

Ecuador: Impacts of the Global Economic Crisis

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OUTLINE

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I. Research Objective/Summary results

- To analyze the main transmission channels and the impacts of the global economic crisis on the Ecuadorian economy

Main results suggest:

A key channel of transmission of the global economic downturn is trade, through a fall in the world price of a key export product (oil), and the ensuing fall in capital return and wages of skilled labor. These factors are used intensively in the oil sector.

From a distributional point of view, the impacts of the crisis (and of the crisis plus policy response) are progressive, affecting more negatively urban households in the highest income quintile.

The import restriction policy adopted by the Government may have increased negative welfare impacts on the economy.

II. Transmission channels


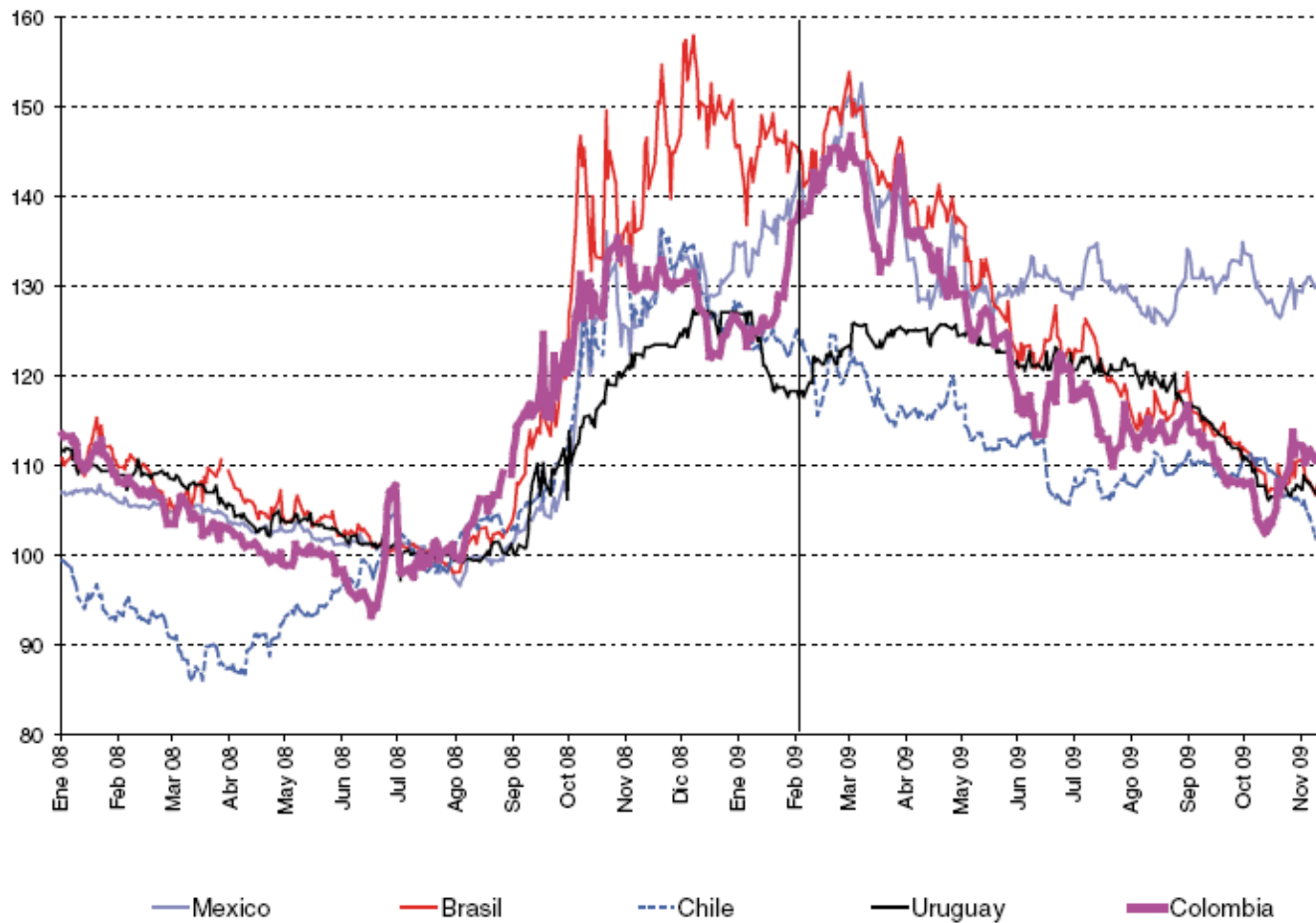
- ▶ **Transmission channels:** trade, remittances, and capital flows (FDI and aid).
 - ▶ Impacts on commodity prices, factor returns, and employment
- ▶ **Distributional transmission mechanisms** through production, the labor market, location and regional impacts.
- ▶ **Government responses.**
- ▶ **For the case of Ecuador:**
 - ▶ Two channels of transmissions: trade and remittances.
 - ▶ A summary of a key policy response adopted by the Ecuadorian government to deal with the crisis: import restrictions.
 - ▶ Recall the economic policy constraints in a dollarized economy
 - ▶ At the outset of the world economic crisis several Latin American countries devalued their currencies. **Figure 1** 

