Complements or Substitutes? Preferential and Multilateral Trade Liberalization at the Sectoral Level*

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INTRODUCTION

What Do We Do?

Latin America developed a complex web of simultaneous unilateral, multilateral, and preferential agreements as a part of structural economic reforms implemented since mid 1980s and throughout the 1990s (Ando and Estevadeordal, 2004).

- \Rightarrow Natural policy questions:
 - How have these trade policy reforms interacted with each other?
 - Have PTL and MTL been complements or substitutes?

A recent paper by Estevadeordal, Freund, and Ornelas (2008) claims that regionalism appears to have been a building bloc to MTL in the case of Latin America. That is, RTL has had a complementary effect on MTL.



INTRODUCTION (cont'd)

What Do We Do?

We explore whether such result holds across sectors.

 \succ Investigate whether sectoral heterogeneity exists for changes in MFN tariffs in response to changes in preferential tariffs.

 \geq Exploit a new database, which substantially extends the database used in Estevadeordal et al. (2008) in terms of period and partner dimension.

Our estimations suggest:

• The nature of the relationship of two trade policy variables (i.e., complements or substitutes) does indeed vary significantly across sectors.

• Sectoral heterogeneity is likely to be linked to specific country-sector characteristics such as import demand elasticity and revealed comparative advantage.

=> Valuable insights to other countries that have been exposed to regionalism, but are increasingly involved in these sorts of initiatives, such as Asian countries.

INTRODUCTION (cont'd)

What Do We Do?

Features of regional initiatives in Asia as of March 2009 (Tab.A1):

≻The movement toward regional integration through FTAs/PTAs was lagging behind the rest of the world until recently.

• AFTA: the utilization of CEPT tariffs explosively expanded only very recently (Fig.A1 for the case of Thailand's exports).

1 Many FTAs/PTAs signed, put under negotiations, or at least subject to feasible study/preparatory talks since the 2000s, parti. the latter half of the 2000s.

 \succ FTA networking in the region has been developed with ASEAN as its hub in terms of both bilateral and plurilateral trade agreements.

• ASEAN+1 FTA/PTA signed/enforced by all "+6 countries" except India.

• Simultaneous efforts to form bilateral FTAs with ASEAN countries by "+6 countries", parti. Japan, Australia, and NZ.

Table A.1 FTA networking in extended East Asia

(as or	20017												(AS OI	March 2009)
	Japan	Korea	China	ASEAN								India	Australia	New Zealand
					Brunei	Indonesia	Malaysia	Singapore	Thailand	Vietnam	CLM			
Japan	\sim	Åõ (suspended)	Å¢	Åù 2008 -	Åù 2008	Å ù 2008	Åù 2006	Åù 2002	Å ù 2007	Åù		Åõ	Åõ	
Korea	Åõ (suspended)		Å¢	Åù 2007 -				Åù 2006				Åõ	Å¢	Å¢
China	Å¢	Å¢	\searrow	Å ù 2005 -				Åù 2009				Å¢	Åõ	Åù 2008
ASEAN	Å ù 2008 -	Åù 2007 -	Å ù 2005 -	Åù 1993 -	(1992)	(1992)	(1992)	(1992)	(1992)	(1995)	(LM:1997/ C:1999)	Åð*	Åù	Åù
Brunei	Åù 2008			(1992)	\searrow	(1992)	(1992)	(1992)	(1992)	(1995)	(LM:1997/ C:1999)			Åù 2006
Indonesia	Åù 2008			(1992)	(1992)		(1992)	(1992)	(1992)	(1995)	(LM:1997/ C:1999)		Å¢	
Malaysia	Åù 2006			(1992)	(1992)	(1992)	\searrow	(1992)	(1992)	(1995)	(LM:1997/ C:1999)	Åõ	Åõ	Å¢
Singapore	Åù 2002	Åù 2006	Åù 2009	(1992)	(1992)	(1992)	(1992)	\searrow	(1992)	(1995)	(LM:1997/ C:1999)	Åù 2005	Åù 2003	Åù 2001
Thailand	Åù 2007			(1992)	(1992)	(1992)	(1992)	(1992)	\square	(1995)	(LM:1997/ C:1999)	Å¢	Åù 2005	Åù 2005
Vietnam	Åù			(1995)	(1995)	(1995)	(1995)	(1995)	(1995)	\searrow	(LM:1997/ C:1999)			
CLM				(LM:1997/C:1 999)	(LM:1997/ C:1999)	(LM:1997/ C:1999)	(LM:1997/ C:1999)	(LM:1997/ C:1999)	(LM:1997/ C:1999)	(LM:1997/ C:1999)	/			
India	Åõ	Åõ	Å¢	Åõ*			Åõ	Åù 2005	Å¢				Å¢	Å¢
Australia	Åõ	Å¢	Åõ	Åù		Å¢	Åõ	Åù 2003	Å ù 2005			Å¢		Åù 1983
New Zealand		Å¢	Åù 2008	Åù	Å ù 2006		Å¢	Åù 2001	Å ù 2005			Å¢	Åù 1983	

