POVERTY & ECONOMIC POLICY

RESEARCH NETWORK

MPIA WORKING PAPER
2011-16

Assessing the impact of the global financial and economic crisis in developing countries: the case of Uruguay[1]

Carmen Estrades♦
carmen.estrades@gmail.com

Cecilia Llambí ♣
cllambi@cinve.org.uy

October 2011

Abstract

This paper uses a static computable general equilibrium model (CGE) linked to a microsimulation model to analyze how the global crisis and some adopted policy responses may have affected the Uruguayan economy. The focus is on the trade channel and foreign capital flows, since they are the most important mechanisms through which the global crisis affected the Uruguayan economy. The crisis had a strong impact on exports and fixed investment. Poorest households would be the most affected, as they face a stronger reduction in real wages and a rise in unemployment. We find a negative impact on extreme poverty, but not on moderate poverty, as households near the poverty line would benefit from the fall in some consumer prices. A policy based in increasing current public consumption does moderately counteract some negative impacts of the crisis, but benefits mainly skilled workers, and does not act directly towards the most affected.

1. <u>Introduction</u>

The financial crisis that burst in September 2008 soon spread throughout the world and became a major global economic crisis. World GDP fell 2% in 2009, and world exports experienced the highest fall since the Great Depression of 1930s (10.5% fall in volume and 20.4% in value)[2]. The epicenter of the crisis was in the developed economies financial systems, mainly United States and Europe, but the financial and economic links with the rest of the world soon took the crisis to developing countries.

Uruguay was not an exception. After six years of steady GDP growth rate following 2002 recession, during the first quarter of 2009 real GDP showed the first decrease (-2.9%). Although GDP immediately recovered during the second quarter of 2009, there was a substantial slowdown of GDP growth rate for 2009 (Figure 1).

After the deepening of the crisis, macroeconomic forecasts of GDP, prices and manufacturing growth in Argentina and Brazil were significantly revised downwards. To the extent that Uruguayan economic growth is very closely linked to that of the two main partners (Argentina and Brazil), downward revisions in forecasts of these economies implied similar reductions in forecasts for the country's economic growth, and in particular for the manufacturing sector, where there is a strong trade link with the MERCOSUR area. Indeed, the manufacturing sector experienced a decline of 3.8% in 2009, after six years of impressive growth, averaging 13%.

---

[2] IMF, World Economic Outlook, July 2010

Figure 1. Uruguay: Real GDP growth (% annual)
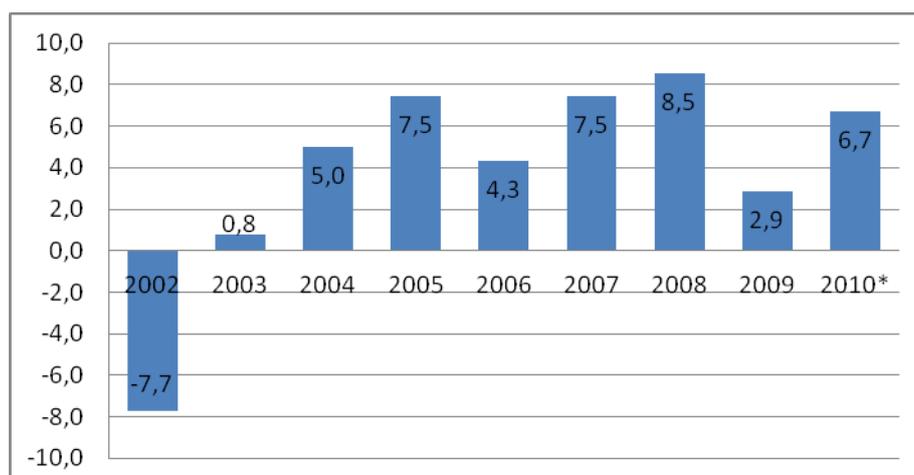
Source: BCU, forecasts by Ministry of Economics and Finance (MEF)

As a consequence of the reversal of the economic cycle, in the first months of 2009 government revenues showed a shortfall and the fiscal deficit significantly expanded. While government projections before the beginning of the crisis situated the fiscal deficit in -0.4% of GDP for 2009, the fiscal deficit finally reached -1.7% of GDP last year. Besides, the declining growth has potential negative implications for income, employment, investment and, in the last instance, for poverty. The negative impact on poverty is reached through two mechanisms: on one hand, through a fall in labor demand, implying an increase in unemployment and a fall in wages; and on the other hand, through a fall in government revenue, which in turn could have a negative effect on public transfers to poor households.

