences.

Using cross-sectional 6-digit HS variation in tariff changes of PTA- and non PTA good subgroups - with PTA goods being defined as goods actually preferentially imported – we use OLS and IV-GMM estimation techniques in order to account for reverse causality concerns. Our empirical findings are statistically and economically relevant by identifying

[4] Ornelas (2005) shows that market-access based preferences granted to competitive trading partners may result in 'political rent destruction', a decline in lobbying and thus lower external mfn tariffs. The latter may therefore amount to a driving force when preferential market access has been granted to a large and competitive partner. Granting unreciprocated preferences to developing countries, on the other hand, is less likely to result in increased intra-bloc competition and thus lower external tariffs. Preferences granted to developing countries, which may also include cooperation agreements on non-trade issues, may also reinforce concerns of 'preference erosion' and thus provide an additional incentive not to reduce external mfn tariffs too aggressively.

larger mfn tariff concessions of on average 1.6 to 1.8 percentage points for non-PTA goods, after having controlled for other influences.

The reminder of our paper is structured as follows. Section 2 briefly sets up the analytical framework which represents the motivation and the conceptual guidance of our study. A short description of Japan's trade policy and Uruguay Round tariff cuts is presented in section 3, while section 4 explains the empirical methodology employed. Section 5 and 6 respectively present the main findings and series of robustness tests. Section 7 concludes.

2. Analytical Framework

Our empirical analysis of this specific preferential-multilateral tariff relationship is motivated by Karacaovali and Limão's (2008) theoretical framework. The authors show that PTA-settings in which a large and developed economy grants preferential market access to poorer countries in exchange for closer political cooperation in non-trade areas are likely to lead to a "stumbling block" effect for multilateral tariff liberalization. The authors illustrate that PTAs formed with the expectation of closer political ties may thus considerably restrict external tariff reform and may even be used as diplomatic 'bargaining chips' (Jackson, 1997) for industrialised countries' political or strategic objectives.

Assume a simple theoretical framework of two symmetric regional trading blocs - each consisting of two economies - which analyses (economically large) Home's external tariff formation in the presence and in the absence of a PTA concluded with the smaller preferential trade partner. The analytical approach includes a political economy motive for external tariff protection and models the government's objective as being determined by external and preferential tariffs as well as a non-trade related policy motivation.[5]

To illustrate the causal chain through which non-mutual market access based PTAs may influence Home's optimal external tariff setting, we start by describing the government's political objectives and the formation of the external tariff set in the absence of trade preferences. Home's intention is to maximize a political support function G(.) which is defined as the sum of aggregate labour income, tariff revenue T(.), consumer and producer surplus W(.), as well as the net benefit arising from closer political ties with the regional trading partner Ψ(.):[6]

$$G(t^p,t^m,e,e^p)=1+T(t^p,t^m)+W(t^m)+\Psi(e,e^p) \qquad (1)$$

where t^m and t^p denote Home's external and preferential tariffs respectively, and where e and e^p represent two terms measuring Home's and the preferential partner's invested

[5] It is important to note that while for Karacaovali and Limão (2008) the political incentive to form a PTA with an economically less developed partner is based on an direct exchange for cooperation agreements in non-trade areas, such as immigration, environmental or labour standards – an important component of most agreements formed by the EU and the US, we argue that Japan's benefit from granting unilateral preferential market access may represent a more general " 'bargaining chip of diplomacy" (Jackson, 1997:160) which are likely to enhance Japan's political and strategic ties with the respective preference receiving countries.

[6] Labour income has been normalized to unity.

resources in the accomplishment of certain diplomatic or non-trade related policy objectives.[7] Following Bagwell and Staiger (1999) in modelling reciprocal tariff liberalization in a multilateral context the optimal tariff set in the absence of a PTA is determined by Home's objective maximization defining the equilibrium external tariff as:[8]

$$t^{mfn} = \arg\max\,[G(t^m, e^p,.)] \qquad (2)$$

Consider now the impact of Home forming a PTA with its smaller trading partner. We assume that the formation of a PTA between Home and the smaller regional trading partner is motivated by the use of preferential market access as a diplomatic bargaining chip for a closer political relationship.

The smaller economy also maximizes a political objective function $G^p(.)$, the latter being defined as:

$$G^p\,(t^p,t^m,e^p)=1-e^p+bX^p \qquad (3)$$

where t^p and t^m again represent Home's preferential and external tariffs respectively; X the smaller country's exports to Home and, b denotes the smaller regional bloc partner's political economy weight placed on its exporting producers. The equilibrium effort the smaller preferential trading partner is willing to accept in terms of an enhanced commitment regarding Home's political objectives is defined as:

$$e^p \leq (t^m - t^p)\,bX \qquad (4)$$

Equation (4) illustrates that the preference-receiving country's willingness to increase its policy commitment towards Home's non-trade related objectives is subject to a particular preferential treatment which is reflected by the difference in external and preferential tariffs - i.e. the preference margin. Aware of the preferential partner's incentive structure (equation 4) Home maximizes its utility function, after the formation of the PTA, as before with a crucial modification. The latter now chooses its optimal external tariff by considering the effect the tariff has on the preference margin and by consequence on the trading partner's political

[7] Note that while Karacaovali and Limão (2008) denote e and e^p as the financial means invested in non-trade objectives we define the latter as indicators of general commitment in making the cooperation in or the accomplishment of certain Japanese (foreign) policy objectives more likely. They also include the external tariff set by the large country in the foreign trading bloc. We drop this term, given that trade bloc negotiation is not relevant here and all preference-receivers are relatively small.

[8] Bagwell and Staiger model GATT reciprocity based tariff liberalization as the joint objective maximization of countries aiming to overcome disadvantageous terms-of-trade effects. Moreover, note that due to the symmetry assumption it is assumed that $t^{mfn} = t^{mfn*}$ - i.e. that the large countries' tariffs in their import competing sectors are the same.

cooperation in non-trade areas. The equilibrium external and preferential tariffs are therefore determined by:

$$\{t^{mfn}_{pta}, t^{p}_{pta}\} = \arg\max [G(t^{p}, t^{m}, e, e^{p})] \tag{5}$$

Aiming to provide enough incentives for small to support Home's non-trade policy objectives the latter is willing to trade in preferential market access (and thus tariff revenue) against the extra utility originating from a closer political partnership with the smaller preferred trading partner. As a result, if Home values the agreement at a given mfn tariff and consequently at a given preferential margin it then faces, after the formation of the PTA, an additional constraint on lowering its external tariffs in the presence of a PTA than in its absence.