Figure 1.- Nominal Exchange Rate 2008-2009
Selected Countries
Base Index July 2008=100



III. Brief outline of related literature

- ▶ **Addressing effects of policy responses in Ecuador:**
 - ▶ Durán et al (2010): Apply a CGE model (GTAP) to evaluate possible effects of import restriction measures on intraregional trade during the crisis.

- ▶ **Addressing general issues of the crisis in the region:**
 - ▶ ECLAC (2009a) and De la Torre (2009): Summarize macroeconomic impacts in the LAC region.
 - ▶ ECLAC (2009b): Present a summary of policy responses by LAC governments to face the global crisis.
 - ▶ Calderón and Fajnzylber (2009): Discuss counter-cyclical fiscal policies.
 - ▶ Orozco (2009): Discuss the effects of the crisis on remittances.

IV. Methodology: The CGE model (1)

- ▶ An adaptation of Lofgren et al (2002): static, perfect competition, with 27 sectors and 6 labor-market segments.
- ▶ Technology is modeled at the top by a Leontief of value added and aggregate intermediate inputs
 - ▶ Value added is a CES of primary factors (labor, capital, and land)
 - ▶ Agg. intermediate input function is a Leontief of disaggregate intermediate inputs
 - ▶ Each activity can produce more than one commodity. A commodity can be produced by more than one activity
- ▶ In the value added CES, the oil sector has a low elasticity of substitution amongst factors (0.2) –lower than in the rest of sectors.
- ▶ Representative producer in each industry (activity) maximizes profits, subject to technology and taking prices as given. They can also get transfers from other institutions. Their total income may be allocated between direct taxes, savings, and transfers to other institutions.
- ▶ Household types: rural, urban.
- ▶ Consumption is spent according to Linear Expenditure (LES) demand function.

IV. Methodology: The CGE model (2)

- ▶ Total government revenue is the aggregate of income tax, and transfers from other institutions. The Government spends this income on purchasing commodities, and transfers to other institutions.
- ▶ Foreign savings is the difference between foreign currency spending and receipts.
- ▶ The world is split into four regions: EU, USA, AC, ROW
 - ▶ Armington assumption. Own Armington estimations applied.
 - ▶ Ecuador: Price taker in world export markets (CET sensitivity analysis)
- ▶ Labor market:
 - ▶ Wage-workers: unskilled rural, skilled rural, unskilled urban, skilled urban
 - ▶ Self-employed: urban, rural

IV. Methodology: Data (1)

- ▶ SAM 2004
- ▶ Trade data
- ▶ Import restrictions adopted by the Government in January 2009

Category	Number of HS ¹ lines	Value
Ad-Valorem	73	30%, 35%
Specific	283	US\$ 10 - US\$ 12 per pair US\$ 0.10 per kilo US\$ 12 per kilo
Quota	271	Depending on the HS line. Total Value permitted: US\$ 2,125,439,679
Total	627	

Source: Government Act No. 512, January 2009, and own calculations.

Notes: Import restrictions are imposed in addition to any existing tariffs.

IV. Methodology: Data (2)

- ▶ Estimating ad-valorem “equivalent” (AVE) tariffs of specific tariffs and quotas
 - ▶ For specific tariffs
 - ▶ Method summarized by Stawowy (2001) applied

$$\text{AVE} = \frac{100 * \text{ST}}{\text{UCF} * \text{UV} * \text{XR}}$$

where:

- ▶ AVE = Ad valorem equivalent of specific tariff (percentage)
- ▶ ST = Specific tariff
- ▶ UCF = Quantity units conversion factor
- ▶ UV = Import unit value (in US\$ per imports quantity unit)
- ▶ XR = Currency exchange rate

For example, a specific tariff of 5 US cents per kilogram will produce AVE of 20 per cent, provided that the import unit value is 0.25 US\$ per kg (see Stawowy, p.2).

- ▶ For quotas
 - ▶ Ad-valorem values provided by the Government applied
 - ▶ The study estimates ad-valorem equivalents for 20 tariff lines (mostly manufactures), assigning them an average of the nominal tariff rate for the rest of tariff lines (including the new tariff surcharge) .

V. Scenarios and closures (1)

Scenarios A: SHOCK HYPOTHESES

- ▶ (i) percentage fall in world (export) prices of crude oil
- ▶ (ii) percentage fall in world (import) prices of fuels
- ▶ (iii) percentage fall in remittances
- ▶ (iv) percentage fall in the world (export) price of fish products

*This study sets up three different scenarios for the fall in those indicators. [Table I](#) summarizes the shock scenarios.