This paper aims to analyze the impact of the global financial and economic crisis on the Uruguayan economy, using a computable general equilibrium (CGE) model and microsimulations. It also discusses to what extent the policy responses of the Uruguayan government were effective in counteracting the negative effects of the crisis. This exercise is not only important to understand the different channels through which the economic crisis affected the country, but also to discuss and propose countercyclical policy options. This assessment is particularly important for Uruguay, a small open economy that has been exposed to several external shocks in the last 20 years.

The remainder of the paper is divided into the following sections. Section 2 describes the channels of transmission of the global crisis in Uruguay. Section 3 briefly describes the CGE model applied, the data used and the simulations carried out. Section 4 presents some major findings and section 5 concludes.

2. Main channels of transmission of the global crisis

Even though the economic crisis started in the financial sector of the developed world, the crisis soon spread throughout the world. The main channels of transmission of the crisis to the developing countries have been discussed extensively: i) collapse in global trade and fall in international prices; ii) drop in capital flows, affecting FDI and equity investment; iii) fall in remittances; and iv) fall in aid flows (Willem te Verde, 2008; World Bank, 2009). While the last two channels do not seem to be important for the Uruguayan case, the first two channels did play a role in transmitting the global crisis to the domestic economy, as we present next.

2.1. Trade channel

The first channel of transmission of the crisis to our economy is that related to the effects on exports, via a decline in global demand and via the reduction of prices of key export commodities. Uruguay is a small open economy with relatively low protection levels and integrated to MERCOSUR (see Table 1). The country has strong comparative advantages in agriculture and food products and is highly dependent on imports of intermediate inputs. Before the 2002 economic crisis that followed the sharp currency devaluation in Brazil and Argentina and led the Uruguayan economy into a strong recession, almost half of Uruguayan exports were destined to the MERCOSUR area. That situation reversed after the 2002 crisis, and by 2008, MERCOSUR concentrated 27% of Uruguayan exports. It is important to notice, however, that although MERCOSUR has strongly decreased its importance, it continues being the main trade partner of the economy. Moreover, exports of services (which averaged 25% of total exports in the last six years, and include mainly tourism and logistic services) are mostly destined to Argentina and Brazil.

Table 1. Main trade indicators for Uruguay. 1997-2009

	1997	2001	2005	2007	2009
Trade Openness*	37.7	36.3	58.9	57.9	52.0
Main trade partners (% total trade)					
Mercosur	46.1	42.8	33.0	38.0	37.9
European Union	9.3	8.8	14.4	8.9	6.3
United States	19.8	18.8	13.9	13.5	12.3
China	2.9	4.4	5.0	8.4	11.2
Average external tariff**	9.5	11.9	9.4	9.2	9.3
Average intrazone tariff**	1.4	0.0	0.1	0.1	0.1
Export price index (annual percentage variation)	Nd	-3.6	2.7	12.6	-13.5

Source: own elaboration with data from Central Bank of Uruguay (national accounts), Chamber of Industries of Uruguay and Ministry of Economics and Finance.
Notes: *Trade Openness = (Exports + Imports)/GDP*100. All variables are at current prices.
**Simple average

On the other hand, Uruguayan exports are highly concentrated in agriculture and food products, for which the country presents comparative advantages, as Table 2 shows. Meat, cereals (rice and wheat), dairy products, wood, vegetable oils, barley, leather, fish and wool concentrate almost 63% of total value of exports of goods in 2007, and all the products present a value of the RCA index above the unit.[3]

Table 2. Main export products for Uruguay: share in total exports and revealed comparative advantage, 2007

HS2	Description	Share of total exports	Revealed Comparative Advantage Index (RCA)
02	Meat and edible meat offal	23.4	45.7
04	Dairy products, eggs, honey	9.4	17.0
10	Cereals	9.1	14.5
41	Raw hides and skins and leather	8.1	217.6
44	Wood and articles of wood	6.5	10.0
51	Wool and animal hair	6.2	78.5
12	Oil seed, ol. fruits, grain, seed, fruit, etc	6.0	34.0
87	Motor vehicles and parts	4.9	0.4
27	Mineral fuels, oils, distillation products	4.9	2.3
39	Plastics and articles thereof	4.9	2.1
03	Fish, crustaceans, molluscs	4.1	8.4
11	Milling products, malt, starches, wheat gluten	2.5	64.0
08	Edible fruit and nuts	2.3	7.0
71	Pearls, precious stones, metals, coins, etc	2.2	4.3
30	Pharmaceutical products	2.0	0.5