A natural definition of the constraint on external tariffs and hence of the "stumbling block" effect is provided by the comparison of mfn tariffs set in the presence and in the absence of granted trade preferences. Based on equation (2) and (3) we then obtain:

$$t^{mfn}_{pta} - t^{mfn} = \Phi \tag{6}$$

where Φ represents a "stumbling block" term assuming higher equilibrium tariffs in presence of a PTA than in its absence. In line with this theoretical framework, our empirical analysis aims to determine whether Φ is statistically significant and whether the respective parameter estimate is positive. Given the fact that Home sets tariffs on numerous products, we assume that expression (6) also applies to multiple goods i.

3. Japan's Preferential Trade Policy and Uruguay Round Tariff Cuts

3.1 Japanese Trade Preferences

Japan's preferential trade policy is characterized by a strong focus on preferences granted to developing and emerging economies. Until the start of the 21st century Japan's preferential trading schemes were limited to GSP and LGSP preferences which were first established in 1971 and periodically reviewed thereafter. [9] Mainly granting positive and zero-tariff preferential market access on designated products, in particular for industrial and mining products with only a few preferences granted on agricultural goods.[10] From the early 2000s onwards, Japan's preferential trade policy changed remarkably (Urata, 2004). Previously, rather reluctant to grant additional trade preferences alongside its GSP systems, Japan started to sign several bilateral economic partnership agreements (EPAs) with the conclusion of 13 bilateral EPAs by the end of 2011. [11]

Analysing Japan's external tariff policy during the Uruguay Round (1986-1994), we focus in our empirical analysis on Japanese preferences granted or in place at the time of the final UR negotiations and thus on preferences granted under the country's GSP or LGSP systems. Despite having been introduced in the GATT's trade policy framework for develpoment reasons, these preferential schemes have also been found to be used to support national policy-makers' "short-term nationalistic political objectives that are not materially

[9] Initiated in 1971, Japan revised its GSP system four times until 2011. The respective starting dates of the four decennial schemes were 1981, 1991 and 2001 (Komuro, 2009).

[10] In addition, Japan's GSP market access was further restricted by ceiling values or ceiling quantities for some products in addition to the usual graduation threshold of 25%. Moreover, in 2003, Japan also introduced a so-called 'Country-Specific Competitiveness-Focused GSP-Exclusion' clause under which country-specific GSP imports could be suspended thereby further highlighting a potentially rather limited import competition and thus domestic rent destruction (cf. Ornelas, 2005) caused by Japan's GSP trading partners.

[11] Japan concluded its first EPA with Singapore in 2002 and further economic partnership agreements (EPAs) with Mexico, Malaysia, the Philippines, Chile and Thailand followed in rapid succession. Until the end of 2011 Japan concluded 13 bilateral EPAs including trade concessions granted to Asean countries and also India. In addition to mutual preferential market access concessions, Japan's EPA policy further includes strong elements of economic and non-economic cooperation such as common regulations on investment rules, competition laws as well as environment- and energy conservation. For more detailed information of EPAs in the East-Asian region see Kawai and Wignaraja (2008). For more detailed information of EPAs in the East-Asian region see Kawai and Wignaraja (2008).The bilateral Japan-Singapore Economic Partnership Agreement (EPA) entered into force in 2002, the Japan-Mexico and Japan-Malaysia EPAs in 2005 and 2006 respectively, while Japan's EPAs with Chile and Thailand were enforced in 2007 and the one with the Philippines in 2008. Further agreements were concluded with Indonesia, Brunei, Asean, Vietnam (all in 2008) as well as with Switzerland (2009), India and Peru (both 2011). In addition, Annex Figure 1 provides a brief graphical overview of Japan's aggregated preferential and mfn tariff evolutions over time. The latter tends to point to a five-year phasing-in period for most of the UR tariff cuts and a relatively small difference between the applied and bound mfn tariffs thereafter.

related to overall economic development" (Jackson, 1997:160). Employed as diplomatic "bargaining chips" for the government's non-trade related policy objectives, trade preferences, in particular when not based on mutual market access concessions, may therefore be seen as components of trade- as well as foreign-policy instruments (Komuro, 2009).

3.2 Uruguay Round Tariff Concessions

Multilateral trade negotiations in the Uruguay Round (UR) started in 1986 and lasted until 1994. More than 100 participating countries agreed to legally binding tariff cuts on numerous goods including concessions negotiated in so-called sectoral agreements (e.g. textile, chemicals etc.). In order to achieve an informal tariff reduction aim of one third, participating countries were asked to submit 'line-by-line' reduction proposals as a starting point for further negotiations.[12]

Table 1 provides an illustration of Japan's bound ad-valorem mfn tariff rates before and after the UR as well as the agreed cuts per industry. The sectors with the largest average tariff protection before and after the Uruguay Round were the beverage, processed food and tobacco industries. In addition, several industries showed (rather low) average protection rates of around 4 percentage points before the Round, including the paper, printing, petroleum, machinery and transport equipment industries; most of which characterized by even lower or duty-free access after the UR negotiations (Table 1, Columns 2 and 3).

The largest average tariff cuts were borne by the processed food and beverage industries. With sector-level reductions of 7 and 14 percentage points, respectively, the latter were clearly above the average cut across all industries of around 4 percentage points (Table 1, Column 3). Analysing Japan's Uruguay Round tariff concessions in percent of initial (i.e. pre-UR) bound rates, rather than percentage points identifies the paper, printing, machinery, transport and scientific equipment industries as the sectors with tariff cuts above 95 percent, whereas the tobacco industry was characterized by the lowest average tariff reductions with

[12] While during preceding multilateral trade rounds (e.g. Tokyo Round) the application of so-called "formula approaches" used to be common practise (cf. GATT Article 28 bis), the UR failed to reach a common consensus on mutually acceptable reduction modalities. While the United States favoured an item-by-item approach, other participants were opposed since they feared that the latter approach would allow for continuing high protection in certain sectors (WTO, 2005). The GATT contracting parties finally agreed to reduce their tariffs "with a target amount of overall reductions at least as ambitious as that achieved by the [Swiss-] formula participants in the Tokyo Round" (WTO, 2005), a statement that was generally interpreted as an overall tariff reduction of 33.3% (Hoda, 2001; WTO, 2005).

around 17 percent (Table 1, Column 5). Coefficients of variation also displayed in Table 1, Column (4), further point to the presence of significant variations regarding the magnitude of the product-level mfn tariff cuts within individual industries. Finally, comparing actual with the one third hypothetical reductions (Table 1, Column 4 and 6, respectively), also reveals that the tariff cuts were not uniformly applied across different industries in order to achieve the reduction target.