Table 1.- Scenarios A: Value of shock simulations

Simulation	A1	A2	A3
Oil world export price	fall 30%	fall 20%	fall 10%
Fuels world import price	fall 25%	fall 15%	fall 5%
Fish products world export price	fall 10%	fall 10%	fall 10%
Remittances	fall 10%	fall 5%	fall 5%

Source: The author.



V. Scenarios and closures (2)

Table 2.- Scenario B: New Applied Tariff Rates







SAM	Description	APPLIED TARIFFS (BASE)				NEW APPLIED TARIFF RATES				
		USA	EU	ROW	CAN	USA	EU	ROW	CAN	
									USA	ROW
1	Banana, coffee, and cocoa									
2	Cereals	5.0	15.0	6.0	0	5.0	15.0	6.0	0	0
3	Flowers	0.8	0.4	2.4	0	0.8	0.4	2.4	0	0
4	Other agricultural products	5.7	10.4	2.7	0	5.9	13.3	2.8	5.9	2.8
5	Livestock	2.2	8.7	0.3	0	2.2	9.7	0.3	2.2	0.3
6	Forestry products	7.6	14.0	1.4	0	7.6	14.0	1.4	0	0
7	Shrimps									
8	Raw fish	1,9		6,5	0	2.6		6.5	2.6	2,6
9	Crude oil, mineral products and fuel oils and other oil products	0.8	0.8	0.3	0	0.8	0.8	0.3	0	0
10	Meat, meat products and sub products	9,6	17,1	8,2	0	9.9	19.0	8.4	9.9	3,6
11	Canned fish and other elaborated aquatic products	2.3	19.0	2.5	0	2.3	19.0	2.5	0	0
12	Oil and fats	2.2	16.9	1.8	0	2.2	16.9	1.8	0	0
13	Dairy products	31.9	17.9	4.1	0	31.9	17.9	4.1	0	0
14	Milling and bakery products	19.5	12.1	0.4	0	21.5	12.1	0.4	21.5	0,5
15	Sugar products	1.0	0.7		0	1.4	0.7		1.4	0,7
16	Alcoholic and non-alcoholic beverages	27.2	19.8	8.6	0	43.0	42.9	19.3	43.0	8,6
17	Other miscellaneous food products, chocolate and tobacco	20.1	15.0	4.9	0	21.9	18.6	5.6	21.9	5,6
18	Textiles and apparel, leather, leather products and footwear	21.3	18.8	18.7	0	34.9	34.8	34.9	35,0	18,7
19	Wood and wooden products	17.0	5.7	9.6	0	20.8	7.2	14.0	21,0	7,2
20	Paper and paper products	6.5	12.5	0.1	0	6.8	13.1	0.1	6,7	0,1
21	Chemicals, rubber and plastic	6.6	8.6	5.1	0	6.6	8.6	5.1	0	6
22	Metallic mineral products and non-metallic	9.1	11.5	4.0	0	9.1	11.5	4.0	0	0
23	Transportation equipment	17.5	13.1	15.0	0	17.5	13.1	15.0	0	0
24	Machinery and equipment, other non-food manufactured goods	5.9	9,5	9.4	0	6.2	10.1	10.0	6.2	5,4

V. Scenarios and closures (3)



Closure rules

- ▶ The nominal exchange rate is fixed (dollarized economy)
- ▶ Current account is:
 - ▶ Flexible (short-run impacts)
- ▶ Tax rates are fixed. Government savings is endogenous
- ▶ Balanced savings-investment adjustment
- ▶ CPI is the numeraire
- ▶ Factor markets:
 - Land is sector specific
 - Capital is sector specific
 - Labor is mobile / or Sector-specific skilled labor
- Each of the above under two alternative labor market assumptions:
 - a) Full employment
 - b) Unemployment in unskilled wage workers

VI. Results (1)

- ▶ In contrast with the scenarios with only shocks, in the scenarios with shocks + policy response (import restrictions) both imports and consumption decrease **Table 3**
 - ▶ more so in the most protected sectors (beverage, textiles and apparel, milling products)
 - ▶ Sectors with the highest new tariffs (beverages, textiles, and milling products) see  reductions in the quantity of imports along the lines of what we observed in the real data.
- ▶ In both, the scenarios with shocks, and with shocks + policy response, total exports fall, although there are differences in performance by sectors; some key sectors grow as usual (bananas), others fall for the first time in years (flowers, fish). **Table 4** 
- ▶ Small and negative changes in real GDP(Static model, perf. competition). **Table 5** 
- ▶ In the scenarios that include shocks + policy response, labor factor income seems to decrease more or increase less than in the scenarios where only the shocks take place. **Table 6a** 
- ▶ Similarly, in the scenarios that include the shocks + policy response, households' income seems to decrease more or increase less than in the scenarios where only the shocks take place. In urban households, larger fall in income. **Table 7a** 
- ▶ There are negative welfare impacts for households in the highest income quintile. **Table 8** 

