

Trade policy options to mitigate the impacts of the international crisis in Latin-America: Is there margin for the design of regional policies?

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Presentation outline

- Motivation
- Objectives
- Methodology and data
 - Methodological strategy
 - Data sources
 - Estimation of ad valorem equivalents of NTBs
 - Simulation scenarios
 - Crisis simulation
- Some results
- Conclusions

Motivation

- Impacts of the international economic crisis in Latin-American countries: slowdown in extra-regional and intra-regional trade flows
- Rise of protectionism: adoption of protectionist measures throughout the world, specially non-tariffs barriers (NTBs) whose impacts are difficult to assess

Motivation

International trade restrictive measures implemented in the world between November 2008 and March 2010

Regions	Applied (A)	Share of total (%)	Pending (B)	Share of total (%)	Total (C = A + B)	Share of total (%)	Share of application (A/C)
Latin America and the Caribbean	66	14.8	52	18.3	118	16.2	55.9
European Union 27	127	28.5	19	6.7	146	20.0	87.0
United States	10	2.2	45	15.8	55	7.5	18.2
Asia	85	19.1	71	25.0	156	21.4	54.5
China	17	3.8	13	4.6	30	4.1	56.7
Rest of Asia	68	15.3	58	20.4	126	17.3	54.0
Rest of the World	157	35.3	97	34.2	254	34.8	61.8
Total World	445	100.0	284	100.0	729	100.0	61.0

Source: Global Trade Alert (GTA) and other official sources

Motivation

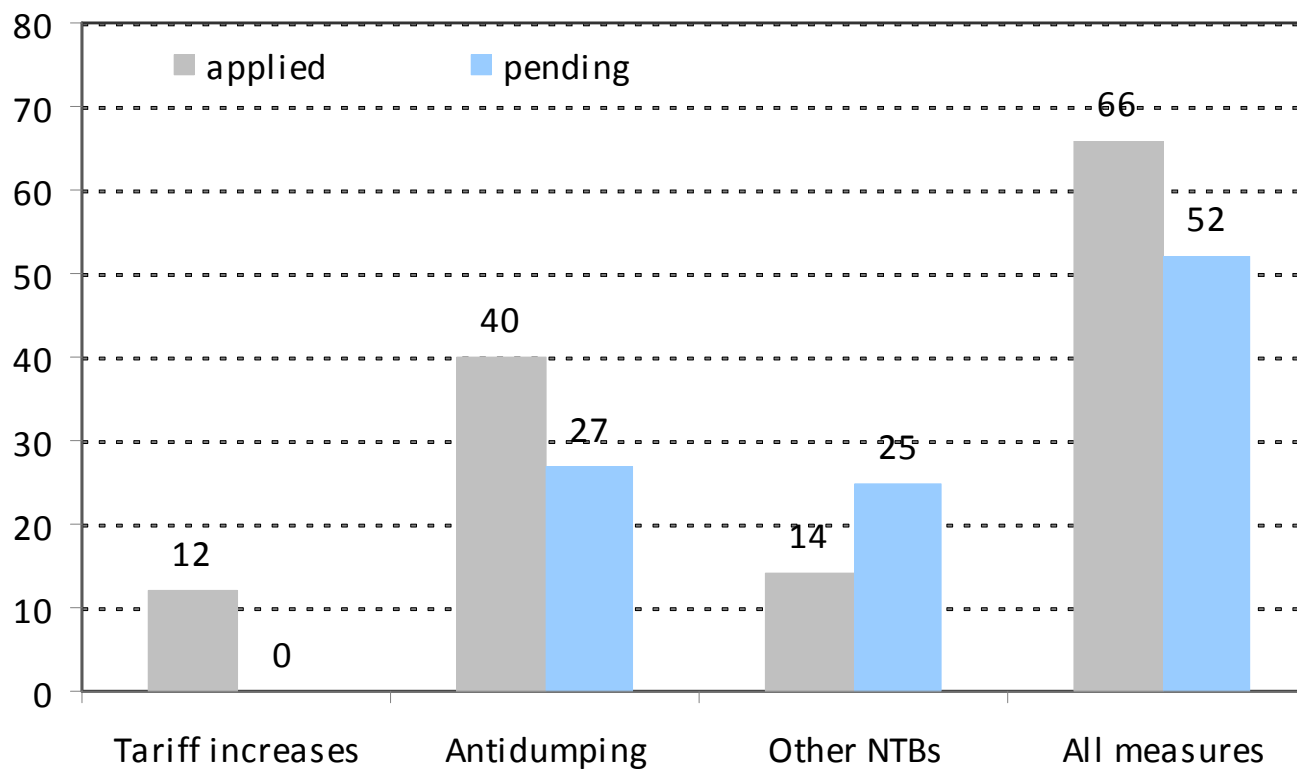
Trade policy measures applied by Latin-American countries