Source: Own elaboration with data from Central Bank of Uruguay and Comtrade

Demand for food products is usually less elastic to changes in income than demand for manufactures or durable goods, and as Freund (2008) has estimated, exports of food and beverages have been less impacted in context of global crisis[4]. For these reasons, we might expect a lower impact on the reduction of world demand on Uruguayan export volumes as a consequence of the most recent crisis, However, there are two indirect associated effects that could result in larger real impacts: first, the impacts of the crisis in the MERCOSUR region - particularly Brazil, the main destination of Uruguayan exports, and second, the consequences of the crisis on global trade policy decisions in the developed economies. Given the importance of the export sector in the Uruguayan economy, significant reductions in exports would generate a negative impact on the level of activity and employment.

---

[3] Following Balassa (1965), we compute the Revealed Comparative Advantage Index as follows:
RCA = (Xiu/Xu)/(Xi/X), where Xiu/Xu is the share of product i (at HS 2 digit level) in total exports of Uruguay, and Xi/X is the share of product i in world exports. Values above the unit indicate that the country presents revealed comparative advantages in exports of the product.

[4] The author analyzes the impact on trade flows by commodity groups during four global downturn episodes: 1975, 1982, 1991, and 2001.

Although 2008 ended up with the highest records of exports of goods, the upward trend of Uruguayan exports since the beginning of 2003 (first driven by the real depreciation of 2002 and then by increasing international commodity prices) reversed sharply during the second half of 2008. With the deepening of the international crisis, the decrease in world and regional demand and the fall of commodity prices (see Figure 2) had a strong impact on Uruguayan exports.

Figure 2. Recent evolution of international prices
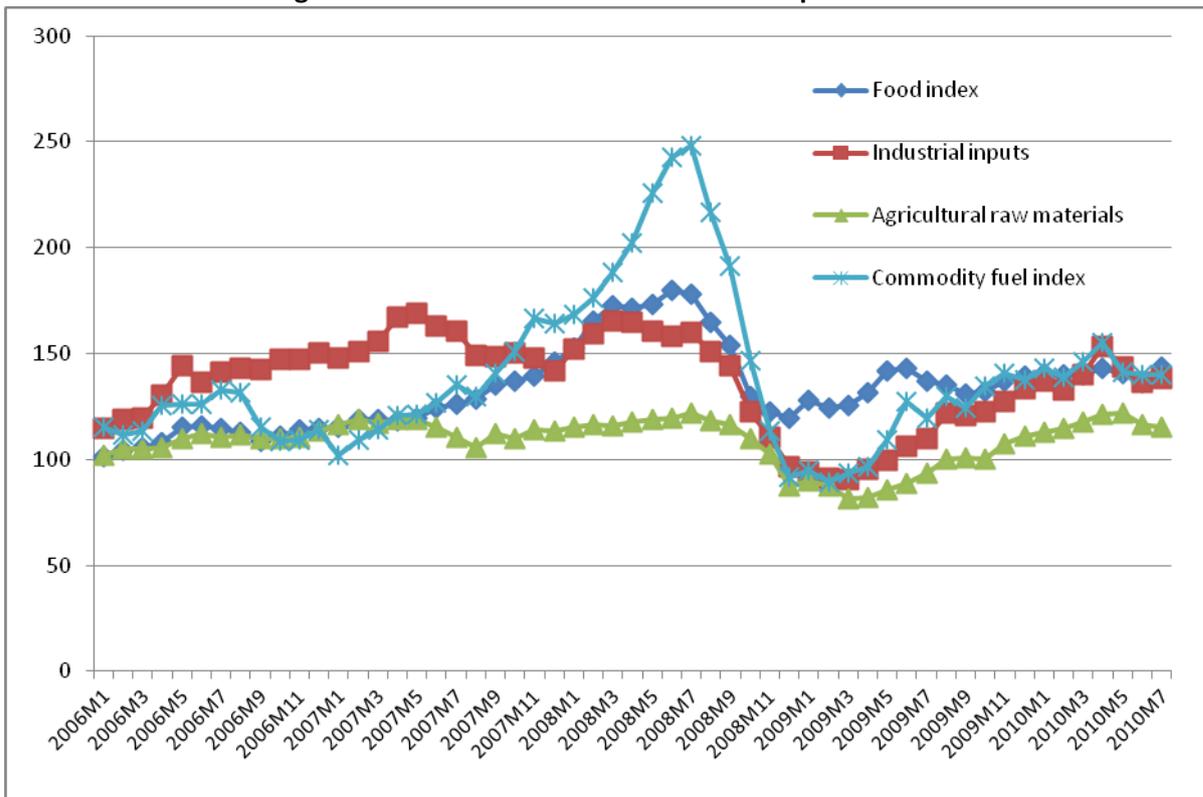
Source: International Monetary Fund. Index 2005=100