VI. Results (2)

- ▶ In either case (scenarios with shock, and scenarios with shock plus policy response), capital and skilled wage labor (in both rural and urban areas) are hit negatively: their total remuneration decreases. [Table 6a](#) 
- ▶ In either case (scenarios with shock, and scenarios with shock plus policy response), households in the upper quintile of income (in both rural and urban areas) are the hardest hit: their income decreases the most. [Table 7a](#) 

Explanation:

- ▶ A hypothesis as to why the crisis has negatively affected the skilled wage labor and the income of households in the upper income quintile may lie in:
 - ▶ the economic activities that the crisis affected: export/import activities (in key sectors such as oil), and
 - ▶ in the policy response adopted by the government: import restrictions.
- ▶ Lower oil prices affect negatively the returns of factors used more intensively in this hard hit sector: capital and skilled labor. These factors are assumed to have low substitutability so that any negative shock in the world price of the output produced in the sector that employs them would lead to a downward adjustment in the price of these factors, particularly because the oil sector is a sector whose domestic output price is set by government regulation.

VI. Results (3)

Explanation (cont'd):




- ▶ The economic activities of households that have a higher income level include export activities and trade (imports and domestic trade). In rural areas, farmers with higher income are usually the ones whose production is oriented to export markets, in particular those in the coastal areas (although in the highlands, flowers is a key export activity). In urban areas, coastal cities such as Guayaquil depend heavily on trade and commerce activities.
- ▶ Higher tariffs and quotas adopted by the Government as a response to the crisis, led to a decline in commercial activities. Recent unemployment data shows that Guayaquil was one of the hardest hit cities in terms of rise in unemployment rates in 2009.
- ▶ NOTE: If in addition we assume that skilled labor is sector specific, an assumption that is consistent with very short-term impact adjustments, there may be even more negative impacts in factor returns (Table 6b),  households' income (Table 7b),  and employment (Table 9)  (in fact, we obtain a similar decline in employment rates as those observed in 2009).



Table 3.- Quantity of Imports
Percentage change



Description	Base (Millions of US\$)	Simulation A: Shocks due to the crisis					
		Scenario A1		Scenario A2		Scenario A3	
		Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
Other agricultural products	89.00	1.04	1.09	0.70	0.72	0.39	0.42
Livestock	11.60	1.88	1.98	1.26	1.31	0.75	0.80
Milling and bakery products	36.74	1.65	1.70	1.15	1.17	0.71	0.73
Alcoholic and non-alcoholic beverages	60.55	1.34	1.42	0.91	0.96	0.57	0.62
Other miscellaneous food products, chocolate and tobacco	188.42	0.81	0.84	0.53	0.54	0.29	0.30
Textiles and apparel, leather, leather products and footwear	433.62	0.92	0.99	0.62	0.66	0.43	0.45
Wood and wooden products	16.23	-0.22	-0.10	-0.40	-0.33	-0.75	-0.61
Description	Base (Millions of US\$)	Simulation B: Shocks + policy response due to the crisis, using US tariffs for the AC					
		Scenario B1		Scenario B2		Scenario B3	
		Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
Other agricultural products	89.00	0.54	0.55	0.20	0.20	-0.10	0.02
Livestock	11.60	1.06	1.09	0.49	0.46	0.01	0.13
Milling and bakery products	36.74	-6.66	-6.67	-7.12	-7.13	-7.51	-7.32
Alcoholic and non-alcoholic beverages	60.55	-22.53	-22.52	-22.83	-22.85	-23.09	-16.02
Other miscellaneous food products, chocolate and tobacco	188.42	-3.85	-4.01	-4.26	-4.27	-4.48	-4.31
Textiles and apparel, leather, leather products and footwear	433.62	-12.91	-12.89	-13.15	-13.16	-13.29	-12.80
Wood and wooden products	16.23	-7.33	-7.28	-7.51	-7.49	-7.85	-6.69

Source: Own calculations.

(Cont'd...)

Table 3.- Quantity of Imports (end)
Percentage change



Description	Base (Millions of US\$)	Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC					
		Scenario B1		Scenario B2		Scenario B3	
		Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
Other agricultural products	89.00	0.71	0.74	0.37	0.39	0.07	0.10
Livestock	11.60	1.56	1.64	0.98	1.01	0.50	0.53
Milling and bakery products	36.74	0.81	0.84	0.32	0.34	-0.10	-0.08
Alcoholic and non-alcoholic beverages	60.55	-12.65	-12.61	-13.00	-12.98	-13.28	-13.25
Other miscellaneous food products, chocolate and tobacco	188.42	-0.80	-0.95	-1.23	-1.22	-1.46	-1.44
Textiles and apparel, leather, leather products and footwear	433.62	-9.69	-9.64	-9.94	-9.92	-10.09	-10.09
Wood and wooden products	16.23	-6.24	-6.16	-6.42	-6.37	-6.76	-6.64

Source: Own calculations.