Notes: Åù signed or being effective, Åõ under negotiation or agreed to negotiate (Åõ*: negotiation completed), Å¢ feasibility study or preparatory talks. The year indicates when the concerned FTA was in force. "-" after the year means that some ASEAN countries are under the corresponding FTAs in force and others follow later. Dark blue indicates FTAs signed before or in the 1990s, blue indicates FTAs signed in the first half of the 2000s, and light blue indicates FTAs signed in the second half of the 2000s. For some FTAs, their status in this table is based on the agreement of trade in goods; negotiations may be still ongoing over other areas such as investment and services even if the agreements are identified as those signed or being effective here. Å The year in parenthesis shows the year for the corresponding ASEAN country to be the member of ASEAN/AFTA.



Data source: JETRO (2009a).

Note: Simgapore is excluded for ASEAN as a whole since it already removes all tariffs except 6 items.

OUTLINE

Introduction

- Within and Between Trade Liberalization: What Do We Know?
- > Data and Descriptive Evidence
- Empirical Methodology
- Econometric Results
 - Aggregate Estimates
 - Sectoral Estimates
- Concluding Remarks

WITHIN AND BETWEEN TRADE LIBERALIZATION

What Do We Know?

An extensive and controversial theoretical debate on how the formation of RTA influences the government's incentives to set MFN tariffs v.s. a few empirical studies examining the relationship bet. preferential and MFN tariffs.

 \succ Using data on 51 industries for 1968 and 1983, Magee&Lee (2001) show that the formation of the EEC induced members to reduce external tariffs in the following 15 years.

Limao (2006) and Karacaovali&Limao(2008) analyze the impact of PTL on MTL at the Uruguay Round in US and EU and find that (multi) liberalization was smaller in products where preferences were granted.

<= offer of preferences on a unilateral basis to extract concessions in nontrade area

> Based on cross-sectional data on <u>the levels of MFN and preferential tariffs</u> for DCs&LDCs in 2005, **Baldwin&Seghezza** (2007) find these tariffs are complements, since zero or low margins of preferences for products with high MFN tariffs.

WITHIN AND BETWEEN TRADE LIBERALIZATION

What Do We Know? (cont'd)

> Examining a rich dataset incl. MFN and preferential tariffs at the 4-digit ISIC level (appx.100 industries) in 1990-2001, **Estevadeordal, Freund, &Ornelas** (2008) examine the relationship bet. <u>the changes in MFN and (lagged) preferential tariffs</u> and find tariff complementarity in Latin America.

- e.g. Other studies focusing on LDCs include Foroutan (1998) for over 50 LDCs and Bohara et al. (2004) for Argentina.
- \Rightarrow Questions:
- Does the overall pattern uniformly prevail across sectors?
- What other factors may be driving differences if any?

• Possible explanations for sectoral heterogeneity in the literature include:

- **Richardson** (1993): fall in MFN tariffs of a country joining a FTA in sectors in which imports are diverted from the rest of the world to the FTA partner

- Stoyanov (2009): the existence of foreign lobbies with different lobbing capacities by sector and the heterogeneity of foreign lobbies in terms of whether from FTA member countries or not

DATA&DESCRIPTIVE EVIDENCE

The Dataset

We have collected highly disaggregated tariff data, both MFN and preferential on a bilateral basis, for 11 countries in Latin America over two decades.