Between July and December 2008, commodity prices fell by 32%, while in the same period Uruguayan exports fell by 18% (in US dollars) and 8% (in volume). The decrease in the value of exports reached 25% between July 2008 and April 2009 (see Figure 3).

Figure 3. Exports (monthly values in current million US dollars)
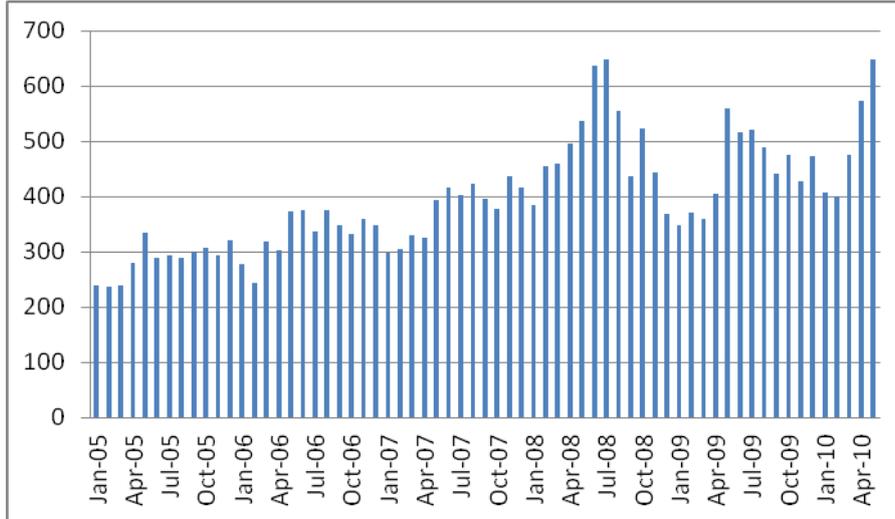
Source: Authors elaboration, based on data of the Uruguay Central Bank (BCU)

The fall in international prices also affected the value of imports, which reached a peak in the second quarter of 2008 and fell pronouncedly in the three following quarters. The evolution of total imports was closely related to the evolution of oil imports, as Figure 4 shows.

Figure 4. Quarterly imports in current million US dollars
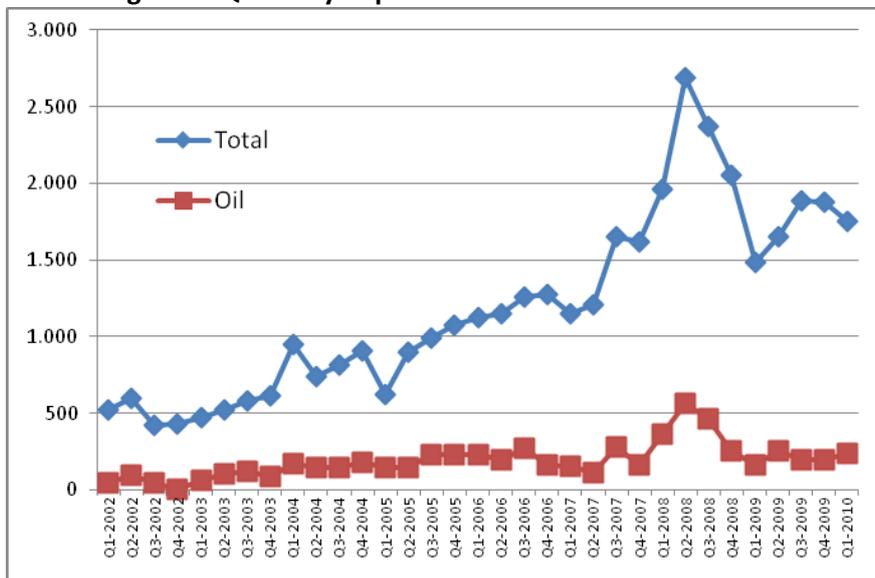
Source: Authors elaboration, based on data of the Uruguay Central Bank (BCU)