Table 1: Japan's Bound MFN Tariff Reductions agreed upon during the Uruguay Round per Industry

		(1)	(2)		(3)		(4)			(5)	(6)
			Before Uruguay Round		After Uruguay Round		Uruguay Round Tariff Cuts (Percentage Points)			Uruguay Round Tariff Cuts (Percent)	Hypothetical 1/3reduction target
ISIC code	Sector name	Tariff Lines	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Coef. Var.	Mean (% of pre-UR rates)	Mean (percentage points)
311	Food products	87	0.19	0.21	0.12	0.12	-0.07	0.10	1.41	-37.9	-0.13
313	Beverages	4	0.25	0.18	0.11	0.08	-0.14	0.11	0.73	-56.2	-0.17
314	Tobacco	2	0.15	0.07	0.12	0.05	-0.03	0.02	0.64	-17.5	-0.10
321	Textiles	148	0.09	0.05	0.06	0.03	-0.04	0.02	0.66	-40.5	-0.06
322	Wearing apparel except footwear	68	0.11	0.03	0.07	0.03	-0.03	0.01	0.43	-34.9	-0.07
323	Leather products	20	0.09	0.05	0.07	0.07	-0.02	0.02	0.82	-40.6	-0.06
324	Footwear except rubber or plastics	2	0.07	0.04	0.06	0.03	-0.01	0.01	0.54	-20.5	-0.05
331	Wood products except furniture	20	0.07	0.06	0.03	0.02	-0.05	0.05	0.97	-59.9	-0.05
332	Furniture except metal	16	0.05	0.00	0.01	0.02	-0.04	0.01	0.36	-79.2	-0.03
341	Paper and products	86	0.04	0.02	0.00	0.01	-0.04	0.02	0.43	-96.3	-0.03
342	Printing and publishing	11	0.04	0.00	0.00	0.00	-0.04	0.00	0.04	-100.0	-0.03
351	Industrial chemicals	464	0.06	0.02	0.03	0.02	-0.02	0.01	0.68	-40.0	-0.04
352	Other chemicals	137	0.06	0.02	0.01	0.03	-0.04	0.02	0.46	-79.6	-0.04
353	Petroleum refineries	13	0.04	0.02	0.02	0.02	-0.02	0.01	0.33	-63.8	-0.02
354	Miscellaneous petroleum and coal products	3	0.04	0.01	0.01	0.01	-0.03	0.02	0.59	-77.1	-0.03
355	Rubber products	37	0.05	0.01	0.01	0.01	-0.04	0.01	0.33	-84.9	-0.03
356	Plastic products	42	0.07	0.04	0.05	0.04	-0.02	0.01	0.46	-38.0	-0.05
361	Pottery china earthenware	12	0.04	0.00	0.01	0.01	-0.03	0.01	0.37	-77.2	-0.03
362	Glass and products	46	0.05	0.02	0.01	0.02	-0.04	0.01	0.26	-81.7	-0.03
369	Other non-metallic mineral products	51	0.04	0.01	0.01	0.01	-0.03	0.01	0.47	-68.6	-0.03
371	Iron and steel	137	0.05	0.01	0.00	0.01	-0.05	0.01	0.24	-94.3	-0.04
372	Non-ferrous metals	87	0.06	0.03	0.03	0.02	-0.03	0.01	0.37	-58.0	-0.04
381	Fabricated metal products	214	0.05	0.01	0.01	0.01	-0.04	0.01	0.37	-81.0	-0.03
382	Machinery except electrical	344	0.05	0.01	0.00	0.01	-0.05	0.01	0.18	-97.7	-0.03
383	Machinery electric	154	0.04	0.01	0.00	0.01	-0.04	0.01	0.29	-95.7	-0.03
384	Transport equipment	89	0.04	0.01	0.00	0.00	-0.04	0.01	0.25	-100.0	-0.03
385	Professional and scientific equipment	130	0.05	0.01	0.00	0.01	-0.05	0.01	0.19	-97.4	-0.03
390	Other manufactured products	108	0.05	0.02	0.02	0.02	-0.03	0.01	0.38	-68.8	-0.03
	Total	2532	0.07	0.03	0.03	0.03	-0.04	0.02	0.51	-67.4	-0.05

Notes: The sample includes 2532 non-missing observations at the HS 6-digit level. Product lines with pre-UR duty free bound mfn tariffs have been excluded due to the lacking possibility to grant tariff preferences on the latter products. Column (1) reports the total number of goods per ISIC 3-digit industry, whereas Columns (2)-(4) illustrate simple average means and standard deviations of pre- and post-UR bound mfn tariff rates as well as the tariff reductions per industry. The coefficients of variation, in Column (4), have been calculated as the ratio of the std. deviation to the mean reduction. Column (5) reflects the negotiated mfn tariff rate changes in percent rather than percentage points, while Column (6) illustrates the hypothetical post-UR mfn rates if the informal reduction aim for developed countries of one-third had been applied to each industry.

4. Empirical Methodology

4.1 Identification and Econometric Specification

Contrasting external tariffs chosen in the presence and in the absence of a PTA, equation (6) predicts higher mfn tariffs in the presence than in the absence of granted trade preferences. In light of the unobserved real counterfactual - i.e. the external tariff levels in case the PTA had not been formed, we follow Limão (2006) by using non-preferentially traded goods - i.e. products not imported or not receiving preferential treatment (non-PTA goods) - as the respective control group. Equation (6) may therefore also be interpreted as predicting lower external tariffs for non-PTA goods relative to PTA goods (i.e. preferentially imported products). Based on the theoretical framework above we use a general optimal tariff expression which may be applied to PTA as well as to non-PTA goods (derived from Eq. (5) and (2), respectively):

$$t_{i(pta)}^{mfn} = \Phi I_i + \beta_4 x_h + \beta_3 rp_i \tag{7}$$

where the equilibrium tariff for a 6-digit HS good i (t_i^{mfn}) is defined by a binary indicator variable identifying PTA and non-PTA goods (I_i), a political economy component x_h as well as a term reflecting the implications of coordinated tariffs set under GATT-based negotiating rules (rp_i). Using first differences in order to account for potential endogeneity concerns due to omitted variables we define our estimating equation as:

$$\Delta t_i = \Phi I_i + \beta_2 R_i + \beta_3 P_i + \beta_4 \Delta X_h + \mu_i \tag{8}$$

Δt_i represents the change of the bound MFN tariffs negotiated during the UR. I_i indicates whether a product was imported under preferential access at the time of the UR (i.e. I_i identifies PTA and non-PTA goods), while the change in political economy forces between 1978 and 1992 in ISIC 3-digit industry h is represented by the term Δx_h. R_i reflects the extent of tariff reductions due to reciprocity, P_i an MFN externality effect and ε_i the idiosyncratic error term. *i* denotes the unit of observation – i.e. the HS 6-digit product level, with i ϵ [1;2532].