	Argentina	Bolivia	Brazil	Chile	Colombia	Ecuador	México	Paraguay	Peru	Trinidad y Tobago	Uruguay	Venezuela	Number of Countries
Tariff increases		X	X			X	X	X		X			6
Antidumping	X		X	X					X				4
Antidumping investigations	X		X	X	X								4
Licenses	X		X									X	3
Prices of reference	X							X					2
Fiscal discrimination	X										X		2
Safeguards						X							1
Quotes						X							1
Exchange control												X	1

Source: Global Trade Alert (GTA) and other official sources

Motivation

Trade policy measures applied by Latin-American countries



Source: Global Trade Alert (GTA) and other official sources

Objectives

- Assess the impact of the tariff and non-tariff measures implemented by Latin-American countries during the global economic crisis
- Evaluate the effects of alternative trade policy measures

Methodology and data

Methodological strategy

- Calculation of ad valorem equivalent of the non-tariff measures applied by Latin-American countries in the context of the crisis
- Use of computable general equilibrium (CGE) models to evaluate the real effects of:
 - the tariff and non-tariff measures applied by LAC
 - other trade policy options that might be implemented in that context

Methodology and data

Data sources

- GTAP 7.0 database with tariff updated from base year 2004 to 2008 (using alertax algorithm)
- Global Trade Alert (GTA) database
- ALADI, COMTRADE and TRAINS (UNCTAD) databases
- Other sources (IMF, Eurostat, U.S. Bureau of Economic Analysis)

Countries aggregation of the GTAP database



Regions / Countries	N° of regions	Countries
LATIN AMERICA AND THE CARIBBEAN	16	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela and Rest of Latin America
EUROPEAN UNION	1	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom
CHINA	1	China
ASIA	1	Hong Kong, Japan, Korea, Taiwan, Rest of East Asia; Cambodia, Indonesia, Lao People's Democratic Republic, Myanmar, Malaysia, Philippines, Singapore, Thailand, Vietnam, Rest of Southeast Asia, Bangladesh, India, Pakistan, Sri Lanka, Rest of South Asia
UNITED STATES	1	United States
REST OF THE WORLD	1	Rest of countries

Sectors aggregation of the GTAP database



Group	Sectors	N° of sectors
Agriculture and forestry	Rice, Wheat, Other cereals, Fruit and vegetables, Oil seeds, Other crops, Vegetable fibers, Livestock, Forestry	9
Fishing, extraction and mining	Fishing, Energy extraction, Mining	3
Food, beverage and tobacco	Meat, Vegetable oils, Dairy, Sugar, Other food products, Beverage and tobacco	6
Textiles, apparel and leather	Textiles, Apparel, Leather products and footwear	3
Wood and paper	Wood, Paper	2
Refined oil products	Refined oil products	1
Other manufactures	Chemicals, Mineral products, Metals, Metal products, Auto parts, Transport equipment, Machinery and equipment, Other manufactures	8
Services	Services	1

Methodology and data

Estimation of ad valorem equivalents of NTBs

1. Based on observed-prices of imports (general case)

Using imports data (January-June 2008 versus January-June 2009) we compute value (IVM) and volume (IQM) indices, then we obtain the imports price indices as:

$$IPM_{ijt}^k = \left(\frac{IVM_{ijt}^k}{IQM_{ijt}^k} \right) \times 100 \quad \text{with } t = 2008, 2009$$

$$\text{Then: } \Delta PM_{ij}^k = \frac{IPM_{ij2009}^k}{IPM_{ij2008}^k} - 1$$

$$\text{If } \begin{cases} \Delta PM_{ij}^k > 0 \text{ y } GTA_k = 1 & EAV \equiv \tau_{ij2009}^k = \tau_{ij2008}^k \times (1 + \Delta PM_{ij}^k) \\ \Delta PM_{ij}^k = 0 \text{ y } GTA_k = 1 & EAV \text{ non - observable} \\ \Delta PM_{ij}^k < 0 \text{ y } GTA_k = 1 & EAV \text{ non - observable} \end{cases}$$