2.2 External Financing Channel

In the case of external financing, the "flight to quality," behavior, the reconstruction of global financial institutions and the increasing country risk of emerging economies during the crisis

resulted in significant reversals of financial capital flows into emerging economies, causing severe decreases in portfolio investment, the most volatile category of the capital account of the balance of payments. Furthermore, the recession in the main economies with a consequent fall in aggregate world demand along with the increasing difficulties in access to financing, adversely affected the inflow of capital through foreign direct investment (FDI), the main component of the Uruguayan capital account.

Table 3. Uruguay: Balance of payments and GDP (in millions of USD)

	2004	2005	2006	2007	2008	2009
Current Account	**3**	**42**	**-392**	**-220**	**-1,486**	**212**
Exports	4,257	5,085	5,787	6,933	9,372	8,556
Imports	3,778	4,693	5,877	6,775	10,270	7,794
Net Rent and Transfers	-475	-350	-302	-378	-588	-551
Capital Account	**72**	**752**	**528**	**1,505**	**2,766**	**1,699**
Foreign Direct Investment	315	811	1,495	1,240	1,786	1,227
Portfolio Investment	-422	806	1,686	1,151	-558	-710
Other Investment	174	-869	-2,659	-889	1,537	1,182
Errors & Omissions	**379**	**-174**	**-152**	**-279**	**953**	**-322**
Reserves	**-454**	**-620**	**15**	**-1,005**	**-2,232**	**-1,588**
GDP	13,268	17,398	20,064	24,302	32,193	32,146
Ratio CA/GDP	0.0%	0.2%	-2.0%	-0.9%	-4.6%	0.7%
Ratio FDI/GDP	2.4%	4.7%	7.4%	5.1%	5.5%	3.8%

Source: Central Bank of Uruguay

Table 3 describes the Uruguayan balance of payments. Two relevant aspects can be noted regarding the capital account. First, the significant reversal of portfolio investment recorded since 2008, which shows the quick reaction of these flows to changes in economic and financial conditions. Second, while FDI had shown an impressive growth between 2005 and 2008 (it represented 2.4% of GDP in 2004 and increased up to 5.7% of GDP in 2008), and became one of the most important sources of growth in the last few years, the worsening of financial problems and its transmission to the real sector affected FDI decisions, causing stagnation in FDI flows into Uruguay. In 2009, the ratio FDI/GDP declined up to 3.8%.

2.3. Remittances and aid flow channels

As already mentioned, while the trade and the external financing channels might have played a role in transmitting the impact of the global financial crisis to the domestic economy, the remittances and aid flows are not significant channels of transmission in the case of Uruguay. Neither of both flows has represented more than 1 percent of GDP along the decade (see

Table 4).[5] Besides, aid flows actually increased during 2009, both in absolute terms and relative to GDP; and even though remittances fell in 2009, the decline was slight.

Table 4. Remittances and aid flows as percentage of GDP

	2004	2005	2006	2007	2008	2009
Remittances*	0.79	0.63	0.57	0.51	0.40	0.36
Net aid**	0.08	0.02	0.05	0.08	0.04	0.10

*Incoming remittances flows
**Net official development assistance
Source: own elaboration with data from FOMIN-IADB, OECD and Central Bank of Uruguay

3. Model and dataset

In order to analyze the impact of the recent economic and financial crisis on the Uruguayan economy, we apply a Computable General Equilibrium (CGE) model and microsimulations. Even though the methodological tool is more appropriate to make ex ante evaluations, an ex post evaluation is interesting in this case because it allows to disentangle the different channels through which the crisis affected the Uruguayan economy, and also to evaluate policy responses to the crisis.

3.1. PEP Standard model

We apply the PEP standard model (PEP 1-1) (Decaluwé et al., 2009)). It is a single country static model[6] in which firms are assumed to operate in a perfectly competitive environment. Output in each firm is reached through a nested structure of production that combines value added and total intermediate consumption in fixed shares at the upper level. At the second level, each industry's value added consists of composite labor and composite capital, following a constant elasticity of substitution (CES) specification. At the bottom level on the value added side, the various categories of labor are combined following a constant elasticity of substitution (CES) technology. Likewise, composite capital is a CES combination of the different categories of capital. As in the case of labor, it is assumed that different categories of capital

---

[5] In Central American countries Guatemala, Nicaragua, El Salvador and Honduras remittances represented between 10 and 20% of GPD in 2010, while in some Sub-Saharan African countries, such as Malawi, aid flows can reach more than 10% of GDP, although this figure can change radically from one year to the next.
[6] The description of the model follows Decaluwé et al (2009), where a more complete presentation of the model, including its equations and assumptions, can be found.

are imperfect substitutes. Aggregate intermediate consumption is made up of various goods and services, under the assumption that intermediate inputs are perfectly complementary, and are combined following a Leontief production function.

