The External Tariffs of South-South Regional Trade Agreements:
An Empirical Investigation of Latin America

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What we do

- We develop a theoretical model of the external tariffs of South-South regional trade agreements (RTAs) and derive predictions for the impact of the internal trade share on the external tariffs.

- We show that, in this type of agreements, we should observe a stumbling bloc effect when the internal tariff equals zero. In all other cases, we should observe neither a building bloc nor a stumbling bloc effect ("neutrality" result).

- We find estimates consistent with the model using data on internal and external tariffs and trade flows for Latin American RTAs from 1985 to 2006.

- Our findings offer an explanation of the different empirical results in the literature on building and stumbling blocs.

Motivation

- In the past 20 years, regionalism has supplanted multilateralism as the main source of negotiated trade liberalization in the world economy.

- 400+ RTAs have been notified to the WTO since 1995, almost 4*(# RTAs notified in the previous 5 decades).

- Concern: members of RTAs might have an incentive to maintain or even raise their external tariffs ("stumbling bloc" hypothesis).

- Mixed empirical evidence:

  - Limão (2006, 2007) and Karacaovali and Limão (2008) find evidence of a stumbling bloc effect for RTAs signed by the US and the EU.

  - Estevadeordal, Freund and Ornelas (2008) find evidence of a stumbling bloc effect for RTAs signed by countries in Latin America.

Motivation (cont.)

What explains the difference in results between LKL and EFO?

- **Different samples of countries are analyzed:**
  - The U.S. and EU differ from Latin American countries in terms of size and level of development.
  - The RTAs of the U.S. and EU are notified under GATT Article 24 (which calls for zero internal tariffs), while Latin American RTAs take advantage of GATT's "Enabling Clause" (internal tariffs can be positive).
  - Binding overhang is much greater for Latin American countries than for the U.S. and EU.

- **Different empirical approaches are used:**
  - LKL compare MFN tariff cuts between the Tokyo and Uruguay rounds for products imported from RTA partners versus products imported only from the rest of the world.
  - EFO examine the relationship between annual changes in external and internal tariffs.

- **Data at different levels of disaggregation are used:**
  - LKL use highly disaggregated data at the 8-digit HS level (several thousand products)
  - EFO use the 4-digit ISIC level (100 industries), for 11 years (1990-2001) and 10 countries

Motivation (cont.)

This paper attempts to resolve the stumbling/building blocs question by developing and estimating a model that emphasizes the difference between RTAs in terms of constraints on the internal tariff.

Outline

- Theoretical model – general set-up and three specific cases:
  - No constraints on internal tariffs
  - Zero-constraint on the internal tariff (as in Article 24 RTAs)
  - Non-negativity constraint on the internal tariff (as in Enabling Clause RTAs)

- Data

  We have data on internal and external tariffs and trade flows for Latin American RTAs from 1985 to 2006.

- Empirical analysis (OLS and IV results):

  Given our focus on RTAs based on the Enabling Clause, this is the case we consider in the empirical analysis.

Theoretical model: preview of the main results

- In our theoretical model, we consider an RTA that sets both its internal and external tariffs to maximize the joint welfare of the partners but ignores the welfare of the rest of the world.

- In our model, stumbling-bloc (building-bloc) effects are associated with a positive (negative) impact of the internal trade share on the RTA's external tariff.

- Three cases:

  o *No constraints on internal tariffs*: no stumbling bloc effect, no building bloc effect ("neutrality" result).

  o *Zero-constraint on the internal tariff (as in Article 24 RTAs)*: building block effect if the desired internal tariff is positive; stumbling block effect if the desired internal tariff is negative.

  o *Non-negativity constraint on the internal tariff (as in Enabling Clause RTAs)*: the flexibility hypothesis always holds except when the internal tariff is zero, in which case we predict a stumbling block effect.

Theoretical model: assumptions

- Three countries: Two developing countries that have formed an RTA plus ROW.

- "Competing exporters" framework:

  o Single numeraire good (produced with labor alone).

  o K non-numeraire goods (produced with sector-specific capital and labor under PC and CRS).

  o Each non-numeraire good k is imported by a single country and exported by the other two. Each country has a representative consumer with a quasi-linear utility function.