Methodology and data

Estimation of ad valorem equivalents of NTBs

2. Venezuela exchange rate control

Using data on the official exchange rate (e_t) and the parallel market exchange rate (e_t^*) (2009 averages) we compute:

$$\theta_t = \left[\left(\frac{e_t}{e_t^*} \right) - 1 \right]$$

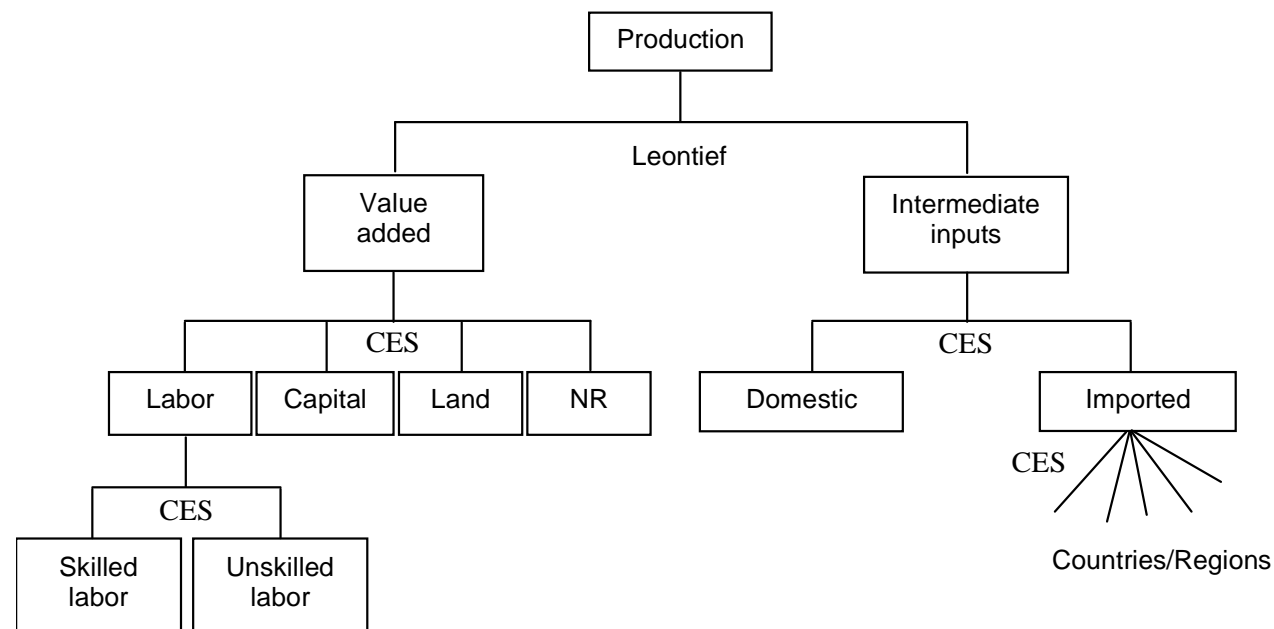
Then:

$$\text{If } \begin{cases} GTA_k = 1 \text{ \& partner non - member of ALADI} \\ GTA_k = 1 \text{ \& partner member of ALADI} \\ GTA_k = 0 \end{cases} \quad \begin{cases} EAV \equiv \tau_{ij2009}^k = \tau_{ij2008}^k \times (1 + \theta_t) \\ EAV \equiv \tau_{ij2009}^k = \tau_{ij2008}^k \times (1 + \theta_t \times 0,25) \\ EAV \equiv \tau_{ij2009}^k = \tau_{ij2008}^k \end{cases}$$

Methodology and data

Mercenier model

- Static, multi-region and multi-sector model
- Exogenous regions: United States, European Union
- Quasi small open economy assumption for endogenous regions
- Perfect competition in all sectors
- Nested production function



Methodology and data

Mercenier model

- The supply of each factor is fixed
- There is no international mobility of factors
- Capital and natural resources are sector-specific
- International transport sector explicitly modeled (export market for international transport, instead of being modeled as iceberg costs)
- Two versions of the model: full employment and unemployment (wage curve)

Methodology and data

Simulation scenarios

ESC-00	Crisis
ESC-01	Crisis and trade policy measures applied between November 2008 and March 2010
ESC-02	Crisis and retaliation
ESC-03	Crisis and trade policy measures applied only to non-LAC
ESC-04	Crisis, trade policy measures applied to non-LAC and complete intra-regional trade liberalization

Methodology and data

Average baseline tariffs and changes considered for the simulation exercises - Total imports