➢ Countries: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela

- > Aggregation: at the 4-digit ISIC rev.2 sectoral level
- ➢ Period: 1985-2005

Dimension of preference: country, partner (all bilateral preferential tariffs or "average relationship"), sector

* An extended version of the database used in Estevadeordal et al. (2008) with data at the 4-digit ISIC level in the period <u>1990-2001</u> and <u>the minimum preferential tariff</u>.

Table 1 Descriptive Statistics

	_	All Countries								
Variable	Year	Average	S.D.	C.V.	p10	p50	p90			
MFN Tariff	1985	41.57	25.85	0.62	17.72	37.00	77.90			
	2005	11.40	6.72	0.59	5.00	10.00	18.94			
Preferential Tariff	1985	39.36	24.81	0.63	16.84	34.54	74.10			
	2005	5.45	5.13	0.94	0.57	4.13	11.92			
	Countries: Member of Customs Unions									
MFN Tariff	1985	45.40	27.59	0.61	17.05	40.83	83.75			
	2005	11.54	5.40	0.47	5.00	10.50	18.95			
Preferential Tariff	1985	43.06	26.45	0.61	16.13	38.47	78.62			
	2005	2.57	2.57	1.00	0.00	2.05	5.30			

•Average and median decline about from 40% to 10%/5%(3%) for MFN/preferential (CU) tariffs

•Dispersion decreases for MFN tariffs while increases for preferential tariffs

Trade Liberalization Patterns in Latin America: Average MFN and Bilateral Preferential Tariffs



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Trade Liberalization Patterns in Latin America: Average MFN and Preferential Tariffs by Country



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Trade Liberalization Patterns in Latin America: Distribution of MFN and Bilateral Preferential Tariffs



Trade Liberalization Patterns in Latin America: Distribution of MFN and Bilateral Preferential Tariffs



Clearly, an enormous heterogeneity still exists, both across countries and especially sectors.

Table 2 Correlation between MFN Changes and Preferential Tariff Changes

(excerpt)

	2	MFN Tariff		² Preferential Tariff			
Variable	(1)	(2)	(3)	(4)	(5)	(6)	
² Preferential Tariff	0.973***	0.965***					
² Lagged Preferential Tariff		0.066***	0.064***				
² MFN Tariff				0.845***	0.824***		
² Lagged MFN Tariff					-0.023***	-0.004	
Observations	217560	206440	206440	217560	206440	206440	
R ²	0.848	0.836	0.184	0.85	0.836	0.197	

Country fix effects, partner fix effects, sector fixed effects, and year fixed effects are considered in all equation * significant at the 10%; ** significant at 5%; significant at 1%.

Simple correlation: ²MFN Tariff: ²Lagged Preferential Tariff (0.184) > ²Lagged MFN Tariff (0.134) ²Preferential Tariff: ²Lagged Preferential Tariff (0.111) > ²Lagged MFN Tariff (0.093)

• Strong correlation bet. preferential and multilateral tariff reduction on both directions

• MFN tariff cuts may be more influenced by past preferential tariff decline => informally supports the hypothesis that MTL and RTL are complements

EMPIRICAL METHODOLOGY

Basic Equations (1)-(4)