Investigating the effect of trade preferences on WTO negotiated mfn tariffs, our dependent variable is defined as the difference between the bound external tariffs agreed

upon during the Uruguay Round and the ones negotiated before.[13] Using tariff data at the 6-digit HS product level, our analysis is based on a sample of 2532 observations excluding product lines characterized by pre-UR zero tariff rates[14] and not considering agricultural products because of the heavy incidence of non-tariff measures affecting the latter.

As indicated above our main interest lies in the parameter estimate of the binary PTA good indicator I_i which takes the value one if a PTA-specific preferential tariff was granted for product i <u>and</u> if the latter was also imported.[15] Using PTA-good specifications for Japanese preferences granted under the GSP as well as the LGSP trading schemes we also use alternative specifications identifying duty-free imported PTA-goods expecting a potentially stronger impact when preferential tariffs were already quite low making the preservation of preference margins more difficult. Following the conceptual framework laid out in section 2, we expect the respective PTA good parameter estimate to have a positive coefficient and capture the size as well as the statistical significance of the "stumbling block" effect.

Accounting for additional elements affecting multilateral tariff negotiations equation (7) also introduces a series of control variables. Based on theoretical expression (7) which identifies further components affecting multilateral tariff negotiations, we include political economy considerations into the empirical model by introducing the change of the elasticity-weighted inverse import penetration ratio ΔX_h. We define ΔX_h as $\Delta X_h = \Delta(X_h/M_h)/\varepsilon_h$, where $\Delta(X_h/M_h)$ reflects the change in the respective ratio between the final phase of the Uruguay Round (1992) and the end of the Tokyo Round (1978) and ε_h represents the corresponding ISIC 3-digit import demand elasticity in sector h.

In line with tariff negotiations in a GATT-based context we also aim to account for potentially reciprocal tariff concessions by including control variable R_i in estimating equation (8). Accounting for the WTO's reciprocity principle, we compute the, over all products i, aggregated sum of WTO-member country k's import weighted UR percentage tariff concessions (i.e. $\sum_i w_i^k \Delta t_i^k / t_i^k$). Multiplying the latter expression by Japan's top-5 import suppliers' import share in good i (s_{it}^k) and aggregating the latter product over all countries k, we finally define a proxy measurement for Japan's reciprocal tariff concessions (i.e. $R_i = \sum_k s_{it}^k \, [\sum_i w_i^k \Delta t_i^k / t_i^k]$).[16] Only considering imports stemming from Japan's top-5 trading partners

[13] The latter were largely negotiated during the Tokyo Round.
[14] Note that preferential market access cannot be granted on products with a zero mfn tariff rate.
[15] We use preferential tariffs in place in 1993 or in 1994 and import data of the year 1994.
[16] Finger et al. (2002) provide data on the aggregated sum of import weighted percentage tariff concessions on product i (i.e. $\sum_i w_i^k \Delta t_i^k / t_i^k$) of country k. w_i^k represents product i's share in total imports from country k and

of product i thereby takes into account the GATT's 'principle supplier' rule which may have resulted in Japan only engaging in direct trade talks with its most important import suppliers.[17]

Reciprocal tariff reductions in combination with the GATT's mfn principle may give rise to an mfn externality effect resulting in potentially lower tariff cuts in the presence of many smaller trading partners which may benefit from the larger countries' reciprocal concessions without having to offer any reductions by themselves. A large number of smaller 'free-riding' countries may then result in a reduced willingness to offer substantial concessions on the part of the larger economies since the latter cannot expect any meaningful reciprocal tariff reductions in return. In light of information on Japan's direct negotiating partners being unavailable we aim to account for the latter effect by introducing a variable reflecting the change in Japan's non top-5 exporters per product line i between 1994 and 1989.[18] Using the latter change as a proxy for a potential mfn externality effect, we define a control variable ΔP_i as an indicator taking the value one if the latter variation in the number of non-top 5 suppliers is larger the median change and zero otherwise. Finally, given that governments may find it easier to reduce tariffs on products where tariff levels are still quite high, we also control for initial (i.e. pre-UR) bound tariffs by introducing the latter as an additional regressor ($t_{i,t-1}$) in our model.

4.2 Endogeneity Concerns

A major endogeneity concern in the context of the current analysis is associated with the possibility of reverse-causality. In order to take this into account we use additional IV-GMM estimation techniques as well as OLS. Considering the possibility that countries may be more likely to ask for preferential treatment in products for which they expect smaller tariff reductions, anticipated mfn tariff changes may influence whether a good receives a preference or not in the first place. Using an instrumental variable approach to account for the

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$\Delta t_i^k/t_i^k$ represents k's tariff cuts in product i. Moreover, it is worthwhile noting that reciprocal tariff reductions do not necessarily refer to the same matching set of products. In practise it is more common to reciprocate with tariff reductions on other products which are possibly more important for the partner country. Some authors therefore distinguish between products j and products i, where j denotes products subject to tariff reductions in partner country k, and i to products subject to mfn tariff cuts by the Home country. For simplicity, however, we use the product index i for both trading partners.

[17] Note that information on Japan's actual direct UR negotiating partners in not available.

