

Trade Liberalizations in Latin America and Eastern Europe

The Cases of Ecuador and Slovenia

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Preliminary and Incomplete

Motivation

- Two trade liberalization episodes are under way:
 - Ecuador is negotiating a Free Trade Agreement with the United States.
 - Slovenia joins the European Union.

- Although these are two small economies, the trade liberalizations occur with their largest trade partners.

- We want to analyze the impact of these trade liberalizations on the economies of Ecuador and Slovenia.

- We follow the tradition of Shoven and Whalley (1984) and construct calibrated general equilibrium models for Ecuador and Slovenia.

- The first step is to build a Social Accounting Matrix (SAM) for each economy.

- A SAM is a record of all the transactions that take place in an economy in a particular period of time, with a finer level of disaggregation than an Input-Output Matrix.

- Examples of the use of SAMs for Applied General Equilibrium Models: Kehoe *et.al.* (1988) for the Spanish economy, etc.

Ecuador

Social Accounting Matrix (2001)

		production					consumption					factors		institutions		capital	exports	total
		1	2	3	4	5	6	7	8	9	10							
		prim	text	trans	oman	serv	prim	text	trans	oman	serv	labor	capital	households	govt			
production	prim	682997	24662	0	2908505	192468	526186.5	0	0	0	0			0	144885	2987915	7467619	
	text	29924	373117	3012	65657	39225	0	849926.5	0	0	0			0	29303	86244	1476409	
	trans	39273	35	216163	66647	193183	0	0	71901	0	0			0	591148	104705	1283055	
	oman	810655	86343	4013	2874587	2953055	0	0	3858666	0	0			0	2069055	1563682	14220056	
	serv	1170504	257348.5	82428	2054446	4531043	648898.5	213120.5	71024	1396656	5567827			2133707	2560303	870302	21557606	
consumption	prim													1175085			1175085	
	text													1178044			1178044	
	trans													272300			272300	
	oman													6143994			6143994	
	serv													5721724			5721724	
factors	L	1796738	264299.9	15424.22	454519.9	6942046											9473028	
	K	2683852	198003.1	7686.777	799053.1	5652908												9341503
institutions	households											9473028	9341503					18814531
	government	19457	24513	109298	725954	43390	0	114997	129375	888673	153897			591660			2801214	
	dir taxes													591660			591660	
	ind taxes	401	0	0	488958	43390	0	114997	129375	888673	153897						1819691	
	tariffs	19056	24513	109298	236996	0												389863
capital														3731724	667507		995463	5394694
imports	234219	248087	845030	4270687	1010288													6608311
total	7467619	1476409	1283055	14220056	21557606	1175085	1178044	272300	6143994	5721724	9473028	9341503	18814531	667507	5394694	6608311		

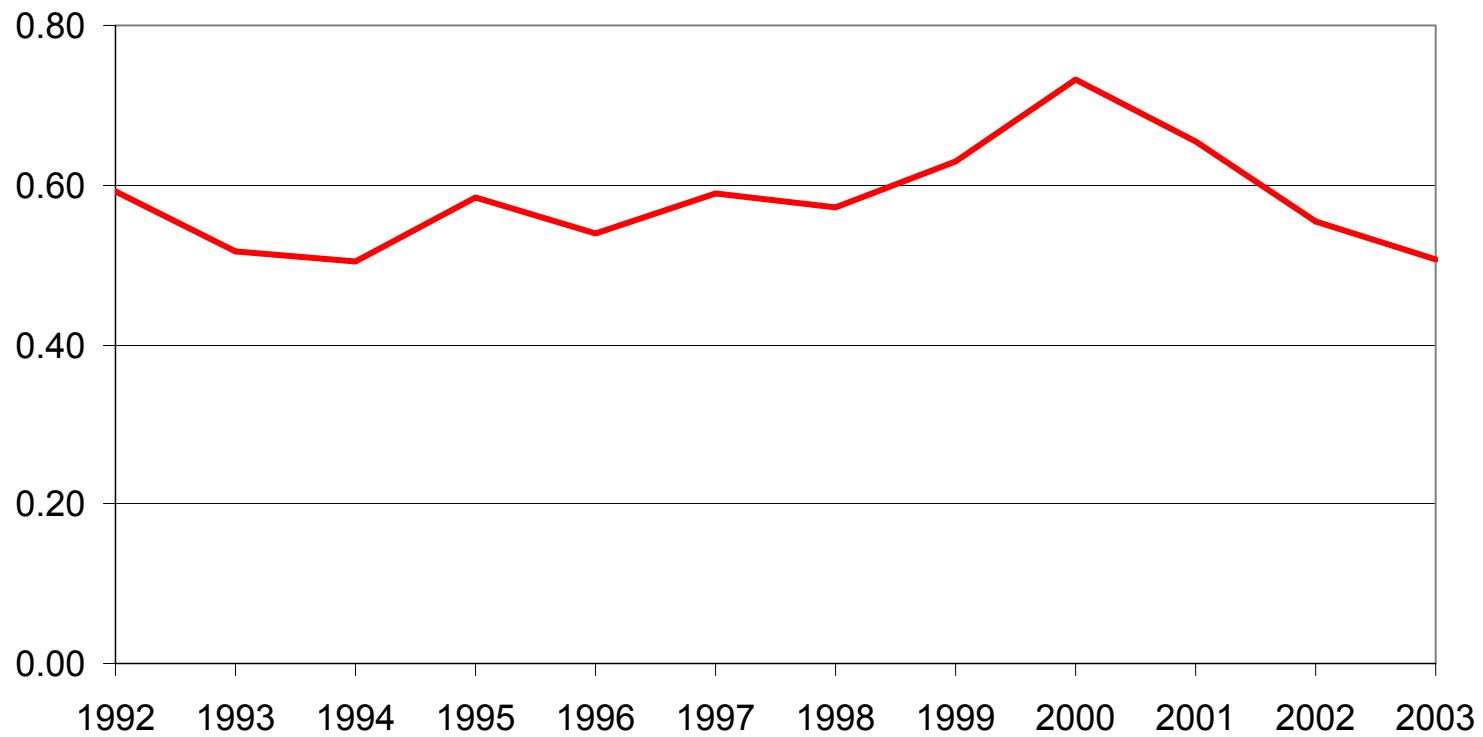
Outline

- Background
- The Model
- Data, Calibration, Results
- Numerical Experiments
- Conclusion and Future Work

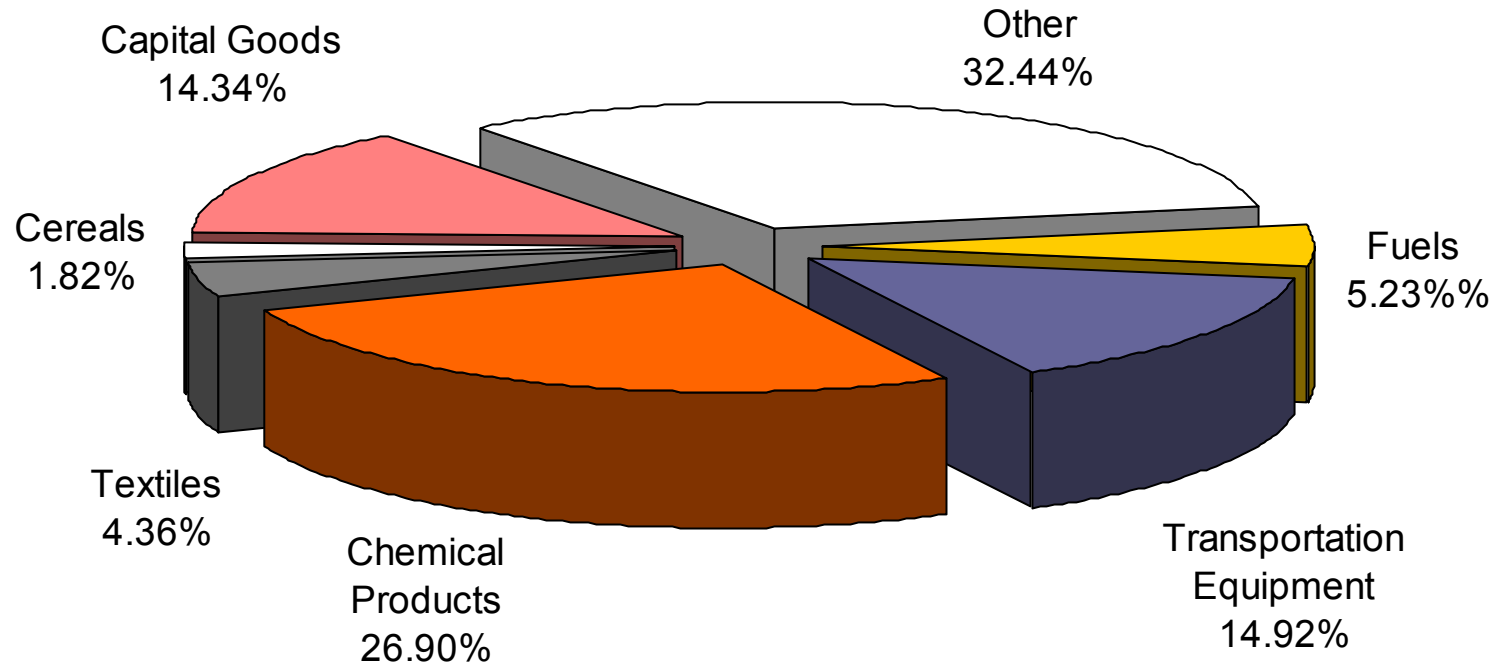
Ecuador

- A relatively very open economy.
- Weighted tariff rate implied by data: 5.89%
- US main trade partner.
- Member of the Andean Community of Nations (CAN), a regional free trade agreement. Trade with CAN is important.

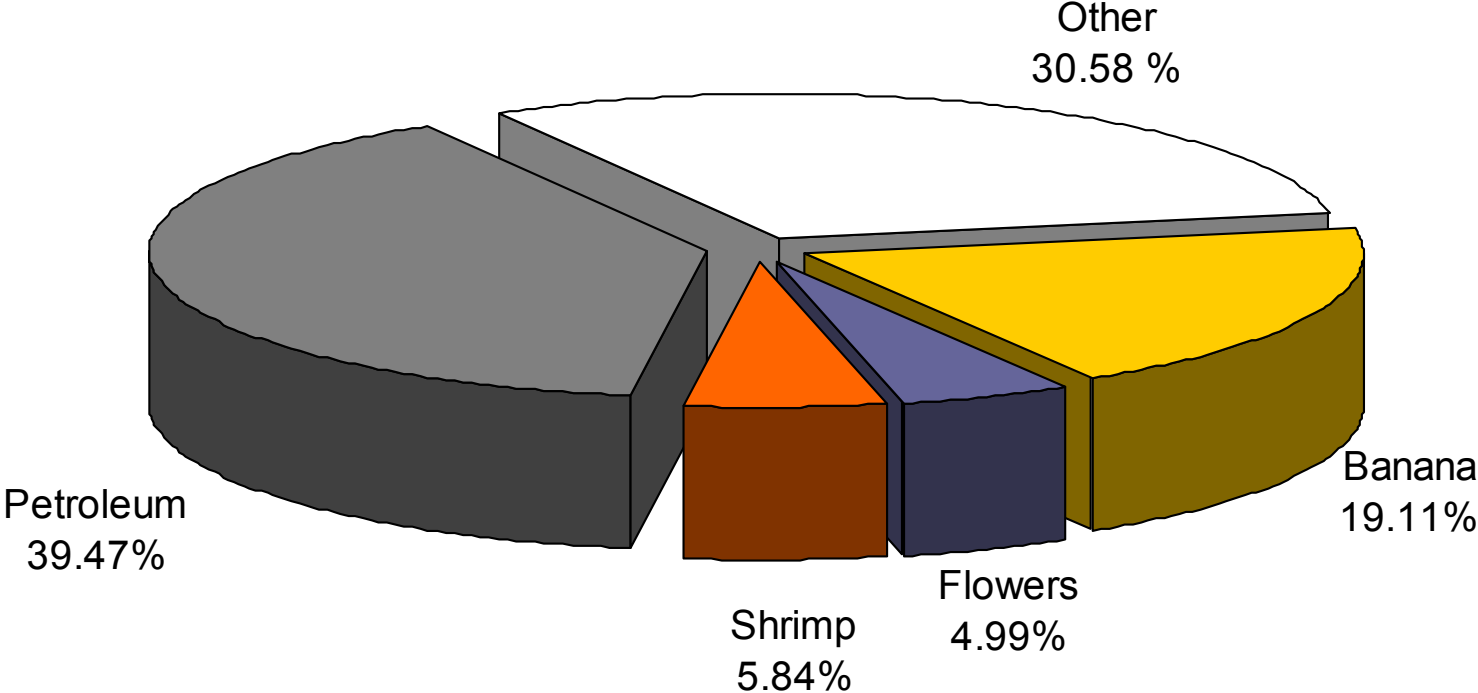
Ecuador
[Exports + Imports]/GDP



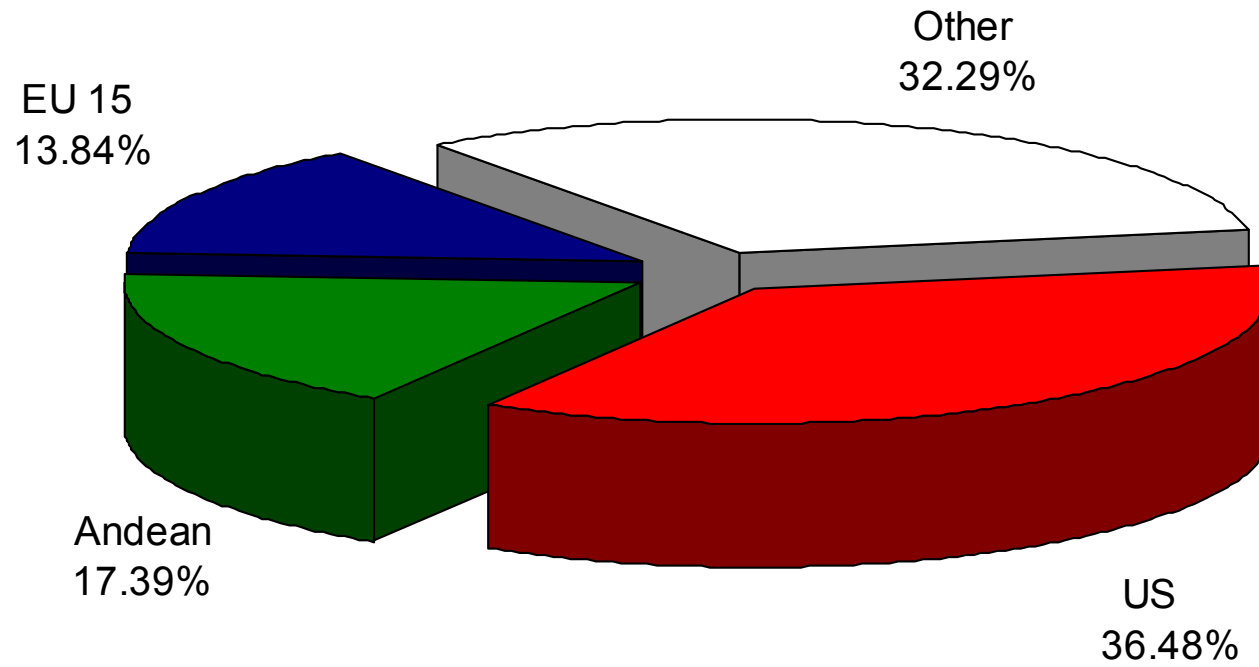
Ecuador Composition of Imports (2001)



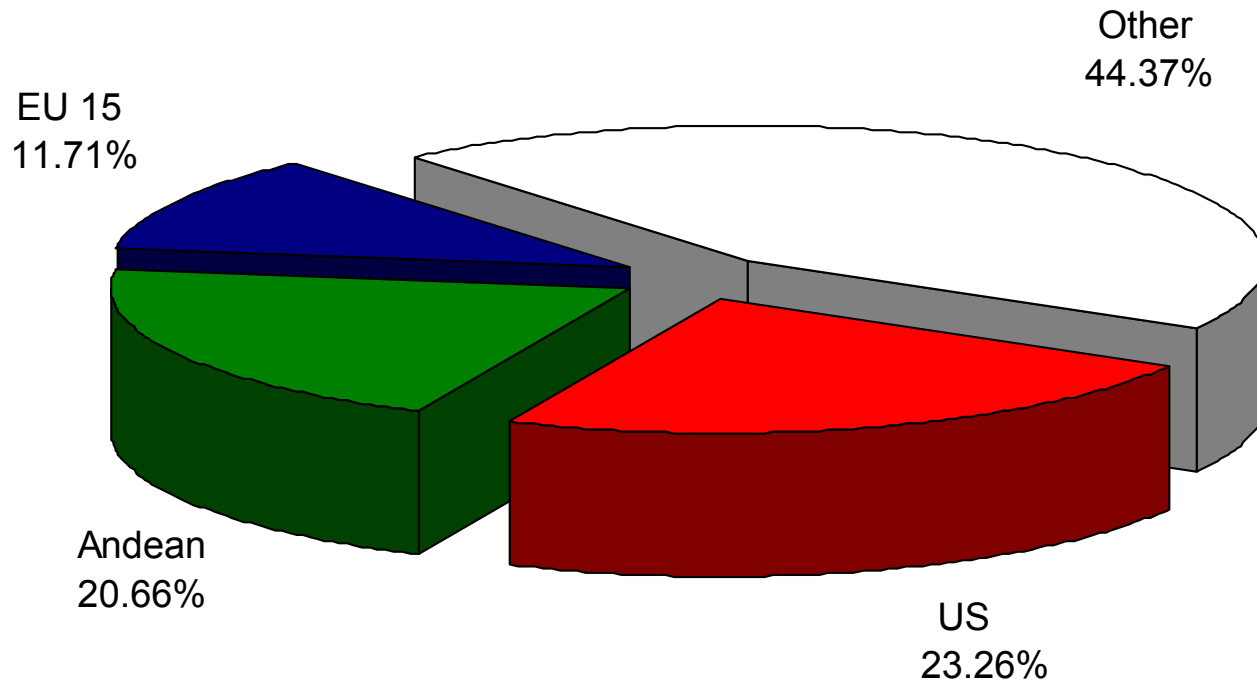
Ecuador Composition of Exports (2001)



Ecuador Destination of Exports (2001)



Ecuador Origin of Imports (2001)