Countries	Baseline 2008 tariffs	ESC-01 Trade policy measures 2009	ESC-02 Retaliation	ESC-03 Trade policy measures only to non-LAC countries	ESC-04 Trade policy measures only to non-LAC countries and intra-regional liberalization
Costa Rica	2.7	2.7	2.7	2.7	1.5
Guatemala	3.9	3.9	3.9	3.9	2.6
Nicaragua	2.8	2.8	2.8	2.8	1.7
Panama	6.7	6.7	6.7	6.7	6.7
Mexico	3.0	2.3	3.2	2.4	2.1
Bolivia	3.6	5.0	5.0	4.1	2.9
Colombia	8.1	8.1	8.3	8.3	7.1
Ecuador	6.0	10.1	10.1	6.9	5.4
Peru	5.9	5.9	6.0	6.3	4.6
Venezuela	8.8	18.1	18.3	17.8	15.7
Argentina	4.9	5.1	6.7	5.0	4.7
Brazil	6.6	7.0	7.2	6.7	6.5
Paraguay	5.5	5.5	6.2	5.5	5.0
Uruguay	3.8	3.8	3.9	3.8	3.5
Chile	1.6	1.6	2.1	1.6	1.4
Rest of Latin America	9.1	9.1	9.1	9.1	7.7
Latin America and the Caribbean	5.2	6.1	6.4	5.9	4.9

Methodology and data

Average baseline tariffs and changes considered for the simulation exercises - Intraregional imports

Countries	Baseline 2008 tariffs	ESC-01 Trade policy measures 2009	ESC-02 Retaliation	ESC-03 Trade policy measures only to non-LAC countries	ESC-04 Trade policy measures only to non-LAC countries and intra-regional liberalization
Costa Rica	5.1	5.1	5.2	5.1	0.0
Guatemala	4.2	4.2	4.2	4.2	0.0
Nicaragua	2.5	2.5	2.6	2.5	0.0
Panama	1.3	1.3	1.9	1.3	0.0
Mexico	5.6	3.7	5.9	5.6	0.0
Bolivia	2.1	3.8	3.9	2.1	0.0
Colombia	4.2	4.2	5.2	4.2	0.0
Ecuador	3.5	12.3	12.3	3.5	0.0
Peru	3.5	3.5	3.8	3.5	0.0
Venezuela	6.5	8.1	8.8	6.5	0.0
Argentina	0.8	3.5	5.4	0.8	0.0
Brazil	1.5	3.1	3.3	1.5	0.0
Paraguay	1.0	1.0	2.4	1.0	0.0
Uruguay	0.7	0.7	0.7	0.7	0.0
Chile	0.5	0.5	2.1	0.5	0.0
Rest of Latin America	7.4	7.4	7.4	7.4	0.0
Latin America and the Caribbean	3.7	4.2	5.3	3.7	0.0