There are four types of agents: households, firms, government and rest of the world. Household incomes come from three sources: labor income, capital income, and transfers received from other agents. Each household type receives a fixed share of earnings of each type of labor. Total capital income is also distributed between agents, including households, in fixed proportion. Finally, transfer income is simply the sum of all transfers received by each household type. Disposable income left after savings and transfers to other agents is entirely dedicated to consumption. Household savings are a linear function of disposable income. It is assumed that households have Stone-Geary utility functions (from which derives the Linear Expenditure System). This implies that there is a minimum level of consumption of each commodity (which may be zero for some commodities).

Firms' income consists of capital income and of transfers received from other agents (including the transfer part of interest on consumer debt). Government receives fiscal revenue through different types of taxes, and also receives part of the remuneration of capital and transfers from other agents. The rest of the world receives payments for the value of imports, part of capital income, and transfers from domestic agents. Foreign spending in the domestic economy consists of the value of exports, and transfers to domestic agents. The difference between foreign receipts and spending is the amount of rest-of-the-world savings, which are equal in absolute value to the current account balance, but with opposite sign.

The demand for goods and services, whether domestically produced or imported, consists of household consumption demand, investment demand, demand by public administration, and demand as transport or trade margins. Investment demand includes both gross fixed capital formation (GFCF) and changes in inventories.

In defining trade relations with the rest of the world, the model assumes the small country hypothesis: the world price of traded goods (imports and exports) is exogenous. However, the local producer is only able to increase his/her share of the world market by offering a lower price relative to the (exogenous) world price, depending on the price-elasticity of export demand. Producers' supply behavior is represented by nested CET functions: on the upper

level, aggregate output is allocated to individual products; on the lower level, the supply of each product is distributed between the domestic market and exports.

Buyer behavior is symmetrical to producer behavior, in that it is assumed that local products are imperfect substitutes for imports. Thus, commodities demanded on the domestic market are composite goods, combinations of locally produced goods and imports. The imperfect substitutability between the two is represented by a constant elasticity of substitution (CES) aggregator function. According to the small-country hypothesis, the price-elasticity of import supply is assumed to be infinite at the going world price.

Supply and demand equilibrium is verified in goods and services market and in the factor market. Also, total investment expenditure must be equal to the sum of agents' savings. The sum of supplies of every commodity by local producers must be equal to domestic demand for that commodity produced locally. Finally, supply to the export market of each good must be equal to demand.

3.2. Modifications to PEP Standard model

Some modifications were introduced in order to adapt the model to the Uruguayan case and allow simulating the specific shocks the country received during the crisis, as well as the policy responses. First, we introduced unemployment in the labor market, through a wage curve that negatively relates unemployment and wages (Blanchflower and Oswald, 1995). This specification for labor market has been widely applied in CGE models (Carneiro and Arbache, 2003; Terra et al, 2010, among others) and is consistent with the efficiency wage theory, which argues that in certain economies firms have an incentive to pay salaries above the average in order to promote higher efficiency or lower quit rate among workers. However, in a context of high unemployment, firms do not need to pay a high incentive, since workers are more prone to lose their jobs. Thus, the higher the unemployment rate in the economy, the lower the wage premiums and the average wage rate of the economy. The wage curve has been estimated empirically in several countries, including Uruguay. In this study, we take the estimated elasticities of wages to unemployment from Bucheli and Gonzalez (2007), who find that there is not a significant effect of unemployment on wages for skilled workers, but a significant wage curve relation exists for unskilled and semiskilled workers. The estimated elasticity is slightly higher for unskilled workers (-0,145) than the one estimated for semiskilled workers (-0,139).

Second, we did not consider firms as separate agents of the model. We made this simplification because we are not considering any change in fiscal policies affecting firms' income (as changes in direct taxes on firms for example). Instead, we are only considering households, government and the rest of the world as relevant type of agents for this analysis.