[18] It is assumed that if the change of small exporters to the EU per product line i was large enough between 1994 and 1989, the latter may mirror a longer term change between 1978 (end-Tokyo) and 1994 (end-Uruguay). The constructed proxy variable is therefore used as an instrument for the mfn externality effect.

latter we employ the '94 import dummy (D_i^{j94}) as an instrument since it is directly related to the preference indicator itself ($I_i^j = PR_i^j * D_i^{j94}$) and tends to be unaffected by the UR tariff cuts. World-price changes between 1992 and 1994 are used as a second instrument for the preference good indicator. Influencing the monetary benefit arising from a preference and thus the demand for preferential market access, world price changes between 1992 and 1994 tend to be uncorrelated with the error term since the UR tariff concessions did not enter into force before 1995.[19] Finally, given that NTBs may lead to an increase of domestic prices which are also received by preferential exporters in case of a zero-preferential tariff, countries may be more likely to ask for a preference on goods which they expect to be subject to an NTB in the future. As a proxy for future NTBs data of 1993 is used.[20]

Potential endogeneity concerns due to reverse causality may also affect some of the introduced control variables. Given that Japan's tariff cuts may influence other countries' (reciprocal) tariff reductions the reciprocity variable may also give rise to reverse causality concerns. Unilateral tariff reductions implemented between 1986 and 1992 are therefore used as an instrument. Most UR-participants reduced their tariffs unilaterally, between 1986 and 1992, despite substantial doubts regarding the successful conclusion of the Uruguay Round (Stewart, 1999). Later, during the final phase of the UR, unilateral liberalization efforts were explicitly taken into account when the final cuts were agreed upon (Finger et al., 2002). Following Limão and Karacaovali (2008), we therefore argue that unilateral tariff reductions may serve as a legitimate instrument for the undertaken reciprocal cuts.[21]

The political economy variable may also represent a source of potential endogeneity since the latter's components are all influenced by domestic prices and therefore by external tariffs. In order to account for this we employ the difference in industry-level scale economies (i.e. valued added/number of firms) between 1981 and 1992 as an instrument, on the grounds that larger economies of scale may point to higher fixed entry costs and by consequence to a higher inverse import penetration ratio (X_h/M_h). Combining the industry-

[19] In light of the fact that a country's financial benefit arising from preferential market access also depends on world prices, the latter may also impact a partner country's desire for preferential market access. Increasing world prices may also help to overcome fixed export costs.

[20] A country may even be more inclined to ask for a preference if it already exported a given product. We therefore interact the NTB indicator variable (D^{ntb93}) with the export dummy variable (D_i^{j94}) and introduce the combined component as an additional instrument. Moreover, world price changes at the 8-digit HS product-level are proxied by calculating unit-values using import value and quantity information available at UN-TRAINS.

[21] Finger et al. (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."

level scale economies with the product-level 1992 to1994 world price change is finally also used as an additional instrument given that world prices impact on domestic prices and thus on our political economy proxy, whereas they tend to be uncorrelated with the error term.[22]

4.3 Data Sources

An overview of the introduced variables and their definitions as well as summary statistics are presented in Annex Tables 1 and 2, respectively. Here we present some of the dataset's most important features. Our dependent variable is constructed using information on Japan's 6-digit HS Uruguay Round ad-valorem tariff reductions provided by the WTO's tariff concessions database. Japanese preferential tariffs as well as value and quantity information of Japan's import flows, all at the 6-digit HS level, stem from the UN-Trains database and were accordingly adjusted using product-level concordance tables from UN-Trains. NTB data for the year 1993, used as an instrument for the preference indicator variable, was helpfully provided by the Trade Information Department of UNCTAD.[23] We construct our political economy variable by using import and production data from the UNIDO database as well as import demand elasticities at the ISIC 3-digit industry level from Kee et al. (2009). Sector level data on the number of establishments and valued added, which were both used to construct an instrument for the political economy variable, also stem from the UNIDO database.[24] Finally, in order to compose a proxy measurement for reciprocal tariff reductions, data from Finger et al. (2002) has been employed. Aggregating import-weighted product level UR tariff concessions into country-averages, the latter authors provide a measure for the UR-participating countries' overall tariff concessions. We use this information to compute a product-level reciprocity measure by multiplying country-averages from Finger et al.'s (2002) by 6-digit HS import-shares from Japan's most important suppliers (retrieved from UN-Trains).

[22] Note that the UR negotiated tariff reductions took effect from 1995 onwards.
[23] The latter data is publicly not available at UN-Trains.
[24] Note that clustering of standard errors at the ISIC 3-digit industry level is used to take into account the different aggregation levels of the political economy variable and its instruments.

5. Estimation Results and Robustness Tests

5.1 Main Findings

Table 2 presents the regression results using heteroscedasticity-robust OLS and IV-GMM estimation techniques. The results show, in all model specifications, a 'stumbling block' effect, with coefficients that vary between 0.016 and 0.018; significant at the 1% level. Providing support for the argument that Japanese trade preferences, in place at the time of the Uruguay Round, hindered further multilateral tariff liberalization, our results point to less aggressive tariff reductions of, on average, 1.6 to 1.8 percentage points for preferentially imported goods than for goods not receiving any preferential treatment or not being imported at all.[25] Our results therefore are in line with Limão's (2006) and Karacaovali and Limão's (2008) findings for the US and the EU of a 'stumbling block' effect when granting preferential market access to a smaller trading partner in exchange for a closer political relationship.

Comparing the estimation results across different empirical estimation strategies and PTA-good definitions shows similar findings for all model specifications displayed in Table 2. Reporting a stumbling block effect of 1.8 percentage points for preferences granted under any preferential trading scheme, the OLS estimations are corroborated by the respective IV-GMM results which show a slightly smaller, yet still highly significant, effect of about 1.7 percentage points (Table 2, Columns 1 and 5). The results for the any duty-free tariff preferences granted also tend to support these findings by showing the same parameter estimates (Table 2, Column 2 for OLS and Column 6 for IV-GMM).[26] Subdividing Japan's preferential trade concessions in individual trading schemes provides further interesting insights. Preferences granted under Japan's GSP system show significant 'stumbling block' coefficients of 0.018 and 0.017 when estimated with OLS and IV-GMM, respectively, both significant at a 1% threshold (Table 2, Columns 3 and 9). Duty-free GSP preferences show almost identical results with a slightly smaller effect when using OLS (Table 2, Column 4 and 7). Analysing the impact of LGSP preferences, however, leads to less clear cut findings

[25] Moreover, in light of Japanese overall tariff concessions of around 4.5 percentage points for non-PTA goods, and a 3.8 percentage point overall reduction, the detected stumbling block effect also points to a certain economic importance.