Methodology and data

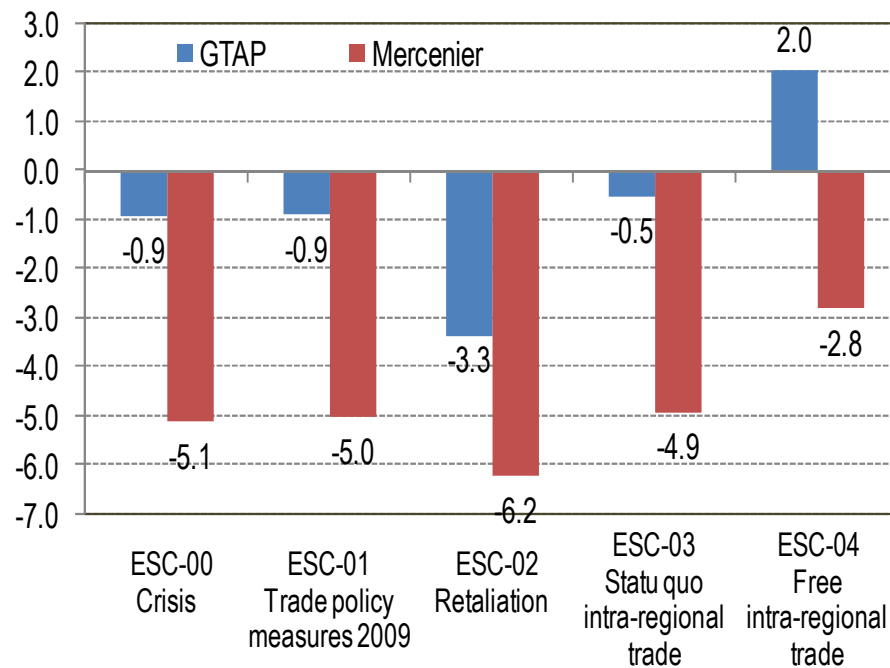
Crisis simulation

	GTAP model	Mercenier model																								
Shock regions	United States European Union 27 China Rest of Asia	United States European Union 27																								
Crisis simulation	<ul style="list-style-type: none"> • Unemployment of capital and labor • Changes in GDP volume of shock regions • Changes in capital endowments of shock regions 	Changes in intermediate and final demand for imported goods of shock regions																								
Shocks details	<p>Variations of GDP volume:</p> <table> <tr> <td>United States</td> <td>-2.5%</td> </tr> <tr> <td>European Union 27</td> <td>-4.0%</td> </tr> <tr> <td>China</td> <td>8.7%</td> </tr> <tr> <td>Rest of Asia</td> <td>-0.036%</td> </tr> </table> <p>Variations of capital stock:</p> <table> <tr> <td>United States</td> <td>-3.0%</td> </tr> <tr> <td>European Union 27</td> <td>-4.0%</td> </tr> <tr> <td>China</td> <td>9.0%</td> </tr> <tr> <td>Rest of Asia</td> <td>-2.0%</td> </tr> </table>	United States	-2.5%	European Union 27	-4.0%	China	8.7%	Rest of Asia	-0.036%	United States	-3.0%	European Union 27	-4.0%	China	9.0%	Rest of Asia	-2.0%	<p>Variations of import prices (simple averages):</p> <table> <tr> <td>United States</td> <td>-6.9%</td> </tr> <tr> <td>European Union 27</td> <td>-5.6%</td> </tr> </table> <p>Variations of imports volume (simple averages):</p> <table> <tr> <td>United States</td> <td>-10.9%</td> </tr> <tr> <td>European Union 27</td> <td>-9.3%</td> </tr> </table>	United States	-6.9%	European Union 27	-5.6%	United States	-10.9%	European Union 27	-9.3%
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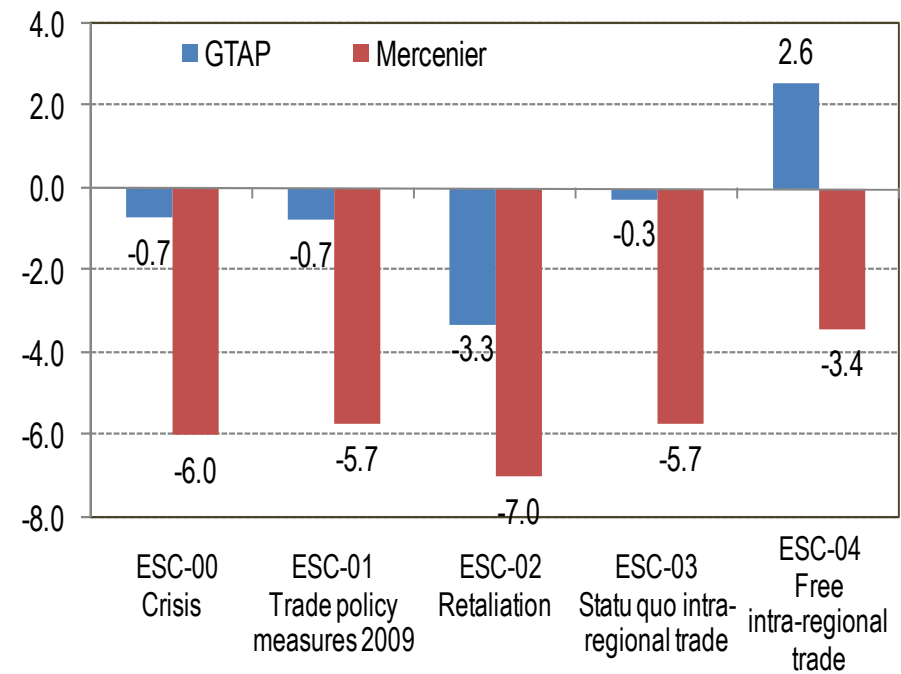
Some results: total exports and imports