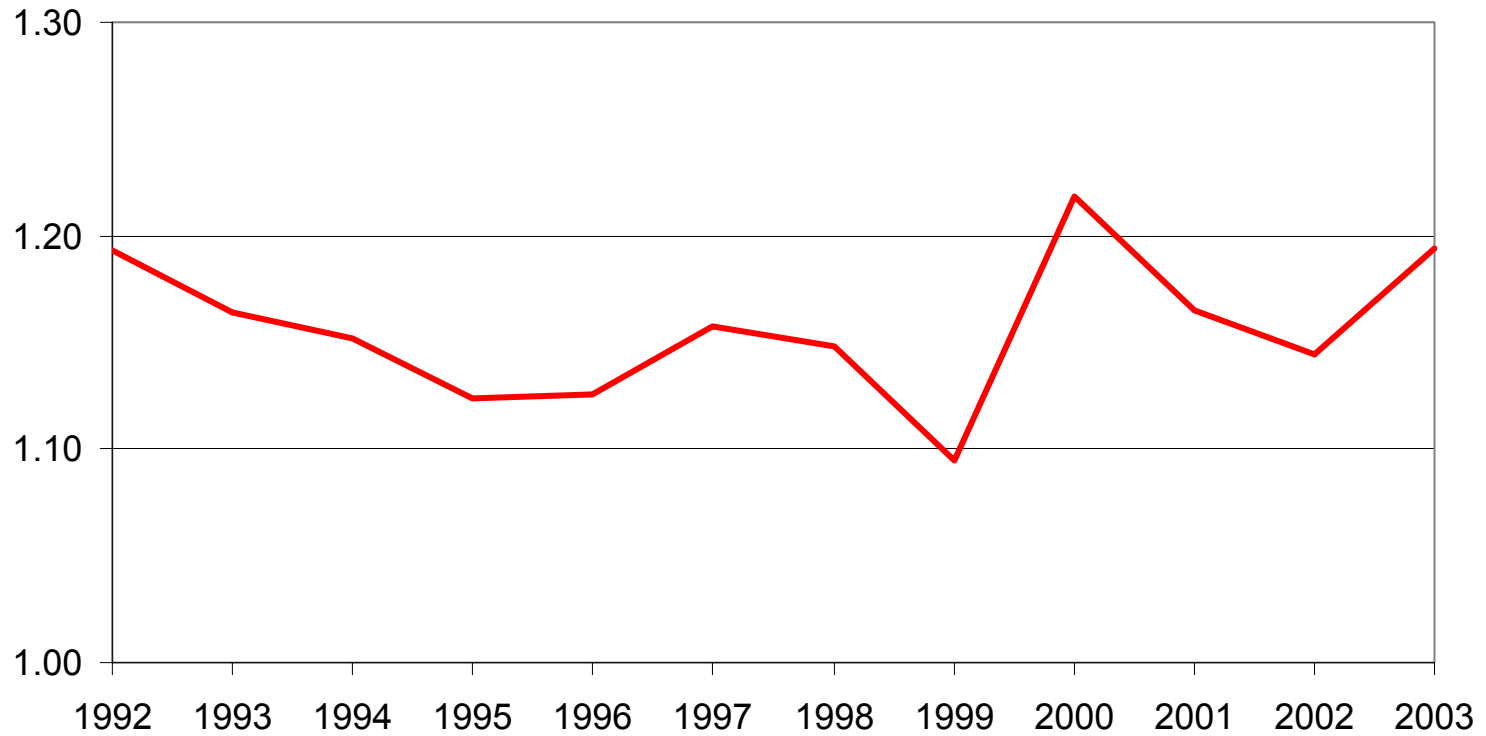
Ecuador Tariff Schedule

Sectors	Tariff rate
Cereals	13.20%
Flowers	1.23%
Other primaries	4.45%
Shrimp	20.00%
Textile	9.88%
Chemicals	4.60%
Transports	12.93%
Other manufacturing	5.92%
Service	0.00%
Weighted Average	5.90%

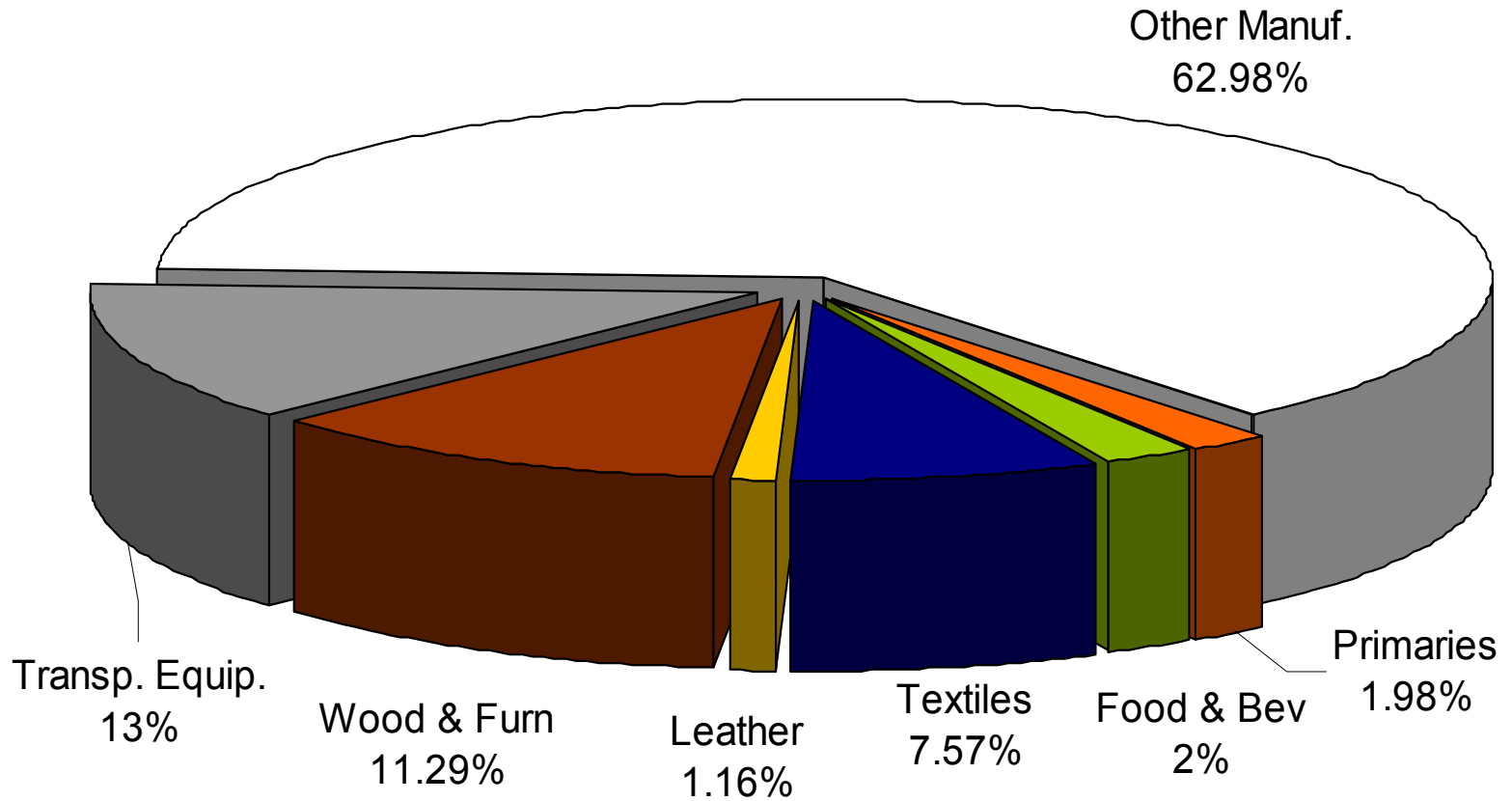
Slovenia

- Slovenia is a very open economy.
- EU 15 by far the main trade partner. Other non-EU 15 trade partners: Croatia, Bosnia & Herzegovina, Russia, Poland, US.
- Low tariff rates, little dispersion.
- By becoming an EU member, it will adopt EU's tariff schedule.

Slovenia
[Exports + Imports]/GDP

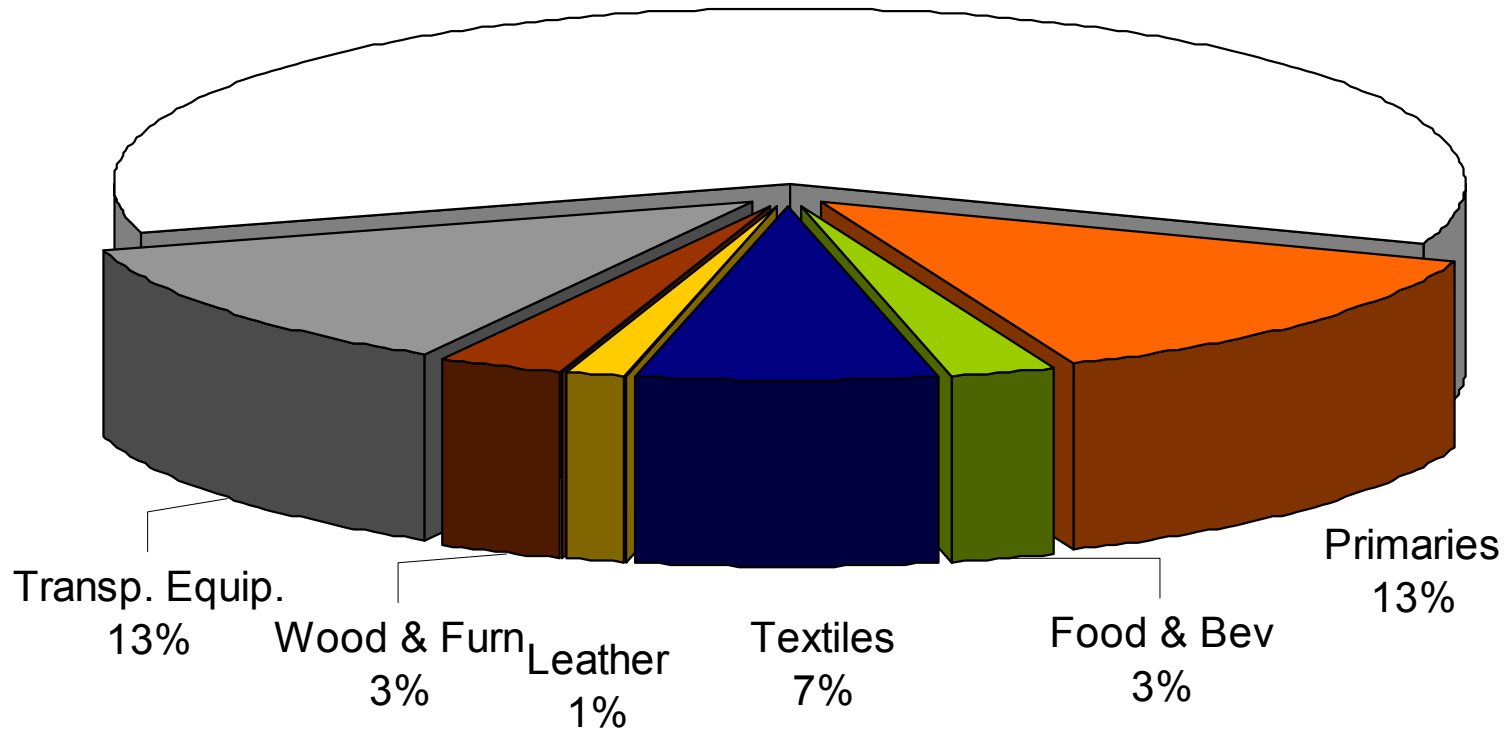


Slovenia Composition of Exports (2001)

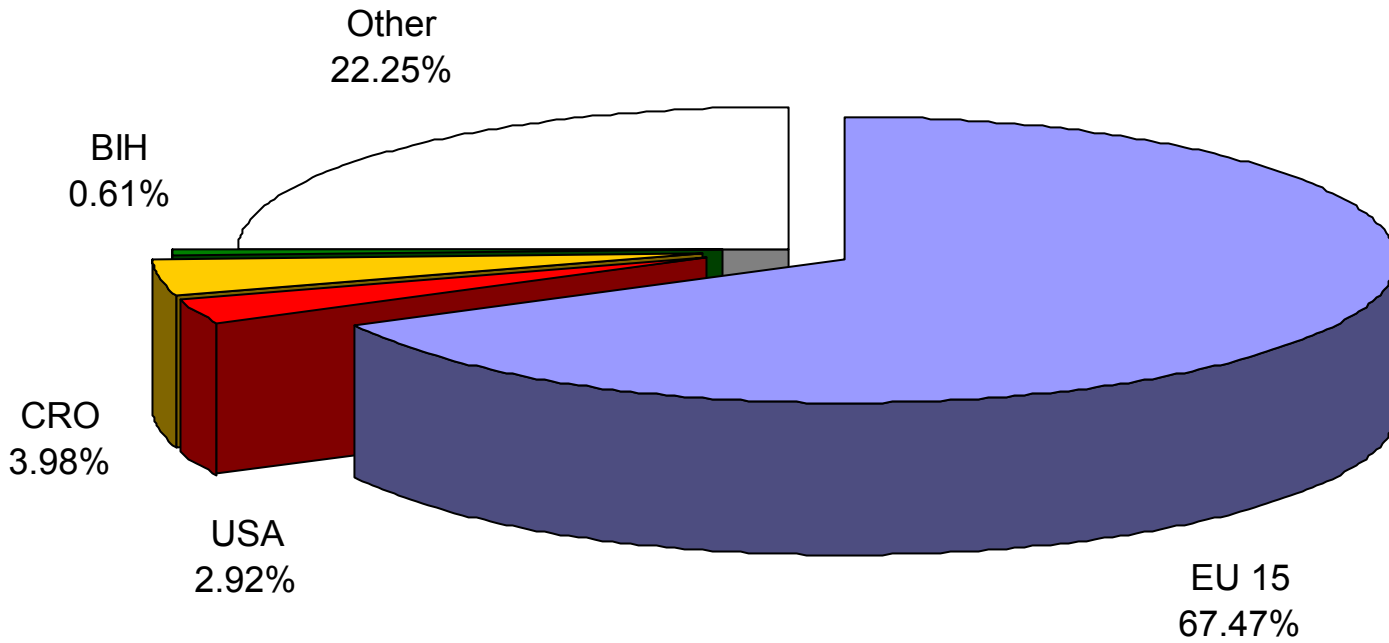


Slovenia Composition of Imports (2001)

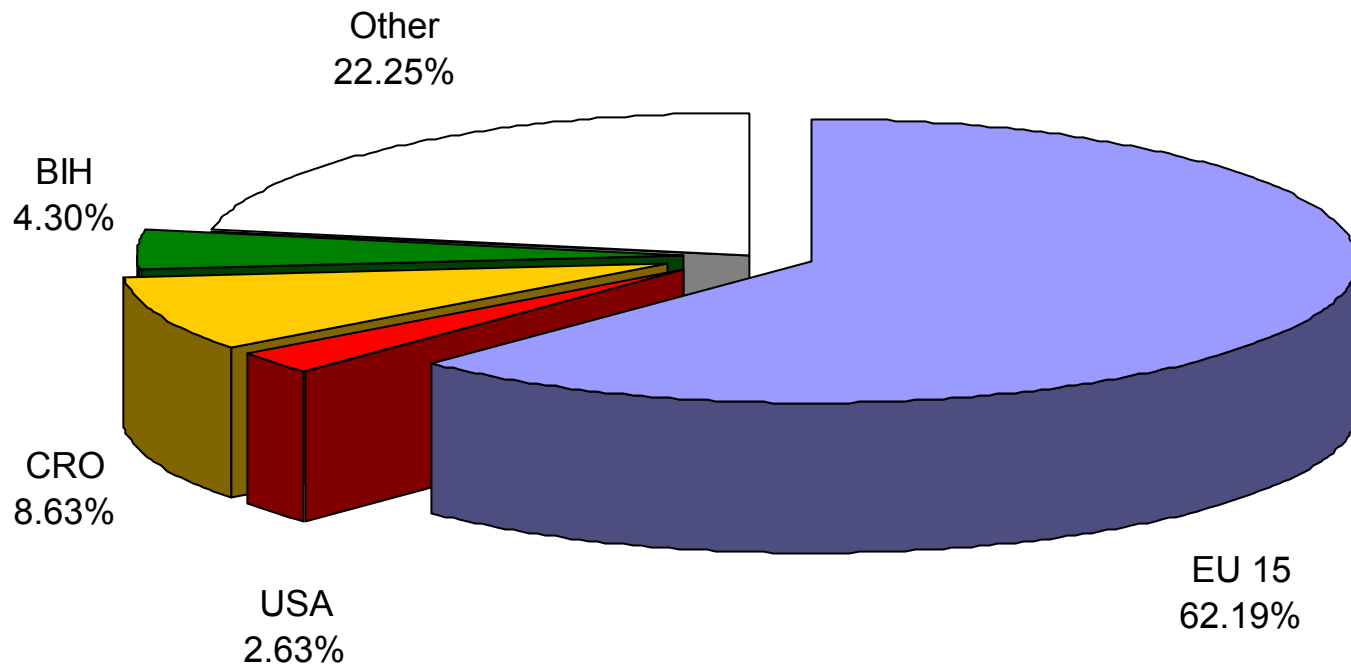
Other Manuf.
61%



Slovenia Origin of Imports (2001)

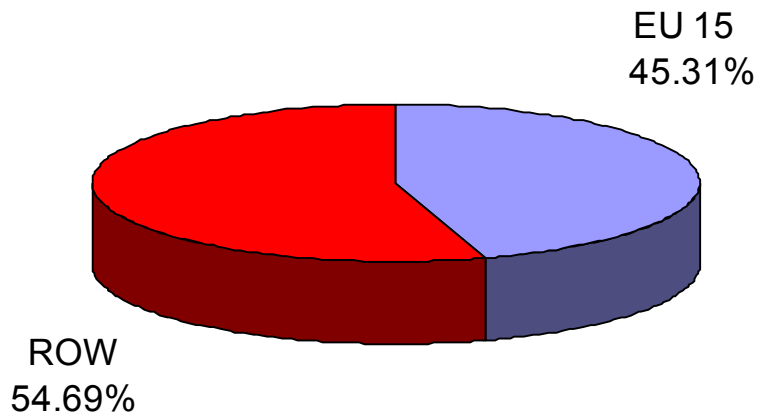


Slovenia Destination of Exports (2001)

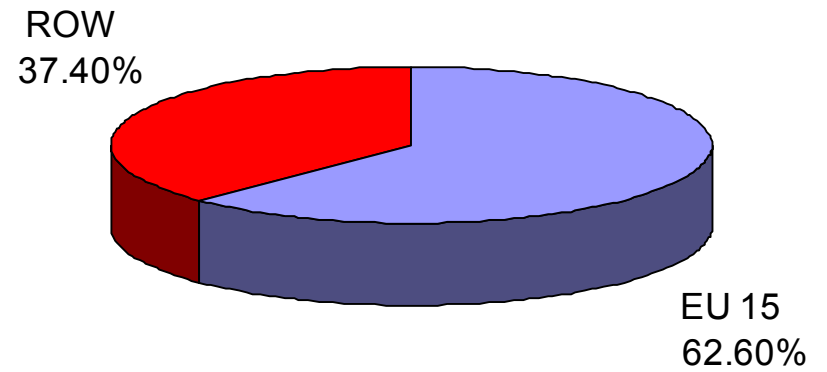


Slovenia Destination of Exports (2001)