Table 4.- Quantity of Exports
Percentage change

Description	Base (Millions of US\$)	Simulation A: Shocks due to the crisis					
		Scenario A1		Scenario A2		Scenario A3	
		Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
Banana, coffee, and cocoa	1,144.73	0.41	0.58	0.29	0.42	0.10	0.25
Cereals	6.14	0.62	0.66	0.37	0.41	0.12	0.16
Flowers	356.41	-1.42	-1.20	-0.96	-0.82	-0.68	-0.55
Crude oil, mineral products and fuel oils and other oil products	4,406.41	-4.41	-4.42	-2.64	-2.66	-1.49	-1.50
Canned fish and other manufactured aquatic products	462.92	-7.19	-7.15	-7.39	-7.37	-7.57	-7.56
Milling and bakery products	5.38	0.18	0.22	0.00	0.02	-0.17	-0.15
Alcoholic and non-alcoholic beverages	11.95	-0.10	-0.11	-0.07	-0.08	-0.07	-0.08
Other miscellaneous food products, chocolate and tobacco	300.69	0.51	0.57	0.33	0.37	0.14	0.18
Textiles and apparel, leather, leather products and footwear	107.13	0.38	0.40	0.27	0.28	0.14	0.15
Wood and wooden products	81.74	0.44	0.44	0.37	0.36	0.38	0.35
Description	Base (Millions of US\$)	Simulation B: Shocks + policy response due to the crisis, using US tariffs for the AC					
		Scenario B1		Scenario B2		Scenario B3	
		Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
Banana, coffee, and cocoa	1,144.73	1.47	1.66	1.34	1.49	1.15	1.19
Cereals	6.14	0.62	0.67	0.37	0.42	0.12	0.19
Flowers	356.41	-1.33	-1.19	-0.91	-0.84	-0.66	-0.60
Crude oil, mineral products and fuel oils and other oil products	4,406.41	-4.32	-4.32	-2.66	-2.65	-1.57	-1.55
Canned fish and other manufactured aquatic products	462.92	-6.93	-6.92	-7.13	-7.14	-7.31	-7.35
Milling and bakery products	5.38	0.47	0.51	0.31	0.32	0.14	0.15
Alcoholic and non-alcoholic beverages	11.95	-0.47	-0.47	-0.45	-0.44	-0.45	-0.22
Other miscellaneous food products, chocolate and tobacco	300.69	0.76	0.80	0.57	0.61	0.38	0.34
Textiles and apparel, leather, leather products and footwear	107.13	0.56	0.57	0.44	0.45	0.32	0.31
Wood and wooden products	81.74	0.39	0.38	0.33	0.32	0.35	0.32

Source: Own calculations.

(Cont'd...)

Table 4.- Quantity of Exports (end)
Percentage change



Description	Base (Millions of US\$)	Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC					
		Scenario B1		Scenario B2		Scenario B3	
		Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
Banana, coffee, and cocoa	1,144.73	0.44	0.58	0.31	0.41	0.12	0.24
Cereals	6.14	0.36	0.39	0.11	0.14	-0.14	-0.10
Flowers	356.41	-1.30	-1.14	-0.88	-0.78	-0.63	-0.53
Crude oil, mineral products and fuel oils and other oil products	4,406.41	-4.35	-4.36	-2.69	-2.70	-1.60	-1.60
Canned fish and other manufactured aquatic products	462.92	-6.93	-6.90	-7.13	-7.12	-7.31	-7.30
Milling and bakery products	5.38	0.23	0.27	0.07	0.08	-0.10	-0.08
Alcoholic and non-alcoholic beverages	11.95	-0.37	-0.37	-0.34	-0.34	-0.35	-0.35
Other miscellaneous food products, chocolate and tobacco	300.69	0.54	0.57	0.35	0.38	0.15	0.19
Textiles and apparel, leather, leather products and footwear	107.13	0.45	0.47	0.34	0.35	0.22	0.22
Wood and wooden products	81.74	0.45	0.45	0.39	0.39	0.41	0.38

Source: Own calculations.