Aggregate estimates: $\Delta MFN_{ijkt} = \gamma_i + \gamma_j + \gamma_k + \gamma_t + \beta \Delta PREF_{ijkt-1} + \varepsilon_{ijkt}$ (1) $\Delta MFN_{ijkt} = \gamma_i + \gamma_j + \gamma_k + \gamma_t + \beta \Delta PREF_{ijkt-1} + \rho CU_{ijt} + \delta \Delta CUPREF_{iikt} + \varepsilon_{iikt}$ (2) Sectoral estimates: $\Delta MFN_{iikt} = \gamma_i^k + \gamma_i^k + \gamma_t^k + \beta^k \Delta PREF_{iikt-1} + \varepsilon_{iikt}$ (3) $\Delta MFN_{iikt} = \gamma_i^k + \gamma_i^k + \gamma_t^k + \beta^k \Delta PREF_{iikt-1} + \rho^k CU_{iit} + \delta^k \Delta CUPREF_{iikt} + \mathcal{E}_{iikt}$ (4) where $MFN_{ikt} = MFN_{ikt} \forall j$ (by definition) represents the multilateral (MFN) tariff of country i in industry k in year t and $\Delta MFN_{ikt} = MFN_{ikt} - MFN_{ikt} - MFN_{ikt-1}$; PREF ikt denotes the p referential tari ff of country i in industry k for goods coming from country j in year t and $\Delta PREF_{ijkt-1} = PREF_{ijkt-2} - PREF_{ijkt-2}$; CU_{ijt} is a binar y varia ble that takes the value of 1 if countries i and j are members of the sam e customs union i n year t and 0 o therwise ; $\Delta CUPREF_{ijkt} = CU_{ijt} \Delta PREF_{ijjkt-1}; \gamma_i, \gamma_j, \gamma_k, \gamma_t$ are count ry, partn er, sect or, and 18 year fixed effects, respectively ; and ε_{iikt} is the er ror term.

ESTIMATION RESULTS

Aggregate Estimates (1)

Table 3 The Relationship between MFN Tariff Changes and Pre	ferential Tari	ff Changes		(excerpt)	
Variable	1985-2	2005	1990-2001		
	(1)	(2)	(3)	(4)	
² Lagged Preferential Tariff	0.064***	0.065***	0.074***	0.085***	
Customs Union* ² Lagged Preferential Tariff		-0.076***		-0.097***	
Customs Union		0.453***		0.174***	
² Lagged Preferential Tariff + Customs Union* ² Lagged Preferent	tial Tariff	-0.013***		-0.008**	
Observations	206440	206440	108210	108210	
R ²	0.184	0.185	0.144	0.145	

Country fix effects, partner fix effects, sector fixed effects, and year fixed effects are considered in all equations. * significant at the 10%; ** significant at 5%; significant at 1%.

• MFN tariffs decline following a reduction of preferential tariffs (complements!), in particular, in the case of FTA members

• Similar results to Estevadeordal et al. (2008) but smaller coefficients probably due to "average effect" in the partner dimension 19

Aggregate Estimates (2) : robustness check

Table 4 The Relationship between MFN Tariff Changes and Preferential Tariff Changes: Robustness Check Exercises(excerpt)

	Fixed Effects		Rules of Origin		Import Shares	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
² Lagged Preferential Tariff	0.052***	0.053***	0.049***	0.052***	0.061***	0.063***
Customs Union* ² Lagged Preferential Tariff		-0.073***		-0.076***		-0.078***
Customs Union		0.922***		0.247***		0.307***
Import Share 1985 * Lagged Preference Margin					-0.153***	-0.319***
Import Share 1985 * Lagged Preference Margin * Customs Union						0.252***
² Lagged Preferential Tariff+Customs Union* ² Lagged Preferential	Tariff	-0.019***		-0.024***		-0.014***
Country-Partner-Sector Fixed Effects	Yes	Yes				
Observations	206440	206440	134487	134487	192520	192520
<u>R</u> ²	0.196	0.197	0.199	0.2	0.187	0.188

Country fix effects, partner fix effects, sector fixed effects, and year fixed effects are considered in equations (3)-(6).

In equation (3)-(4), small margins of preference (2.5%) were treated as no preference, considering the costs to comply with RoO.

* significant at the 10%; ** significant at 5%; significant at 1%.

- PTL leads to MTL, in particular in the case of FTA members
- Does this also hold for all sectors? If not, which sectors may be driving this result?



Sectoral Estimates [based on equation (3)]

Sectoral heterogeneity exists!

 \succ Even though PTL seems to have favored MTL in many sectors, there are a relative large number of sectors where no systematic association between these liberalizations is observed and there are even a few sectors for which substitutability effects are detected.