Latin America and the Caribbean

Total exports



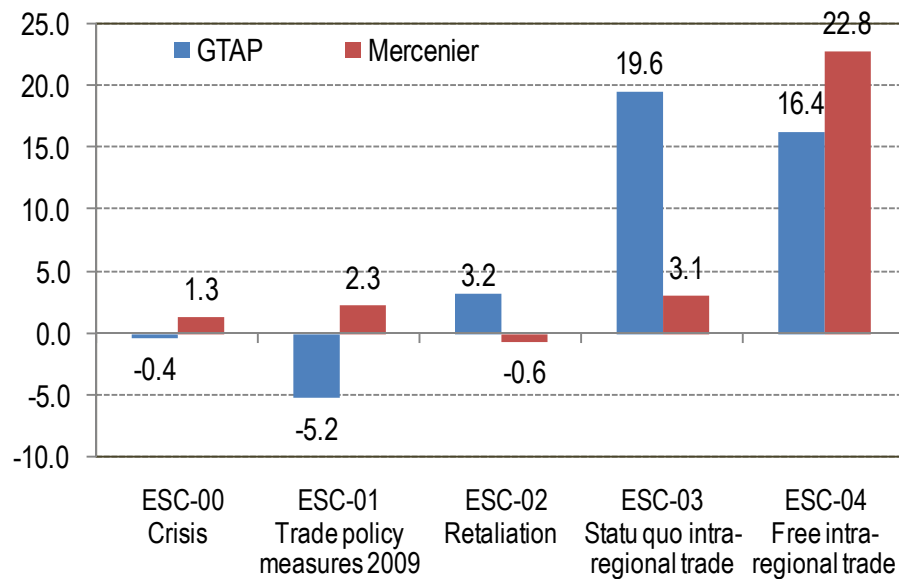
Total imports



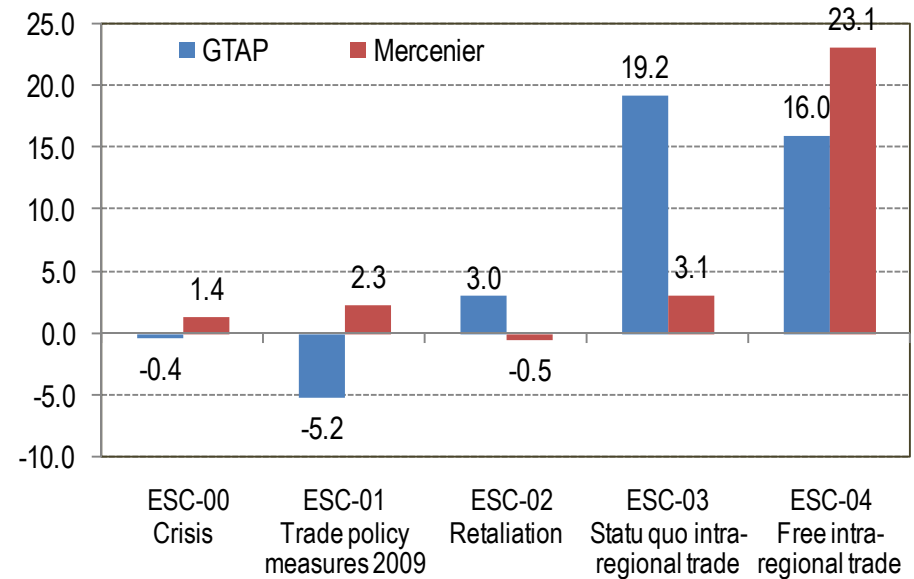
Some results: intra-regional exports and imports