Third, we separated public and private investment, in the spirit of the dynamic version of the PEP Standard Model (PEP-1-t; see Decaluwé et al, 2010). This modification was necessary in order to evaluate the countercyclical public policies implemented by the government. For doing so, we also introduced a fourth modification, introducing unemployment insurance transfers, which are linked to the level of unemployment of the economy (automatic mechanism of response) by a parameter that allows us to simulate explicit changes in unemployment transfers from the government.

Regarding factor substitutability, we assume producers have a low flexibility to adjust to shocks by changing the composition of their labor force in the very short term. Therefore, we use low values of elasticities of substitution between different types of labor and capital. We take estimations of elasticities of substitution between labor and capital for Uruguay from Cassoni (1998). The range of variation of this elasticity is estimated in [0.3, -1], and we are taking a value close to the lower bound (0.5). We assume capital is sector specific and labor is mobile across sectors. Armington elasticities are estimates for Uruguay taken from Flores (2008), and household income elasticities are taken from González (2003).

A savings driven closure was adopted. Real investment is endogenous and follows available savings. The trade balance is exogenous and the real exchange rate is the equilibrating variable. Finally, regarding government balance, we assume real government consumption and tax rates are fixed, so savings equilibrate government accounts. This implies a last change to the PEP model, as we assumed government consumption of each commodity in real terms is fixed, instead of taking total government spending as fixed.

3.3. Data and calibration

For calibration purposes, we use a 2005 SAM for Uruguay based on the last recently published Tables of Supply and Use (Central Bank of Uruguay, 2005). The SAM has 55 activities, six types of labor according to formal education and sector of activity (agricultural/non-agricultural), and one type of capital. We consider agricultural labor to be sector-specific (in the three categories of formal education). Households are disaggregated into five types according to

quintiles of household income.Even though other criteria is usually recommended for classification of households (see Decaluwe et al., 1999), this classification is relevant for Uruguay because it allows differentiating very distinctive patterns of income and consumption[7]. For example, households belonging to the poorest quintile receive their income mainly from transfers and unskilled labor wages, while households in the highest quintile of income obtain their income from capital income and skilled labor wages. In any case, we analyze the impact on income distribution and poverty from a microsimulation analysis, which enriches the results from the CGE model.

The main sources of data are the tables of supply and use 2005 (BCU), National Household Survey (NHS -INE) and the last Income and Consumption Survey (2006). The ample sectoral disaggregation of the SAM allows us to introduce specific price and demand shocks in the main export oriented goods and service sectors, as described in the previous section. We adapt the 2005 SAM to the model requirements, mainly simplifying some accounts, such as taxes.

We calibrate public investment using National Accounts data, unemployment transfers with information from the National Institute of Social Security (BPS), and percentage of unemployed receiving the insurance from the National Household Survey (ECH-INE).

Table 5 presents the supply and demand structure for Uruguay at the baseline. In 2005, investment reached 16.5% of GDP, and the highest proportion corresponded to private investment. Government consumption was almost 11% of GDP, while private consumption was the main component of GDP, representing 72% at market prices.

---

7 Some of the criteria usually suggested is not relevant for the Uruguayan case; for example, the differentiation between urban and rural households, because rural households are negligible in Uruguay

Table 5. GDP structure of Uruguay, 2005

	Share of GDP (%)
Household consumption	71.7
Private investment	13.6
Public investment	2.9
Stock variation	1.2
Government consumption	10.9
Exports	26.9
Imports	-27.2
GDP market prices	**100.0**
Net indirect taxes	13.3
GDP at factor cost	86.7

Source: SAM

Production, export, import and value added structure for each aggregated sector are presented in Table 6. While service sectors represent 64% of total output and 74% of total value added of the economy, manufacturing sectors are more linked to the external sector, representing 74% of total exports and 85% of total imports. Food manufacturing sectors are more oriented to exports, while importing sectors are mostly other manufacturing sectors (see table A1 in Annex).

Table 6. Production and trade structure by aggregated sectors (in %)

	Output	Value added	Exports	Imports
Primary	8.50	10.61	7.17	2.18
Food Manufacturing	11.95	6.19	39.22	24.98
Other manufacturing	15.75	9.12	34.26	59.53
Services	63.80	74.08	19.36	7.29
Total	100.0	100.0	100.0	100.0

Source: SAM

Value added structure by sectors is remarkably different, as Table 7 shows. The main difference stands on the use of labor by skills: while service sectors are more intensive in the use of skilled labor, primary sectors are more intensive in unskilled labor.