Primaries

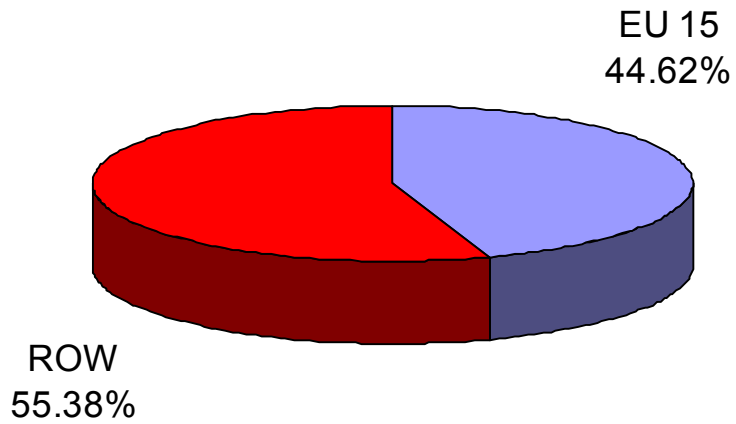


Manufactures

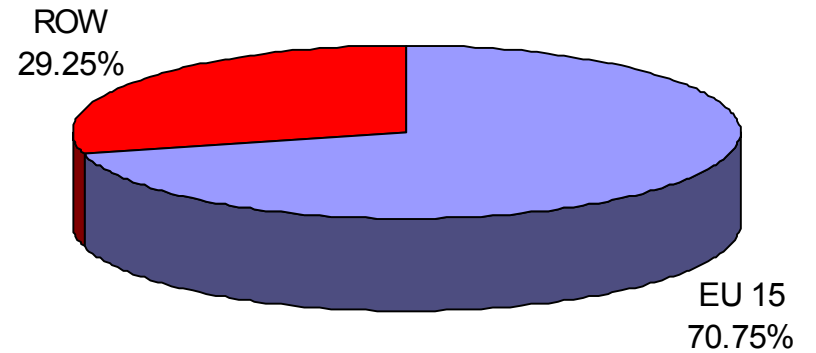


Slovenia Origin of Imports (2001)

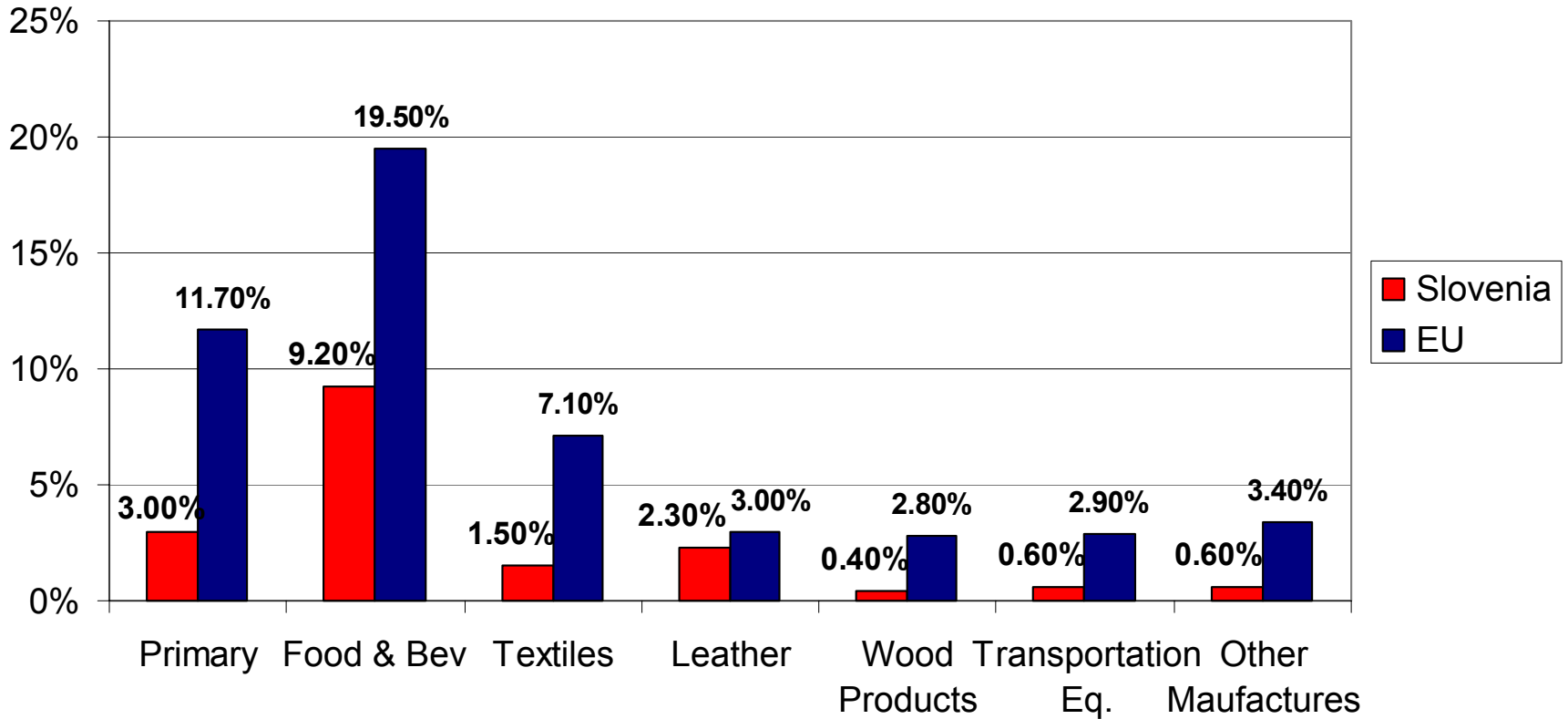
Primaries



Manufactures



Slovenia and EU Tariff Rates



The Model

- A Static Applied General Equilibrium Model.

- Agents:

 - Households

 - Firms

 - Government

 - Foreign Trade Partners

Sectoral Disaggregation

- We disaggregate the economies in the sectors that might exhibit the greatest impact due to elimination of tariffs.

Ecuador

Banana
Cereals
Flowers
Other Primaries
Shrimp
Textiles
Chemical Products
Transportation Equipment
Other Manufactures
Services

Slovenia

Primaries
Food & Beverages
Leather
Wood & Furniture
Textiles
Transportation Equipment
Other Manufactures
Services

Types of Goods: Ecuador

Production Goods (G_P)

Banana
Cereals
Flowers
Other Primaries
Shrimp
Textiles
Chemical Products
Transportation Equipment
Other Manufactures
Service

Investment Good

Consumption Goods (G_C)

Banana
Cereals
Flowers
Other Primaries
Shrimp
Textiles
Chemical Products
Transportation Equipment
Other Manufactures
Services

Imported Good

Types of Goods: Slovenia

Production Goods (G_P)

Primaries
Food & Beverage
Leather
Wood & Furniture
Textiles
Transportation Equipment
Other Manufactures
Services

Investment Good

Consumption Goods (G_C)

Primaries
Food & Beverage
Leather
Wood & Furniture
Textiles
Transportation Equipment
Other Manufactures
Services

Imported Good

Trade Partners

Ecuador

United States (*us*)
Andean Community (*and*)
Rest of the World (*row*)

Slovenia

EU 15 (*eu*)
Rest of the World (*row*)

Households

- Households derive utility from purchasing the consumption goods:

$$\begin{aligned} \max \quad & \sum_{i \in G_C} \theta_{c,i} \log c_i \\ \text{s.t.} \quad & \sum_{i \in G_C} (1 + t_{c,i}) p_{c,i} c_i = (1 - \tau_d)(w\bar{l} + r\bar{k}) \end{aligned}$$

Domestic Production Firms

- Use intermediate inputs from all the sectors in fixed proportions and combine capital and labor to produce the domestic good:

$$y_{j,d} = \min \left\{ \frac{x_{ban,j}^d}{a_{ban,j}^d}, \frac{x_{cer,j}^d}{a_{cer,j}^d}, \dots, \frac{x_{ser,j}^d}{a_{ser,j}^d}, \beta_j k_j^{\alpha_j} \ell_j^{(1-\alpha_j)} \right\}, \quad j \in G_P$$

- In equilibrium these firms make zero profits.

Final Production Goods Firms

- Purchase domestic goods

$$(1 + t_{p,j})p_{j,d}y_{j,d}$$

and imported goods

$$e_{us}(1 + \tau_{j,us})\bar{p}_{j,us}y_{j,us} + e_{and}(1 + \tau_{j,and})\bar{p}_{j,and}y_{j,and} \\ + e_{row}(1 + \tau_{j,row})\bar{p}_{j,row}y_{j,us}$$

- Combine domestic output with imported goods to produce final goods:

$$y_j = \gamma_j \left[\delta_{j,d} y_{j,d}^{\rho_m} + \delta_{j,us} y_{j,us}^{\rho_m} + \delta_{j,and} y_{j,and}^{\rho_m} + \delta_{j,row} y_{j,row}^{\rho_m} \right]^{\frac{1}{\rho_m}}$$

- Note when $\rho_m \rightarrow 0$, $y_j = \gamma_j \begin{bmatrix} \delta_{j,d} & \delta_{j,us} & \delta_{j,and} & \delta_{j,row} \\ y_{j,d} & y_{j,us} & y_{j,and} & y_{j,row} \end{bmatrix}$

Investment Good Firm

- The Investment Good Firm combines the final goods as intermediate inputs in fixed proportions:

$$y_{inv} = \min \left\{ \frac{x_{ban,inv}^{inv}}{a_{ban,inv}^{inv}}, \frac{x_{cer,inv}^{inv}}{a_{cer,inv}^{inv}}, \dots, \frac{x_{ser,inv}^{inv}}{a_{ser,inv}^{inv}} \right\}$$

- Its output is purchased by the households, the government, and by foreigners.

Consumption Goods Firms

- Produce goods to be consumed exclusively by households. They combine final production goods as intermediate inputs in fixed proportions:

$$y_j^c = \min \left\{ \frac{x_{ban,j}^c}{a_{ban,j}^c}, \frac{x_{cer,j}^c}{a_{cer,j}^c}, \dots, \frac{x_{ser,j}^c}{a_{ser,j}^c} \right\}, \quad j \in G_C$$

- We assume that $x_{i,j}^c = 0$ for $i \neq j, ser$.

Government

- Derives utility from consuming services and the investment good:

$$\theta_{g,ser} \log c_{g,ser} + \theta_{g,inv} \log c_{g,inv}$$

- Government's budget constraint:

$$\begin{aligned} & \tau_d(w\bar{l} + r\bar{k}) + \sum_{j \in G_P} t_{p,j} p_{j,d} y_{j,d} + \sum_{j \in G_C} t_{c,j} p_{c,j} c_j + \\ & \sum_{j \in G_P} \tau_{j,us} e_{us} \bar{p}_{j,us} y_{j,us} + \sum_{j \in G_P} \tau_{j,and} e_{and} \bar{p}_{j,and} y_{j,and} + \\ & \sum_{j \in G_P} \tau_{j,row} e_{row} \bar{p}_{j,row} y_{j,row} = p_{ser} c_{g,ser} + p_{inv} c_{g,inv} \end{aligned}$$

Trade Partners

- The representative agent in each foreign country f purchases imported goods from the domestic economy, and consumes a local good:

$$\begin{aligned} \max \quad & \left(\sum_{j \in G^P} \theta_{f,j} \log x_{f,j} \right) + \theta_{f,inv} \log x_{f,inv} + \theta_{f,f} \log x_{f,f} \\ \text{s.t.} \quad & \sum_{j \in G^P} (1 + \tau_{t,j}) p_j x_{f,j} + p_{inv} x_{f,inv} + e_f x_{f,f} = e_f I_f \end{aligned}$$

Equilibrium

- An equilibrium is a set of:
 - prices for domestic goods $(p_{j,d})_{j \in G^P}$
 - prices for final goods $(p_j)_{j \in G^P}, p_{inv}$
 - prices for consumption goods $(p_{c,j})_{j \in G^C}$
 - factor prices r, w
 - real exchange rates $(e_{us}, e_{and}, e_{row})$
 - foreign prices $(\bar{p}_{ban,f}, \dots, \bar{p}_{ser,f})_{f=us,and,row}$
 - consumption plan for the consumer $(c_{ban}, c_{cer}, \dots, c_{ser}, c_{inv})$

- production plan for domestic good firm j
 $(y_{j,d}, x_{ban,j}^d, \dots, x_{ser,j}^d, k_j, \ell_j)$
- production plan for final good firm j
 $(y_j, y_{j,d}, y_{j,us}, y_{j,and}, y_{j,row})$
- production plan for investment good firm j
 $(y_{inv}, x_{ban,inv}^{inv}, \dots, x_{ser,inv}^{inv})$
- production plan for consumption good firm j
 $(y_j^c, x_{ban,j}^c, \dots, x_{ser,j}^c)$
- consumption plan in country f
 $(x_{ban,f}, \dots, x_{ser,f}, x_{inv,f}, x_{f,f})$
- consumption plan for the government $(c_{g,ser}, c_{g,inv})$

such that, given taxes and tariffs:

- (i) The consumption plan $(c_{ban}, c_{cer}, \dots, c_{ser}, c_{inv})$ solves the consumer's problem.
- (ii) The production plan $(y_{j,d}, x_{ban,j}^d, \dots, x_{ser,j}^d, k_j, \ell_j)$ solves the domestic good firm j problem, and generates zero profits.
- (iii) The production plan $(y_j^c, x_{ban,j}^c, \dots, x_{ser,j}^c)$ solves the consumption good firm j problem, and generates zero profits.
- (iv) The production plan $(y_{inv}, x_{ban,inv}^{inv}, \dots, x_{ser,inv}^c)$ solves the investment firm problem, and generates zero profits.
- (v) The production plan $(y_j, y_{j,d}, y_{j,us}, y_{j,and}, y_{j,row})$ for final good firm j minimizes cost and generates zero profit.

(vi) The market for final good j clears,

$$y_j = \sum_{i \in G_P} x_{j,i}^d + \sum_{i \in G_C} x_{j,i}^c + x_{j,inv} + x_{us,j} + x_{and,j} + x_{row,j}$$

(vii) The market for consumption good j clears, $y_j^c = c_j$.

(viii) The market for investment good clears,

$$y_{inv} = c_{inv} + c_{g,inv} + x_{us,inv} + x_{and,inv} + x_{row,inv}$$

(ix) The factor markets clear, i.e. $\sum_j \ell_j = \bar{\ell}$, and $\sum_j k_j = \bar{k}$

(x) The Government balances its budget.

(xi) Trade is balanced:

$$e_f \sum_j \bar{p}_{j,f} y_{j,f} = \sum_j p_j x_{j,f} + p_{inv} x_{inv,f}, \quad f = us, \text{ and, row}$$

(xii) The consumption plan $(x_{ban,f}, x_{cer,f}, \dots, x_{ser,f}, x_{inv,f}, x_{f,f})$ solves country f representative consumer's problem.

Data

- For Ecuador:
 - Input-Output Matrix (2001)
 - Foreign Trade Statistics
 - Source: Central Bank of Ecuador

- We construct a 10-sector SAM.

For Slovenia:

- Input-Output Matrix (2001)
- Foreign Trade Statistics
- Trade in Services Statistics
- Statistical Office of the Republic of Slovenia and Bank of Slovenia

We construct an 8-sector SAM.

Calibration

- We calibrate the values of the parameters of the model economy so that, in equilibrium, the agents replicate the transactions observed in the SAM.
- Also, we obtain:

Partners' GDP	IFS
Partners' Tariff Rates	WTO Trade Policy Reviews
ρ_m	Sensitivity Analysis: $\rho_m^L = 0.0$ $\rho_m^H = 0.9$

Experiments – For Ecuador

- Experiment 1 – “Partial Liberalization”: Ecuador and the US lower, but do not completely eliminate the tariffs they impose on each other.

- Experiment 2 – “Free Trade Agreement”: Ecuador and the US completely eliminate their tariffs.

- NOTE: In both cases, Ecuador does not alter its tariffs with the Rest of the World.