[26] The latter points to the relatively large number of duty-free imported preference goods in our sample.

with positive stumbling block effects which are only significant at the usual levels when estimated with OLS (the latter results are reported in Annex Table 3). [27]

The results for the remaining variables, displayed in Table 2, point to a rather weak impact of political economy forces on Japan's Uruguay Round tariff commitments; the latter only being significant when estimated with IV-GMM. Showing coefficients between 0.003 and 0.011, significant at the 10 percent level, our findings may therefore only provide partial evidence for lower tariff reductions in politically influential sectors.[28]

Evidence for reciprocity based tariff cuts is not found when analysing the latter's impact on Japan's UR tariff concessions. Negative coefficients for some of the preference specifications are found when using IV-GMM estimation techniques, suggesting smaller Japanese tariff reductions on products imported from UR participating countries which themselves implemented larger product-level tariff reductions. Free-riding strategies on the part of other countries also seem to have played a minor role for Japanese policy makers when establishing their own tariff commitments, as indicated by non-significant coefficients for the mfn externality variable in all model specifications.

Finally, initial tariff rates included in the estimation to control for potentially larger tariff cuts on products with initially high tariffs, show highly significant parameter estimates in all model specifications pointing to an important impact of the level of pre-UR bound tariff rates on the final UR tariff concessions.

Statistical robustness tests presented at the bottom of Table 2 tend to point to generally robust findings. Hansen J-tests of the joint relevance of the instruments point to a high instrument significance in almost all model specifications.[29] Difference-in-Sargan test statistics analysing the exogeneity of the more endogeneity prone instruments also reject, in most specifications, the correlation hypothesis to the error term. [30] Moreover, further

[27] The any- and zero-tariff LGSP preference good specifications (Annex Table 3) both show parameter estimates of 0.020, significant at the 1% level, when using the OLS estimator, and parameter estimates of 0.028 with IV-GMM. Moreover, it is also worth noting that the LGSP results are based on a very small set of PTA goods (merely covering 22 product lines) which implies a certain caution when interpreting the latter results.

[28] Note that the results for LGSP preferences, reported in Annex Table 3, show slightly stronger political economy influences which are significant at the 1% threshold.

[29] The correlation hypothesis of the second stage error term with the instruments is rejected in all specifications apart from the LGSP specifications in Annex Table 3.

[30] In choosing the subset of more endogeneity prone instruments we follow Karacaovali and Limão (2008) and select the instruments which include either NTB data or an import dummy variable.

statistical endogeneity tests, also displayed at the bottom of Table 2, do not indicate severe endogeneity concerns.

Table 2: The Impact of Japanese Trade Preferences on Multilateral Tariff Reductions during the Uruguay Round

	OLS				IV-GMM			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All Preferences	All Duty-Free Preferences	GSP	Duty-Free GSP	All Preferences	All Duty-Free Preferences	GSP	Duty-Free GSP
$I_i^{j‡}$	0.018***	0.018***	0.018***	0.016***	0.017***	0.017***	0.017***	0.017***
	(0.003)	(0.003)	(0.003)	(0.005)	(0.002)	(0.002)	(0.002)	(0.002)
$R_i^{‡}$	0.002	0.002	0.002	0.001	-0.010	-0.010*	-0.010*	-0.008
	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
ΔX_I‡	0.003	0.003	0.003	0.003	0.011*	0.011*	0.011*	0.010*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.006)	(0.006)	(0.006)	(0.005)
P_i	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
$t_{i,t-1}$	-0.376***	-0.376***	-0.376***	-0.360***	-0.334***	-0.334***	-0.334***	-0.326***
	(0.017)	(0.017)	(0.017)	(0.025)	(0.076)	(0.074)	(0.074)	(0.059)
Constant	-0.021***	-0.021***	-0.021***	-0.020***	-0.022***	-0.022***	-0.022***	-0.022***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)
Observations	2532	2532	2532	2532	2532	2532	2532	2532
Number of PTA goods	1237	1226	1226	1124	1237	1226	1226	1124
Hansen's J (p-val.)[a]	-	-	-	-	0.685	0.676	0.676	0.628
C-stat (p-val.)[b]	-	-	-	-	0.660	0.657	0.657	0.630
Endogeneity (p-val.)[c]	-	-	-	-	0.479	0.446	0.446	0.507
Heterosked. (p-val.)[d]	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: *, **, *** denote the 10%, 5%, 1% significance levels, respectively. The estimations reported in Table 2 have been conducted by using heteroskedasticity robust standard errors, clustered at the 3-digit ISIC industry level. Columns (1)-(4) report the OLS estimation results under different Japanese PTA-good specifications. The respective IV-GMM regression results illustrated in Columns (5)-(8). ΔX_I has been re-scaled by 10,000. The F-tests of instrument exclusion in the first-stage regressions report all rejections either at the 1 or 5% significance level and show first-stage F-statistics which are larger than 10 for I_{ij} and R_i. For ΔX_I the F-statistics show values of around 2.3. The first-stage regression results are available upon request. (a) Test of over-identifying restrictions using the Sargan-Hansen method which is based on the null hypothesis that the employed instruments are valid instruments - i.e. that the latter are (jointly) not correlated with the second stage error term. (b) Exogeneity test for a subset of instruments (using Difference-in-Sargan/ C-statistics) defining the null hypothesis as instrument exogeneity. The tested instruments include: Danyexp, Dntball, Dntball*Danyexp, Dntb, (Δp9294)avg*Δscale. (c) Testing regressor endogeneity under the null hypothesis that the selected variables are exogenous (i.e. using OLS provides consistent and efficient results). The potentially endogenous regressors are marked with ‡. (d) Pagan and Hall's heteroskedasticity test for instrumental variable regressions under the null hypothesis of no heteroskedasticity.

5.2 Robustness Tests

Table 3 displays the regression results when subjecting our main findings to a series of robustness tests. Reporting results for OLS as well as IV-GMM estimation techniques, Table 3 shows the findings for the preference good indicator (I_i) variable with the other control variables suppressed.[31] The baseline results from Table 2 (Columns 1 and 5) are included in Column 1 for comparison, while the remaining columns in Table 3 illustrate the regression results when subjecting the latter baseline findings to various robustness checks.

In order to account for unobserved industry effects we first include an additional indicator variable at the 1-digit level when using the Harmonized System (HS) product classification. The results, reported in column (2), confirm our previous findings by showing highly significant, although slightly smaller, coefficients of 0.014 and 0.015 when estimated with OLS and IV-GMM, respectively.