- Governments are politically motivated and thus possess objective functions represented by weighted social welfare functions.

- Payoff of importing country:

$$w_I = s_I(p_I) + (1 + \lambda_I)\pi_I(p_I) + (p_I - p_P)E_P(p_P) + (p_I - p_E)E_E(p_E)$$

- Payoff of partner country:

$$w_P = s_P(p_P) + (1 + \lambda_P)\pi_P(p_P)$$

Theoretical model: set-up

- The RTA is free to set both internal tariffs (on trade between members) and external tariffs (on imports from the rest of the world) so as to maximize the joint payoff of the RTA members (i.e., we assume (1) a large binding overhang and (2) RTA is signed under Enabling Clause):

$$\{\tau_P^n, \tau_E^n\} = \underset{\{\tau_P, \tau_E\}}{\arg\max} \; w_I + w_P$$

Case 1): *No constraints on internal tariffs*

$$\tau_E^* = \frac{1 + \dfrac{1}{\xi_E}}{1 - \dfrac{\lambda_I}{\mu} \dfrac{X_I}{M}}$$

$$\tau_P^* = \frac{1 - \dfrac{\lambda_P}{\xi_P} \dfrac{X_P}{E_P}}{1 - \dfrac{\lambda_I}{\mu} \dfrac{X_I}{M}}$$

- Only the external tariff reflects terms-of-trade considerations, while only the internal tariff reflects the political influence of partner producers.

- The partner's share of total imports (Φ) enters neither equation.

- No stumbling block effect, no building block effect ("neutrality" result).

Case 2): *Zero-constraint on the internal tariff (as in Article 24 RTAs)*

$$\tau_E = \frac{1 + \dfrac{1}{\xi_E}}{1 - \dfrac{\lambda_I}{\mu}\dfrac{X_I}{M_I} + \left[\dfrac{\lambda_I}{\mu}\dfrac{X_I}{M_I} - \dfrac{\lambda_P}{\xi_P}\dfrac{X_P}{E_P}\right]\Delta}$$

where Δ is increasing in Φ.

$$\tau_P = 1$$

- Whether the external tariff is increasing/decreasing in Φ depends on the sign of:

$$\frac{\lambda_I}{\mu}\frac{X_I}{M_I} - \frac{\lambda_P}{\xi_P}\frac{X_P}{E_P}$$

- If $\dfrac{\lambda_I}{\mu}\dfrac{X_I}{M_I} - \dfrac{\lambda_P}{\xi_P}\dfrac{X_P}{E_P} > 0$ (i.e., positive desired internal tariff) ==> building block effect.

- If $\dfrac{\lambda_I}{\mu}\dfrac{X_I}{M_I} - \dfrac{\lambda_P}{\xi_P}\dfrac{X_P}{E_P} < 0$ (i.e., negative desired internal tariff) ==> stumbling block effect.

Case 3): *Non-negativity constraint on the internal tariff (as in Enabling Clause RTAs)*

- Given that in South-South RTAs we frequently observe positive internal tariffs, often observe zero internal tariffs, but never observe negative ones, we might suppose that a non-negativity constraint is in effect.

- If this is so, for products on which the internal tariff is zero, the desired one is likely to be negative, in which case we should observe a positive relationship between the RTA share of imports and the external tariff (stumbling bloc effect).

- For all other products, there should be no impact of the RTA share of imports on the external tariff.

- This is the hypothesis that we test.

Data

- Tariff data, both MFN (Most Favored Nation) and preferential on a bilateral basis, disaggregated at the 5-digit SITC (Standard International Trade Classification) Revision 2 level for 11 countries in Latin America, over the period 1985-2006.

- 11 countries in Latin America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela.

- Note that we use substantially more disaggregated data than in EFO as we analyze 1875 products as opposed to 110 sectors.

- In addition, our dataset significantly extends the EFO's database by covering ten additional years: 1985-1989 and 2002-2006. The former period is especially important because it is when most sample countries implemented unilateral trade reforms and signed agreements that deepened regional trade integration and eventually led to more comprehensive arrangements.