Real Income Indices

$$\square \text{ Consumer Real Income Index} = \left[c_{ban}^{\theta_{ban}} \times \dots \times c_{ser}^{\theta_{ser}} \times c_{inv}^{\theta_{inv}} \right]$$

$$\square \text{ Government Real Income Index} = \left[c_{g,ban}^{\theta_{g,ban}} \times \dots \times c_{g,ser}^{\theta_{g,ser}} \times c_{g,inv}^{\theta_{g,inv}} \right]$$

$$\square \text{ "Social" Real Income Index} = \left[\mathbb{C}_{ban}^{\Theta_{ban}} \times \dots \times \mathbb{C}_{ser}^{\Theta_{ser}} \times \mathbb{C}_{inv}^{\Theta_{inv}} \right]$$

$$\text{where } \mathbb{C}_j = c_j + c_{g,j} \quad \text{and} \quad \Theta_j = \frac{c_j + c_{g,j}}{\sum_j c_j + \sum_j c_{g,j}}$$

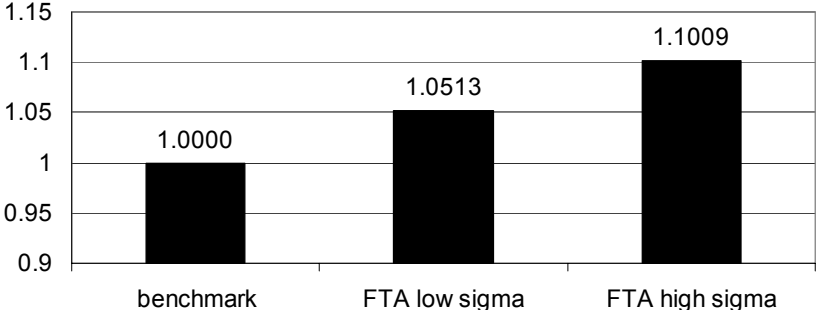
ECUADOR NUMERICAL EXPERIMENTS II : FREE TRADE AGREEMENT WITH US

Tariffs

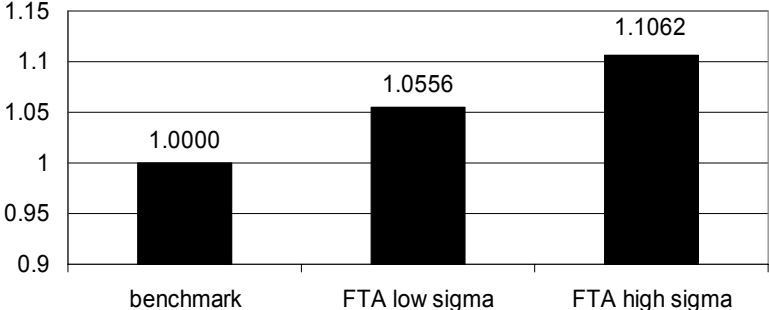
		Data	Partial Liberalization		Total Liberalization	
		Benchmark	$\sigma_{imp}=1$ $\sigma_{exp}=1$	$\sigma_{imp}=10$ $\sigma_{exp}=1$	$\sigma_{imp}=1$ $\sigma_{exp}=1$	$\sigma_{imp}=10$ $\sigma_{exp}=1$
tariff rate on US	Banana	0.000	0.020	0.020	0.000	0.000
	Cereal	0.134	0.020	0.020	0.000	0.000
	Flower	0.013	0.020	0.020	0.000	0.000
	Other primaries	0.094	0.020	0.020	0.000	0.000
	Shrimp	0.222	0.020	0.020	0.000	0.000
	Textile	0.161	0.020	0.020	0.000	0.000
	Chemicals	0.061	0.020	0.020	0.000	0.000
	Transport	0.164	0.020	0.020	0.000	0.000
	Other manufacture	0.070	0.020	0.020	0.000	0.000
	Service	0.000	0.000	0.000	0.000	0.000
tariff rate on ROW	Banana	0.000	0.000	0.000	0.000	0.000
	Cereal	0.134	0.134	0.134	0.134	0.134
	Flower	0.013	0.013	0.013	0.013	0.013
	Other primaries	0.094	0.094	0.094	0.094	0.094
	Shrimp	0.000	0.000	0.000	0.000	0.000
	Textile	0.161	0.161	0.161	0.161	0.161
	Chemicals	0.061	0.061	0.061	0.061	0.061
	Transport	0.164	0.164	0.164	0.164	0.164
	Other manufacture	0.070	0.070	0.070	0.070	0.070
	Service	0.000	0.000	0.000	0.000	0.000
US tariff rate	Banana	0.034	0.020	0.020	0.000	0.000
	Cereal	0.012	0.020	0.020	0.000	0.000
	Flower	0.040	0.020	0.020	0.000	0.000
	Other primaries	0.040	0.020	0.020	0.000	0.000
	Shrimp	0.050	0.020	0.020	0.000	0.000
	Textile	0.095	0.020	0.020	0.000	0.000
	Chemicals	0.041	0.020	0.020	0.000	0.000
	Transport	0.027	0.020	0.020	0.000	0.000
	Other manufacture	0.035	0.020	0.020	0.000	0.000
	Service	0.000	0.000	0.000	0.000	0.000
ROW tariff rate	Banana	0.100	0.100	0.100	0.100	0.100
	Cereal	0.100	0.100	0.100	0.100	0.100
	Flower	0.100	0.100	0.100	0.100	0.100
	Other primaries	0.100	0.100	0.100	0.100	0.100
	Shrimp	0.040	0.040	0.040	0.040	0.040
	Textile	0.040	0.040	0.040	0.040	0.040
	Chemicals	0.040	0.040	0.040	0.040	0.040
	Transport	0.040	0.040	0.040	0.040	0.040
	Other manufacture	0.040	0.040	0.040	0.040	0.040
	Service	0.000	0.000	0.000	0.000	0.000

ECUADOR - EXPORTS TO US

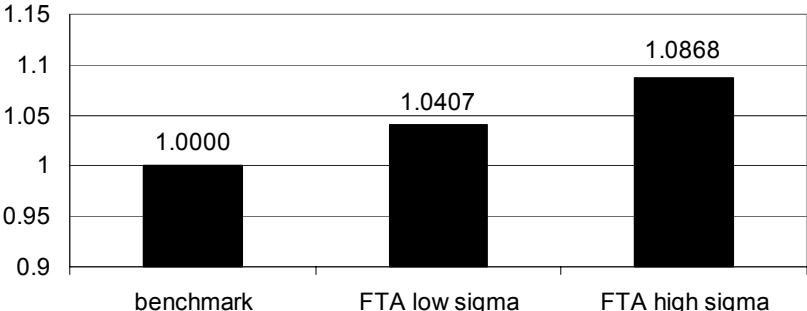
**Ecuador
Banana Exports to US**



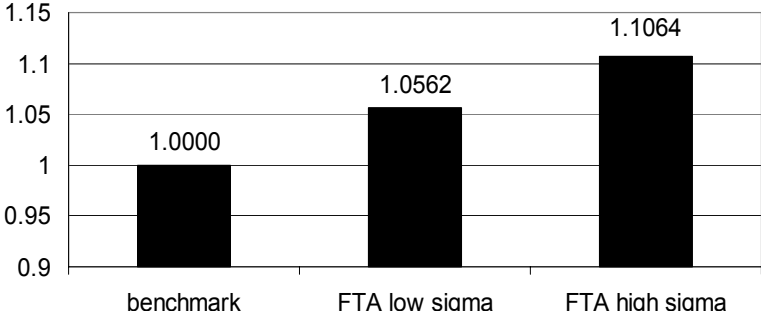
**Ecuador
Flower Exports to US**



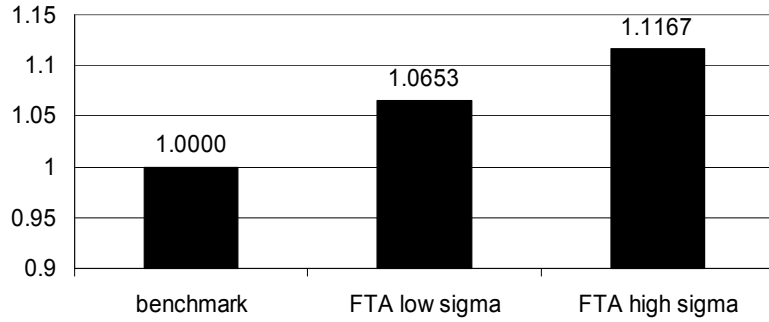
**Ecuador
Cereal Exports to US**



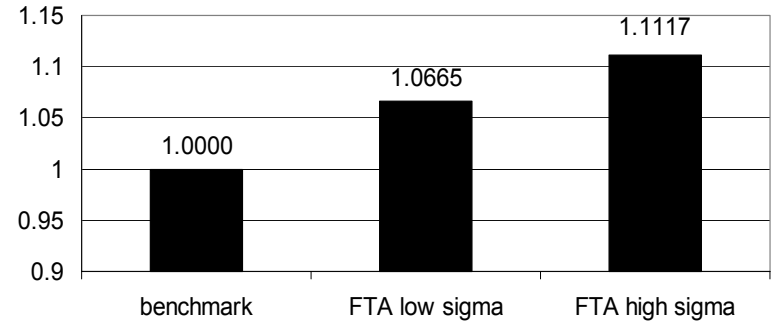
**Ecuador
Other Primaries Exports to US**



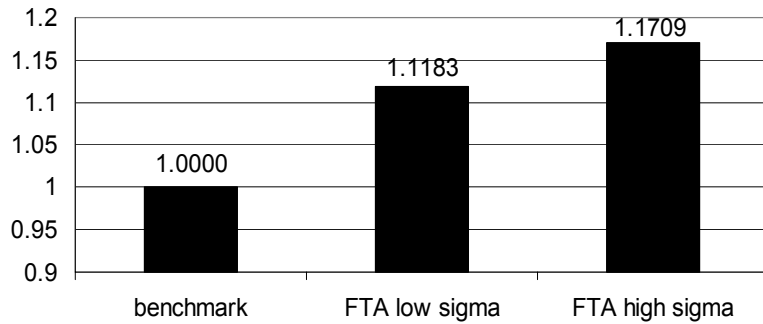
**Ecuador
Shrimp Exports to US**



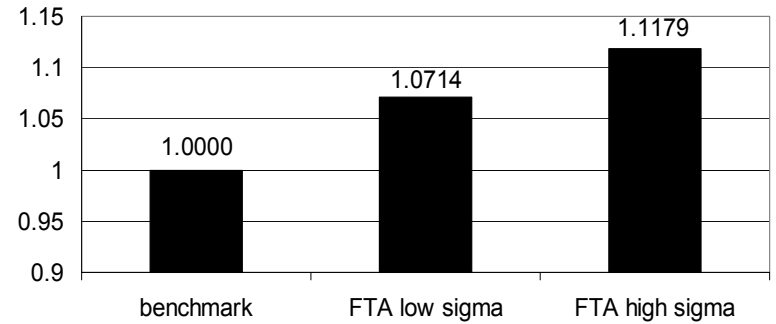
**Ecuador
Chemicals Exports to US**



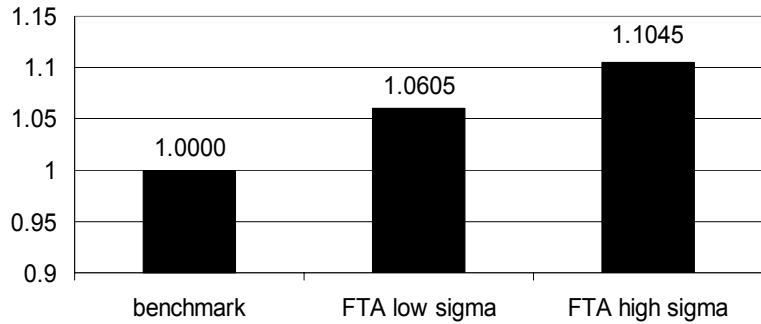
**Ecuador
Textile Exports to US**



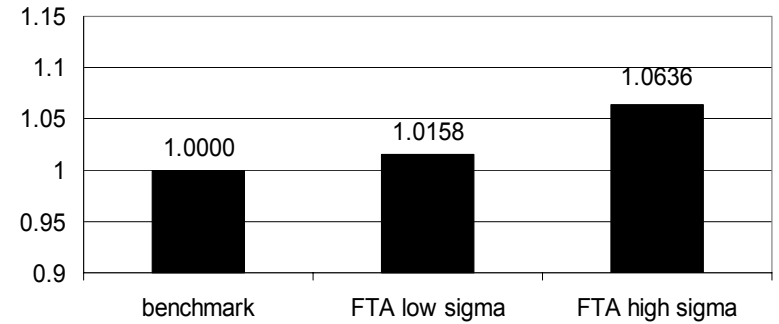
**Ecuador
Transports Exports to US**



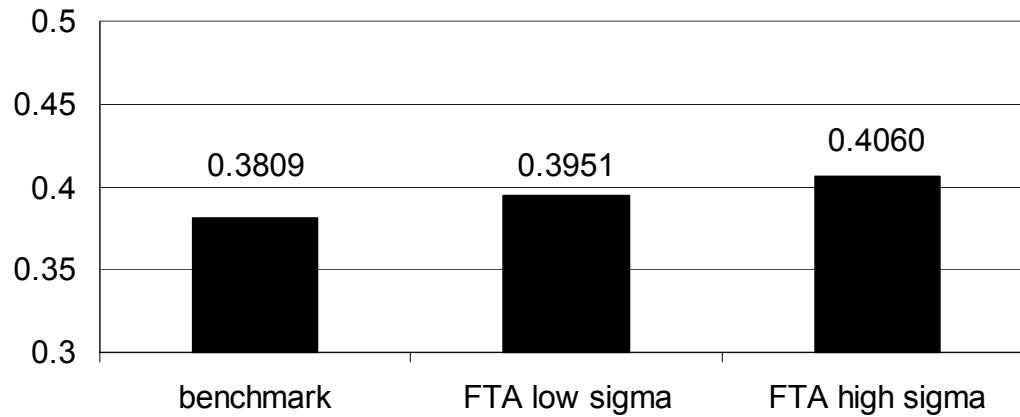
Ecuador
Other Manufacturing Exports to US



Ecuador
Service Exports to US

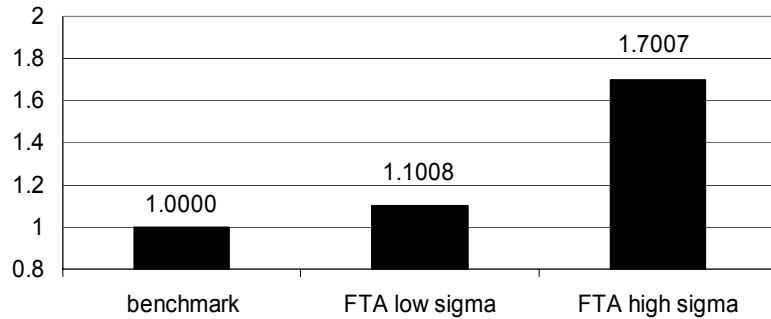


Ecuador
Goods Export share of US

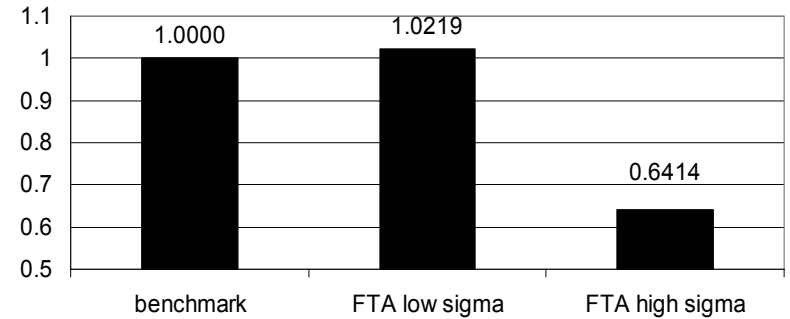


ECUADOR - IMPORTS FROM US

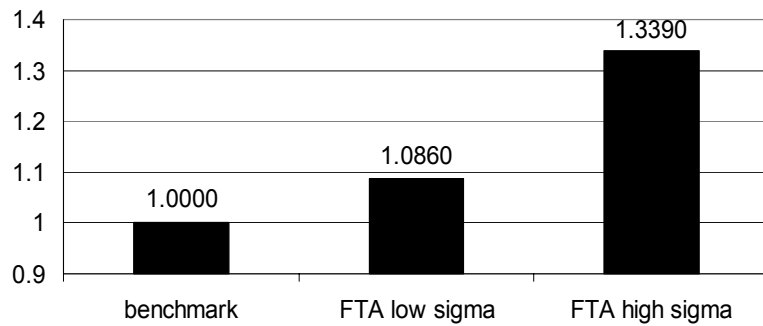
**Ecuador
Cereal Imports from US**



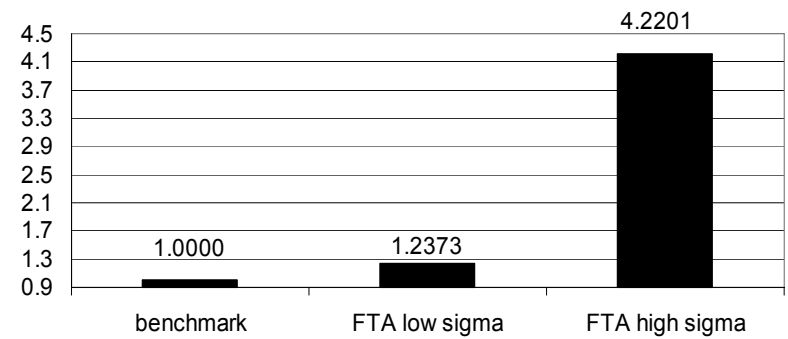
**Ecuador
Flower Imports from US**



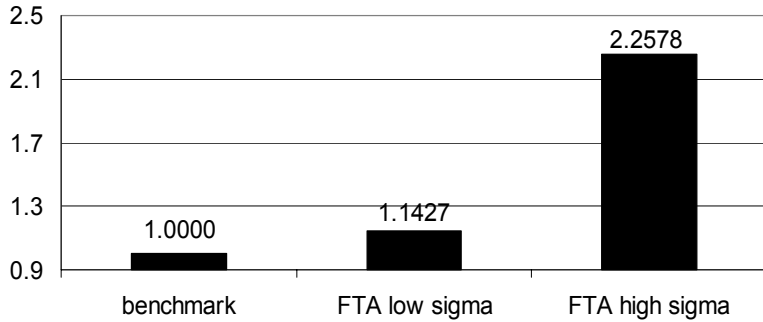
**Ecuador
Other Primaries Imports from US**