In light of the so-called sectoral agreements negotiated during the UR we also test whether the stumbling block effect still holds when accounting for a potential alternative tariff reduction rationale by excluding product lines affected by sectoral negotiations. Column (3) reports the results for the so-called 'zero-for-zero' tariff concessions, while column (4) additionally takes into account the sectoral negotiations on chemicals. With highly significant coefficients of 0.021 and 0.014 (column 3) as well as 0.022 and 0.026 (column 4), we continue to find strong support for the stumbling block effect.

The exclusion of the reciprocity variable and the latter's instruments represent a further robustness test by following the structural model more closely.[32] The results confirm the baseline results in column 1 (Table 3).

Product lines characterized by NTBs which affect all trading partners may point to the presence of common unobserved product characteristics which in turn may have an impact on the depth of the agreed tariff concessions. As suggested by Karacaovali and Limão (2008), we exclude the set of instruments involving the latter NTB variable. The results corroborate the above findings, with a slightly smaller but still highly significant PTA good coefficient of 0.015 (Column 6, Table 3).

Finally, in light of diverging distributions of PTA and non-PTA goods across sectors we additionally analyse whether sector-specific features may drive our stumbling block

[31] The results for the suppressed variables as well as the first stage regression results for the IV estimations are available upon request.

[32] Note that Karacaovali and Limão's (2008) theoretical model, sketched out in section 2 above, does not include a reciprocity term in its final estimation equation.

findings by dropping successively single industries. The results, not reported in Table 3 but available upon request, confirm the main findings by showing highly significant stumbling block results when omitting all sectors individually.

Table 3: Robustness Analysis

	OLS & IV-GMM					
	(1)	(2)	(3)	(4)	(5)	(6)
Robustness test	All Preferences	"HS Industry Effects"	"Zero-for-Zero" Sectoral Agreements	"Zero-for-Zero" Agreements incl. Chemicals	Excluding Reciprocity	Exclude all NTB instruments
I_i^{OLS}	0.018***	0.014***	0.021***	0.022***	0.018***	-
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	-
I_i^{IV}	0.017***	0.015***	0.014***	0.026***	0.018***	0.015***
	(0.002)	(0.005)	(0.003)	(0.008)	(0.002)	(0.004)
Observations	2532	2532	2061	1479	2532	2532
Number of PTA goods	1237	1237	1022	557	1237	1237

Notes: Column (1) above reports the baseline regression results from Table 2 (Columns 1 and 5), while the additional robustness test findings are display in columns (2) to (6). In all regression concordance tables have been used. Columns (3) and (4) report the findings when tariff lines covered by the so-called ‘zero-for-zero’ concessions and by the sectoral agreement on chemicals were excluded. The information which we used regarding product coverage of the latter two agreements is based on information provided by the WTO’s secretariat (WTO, 2005). Additional test have been conducted on the basis of excluding individual industries. The latter results (not reported above in Table 3, but available upon request) confirm the reported 'stumbling block' findings. 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

The impact of preferential trade agreements (PTAs) on multilateral trade liberalisation (MTL) is still subject to a controversial debate. In light of an abundant but inconclusive theoretical literature and scarce empirical evidence on the subject matter we provide new theory-based evidence for an important developed Asian economy – i.e. Japan. By focusing on Japan's external tariff liberalisation agreed upon during the Uruguay Round, we aim to extend the current empirical literature by using an identification strategy which has been suggested by Limão (2006). By analysing negotiated tariff cuts for PTA and non-PTA goods we find larger tariff reductions for goods not imported under preferential market access (i.e. non-PTA goods), after having controlled for other influences. Our findings show that tariff concessions on non-PTA goods were on average 1.6 to 1.8 percentage points larger than those for preferentially imported goods.

In light of Japan's strong focus on unilateral GSP preferences before the start of the 21st century our findings tend to provide support for the argument that PTA policy-settings in which preferential market access granted to smaller trading partners is exchanged for a closer political cooperation are likely to results in a stumbling block effect. This PTA-setting results in smaller tariff reductions on preferentially imported products in order to preserve previously negotiated preference margins and thus the partner countries' incentives for a continuing commitment towards the larger country's non-trade based political objectives.

Our present findings are in line with previous empirical evidence on the US and the EU which are both characterized by several PTAs formed with smaller trading partners including requirements on non-trade related political issues (Limão, 2006; Karacaovali and Limão, 2008).[33] Our present findings are in contrast however with our work for Canada, but view the difference in findings to be driven by the difference in the preferential trade policy setting. In the present study we are exploring the effects of preferences given by a large industrial country to small developing trade partners. In the case of Canada, Ketterer et al. (2012) examine the effect on MFN tariffs of Canadian preferences granted to the USA under CUSFTA.

[33] Examples of such agreements for the US include the Andean (ATPA) and Caribbean (CBI) trade agreements as well as the former's GSP trading schemes. EU PTAs explicitly including non-trade related policy objectives include, among others, the EU's MED, ACP and GSP trading schemes.

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ANNEX

Annex Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Δt_i	-0.04	0.03	-0.43	0.00
I_i^{any}	0.49	0.50	0	1
I_i^{any0}	0.48	0.50	0	1
I_i^{gsp}	0.48	0.50	0	1
I_i^{gsp0}	0.44	0.50	0	1
I_i^{lgsp}	0.01	0.09	0	1
I_i^{lgsp0}	0.01	0.09	0	1
ΔX_I	-0.69	0.98	-7.74	0.20
R_i	-0.49	0.11	-0.96	0.00
D_{iany}^{94}	0.90	0.30	0	1
D_{igsp}^{94}	0.90	0.30	0	1
D_{ilgsp}^{94}	0.06	0.24	0	1
R_i^{uni}	-0.26	0.11	-0.92	1
D^{ntb}	0.30	0.46	0	1
D^{ntball}	0.30	0.46	0	1
$D^{ntball}*D_i^{94}$	0.26	0.44	0	1
$D^{ntball}*D^{gsp}$	0.26	0.44	0	1
$D^{ntball}*D^{lgsp}$	0.01	0.11	0	1
Δp_{9294}	0.05	0.15	-0.07	0.79
Δscale	4.33e+08	6.00e+08	-5.56e+08	1.12e+10
P_i	0.44	0.50	0	1
$t_{i,t-1}$	0.06	0.05	0.01	0.93

The summary statistics in Annex Table 1 are based on the dataset of 2532 observations.