Latin America and the Caribbean

Intra-regional exports

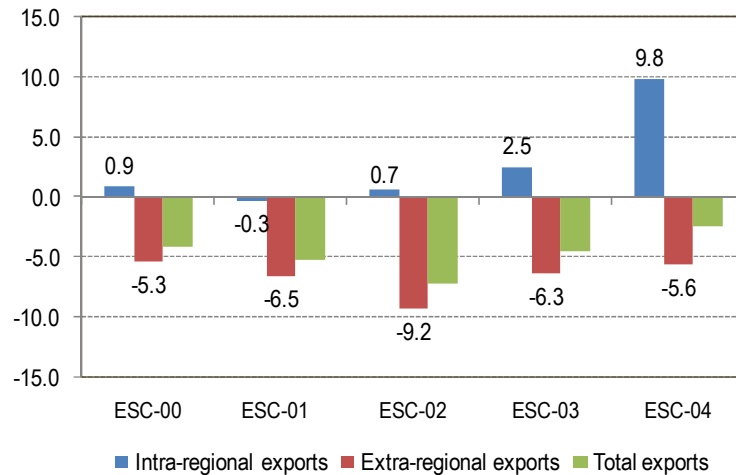


Intra-regional imports

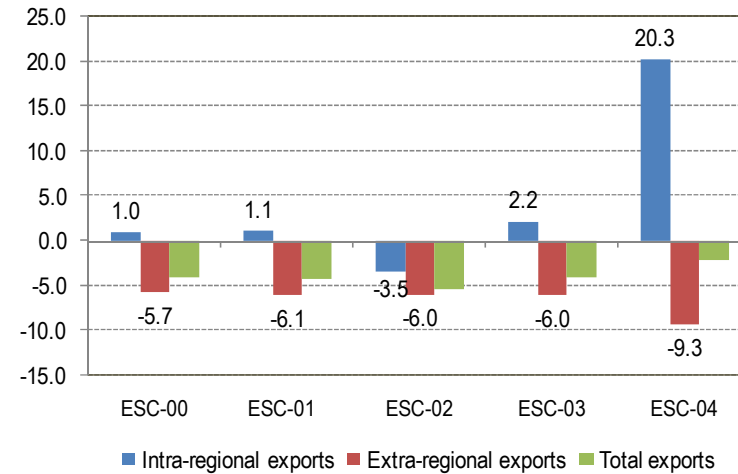


Some results: exports by destination

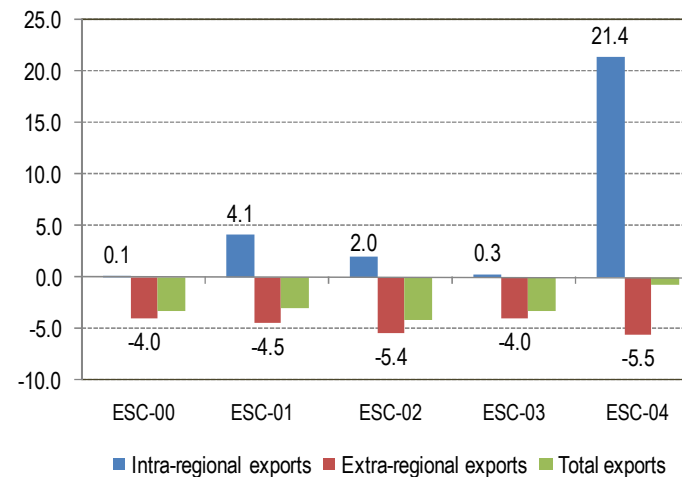
Andean countries



MERCOSUR



Central America

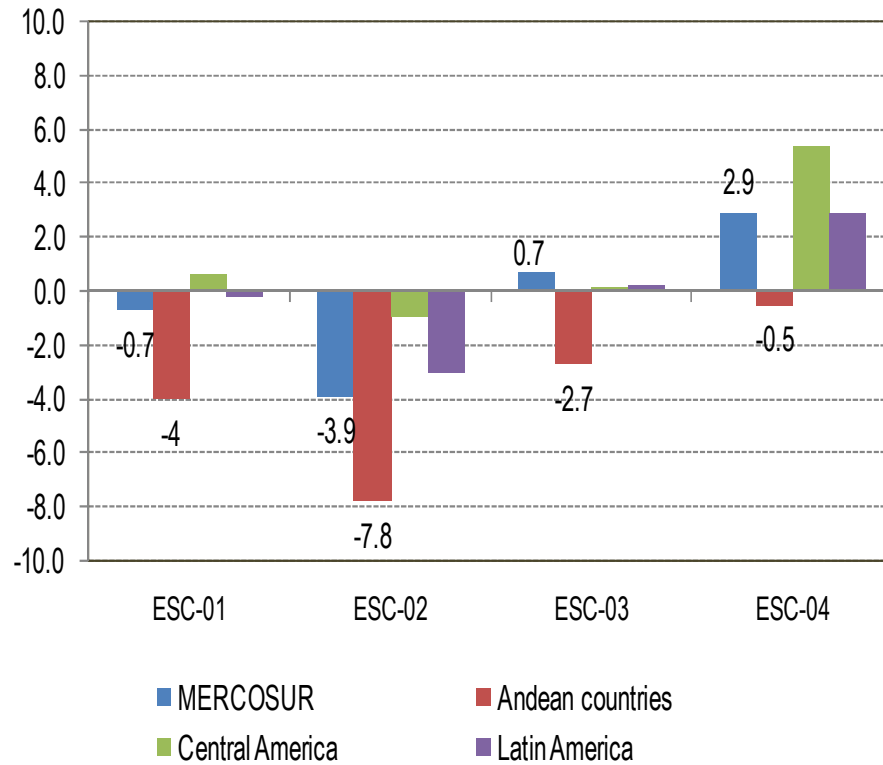


Some results: intra-regional exports by destination

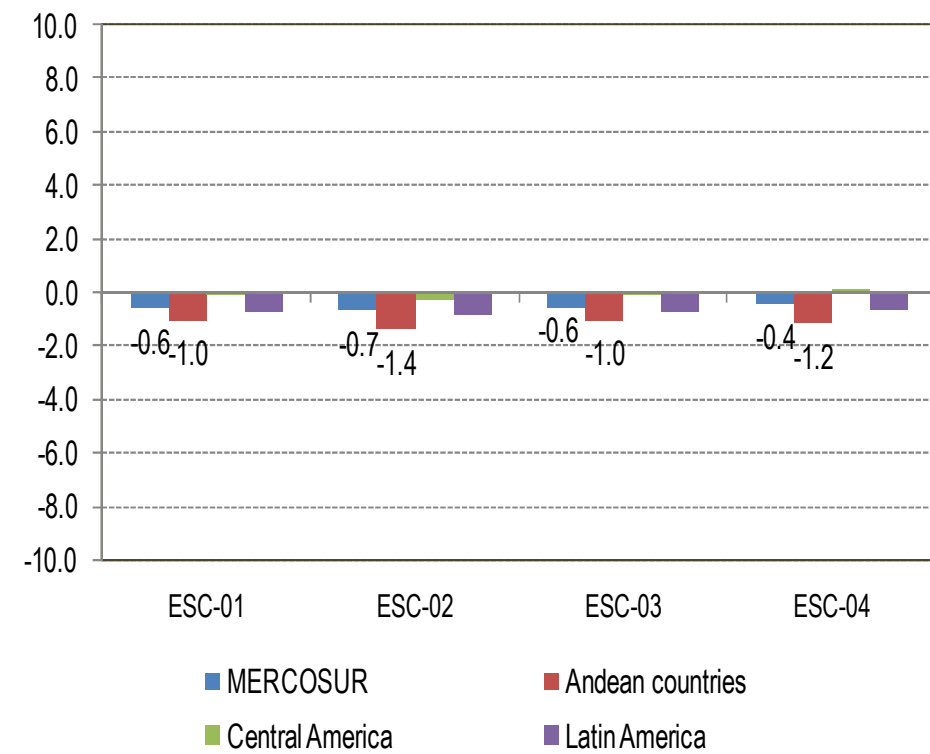
Destination		Central America	Mexico	Andean countries	MERCOSUR	Chile	Rest of Latin America	Total
Origen								
Central America	ESC-00	0.3	1.7	-2.2	-1.6	-4.7	0.1	0.1
	ESC-01	-0.2	26.0	5.2	-1.5	-5.6	-0.6	4.1
	ESC-02	1.2	3.4	4.6	0.3	-4.2	1.9	2.0
	ESC-03	0.4	-0.5	6.3	-1.1	-4.5	0.2	0.3
Mexico	ESC-00	6.6		5.3	4.3	5.0	6.2	5.5
	ESC-01	8.1		20.2	6.6	5.8	8.1	10.7
	ESC-02	4.8		15.5	7.5	7.2	5.2	8.4
	ESC-03	7.4		22.1	6.2	5.9	7.4	10.8
Andean countries	ESC-00	2.4	6.4	-0.9	-0.3	-1.1	3.6	0.9
	ESC-01	0.9	2.0	-1.0	-0.9	-2.7	1.5	-0.3
	ESC-02	3.1	5.5	-2.3	5.7	-0.8	3.4	0.7
	ESC-03	0.4	0.1	5.0	-0.7	-2.5	1.6	2.5
MERCOSUR	ESC-00	5.0	3.2	1.1	0.4	-0.9	3.4	1.0
	ESC-01	5.2	6.2	9.8	-3.1	-1.1	3.4	1.1
	ESC-02	4.4	5.4	7.4	-10.0	-6.2	1.2	-3.5
	ESC-03	4.6	-3.7	14.8	0.6	-1.1	3.1	2.2
Chile	ESC-00	3.9	4.9	0.7	0.1		3.5	1.9
	ESC-01	4.7	2.7	-0.3	-0.8		4.2	0.8