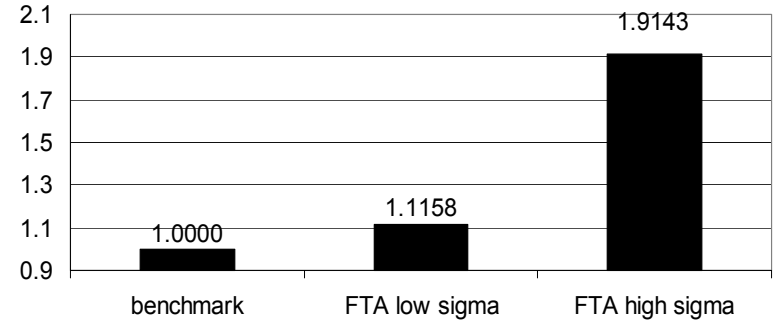
**Ecuador
Shrimp Imports from US**



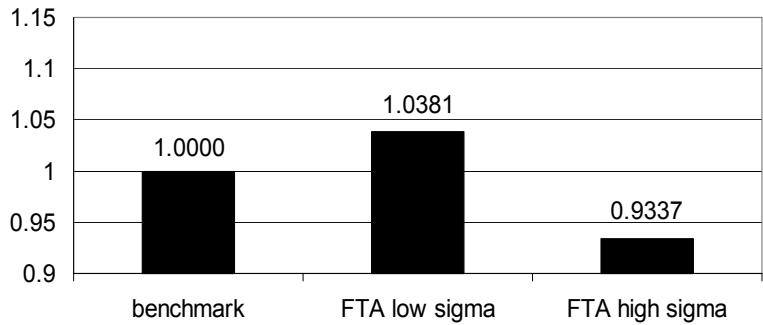
**Ecuador
Textile Imports from US**



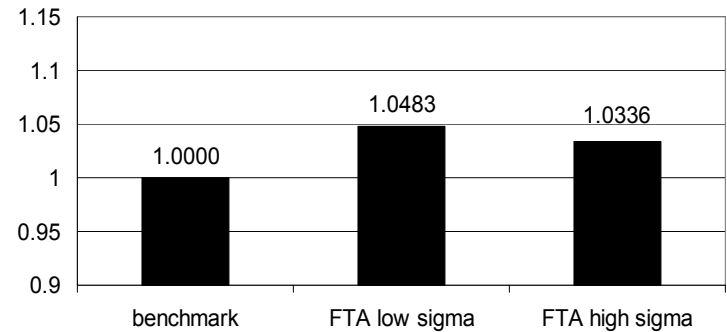
**Ecuador
Transports Imports from US**



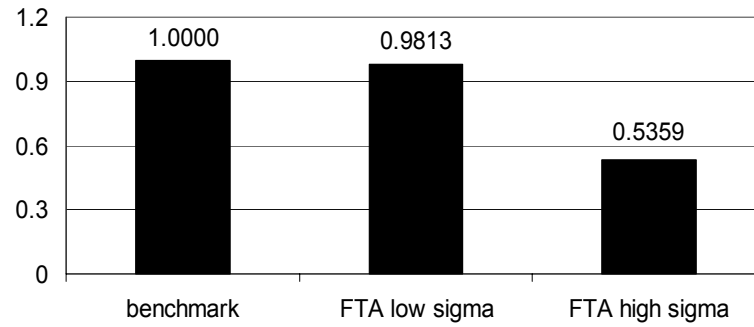
**Ecuador
Chemicals Imports from US**



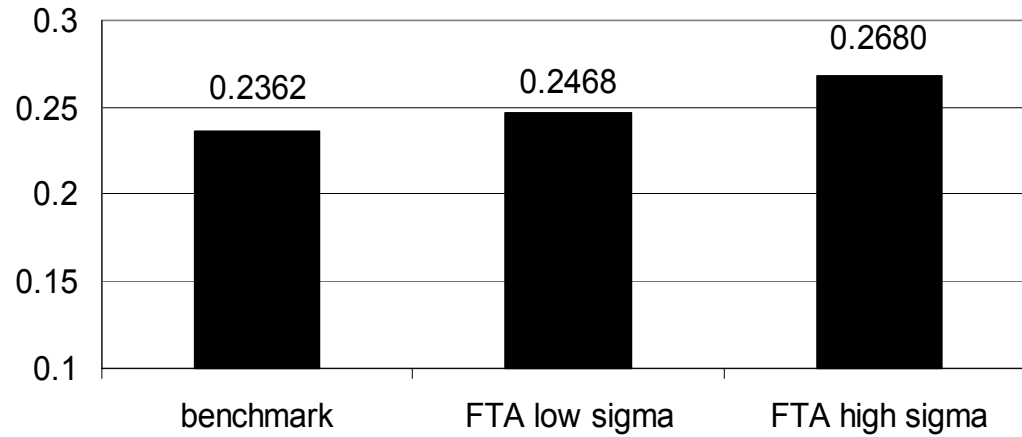
**Ecuador
Other Manufacturing Imports from US**



**Ecuador
Service Imports from US**

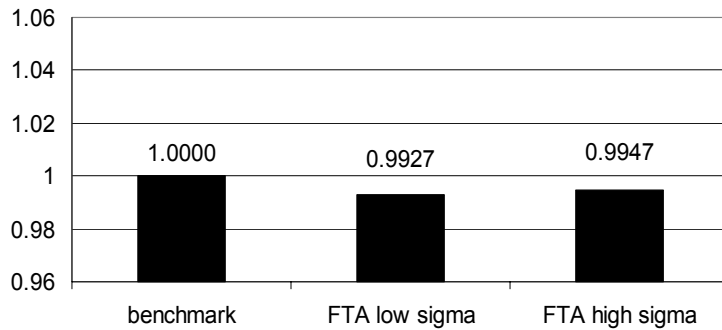


**Ecuador
Goods Import share of US**

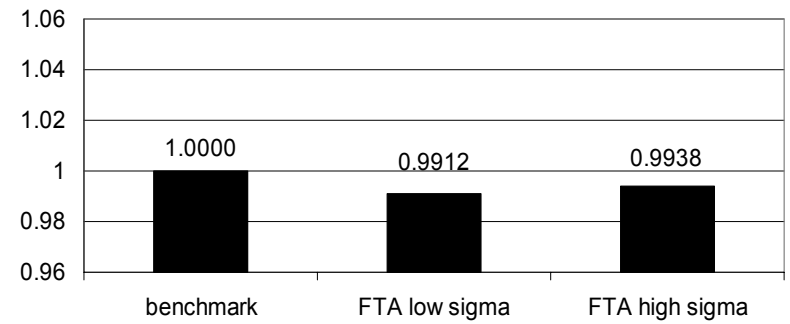


ECUADOR - EXPORTS TO REST OF THE WORLD

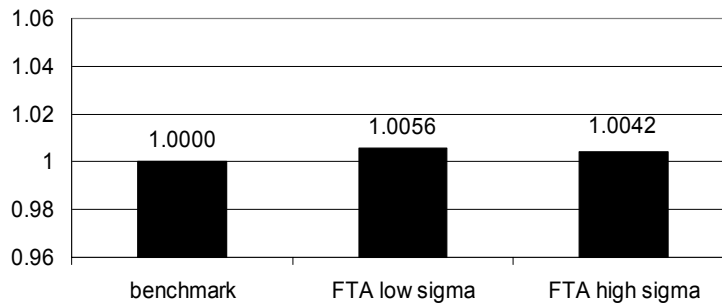
Ecuador
Banana Exports to Rest of the World



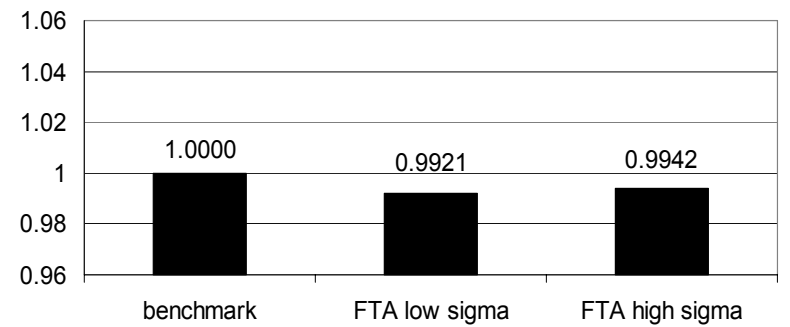
Ecuador
Flower Exports to Rest of the World



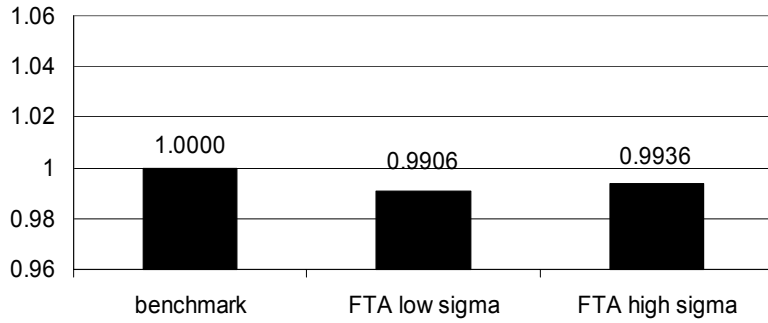
Ecuador
Cereal Exports to Rest of the World



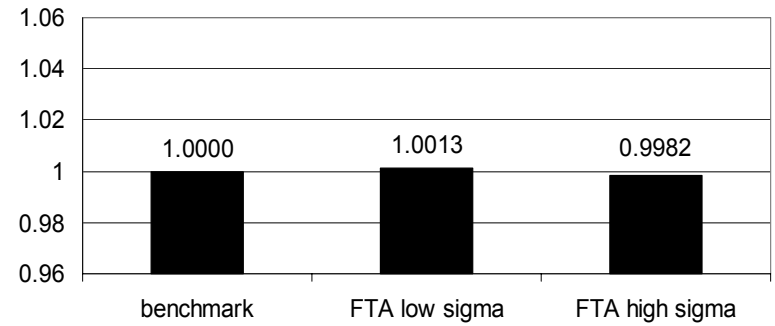
Ecuador
Other Primaries Exports to Rest of the World



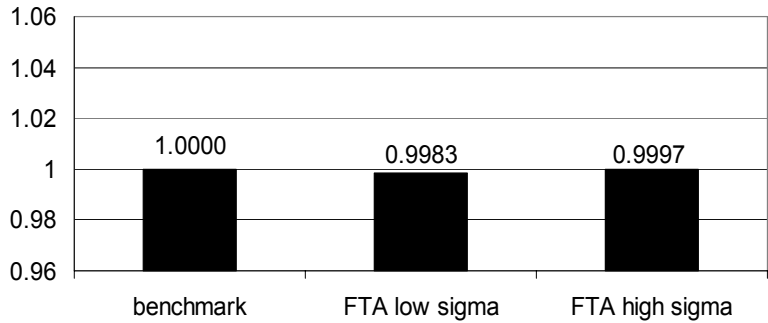
Ecuador
Shrimp Exports to Rest of the World



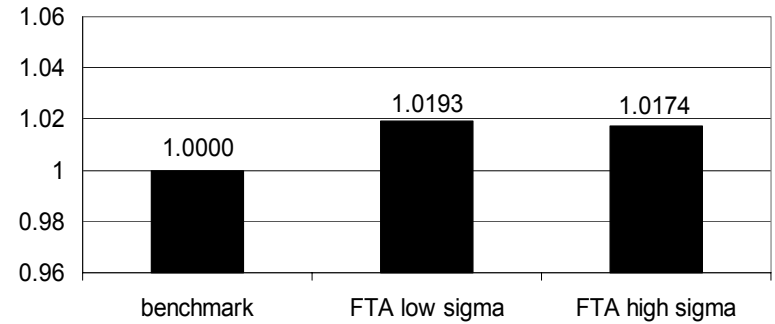
Ecuador
Chemicals Exports to Rest of the World



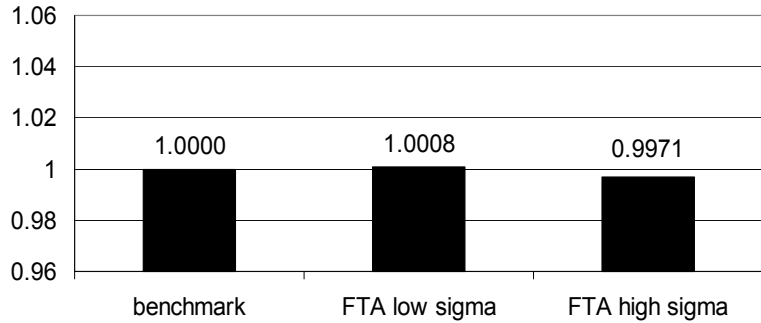
Ecuador
Textile Exports to Rest of the World



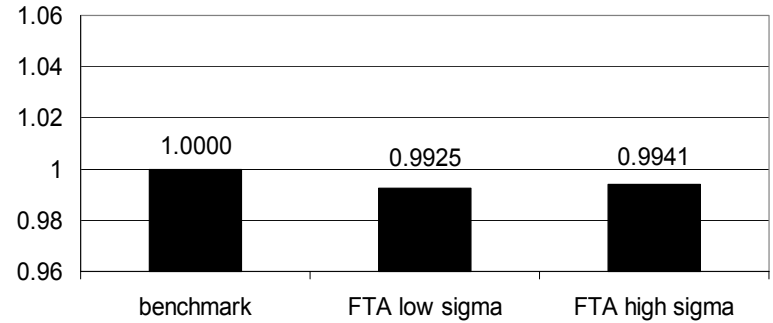
Ecuador
Transports Exports to Rest of the World



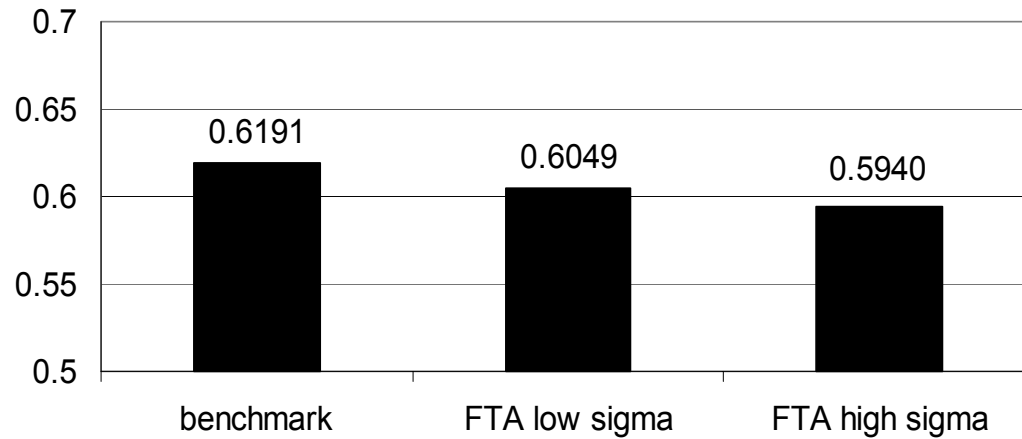
Ecuador
Other Manufacturing Exports to ROW



Ecuador
Service Exports to Rest of the World

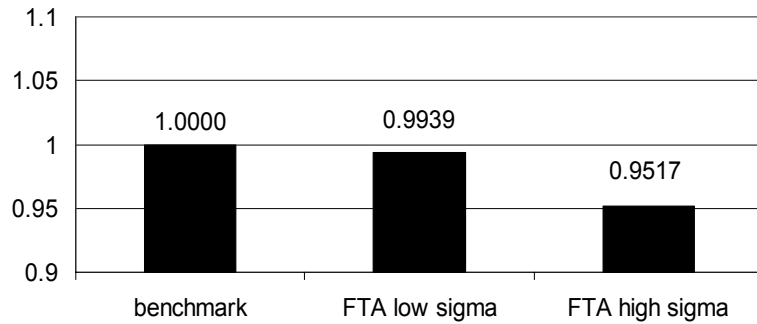


Ecuador
Goods Export share of Rest of the World

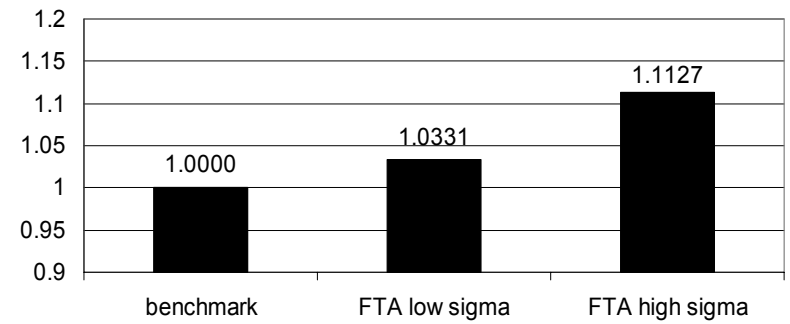


ECUADOR - IMPORTS FROM REST OF THE WORLD

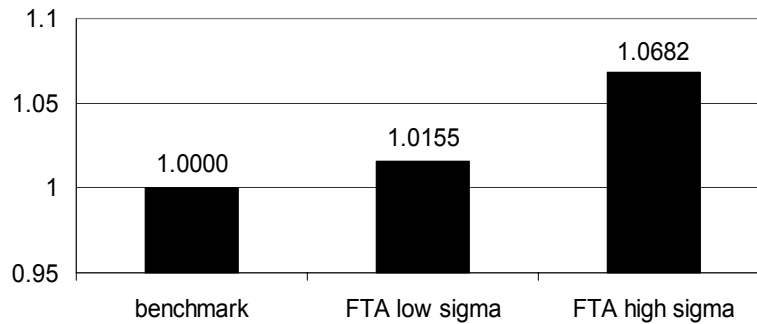
Ecuador
Cereal Imports from Rest of the World



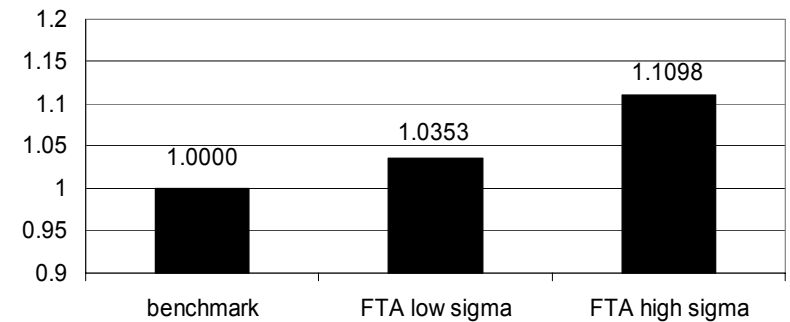
Ecuador
Flower Imports from Rest of the World



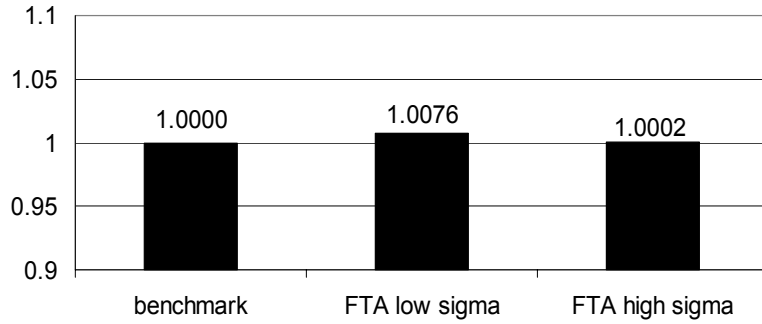
Ecuador
Other Primaries Imports from Rest of the World



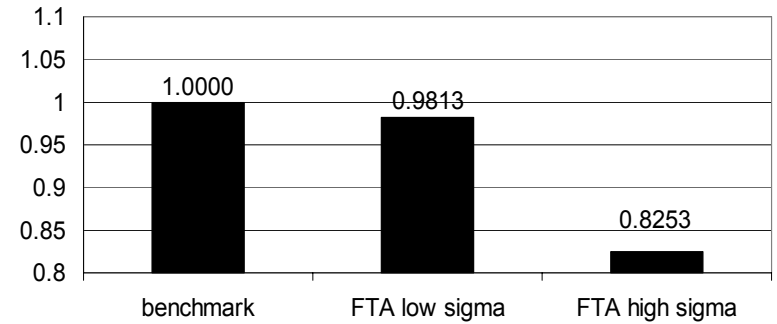
Ecuador
Shrimp Imports from Rest of the World



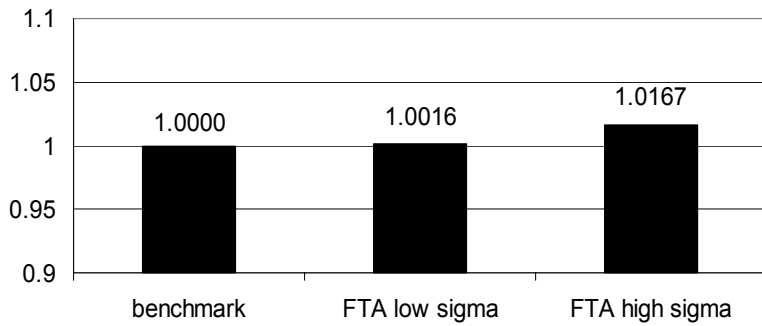
Ecuador
Textile Imports from Rest of the World