Annex Table 2: Description of Variables and their Sources when analysing UR bound tariff Changes

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 + authors' own calculations
		Explanatory variables	
PTA good variable	I_i^j	Indicator variable taking the value one if a product was granted (duty-free) preferential access PTAs in 1993 or 1994 and was imported by Japan in 1994 (from the respective partner country j).	TRAINS
Reciprocity induced changes in market access	R_i	Import weighted percentage tariff reductions of Japan's principal suppliers between 1986 and 1994 multiplied by good i's export share of each principal supplier to Japan; finally aggregation over all principal suppliers of good i.	Finger et al. (2002) + TRAINS + authors' 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) .[34]	COMTRADE + UNIDO + Kee et al. (2009) + authors' own calculations
MFN externality variable	P_i	Change in the share of small exporters (i.e. non-top 5 exporters/suppliers) of product i between 1989 and 1994. P_i takes the value one if the above mentioned change is larger than the median change and zero otherwise.[35]	TRAINS + authors' own calculations
		Instruments	
Import dummy variable	D_i^{any94}	Dummy variable indicating whether a product was imported by Japan from the respective trading partner j; regardless of its 'PTA-status' (instrumental variable for I_i^j).	TRAINS + authors' own calculations
NTB dummy variable	D_i^{ntb93}	Dummy variable taking the value one if product i was subjected to an NTB in 1993 (instrumental variable for I_i^j).	TRAINS + authors' own calculations
NTB dummy variable	$D_i^{ntball93}$	Indicator variable taking the value one if product i was subjected to an NTB in 1993 which applied to all trading partners (instrumental variable for I_i^j).	TRAINS + authors' own calculations
NTB & Import dummy variable	$D^{ntball93}*D^{any94}$	Combination of import and NTB indicator variables.	TRAINS + authors' 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 + authors' 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 + TRAINS + authors' own calculations
World prices	Δworld $price_i$, $(\Delta \text{world price})_i^2$, $(\Delta \text{world price})_i^3$	HS 6-digit world prices changes calculated as changes in unit-values between 1992 and 1994 (instrumental variable for I_i^j).	TRAINS + authors' 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) + TRAINS + authors' own calculations

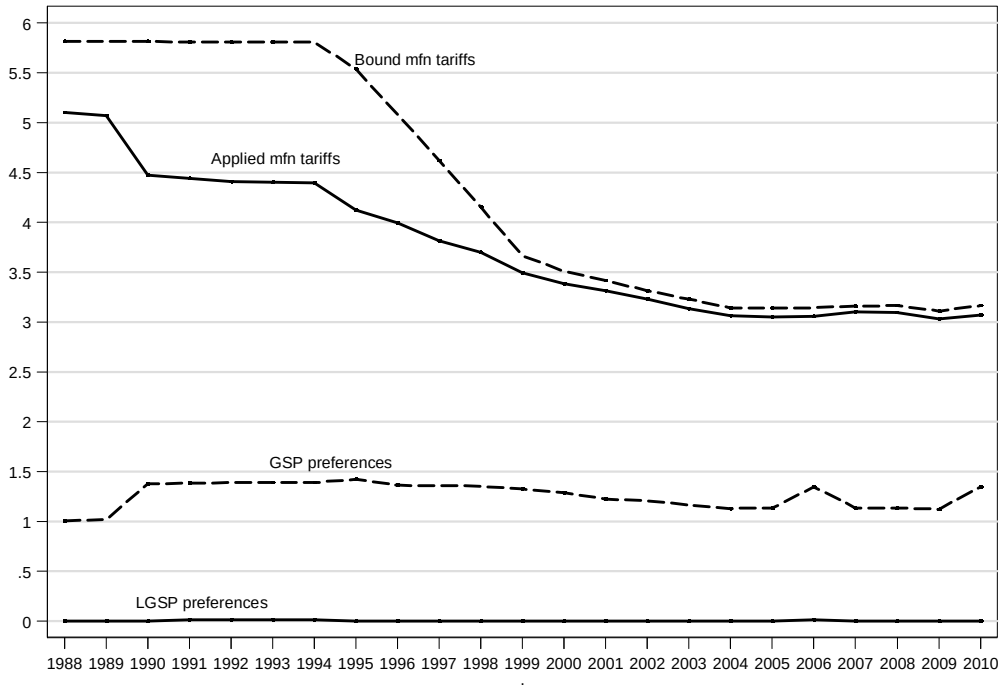
[34] The change in the elasticity weighed inverse import penetration ratio ΔX_I is calculated as $x^{92} - x^{78}$.
[35] The change in the MFN externality effect or the change in the share of small (non-top5 exporters) of product-line i to Japan is calculated as share94-share89.

Annex Table 3: Uruguay Bound Tariffs Concessions and LGSP Preferences

	(1)	(2)	(3)	(4)
	LGSP	Duty-Free LGSP	LGSP	Duty-Free LGSP
$I_i^{j‡}$	0.020***	0.020***	0.028	0.028
	(0.005)	(0.005)	(0.021)	(0.021)
$R_i^{‡}$	-0.006	-0.006	-0.013**	-0.013**
	(0.006)	(0.006)	(0.006)	(0.006)
ΔX_I‡	0.003	0.003	0.018***	0.018***
	(0.002)	(0.002)	(0.001)	(0.005)
P_i	-0.003	-0.003	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
$t_{i,t-1}$	-0.363***	-0.363***	-0.289***	-0.289***
	(0.034)	(0.034)	(0.069)	(0.069)
Constant	-0.017***	-0.017***	-0.016***	-0.016***
	(0.006)	(0.006)	(0.005)	(0.005)
Observations	2532	2532	2532	2532
Number of PTA goods	22	22	22	22
Hansen's J (p-val.)[a]	-	-	0.087	0.087
C-stat (p-val.)[b]	-	-	0.097	0.097
Endogeneity (p-val.)[c]	-	-	0.620	0.620
Heterosked. (p-val.)[d]	0.000	0.000	0.000	0.000

Notes: *, **, *** denote the 10%, 5%, 1% significance levels, respectively. The OLS regression results are displayed in Columns (1)-(4), while the results based on IV-GMM estimation techniques are reported in Columns (5)-(8). All specifications have been estimated using heteroskedasticity robust standard errors, clustered at the 3-digit ISIC industry level. ΔX_I has been re-scaled by 10,000.

Annex Figure 1: Applied Average MFN and GSP Preferential Tariffs: 1988-2010



Source: Authors' own calculations based on UN-Trains tariff data