Table 5.- Real GDP
Percentage change



Variable	Simulation A: Shocks due to the crisis ^{1,2}					
	Scenario A1		Scenario A2		Scenario A3	
	Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
Private consumption	0.76	0.82	0.52	0.55	0.36	0.38
Fixed investment	0.25	0.27	0.17	0.18	0.10	0.11
Exports	-2.36	-2.32	-1.56	-1.53	-1.06	-1.03
Imports	0.06	0.11	-0.02	0.01	-0.07	-0.05
GDP (value added)	-0.10	-0.06	-0.03	-0.01	-0.01	0.01
Variable	Simulation B: Shocks + policy response due to the crisis, using US tariffs for the AC ^{1,3,4}					
	Scenario B1		Scenario B2		Scenario B3	
	Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
Private consumption	0.21	0.22	-0.02	-0.03	-0.17	-0.13
Fixed investment	-0.21	-0.20	-0.29	-0.29	-0.35	-0.32
Exports	-2.05	-2.02	-1.30	-1.28	-0.84	-0.84
Imports	-1.14	-1.13	-1.22	-1.22	-1.26	-1.16
GDP (value added)	-0.13	-0.12	-0.07	-0.07	-0.05	-0.04

Source: Own calculations. **Notes: 1.-** For all scenarios the closures include: (i) External Account: Flexible current account. Fixed real exchange rate. (ii) Government: Flexible savings, flexible income, fixed expenditure. (iii) Savings Investment Balance: balanced investment point share adjustment. (iv) Factor markets: land and capital sector specific. Labor mobile and two alternative scenarios: Full employment, and unemployment in the unskilled wage worker labor market segment. **2.- Scenario A1:** 30% fall in oil world price; 25% fall in fuels world import price and 10% fall in fish products world export price. **Scenario A2:** 20% fall in oil world price; 15% fall in fuels world import price and 10% fall in fish products world export price. **Scenario A3:** 10% fall in oil world price; 5% fall in fuels world import price and 10% fall in fish products world export price. **3.- Scenario B1:** Scenario A1 plus higher tariffs for selected commodities. **Scenario B2:** Scenario A2 plus higher tariffs for selected commodities. **Scenario B3:** Scenario A3 plus higher tariffs for selected commodities. Higher tariffs for selected commodities, by regions, are shown in Table 19. **4.-** US is the United States and AC is the Andean Community.



Table 6a.- Factor Income
Percentage change



Results (1)



Results (2)

Factor	Labor market type	Simulation A: Shocks due to the crisis ^{1,2}		Simulation B: Shocks + policy response due to the crisis, using US tariffs for the AC ^{1,2}		Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC ^{1,2}	
		Scenario A1		Scenario B1		Scenario B1	
		Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment
LABOR							
	Urban						
	Unskilled wage labor	0.31	0.38	0.04	0.07	0.22	0.27
	Skilled wage labor	-0.56	-0.44	-0.93	-0.90	-0.67	-0.59
	Self-employment	0.70	0.82	0.30	0.33	0.59	0.67
	Rural						
	Unskilled wage labor	0.21	0.29	0.29	0.28	0.15	0.21
	Skilled wage labor	-0.40	-0.27	-0.69	-0.66	-0.50	-0.41
	Self-employment	1.01	1.14	0.68	0.71	0.91	1.00
CAPITAL		-20.85	-20.61	-20.01	-19.96	-19.81	-19.62
LAND		1.62	1.79	1.77	1.87	1.43	1.56

Source: Own calculations. **Notes:** 1.- For all scenarios the closures include: (i) External Account: Flexible current account. Fixed real exchange rate. (ii) Government: Flexible savings, flexible income, fixed expenditure. (iii) Savings Investment Balance: balanced investment point share adjustment. (iv) Factor markets: land and capital sector specific. Labor mobile and two alternative scenarios: Full employment, and unemployment in the unskilled wage worker labor market segment. **2.- Scenario A1:** 30% fall in oil world price; 25% fall in fuels world import price and 10% fall in fish products world export price. **Scenario B1:** Scenario A1 plus higher tariffs for selected products, by regions (US, EU, ROW, and the AC).

Table 6b.- Factor's Return
 Percentage Change
 Assuming Sector-specific Skilled Labor



Factor	Labor market type	Simulation A: Shocks due to the crisis ^{1,2}		Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC ^{1,2}	
		Scenario A1		Scenario B1	
		Full employment	Unemployment	Full employment	Unemployment
LABOR					
	Urban				
	Unskilled wage labor	-0.86	-1.16	-0.79	-1.05
	Skilled wage labor	-4.29	-4.81	-4.09	-4.55
	Self-employment	-0.69	-1.16	-0.62	-1.04
	Rural				
	Unskilled wage labor	-0.80	-1.06	-0.71	-0.94
	Skilled wage labor	-4.00	-4.54	-3.80	-4.27
	Self-employment	-0.44	-0.94	-0.35	-0.79
CAPITAL		-22.29	-23.23	-20.86	-21.70
LAND		0.87	0.30	0.74	0.23

Source: Own calculations. **Notes:** 1.- For all scenarios the closures include: (i) External Account: Flexible current account. Fixed real exchange rate. (ii) Government: Flexible savings, flexible income, fixed expenditure. (iii) Savings Investment Balance: balanced investment point share adjustment. (iv) Factor markets: land and capital sector specific. Labor mobile and two alternative scenarios: Full employment, and unemployment in the unskilled wage worker labor market segment. 2.- Scenario A1: 30% fall in oil world price; 25% fall in fuels world import price and 10% fall in fish products world export price. Scenario B1: Scenario A1 plus higher tariffs for selected products, by regions (US, EU, ROW, and the AC).