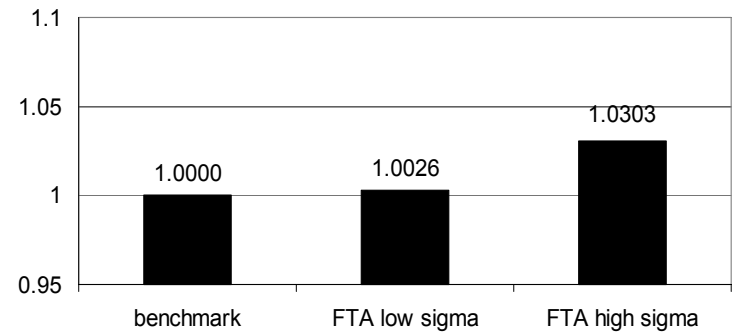
Ecuador
Transports Imports from Rest of the World



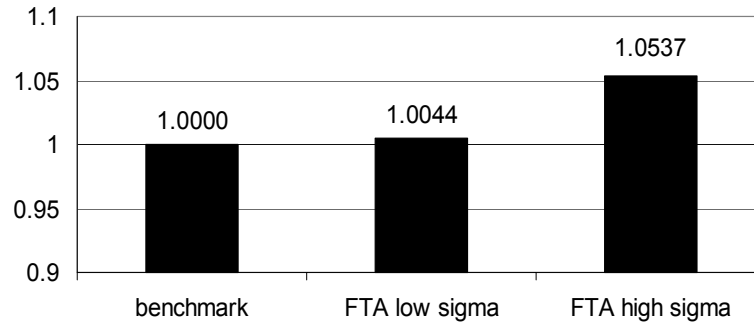
Ecuador
Chemicals Imports from Rest of the World



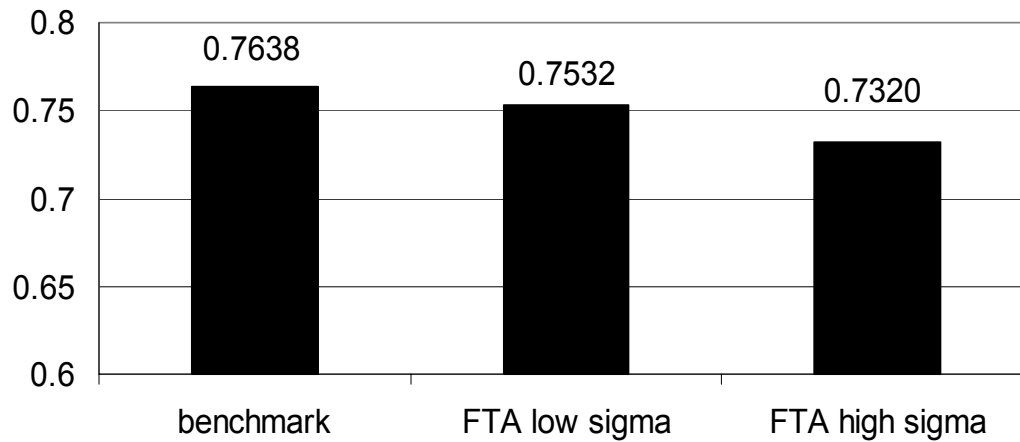
Ecuador
Other Manufacturing Imports from ROW



Ecuador
Service Imports from Rest of the World

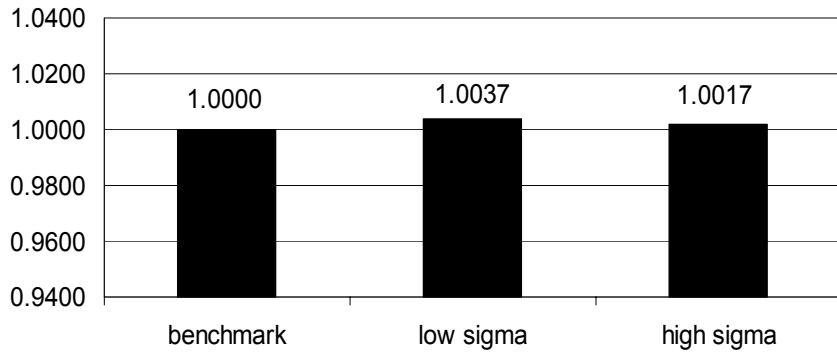


Ecuador
Goods Import share of Rest of the World

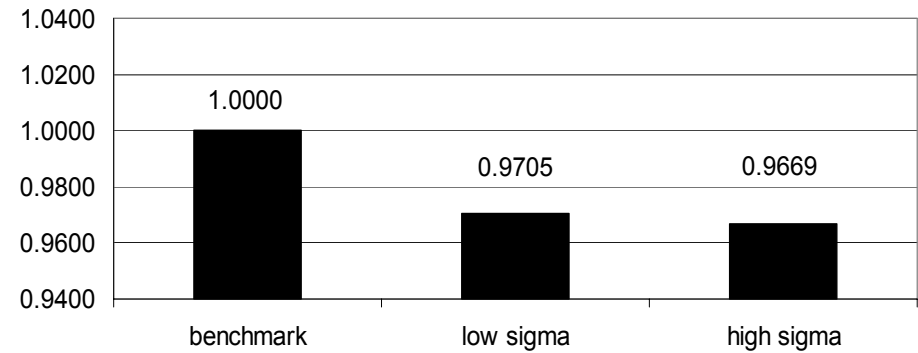


ECUADOR - WELFARE ANALYSIS

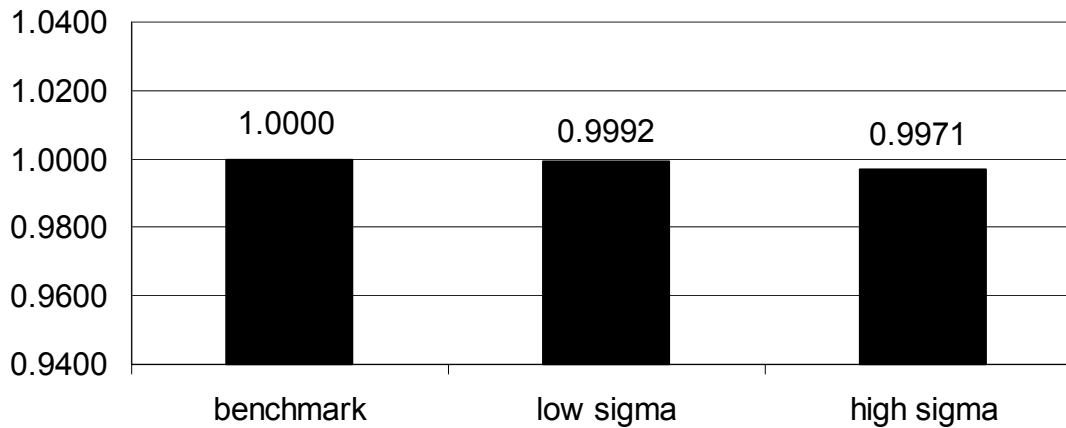
Ecuador
Consumer Welfare under Partial Liberalization



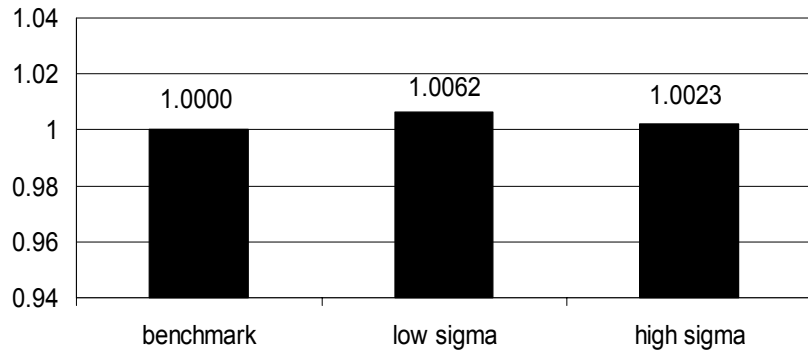
Ecuador
Government Welfare under Partial Liberalization



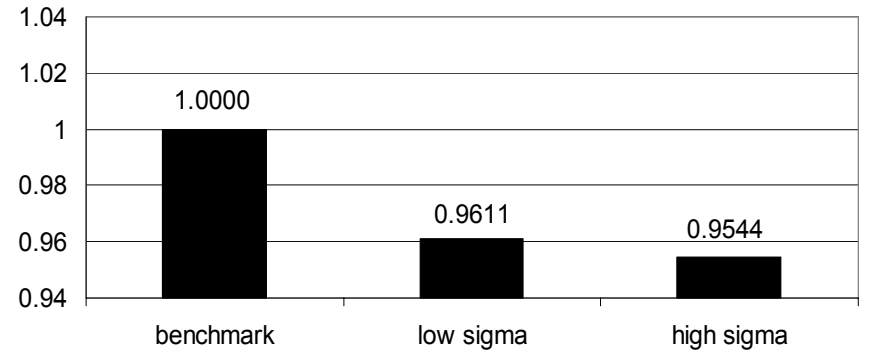
Ecuador
Social Welfare under Partial Liberalization



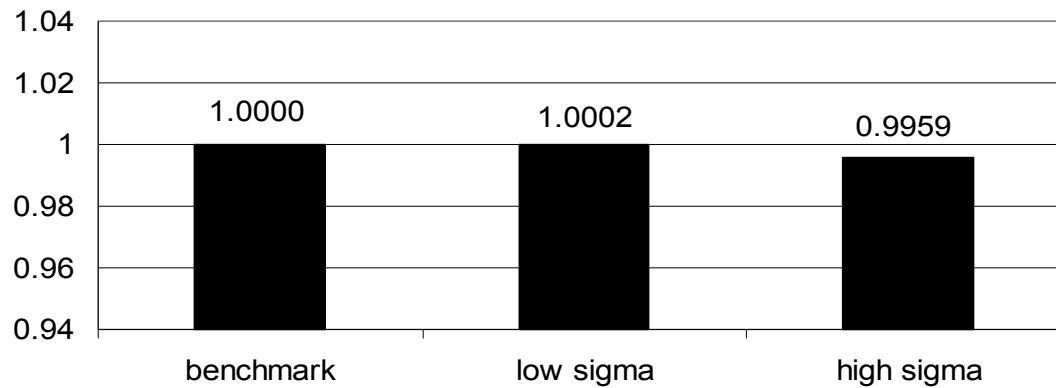
Ecuador
Consumer Welfare under FTA



Ecuador
Government Welfare under FTA



Ecuador
Social Welfare under FTA



Experiment 3

- We observe that Tariff Revenues are an important component of the Ecuadorian Government Total Revenues.
- Losing these Tariff Revenues might be of particular interest for the Ecuadorian Government.
- We ask the question: “By how much would the Value Added Tax (VAT) rate have to be raised in order to compensate the loss of Tariff Revenues?”

ECUADOR EXPERIMENTS III : FISCAL POLICY TO COMPENSATE TARIFF REVENUE

Tariffs

		Data	Partial Liberalization		Total Liberalization	
		Benchmark	$\sigma_{imp}=1$ $\sigma_{exp}=1$	$\sigma_{imp}=10$ $\sigma_{exp}=1$	$\sigma_{imp}=1$ $\sigma_{exp}=1$	$\sigma_{imp}=10$ $\sigma_{exp}=1$
Tariff Revenue	from US	111,333	29,186	31,604	0	0
	from ROW	278,530	290,700	272,470	289,440	271,360
Effective VAT rate		8.92%				
Compensatory Effective VAT Rate			9.25%	9.39%	9.47%	9.64%

Experiment – For Slovenia

- Slovenia and EU 15 eliminate its tariffs on each others imports.
- Note: In this case Slovenia's tariffs with the ROW change: Slovenia adopts EU 15's tariff schedule

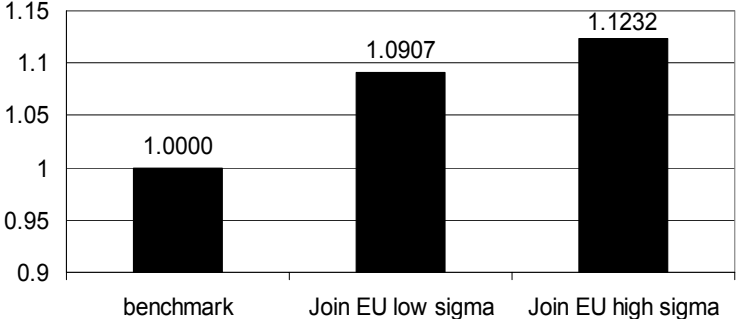
SLOVENIA NUMERICAL EXPERIMENT : JOINING THE EU

Tariffs

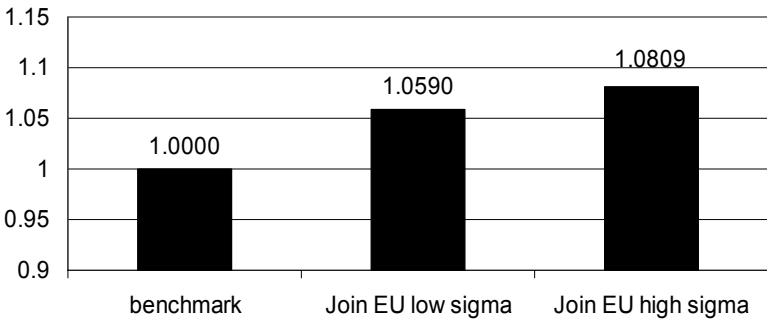
		Data	Partial Liberalization with EU		Joining The EU	
		Benchmark	$\sigma_{imp}=1$ $\sigma_{exp}=1$	$\sigma_{imp}=10$ $\sigma_{exp}=1$	$\sigma_{imp}=1$ $\sigma_{exp}=1$	$\sigma_{imp}=10$ $\sigma_{exp}=1$
Tariff rate on EU	Primary	0.030	0.010	0.010	0.000	0.000
	Food & Beverage	0.092	0.010	0.010	0.000	0.000
	Textile	0.015	0.010	0.010	0.000	0.000
	Leather	0.023	0.010	0.010	0.000	0.000
	Wood Product	0.004	0.010	0.010	0.000	0.000
	Transport	0.006	0.010	0.010	0.000	0.000
	Other manufacture	0.006	0.010	0.010	0.000	0.000
	Service	0.000	0.000	0.000	0.000	0.000
Tariff rate on ROW	Primary	0.030	0.030	0.030	0.117	0.117
	Food & Beverage	0.092	0.092	0.092	0.195	0.195
	Textile	0.015	0.015	0.015	0.071	0.071
	Leather	0.023	0.023	0.023	0.030	0.030
	Wood Product	0.004	0.004	0.004	0.028	0.028
	Transport	0.006	0.006	0.006	0.029	0.029
	Other manufacture	0.006	0.006	0.006	0.034	0.034
	Service	0.000	0.000	0.000	0.000	0.000
EU tariff rate	Primary	0.117	0.010	0.010	0.000	0.000
	Food & Beverage	0.195	0.010	0.010	0.000	0.000
	Textile	0.071	0.010	0.010	0.000	0.000
	Leather	0.030	0.010	0.010	0.000	0.000
	Wood Product	0.028	0.010	0.010	0.000	0.000
	Transport	0.029	0.010	0.010	0.000	0.000
	Other manufacture	0.034	0.010	0.010	0.000	0.000
	Service	0.000	0.000	0.000	0.000	0.000
ROW tariff rate	Primary	0.100	0.100	0.100	0.100	0.100
	Food & Beverage	0.040	0.040	0.040	0.040	0.040
	Textile	0.040	0.040	0.040	0.040	0.040
	Leather	0.040	0.040	0.040	0.040	0.040
	Wood Product	0.040	0.040	0.040	0.040	0.040
	Transport	0.040	0.040	0.040	0.040	0.040
	Other manufacture	0.040	0.040	0.040	0.040	0.040
	Service	0.000	0.000	0.000	0.000	0.000

SLOVENIA - EXPORTS TO EU

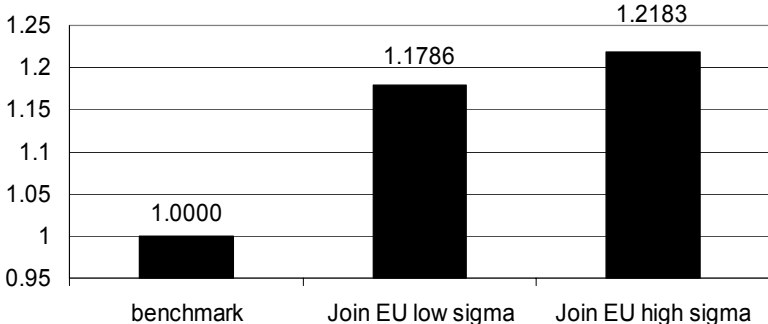
Slovenia Primary Goods Exports to EU



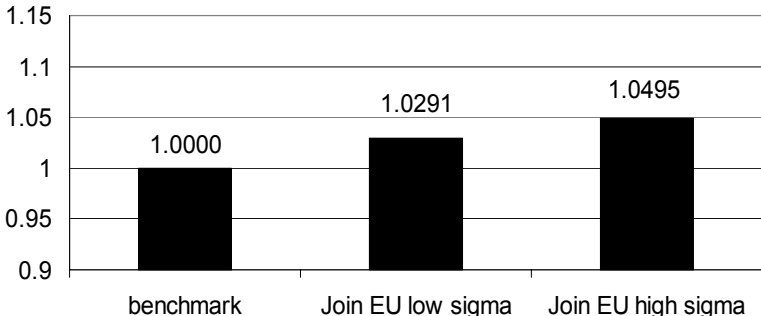
Slovenia Textile Exports to EU



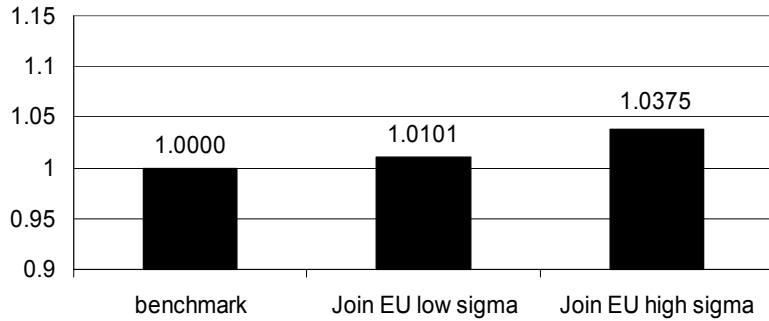
Slovenia Food & Beverage Exports to EU



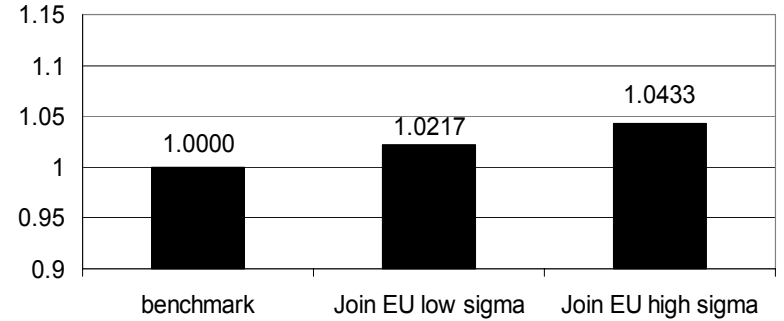
Slovenia Leather Product Exports to EU



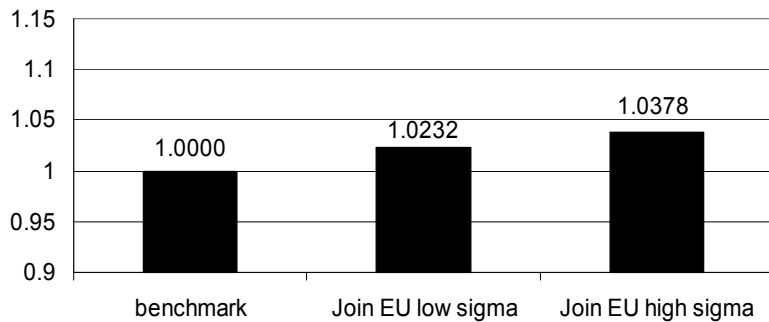
Slovenia
Woods Product Exports to EU



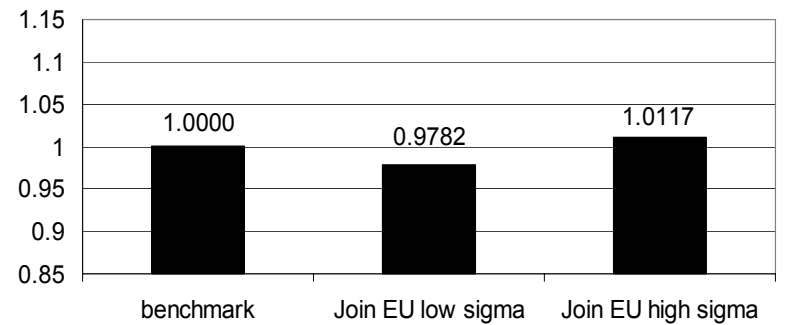
Slovenia
Other manufacturing goods Exports to EU