Table 1

Descriptive Statistics							
All Countries							
Variable	**Year**	**Average**	**S.D.**	**C.V.**	**p10**	**p50**	**p90**
MFN Tariff	**1985**	41.566	25.848	0.622	17.720	37.000	77.900
	2005	11.399	6.718	0.589	5.000	10.000	18.940
Preferential Tariff	**1985**	39.362	24.807	0.630	16.835	34.540	74.100
	2005	5.448	5.133	0.942	0.570	4.130	11.920
Countries Member of Customs Unions							
MFN Tariff	**1985**	45.395	27.585	0.608	17.050	40.830	83.750
	2005	11.539	5.400	0.468	5.000	10.500	18.950
Preferential Tariff	**1985**	43.064	26.454	0.614	16.130	38.470	78.620
	2005	2.567	2.567	1.000	0.000	2.050	5.300

Figure 1
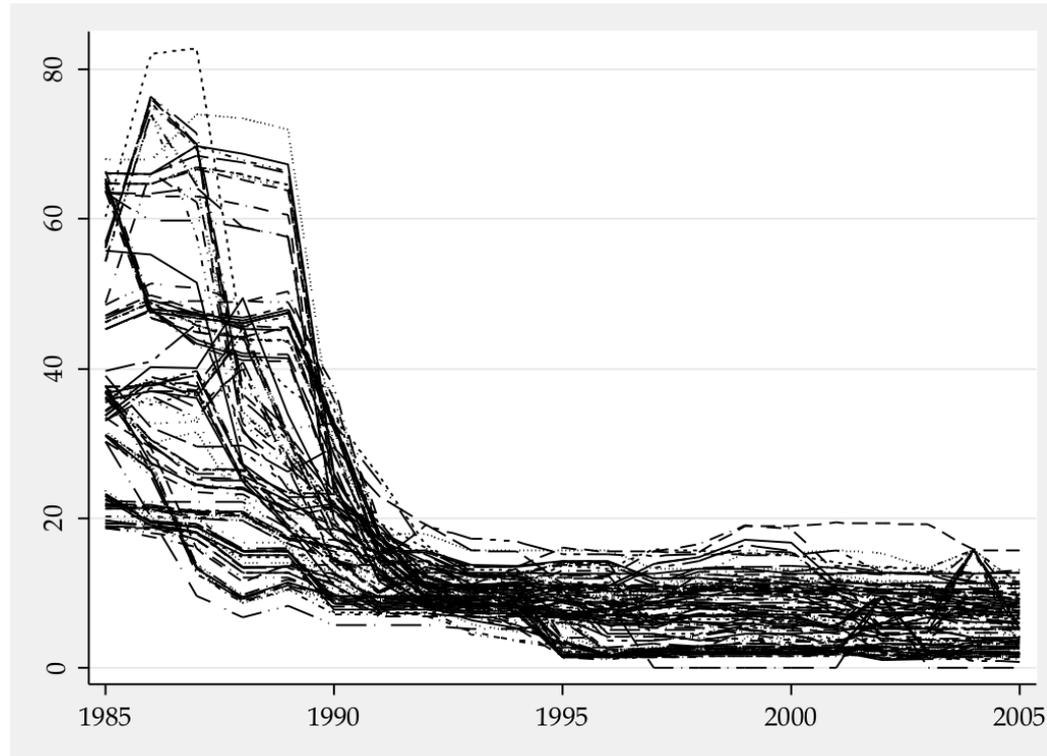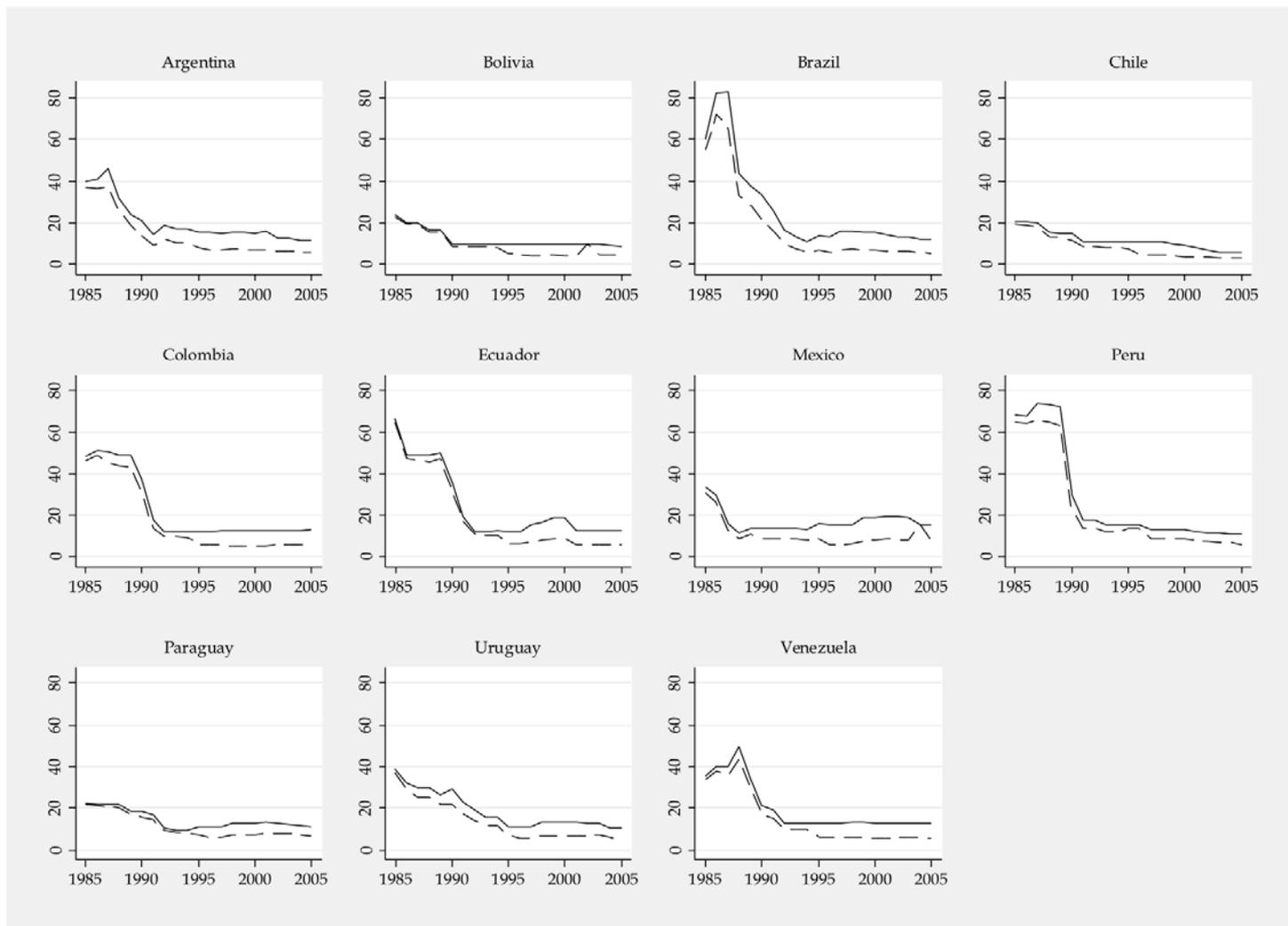**Average MFN and Preferential Tariffs, All Countries, 1985-2005**

Figure 2
Evolution of the Average MFN (continuous line) and Preferential (dotted line) Tariffs
for each Sample Country, 1985-2005

Empirical strategy

- We can linearize the tariff equations for the purpose of estimation.
- We take a first-order Taylor approximation of each equation around the point of welfare maximization, which is also the point of zero internal tariff.
- If internal trade is constrained to be free, then we have:

$$\tau_E - 1 = \frac{1}{\xi_E} + \frac{\lambda_I}{\mu} \frac{X_I}{M_I} - \left[\frac{\lambda_I}{\mu} \frac{X_I}{M_I} - \frac{\lambda_P}{\xi_P} \frac{X_P}{E_P} \right] \Delta$$