Table 7a.- Household Income
Percentage change

Area/Income quintile	Base (Millions of US\$)	Simulation A: Shocks due to the crisis ^{1,2}		Simulation B: Shocks + policy response due to the crisis, using US tariffs for the AC ^{1,2}		Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC ^{1,2}		
		Scenario A1		Scenario B1		Scenario B1		
		Full employment	Unemployment	Full employment	Unemployment	Full employment	Unemployment	
Urban								
Quintile 1	1.804,74	-0,33	-0,21	-0,64	-0,61	-0,39	-0,31	
Quintile 2	2.751,50	-1,04	-0,93	-1,32	-1,29	-1,08	-1,00	
Quintile 3	3.623,25	-2,34	-2,22	-2,55	-2,53	-2,33	-2,24	
Quintile 4	5.222,93	-3,64	-3,52	-3,79	-3,77	-3,57	-3,49	
Quintile 5	15.586,78	-6,85	-6,72	-6,86	-6,83	-6,64	-6,54	
Rural								
Quintile 1	310,85	0,25	0,36	0,03	0,06	0,18	0,27	
Quintile 2	483,42	-0,74	-0,63	-0,88	-0,85	-0,77	-0,69	
Quintile 3	669,33	-0,73	-0,62	-0,86	-0,84	-0,77	-0,69	
Quintile 4	1.037,49	-1,19	-1,09	-1,32	-1,31	-1,24	-1,17	
Quintile 5	2.750,65	-4,90	-4,77	-4,89	-4,86	-4,78	-4,69	

Source: Own calculations. **Notes:** 1.- For all scenarios the closures include: (i) External Account: Flexible current account. Fixed real exchange rate. (ii) Government: Flexible savings, flexible income, fixed expenditure. (iii) Savings Investment Balance: balanced investment point share adjustment. (iv) Factor markets: land and capital sector specific. Labor mobile and two alternative scenarios: Full employment, and unemployment in the unskilled wage worker labor market segment. 2.- Scenario A1: 30% fall in oil world price; 25% fall in fuels world import price and 10% fall in fish products world export price. Scenario B1: Scenario A1 plus higher tariffs for selected products, by regions (US, EU, ROW, and the AC.)

Table 7b.- Household Income
 Percentage change
 Assuming Sector-specific Skilled Labor



Results (1)



Results (2)



Results (3)

Area/Income quintile	Base (Millions of US\$)	Simulation A: Shocks due to the crisis ^{1,2}		Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC ^{1,2}	
		Scenario A1		Scenario B1	
		Full employment	Unemployment	Full employment	Unemployment
Urban					
Quintile 1	1,804.74	-1.68	-2.12	-1.57	-1.95
Quintile 2	2,751.50	-2.51	-2.95	-2.36	-2.75
Quintile 3	3,623.25	-3.87	-4.32	-3.66	-4.06
Quintile 4	5,222.93	-5.28	-5.74	-5.00	-5.41
Quintile 5	15,586.78	-8.22	-8.74	-7.79	-8.24
Rural					
Quintile 1	310.85	-1.05	-1.49	-0.94	-1.33
Quintile 2	483.42	-1.97	-2.39	-1.83	-2.20
Quintile 3	669.33	-1.98	-2.37	-1.86	-2.21
Quintile 4	1,037.49	-2.36	-2.72	-2.27	-2.59
Quintile 5	2,750.65	-6.17	-6.63	-5.87	-6.28

Source: Own calculations. **Notes:** 1.- For all scenarios the closures include: (i) External Account: Flexible current account. Fixed real exchange rate. (ii) Government: Flexible savings, flexible income, fixed expenditure. (iii) Savings Investment Balance: balanced investment point share adjustment. (iv) Factor markets: land and capital sector specific. Labor mobile and two alternative scenarios: Full employment, and unemployment in the unskilled wage worker labor market segment. 2.- Scenario A1: 30% fall in oil world price; 25% fall in fuels world import price and 10% fall in fish products world export price. Scenario B1: Scenario A1 plus higher tariffs for selected products, by regions (US, EU, ROW, and the AC.)