Slovenia
Transports Exports to EU

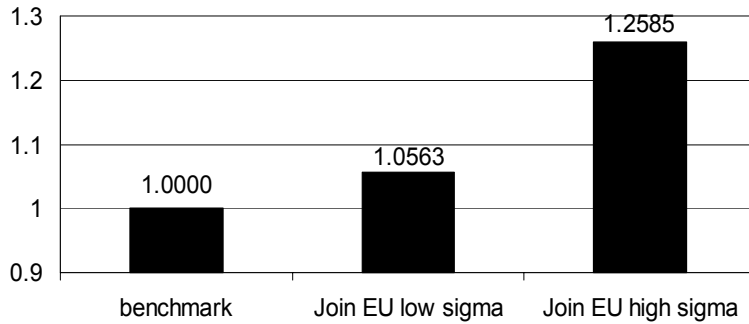


Slovenia
Service Exports to EU

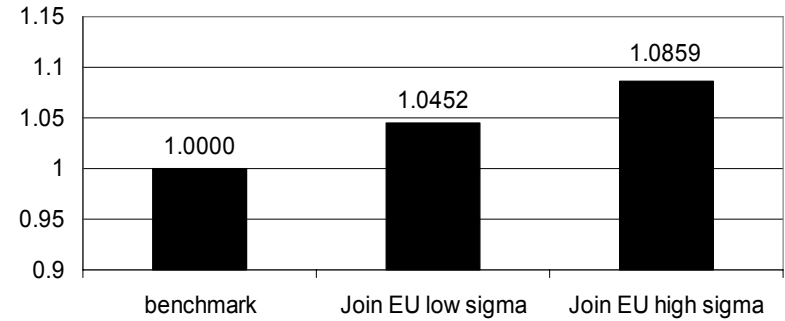


SLOVENIA - IMPORTS FROM EU

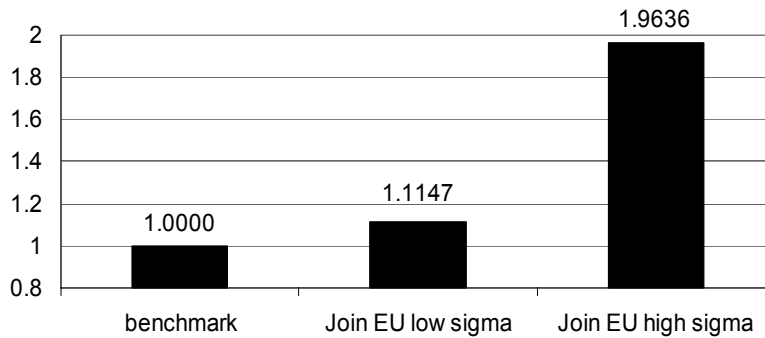
Slovenia
Primary Goods Import from EU



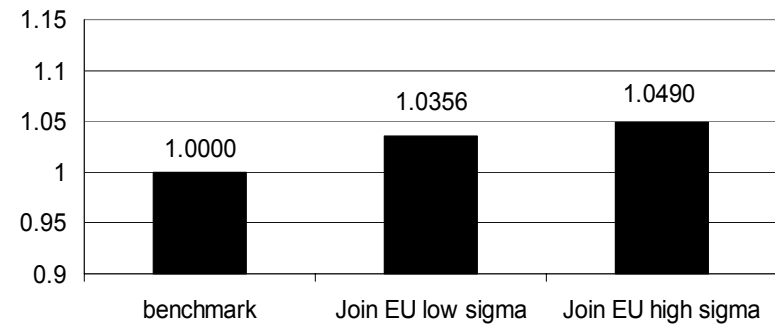
Slovenia
Textile Import from EU



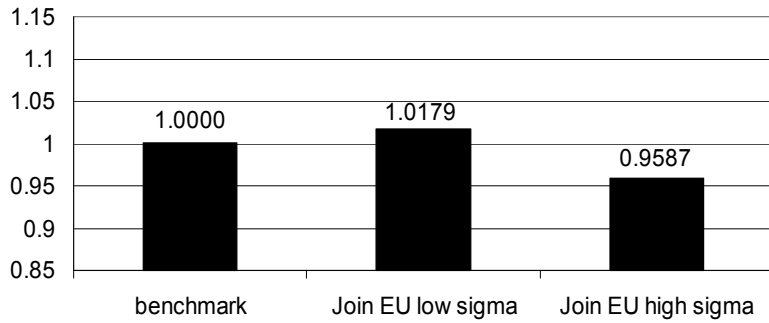
Slovenia
Food & Beverage Import from EU



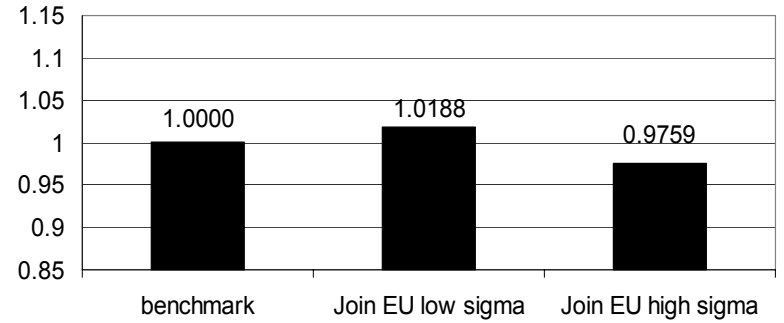
Slovenia
Leather Product Imports from EU



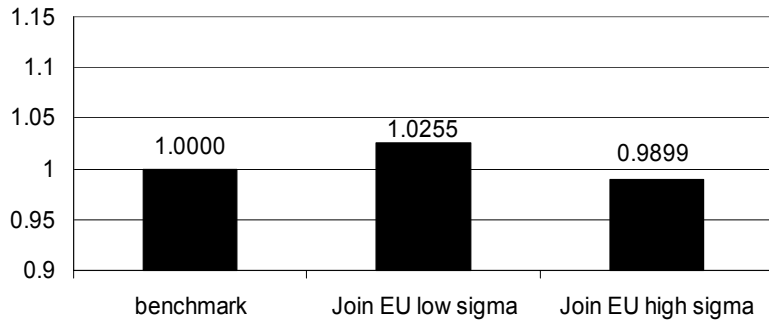
Slovenia
Woods Product Imports from EU



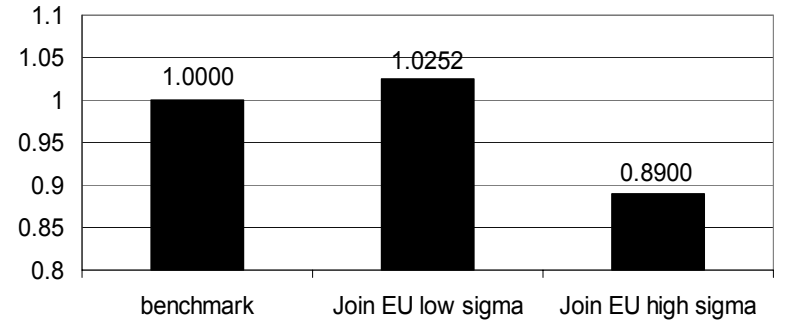
Slovenia
Other manufacturing goods Imports from EU



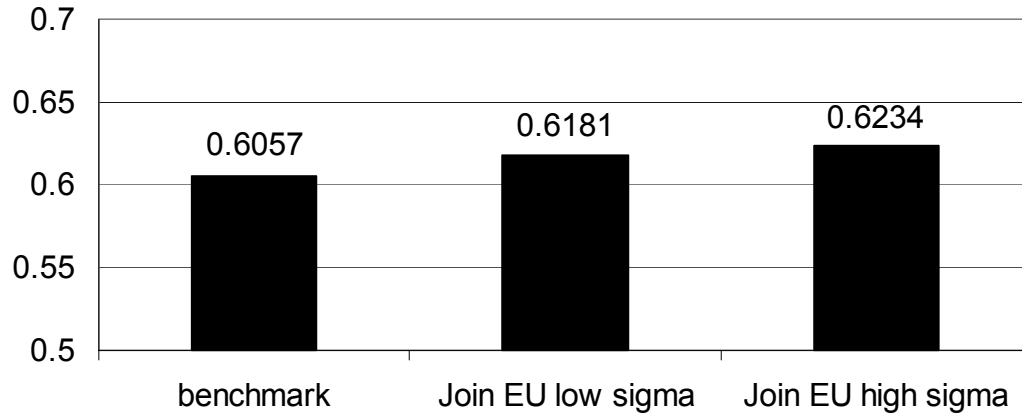
Slovenia
Transports Imports from EU



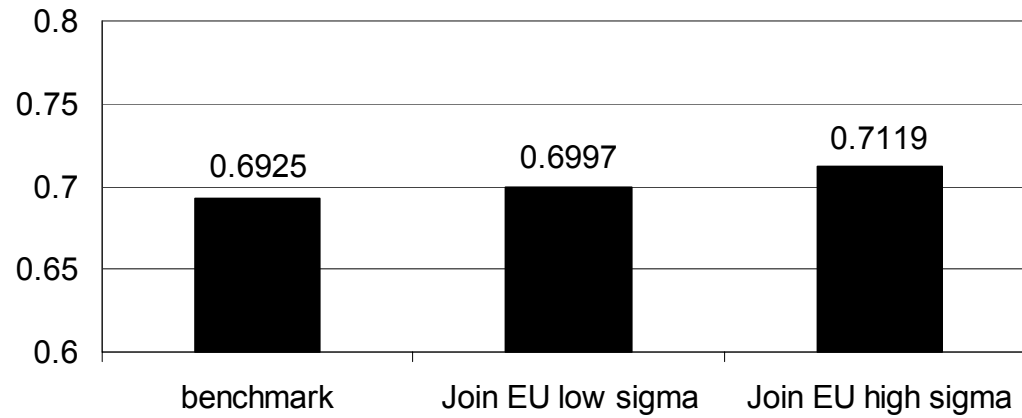
Slovenia
Service Imports from EU



Slovenia
Goods Export share of EU

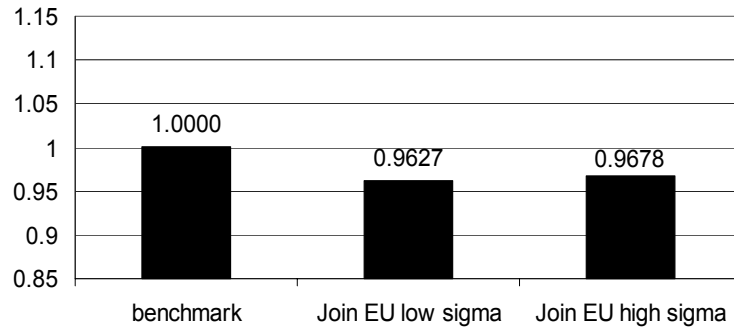


Slovenia
Goods Import share of EU

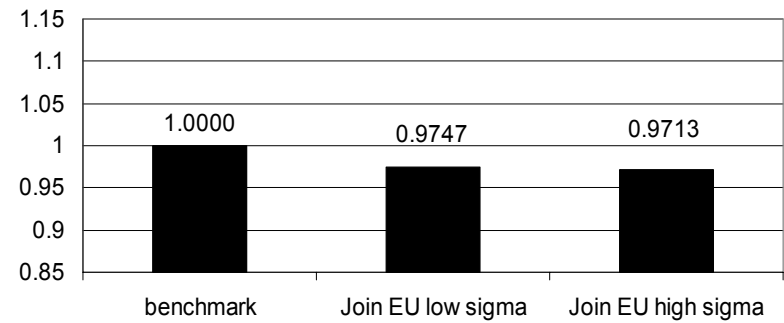


SLOVENIA - EXPORTS TO REST OF THE WORLD

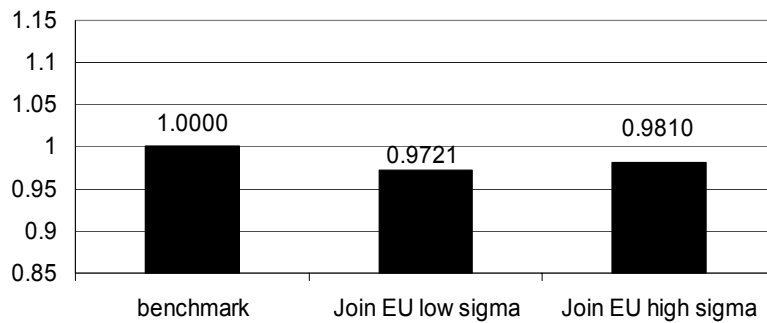
Slovenia
Primary Goods Exports to Rest of the World



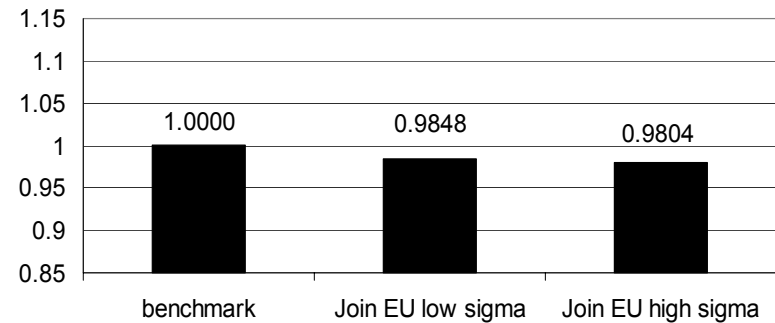
Slovenia
Textile Exports to Rest of the World



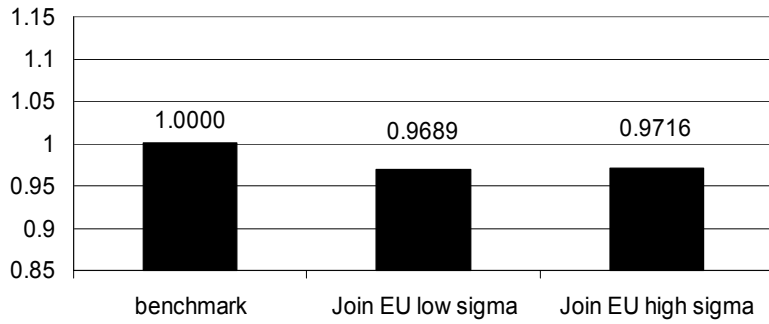
Slovenia
Food & Beverage Exports to Rest of the World



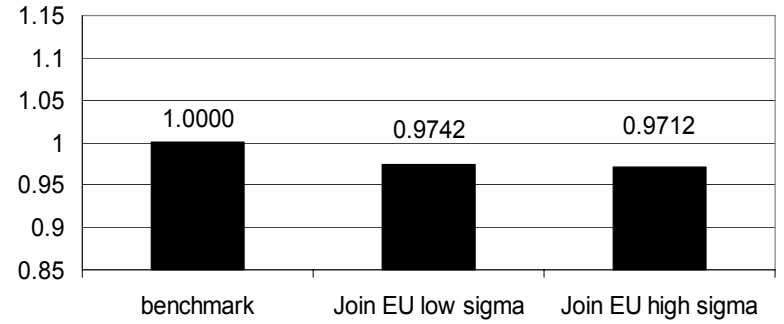
Slovenia
Leather Product Exports to Rest of the World



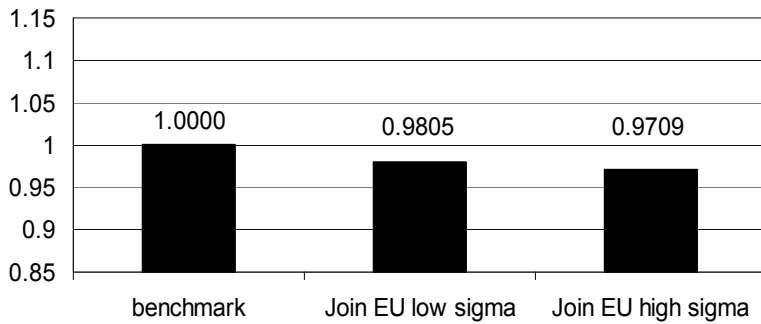
Slovenia
Woods Product Exports to Rest of the World