• Examples of sectors where a negative relationship prevails: ocean and coastal fishing; crude petroleum and natural gas production; chemical and fertilizer mineral mining; grain mill products: manufacture of prepared animal feeds; fur dressing and dyeing industries; manufacture of containers and boxed of paper and paperboard; manufacture of fertilizers and pesticides; manufacture of drugs and medicines; and petroleum refineries. => Many of these sectors are heavy or raw material sectors, where market power may play a role

Sectoral Heterogeneity (import demand elasticity)

Table 5 MFN Tariff Changes, Preferential Tariff Changes, and Import Demand Elasticities (
Variable	(1)	(2)	(3)	(4)				
² Lagged Preferential Tariff	0.066***	0.065***	0.069***	0.068***				
Customs Union* ² Lagged Preferential Tariff			-0.086***	-0.087***				
Customs Union			0.295***	0.297***				
Demand Elasticity	-0.002***	-0.001***	-0.002***	-0.002***				
Customs Union * Demand Elasticity			0.004***	0.003***				
Demand Elasticity * ² Lagged Preferential Tariff		0.000***		0.000**				
Demand Elasticity * Customs Union * ² Lagged Preferential Tariff				0.000				
² Lagged Preferential Tariff + Customs Union* ² Lagged Preferential	Tariff		-0.018***	-0.019***				
² Lagged Preferential Tariff + Demand Elasticity * ² Lagged Preferential	tial Tariff	0.065***		0.068****				
Observations	118180	118180	118180	118180				
\mathbf{R}^2	0.206	0.206	0.207	0.207				
Country fix effects, partner fix effects, sector fixed effects, and year fixed	d effects are co	nsidered in al	1 equations.					

Country fix effects, partner fix effects, sector fixed effects, and year fixed effects are considered in all equations * significant at the 10%; ** significant at 5%; significant at 1%.

• Strong positive relationship bet. PTL and MTL for sectors with larger import demand elasticity (Broda et al., 2006)

Sectoral Heterogeneity (revealed comparative advantage)

Table 6 MFN Tariff Changes, Preferential Tariff Changes, and Revealed Comparative Advantage

Variable	(1)	(2)	(3)	(4)
² Lagged Preferential Tariff	0.069***	0.045***	0.072***	0.048***
Customs Union* ² Lagged Preferential Tariff			-0.085***	-0.064***
Customs Union			0.259***	0.306***
Revealed Comparative Advantage	-0.025***	0.020***	-0.037***	0.014*
Customs Union * Revealed Comparative Advantage			0.077***	0.026
Revealed Comparative Advantage * ² Lagged Preferential Tariff		0.030***		0.030***
Revealed Comparative Advantage * Customs Union * ² Lagged Preferential Tariff				-0.025***
² Lagged Preferential Tariff + Customs Union* ² Lagged Preferential Tariff	•		-0.013***	-0.016***
² Lagged Preferential Tariff + Revealed Comparative Advantage * ² Lagged Preferenti	al Tariff	0.075***		0.078***
Observations	183050	183050	183050	183050
<u>R²</u>	0.194	0.195	0.195	0.196

Country fix effects, partner fix effects, sector fixed effects, and year fixed effects are considered in all equations. * significant at the 10%; ** significant at 5%; significant at 1%.

• Strong positive relationship bet. PTL and MTL for sectors where countries exhibit RCA (Proudman and Redding, 2000)

CONCLUDING REMARKS

Constructed a database with both MFN and <u>bilateral</u> preferential tariffs for 11 Latin American countries at the sectoral (4-digit ISIC) levels in the period 1985-2005

Analyzed the relationship bet. PTL and MTL.

- \Rightarrow A positive relationship bet. the two, or tariff complementarity, is confirmed.
- e.g. robustness check for fixed effects, RoO, and import share

In particular, investigated whether sectoral heterogeneity exists for changes in MFN tariffs in response to changes in preferential tariffs. \Rightarrow The answer is Yes.

• The nature of the relationship of two trade policy variables does indeed vary significantly across sectors: complementary effects in some sectors and no signifivant links in others.

• Sectoral heterogeneity is likely to be linked to specific country-sector characteristics such as import demand elasticity and revealed comparative advantage.

• Our results provides helpful insights into trade policy design for countries becoming increasingly engaged in regional trade initiatives as the Asian countries.

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