- If internal trade is not constrained to be free, then we have:

$$\tau_E - 1 = \frac{1}{\xi_E} + \frac{\lambda_I}{\mu} \frac{X_I}{M_I}$$

- Thus we estimate the following specification:

$$\tau_{ckt}^E = \alpha + \beta \Phi_{ckt} + \gamma \Phi_{ckt} I_{ckt}^0 + \eta \tau_{ckt}^P + \varepsilon_{ckt}$$

- We expect beta=0 and gamma>0.

Empirical strategy: Endogeneity

- Our main independent variables are likely affected by endogeneity.

- The RTA import share is likely to be impacted positively by the external tariff, thus imparting bias due to reverse causality.

- We instrument for the RTA import share using data on the import share of other Latin American countries from the same set of exporters.

- The internal tariff is endogenous as well, as is clear in the theoretical model.

- We follow EFO in using as an instrument for the internal tariff the internal tariff charged by c's RTA partners for the same product and year.

Table 2
External MFN Tariffs of Latin American RTAs, 1985-2006 (OLS)

	Clustered by Country-Product			Clustered by 2 Digit Product		
	(1)	(2)	(3)	(1)	(2)	(3)
RTA Share	-1.388***	-0.391***	-0.274***	-1.388***	-0.391*	-0.274
	(0.117)	(0.127)	(0.101)	(0.329)	(0.197)	(0.184)
RTA Share *Lagged PT (min)=0	7.115***	4.382***	2.263***	7.115***	4.382***	2.263***
	(0.219)	(0.169)	(0.138)	(1.056)	(0.520)	(0.309)
Lagged PT (min)	0.801***	0.675***	0.590***	0.801***	0.675***	0.590***
	(0.003)	(0.006)	(0.006)	(0.012)	(0.018)	(0.020)
Country-Product Fixed Effects	No	Yes	Yes	No	Yes	Yes
Country-Year Fixed Effects	No	No	Yes	No	No	Yes
Year Fixed Effects	No	Yes	No	No	Yes	No
Observations	271,203	271,203	271,203	271,203	271,203	271,203
R-squared	0.686	0.832		0.686	0.832	

Table 3

External MFN Tariffs of Latin American RTAs, 1985-2006 (IV)

	Clustered by Country-Product			Clustered by 2 Digit Product		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
RTA Share	-2.320***	-6.409**	-0.938	-2.320**	-6.409	-0.938
	(0.349)	(3.182)	(1.814)	(1.000)	(4.293)	(2.860)
RTA Share *Lagged PT (min)=0	6.206***	8.554***	2.434***	6.206***	8.554***	2.434**
	(0.675)	(1.083)	(0.619)	(1.961)	(2.510)	(1.121)
Lagged PT (min)	0.779***	0.153***	0.621***	0.779***	0.153	0.621***
	(0.004)	(0.040)	(0.010)	(0.018)	(0.132)	(0.033)
Country-Product Fixed Effects	No	Yes	Yes	No	Yes	Yes
Country-Year Fixed Effects	No	No	Yes	No	No	Yes
Year Fixed Effects	No	Yes	No	No	Yes	No
Observations	271,203	271,203	271,203	271,203	271,203	271,203
R-squared						