	ESC-02	2.8	6.0	-4.0	-1.6		2.9	0.1
	ESC-03	3.9	3.3	5.7	1.5		3.5	3.4
Rest of Latin America	ESC-00	1.3	1.1	-1.3	-1.9	-2.0	0.6	0.4
	ESC-01	1.2	24.4	15.8	-1.6	-2.6	0.5	7.7
	ESC-02	1.0	1.8	13.7	-4.4	-1.9	1.2	2.0
	ESC-03	1.2	-1.4	26.3	-1.3	-1.9	0.6	2.7

Some results: welfare (EV)

GTAP



Mercenier



Some results: factor prices

GTAP

	ESC-00	ESC-01	ESC-02	ESC-03	ESC-04
Capital	-0.5	-0.3	-0.3	-0.4	-0.5
Labor	-0.6	0.0	-0.6	-0.3	-0.6
Land	-0.7	-2.0	-6.5	-1.2	2.7
Natural resources	-0.5	-1.2	-6.0	-0.7	3.1

Mercenier

	ESC-00	ESC-01	ESC-02	ESC-03	ESC-04
Capital	-3.7	-3.3	-4.4	-3.4	-2.7
Labor	-3.0	-2.8	-3.5	-2.8	-2.5
Land	-3.5	-3.5	-5.2	-3.5	-3.3
Natural resources	-7.3	-7.2	-8.2	-7.2	-7.1

Conclusions

- Intraregional trade spaces should be preserved, especially in times of crisis.
- The maintenance of the status quo would be a better response than the proliferation of indiscriminate protectionist measures, that would sharpen the adverse effects of crisis.
- The deepening of regional integration would be the best policy option, contributing to compensate the impacts of crisis.

Thank you

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III Regional Meeting on Computable General Equilibrium Modeling

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