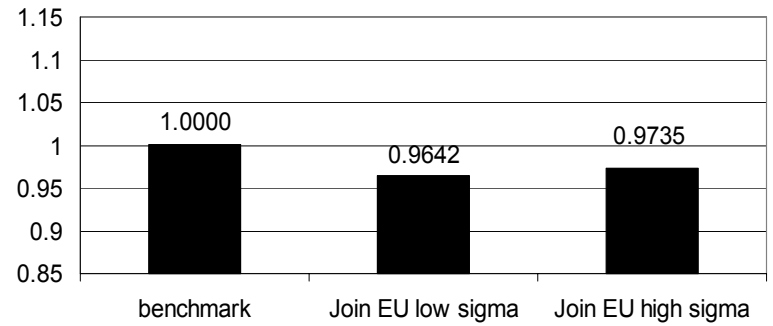
Slovenia
Other manufacturing goods Exports to ROW



Slovenia
Transports Exports to Rest of the World

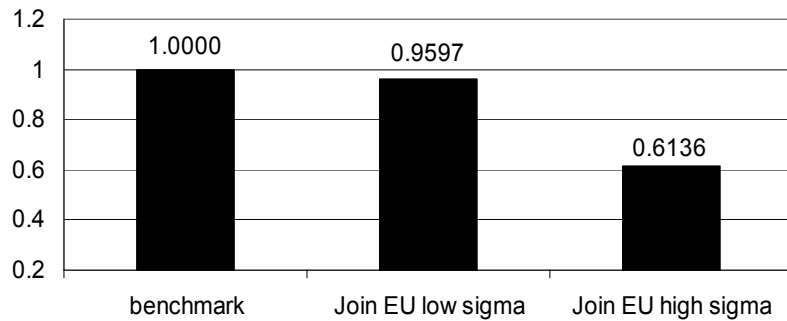


Slovenia
Service Exports to ROW

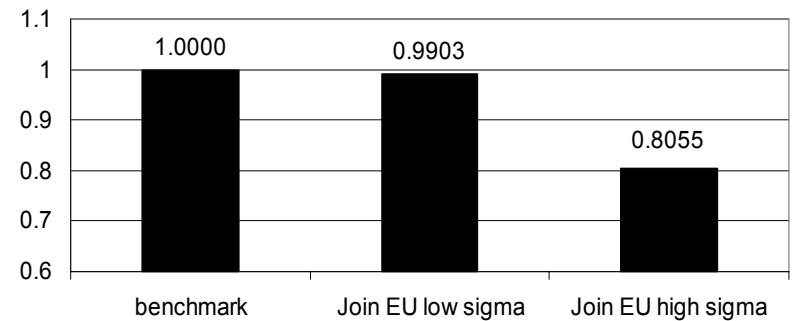


SLOVENIA - IMPORTS FROM REST OF THE WORLD

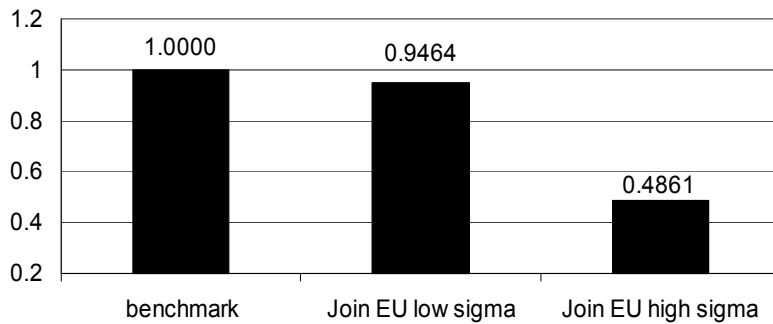
Slovenia
Primary Goods Import from Rest of the World



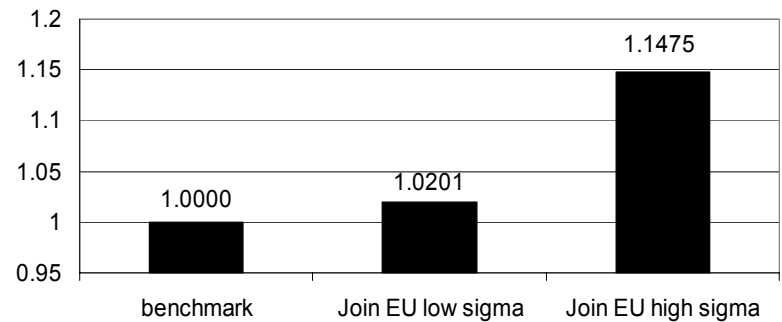
Slovenia
Textile Import from Rest of the World



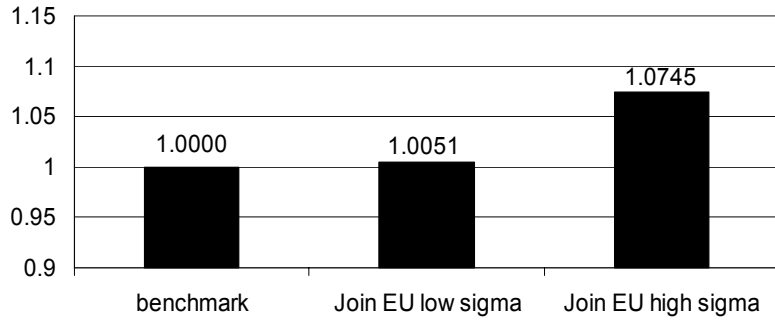
Slovenia
Food & Beverage Import from Rest of the World



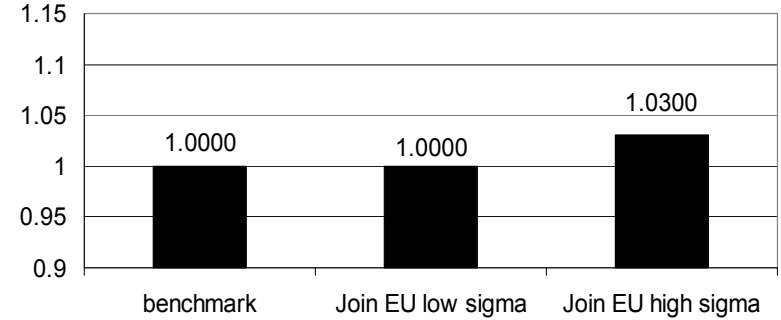
Slovenia
Leather Product Imports from Rest of the World



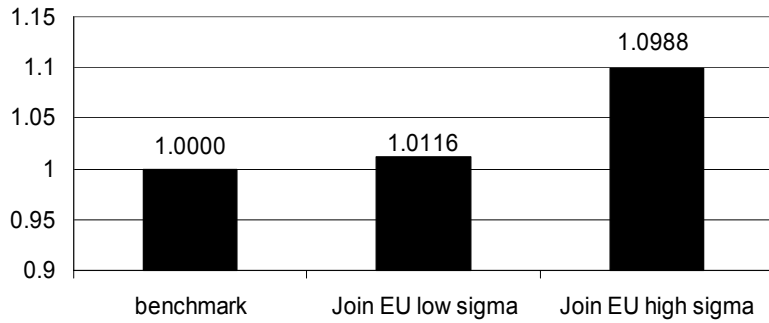
Slovenia
Woods Product Imports from Rest of the World



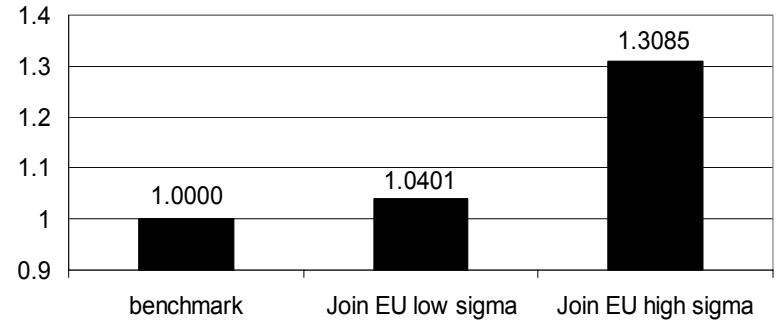
Slovenia
Other manufacturing goods Imports from ROW



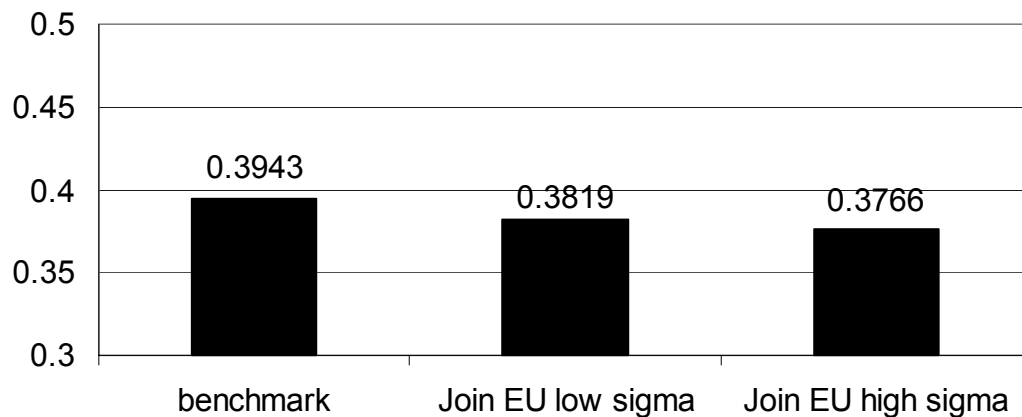
Slovenia
Transports Imports from Rest of the World



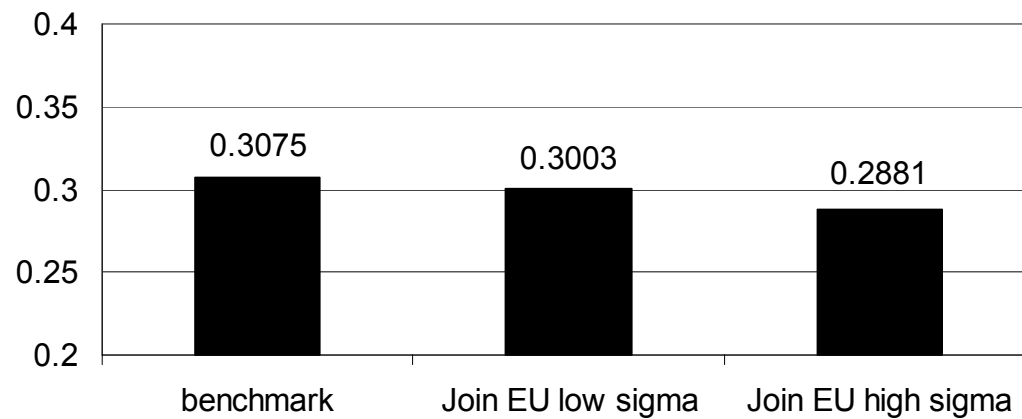
Slovenia
Service Imports from EU



Slovenia Goods Export share of Rest of the World

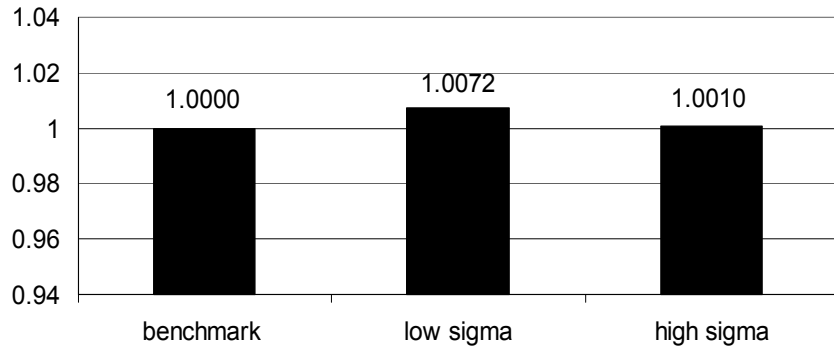


Slovenia Goods Import share of Rest of the World

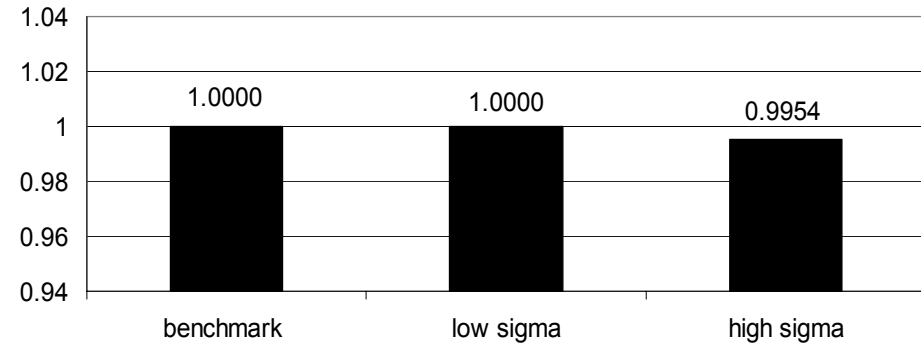


SLOVENIA - WELFARE ANALYSIS

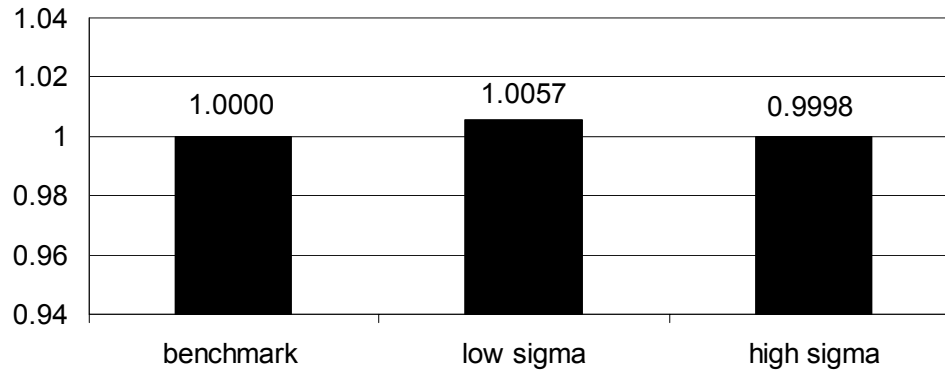
Slovenia
Consumer Welfare under Partial Liberalization



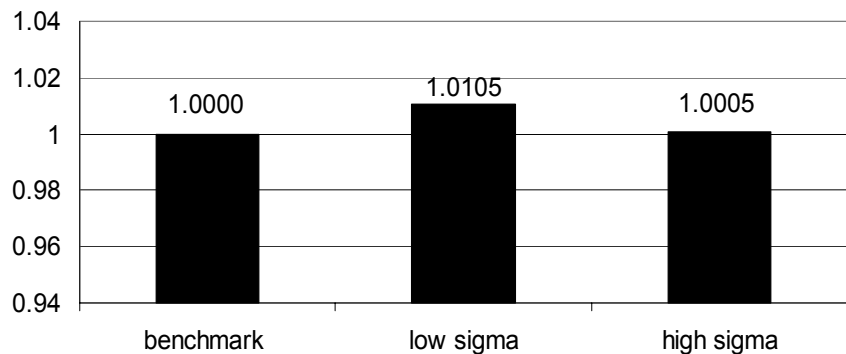
Slovenia
Government Welfare under Partial Liberalization



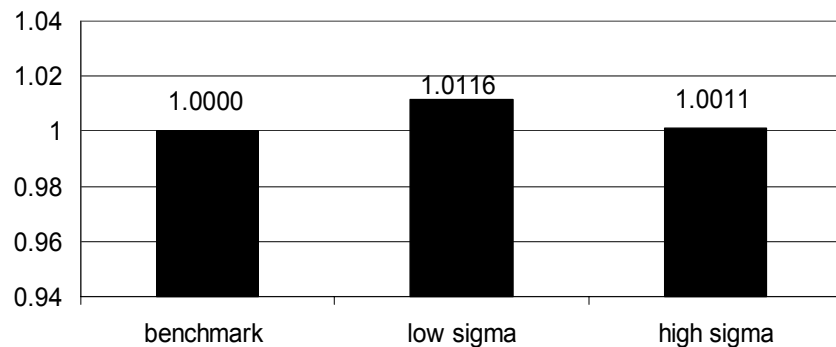
Slovenia
Social Welfare under Partial Liberalization



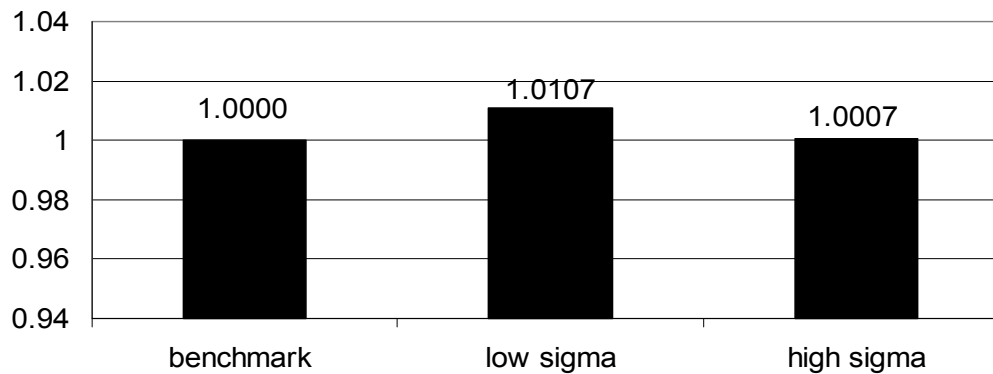
Slovenia
Consumer Welfare under EU membership



Slovenia
Government Welfare under EU membership



Slovenia
Social Welfare under EU membership



Summary of Results – Ecuador

- Fraction of Ecuador's exports to US increases.
- Imports of textiles and transport equipment from US show explosive growth.
- Small, but positive, gains in welfare for the consumer.
- Big losses in welfare for the government. This drives down Social Welfare.

Summary of Results – Slovenia

- Fraction of Slovenia's exports to EU increases.
- Imports of primary goods, food & beverage and textile from EU show huge increase.
- Slovenia's trade with non-EU countries basically shuts down in many sectors (particularly Primaries, Food & Beverage, Textiles).
- Positive gains in welfare for both the consumer and the government. Social welfare improves by upto 1.1%.

Future Work

- Introduce substitution in foreign trade partners, i.e. a utility function of the form:

$$\left[\log x_{ban,f}^{\rho_x} + \dots + \log x_{ser,f}^{\rho_x} + \log x_{inv,f}^{\rho_x} + \log x_{f,f}^{\rho_x} \right] / \rho_x$$

- Elasticity of substitution differentiated by sector, i.e.

$$\rho_{ban,m} \neq \rho_{cer,m} \neq \dots \neq \rho_{ser,m}$$

- Better estimates for foreign tariffs.

- Ultimate goal: a dynamic model. A static model misses the dynamic aspects (capital flows, foreign direct investment, productivity gains) that trade liberalizations of the types studied here imply.

- Also: think about the differences that an FTA and a customs union imply for free trade. Which one promotes more free trade?