Table 4
First Stage Regressions for Instrumental Variables

	Clustered by Country-Product			Clustered by 2 Digit Product		
RTA Share	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
RTA Crossed Share	0.987***	0.127***	0.119***	0.987***	0.127***	0.119***
	(0.024)	(0.014)	(0.014)	(0.07)	(0.02)	(0.02)
RTA Crossed Share * Lagged PT of Partners (min)=0	-0.015	0.033*	0.032*	-0.015	0.033	0.032
	(0.037)	(0.017)	(0.017)	(0.05)	(0.024)	(0.023)
Lagged PT of Partners (min)	-0.002***	-0.000**	-0.000	-0.002***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country-Product Fixed Effects	No	Yes	Yes	No	Yes	Yes
Country-Year Fixed Effects	No	No	Yes	No	No	Yes
Year Fixed Effects	No	Yes	No	No	Yes	No
Observations	271,203	271,203	271,203	271,203	271,203	271,203
F-Stat	736.7	47.5	41.3	91.0	22.5	20.5
RTA Share *Lagged PT (min)=0	**(1)**	**(3)**	**(4)**	**(1)**	**(3)**	**(4)**
RTA Crossed Share	-0.002	-0.160***	-0.154***	-0.002	-0.160***	-0.154***
	(0.01)	(0.014)	(0.013)	(0.015)	(0.031)	(0.029)
RTA Crossed Share * Lagged PT of Partners (min)=0	0.721***	0.588***	0.557***	0.721***	0.588***	0.557***
	(0.034)	(0.027)	(0.026)	(0.081)	(0.075)	(0.069)
Lagged PT of Partners (min)	-0.004***	-0.001***	-0.001***	-0.004***	-0.001**	-0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country-Product Fixed Effects	No	Yes	Yes	No	Yes	Yes
Country-Year Fixed Effects	No	No	Yes	No	No	Yes
Year Fixed Effects	No	Yes	No	No	Yes	No
Observations	271,203	271,203	271,203	271,203	271,203	271,203
F-Stat	1028.7	173.5	166.6	91.9	21.6	22.5
Lagged PT (min)	**(1)**	**(3)**	**(4)**	**(1)**	**(3)**	**(4)**
RTA Crossed Share	-5.746***	-1.843***	0.122	-5.746***	-1.843**	0.122
	(0.582)	(0.561)	(0.472)	(0.862)	(0.77)	(0.548)
RTA Crossed Share * Lagged PT of Partners (min)=0	2.496***	5.685***	1.872***	2.496**	5.685***	1.872**
	(0.73)	(0.684)	(0.589)	(1.196)	(1.042)	(0.903)
Lagged PT of Partners (min)	1.326***	0.280***	0.526***	1.326***	0.280***	0.526***
	(0.019)	(0.015)	(0.013)	(0.022)	(0.046)	(0.03)
Country-Product Fixed Effects	No	Yes	Yes	No	Yes	Yes
Country-Year Fixed Effects	No	No	Yes	No	No	Yes
Year Fixed Effects	No	Yes	No	No	Yes	No
Observations	271,203	271,203	271,203	271,203	271,203	271,203
F-Stat	2085.4	123.0	560.0	1205.7	29.7	114.3

Do our findings shed light on the results of the existing literature?

- The theoretical model predicts that, for a given distribution of desired internal tariffs, Enabling Clause RTAs are more likely than Article 24 RTAs to give rise to a stumbling bloc effect on average.
  - For products with negative desired preferential tariffs, there will be a stumbling block effect in both types of agreements.
  - For products with positive desired preferential tariffs, Article 24 RTAs will have a building block effect while Enabling Clause RTAs will have no effect.

- However, since countries self select into signing a RTA as a function of the distribution of desired internal tariffs they face, Article 24 RTAs are less likely to be building blocks than Enabling Clause RTAs.
  - Given a positive desired internal tariff, two developed countries may choose not to sign a RTA - which would be under Article 24 – because they would be forced to set those internal tariffs equal to zero.
  - On the other hand, given a positive desired internal tariff, two developing countries signing a RTA with the Enabling Clause will not be discouraged from going ahead.
  - Given a negative desired internal tariff, any type of country – either developed or developing – would be wary of signing a RTA given that both Article 24 and the Enabling Clause include a non-negativity constraint.

Conclusions

- We develop a theoretical model which gives predictions about the external and internal tariffs set by RTA members under alternative assumptions about the constraints on the internal tariffs.

- We derive a theory-based estimating equation.

- We examine the impact of the internal trade share on external tariffs across products, countries and time, comparing this impact for goods with positive internal tariffs with that of goods with zero internal tariffs.

- We find that the greater the internal trade share, the greater is the incentive to maintain a high external tariff, if, and only if, the internal tariff is zero.