Table 8.- Welfare impacts



Household type	Assuming Mobile Labor		Assuming Sector-specific Skilled Labor	
	Simulation A: Shocks due to the crisis ^{1,2}	Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC ^{1,2,3}		Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC ^{1,2,3}
		Scenario A1	Scenario B1	
	Scenario A1	Scenario B1	Scenario A1	Scenario B1
Urban				
Quintile 1	51	45	39	34
Quintile 2	62	53	45	38
Quintile 3	52	42	27	19
Quintile 4	38	24	0	-10
Quintile 5	-73	-96	-120	-135
Rural				
Quintile 1	14	13	10	10
Quintile 2	15	14	10	10
Quintile 3	22	19	14	13
Quintile 4	29	24	20	16
Quintile 5	-33	-38	-58	-60

Source: Own calculations. **Notes: 1.-** For all scenarios the closures include: (i) External Account: Flexible current account. Fixed real exchange rate. (ii) Government: Flexible savings, flexible income, fixed expenditure. (iii) Savings Investment Balance: balanced investment point share adjustment. (iv) Factor markets: land and capital sector specific. Mobile labor or sector-specific skilled labor assuming unemployment in the unskilled wage worker labor market segment. **2.- Scenario A1:** 30% fall in oil world price; 25% fall in fuels world import price; 10% fall in fish products world export price; and 10% fall in remittances. **Scenario B1:** Scenario A1 plus higher tariffs for selected commodities. **3.-** AC is the Andean Community and ROW is the Rest of the World.



Table 9.- Unemployment

Part I: Scenarios assuming Mobile labor

Labor market	Simulation A: Shocks due to the crisis ^{1,2}			Simulation B: Shocks + policy response due to the crisis, using US tariffs for the AC ^{1,3,4}			Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC ^{1,3,4}		
	A1	A2	A3	B1	B2	B3	B1	B2	B3
Urban	0.38	0.19	0.15	0.07	-0.09	-0.08	0.27	0.11	0.09
Rural	0.29	0.22	0.24	0.28	0.23	0.27	0.21	0.17	0.19

Part II: Scenarios assuming Sector-specific Skilled Labor

Labor market	Simulation A: Shocks due to the crisis ^{1,2}			Simulation B: Shocks + policy response due to the crisis, using ROW tariffs for the AC ^{1,3,4}		
	A1	A2	A3	B1	B2	B3
Urban	-1.16	-0.76	-0.32	-1.05	-0.64	-0.20
Rural	-1.06	-0.60	-0.16	-0.94	-0.49	-0.06

Source: Own calculations. **Notes: 1.-** For all scenarios the closures include: (i) External Account: Flexible current account. Fixed real exchange rate. (ii) Government: Flexible savings, flexible income, fixed expenditure. (iii) Savings Investment Balance: balanced investment point share adjustment. (iv) Factor markets: land and capital sector specific. Mobile labor unless otherwise specified. **2.- Scenario A1:** 30% fall in oil world price; 25% fall in fuels world import price; 10% fall in fish products world export price; and 10% fall in remittances. **Scenario A2:** 20% fall in oil world price; 15% fall in fuels world import price; 10% fall in fish products world export price; and 5% fall in remittances. **Scenario A3:** 10% fall in oil world price; 5% fall in fuels world import price; 10% fall in fish products world export price; and 5% fall in remittances. **3.- Scenario B1:** Scenario A1 plus higher tariffs for selected commodities. **Scenario B2:** Scenario A2 plus higher tariffs for selected commodities. **Scenario B3:** Scenario A3 plus higher tariffs for selected commodities. Higher tariffs for selected commodities, by regions, are shown in Table 19. **4.-** US is the United States, AC is the Andean Community, and ROW is the Rest of the World.

VII. Conclusions (1)

- ▶ The Crisis had some negative impacts on the economy: in real terms total exports and value added fell, return to capital and wages for the skilled wage workers fell, and also household incomes fell.
- ▶ The fall in the world export price of the most important export product of Ecuador, oil, brings about a fall in the return of the factors most intensively used in the sector: capital and skilled wage labor. When skilled labor is assumed sector specific (as it would be expected in a very short-term analysis), the fall on the returns of these factors is even larger .
- ▶ Households' income falls, in particular for households in urban areas and in the highest income quintile.
- ▶ When the effect of *import restrictions* is added to the shock scenarios, not only do exports and value added fall, but also imports and fixed investment; the higher the increase in the tariffs, the more so. Income and welfare of households in the highest income quintile decrease more (than the decrease observed in other household categories)

VII. Conclusions (2)

- ▶ Differences in economic impact coming from different scenarios (shocks, shocks + policy response) and closures highlight:
 - ▶ welfare impacts of shocks depend on the nature of the policy adopted in response
 - ▶ labor market assumptions (sector specific; unemployment or not)
 - ▶ segmented labor markets
 - ▶ differentiated Urban – Rural impacts

Caveats:

- ▶ Hard to come by a “right” applied tariff (when simulating the policy response: import restrictions)
- ▶ Results from static CGE model!

Future work:

- ▶ Poverty impacts: Microsimulation model: econometric, with two main components (occupational choice and wage/earnings regressions)
 - ▶ Approach: sequential (top-down)

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Thank you for your attention!

Comments welcome at sawong@espol.edu.ec