Table 7. Value added structure of aggregated sectors (in %)

	Skilled labor	Semi- skilled labor	Unskilled labor	Capital	Total
Primary	3.4	12.4	26.0	58.2	100
Food Manufacturing	3.2	21.3	15.3	60.1	100
Other manufacturing	8.2	31.3	14.6	45.9	100
Services	14.8	29.2	13.3	42.6	100
Total	12.3	27.1	14.9	45.7	100

Source: SAM

Household income structure is presented in Table 8. While the poorest households rely on income from unskilled labor and government transfers, richest quintiles receive their income mainly from capital and skilled labor. Unemployment transfers are more important for the

middle segments of the population, which are more integrated in the labor market than poorest households, but face higher unemployment rates than the richest households.

Table 8. Household income by main source (in %)

	Poorest quintile	Second quintile	Third quintile	Fourth quintile	Richest quintile
Skilled labor	3.9	4.3	6.1	9.5	14.4
Semi-skilled labor	23.5	29.0	32.2	30.9	17.6
Unskilled labor	38.0	28.8	20.2	13.2	5.0
Capital	17.0	21.0	23.9	29.8	53.9
Households transfers	1.4	0.9	0.8	0.8	0.5
Government transfers	16.0	15.8	16.6	15.6	8.5
Unemployment benefits	0.2	0.2	0.3	0.2	0.1
Total	100.0	100.0	100.0	100.0	100.0

Source: SAM

Government consumption structure is presented in Table 9, both for final consumption and investment demand. Final consumption is in few services sectors, mainly government services and public services such as education and health. On the other hand, public investment is highly concentrated in construction sector, and to a less extent in metal products and services and other manufactures.

Table 9. Government consumption structure (in %)

	Current consumption
Government services	48.8
Education	24.5
Health	23.4
Financial services	1.8
Other services	1.6
	Investment demand
Construction	54.5
Metal products	25.1
Business services	6.3
Vehicles and parts	4.9
Other manufactures	2.0
Other services	1.6
Other goods	5.6

Source: SAM

3.4. Scenarios

With the aim of analyzing the effects of the world economic and financial crisis in Uruguay we simulate the two main channels through which the crisis has affected the Uruguayan economy: the trade and the external financing channel.

Trade scenarios

As already introduced, the global crisis affected exports through two main channels: a fall in external demand and a fall in international prices. Of the main 13 export sectors in Uruguay, which account for more than 2.5% of total exports separately and 65% of total export at the benchmark, 9 sectors experienced a fall in the export value between the first half of 2008 and the first half of 2009 (see Table 10). In some of them the decline was very important –such as leather, wood, textiles, meat and refined oil.

The fall in exports measured in current prices can be explained by two phenomena: a fall in prices or a fall in quantities (demand). In order to disentangle these two effects, we analyzed the evolution of prices of these goods. In the case of commodities, we took the price variation reported by the IMF; while in the case of industrial goods, we took the exports price index reported by the Uruguay Chamber of Industry (CIU). Dairy food prices were taken from USDA. IMF reports prices at a disaggregated level, while some of the sectors included in our SAM are composed by several different products. In these cases, in order to compute the price change for the whole sector, we estimated the weighted average price change of the different products that are included in each sector.

In the case of most industrial non-food sectors and services, we assumed a demand shock. As these sectors are mainly oriented to the MERCOSUR area, the size of the shock is equal to a weighted average of the demand fall in our main trade partners, Argentina and Brazil.

Table 10. Simulated shocks in manufacturing export sectors

Description	Share in total exports at benchmark	Var exports, Jan-June 2008/Jan-June 2009 (in %)	Shock (percentage variation)	Type of shock
Meat processing	19.23	-28.53	-3.1	Price
Refined petroleum products and nuclear fuel	6.41	-46.18	-52.2	Price
Leather products	5.24	-41.77	-15.9	Price
Dairy products	5.23	-19.42	-51.9	Price
Sugar	4.99	44.32	-8.2	Price
Rice processing	4.24	35.75	-19.6	Price
Textiles	3.88	-34.72	-38.9	Price
Cereals and other primary	3.24	18.09	-29.3	Price
Fish products	2.91	3.34	-6.7	Price
Basic Chemicals	2.81	-26.86	-1.0	Quantity
Rubber and plastic	2.97	-12.86	-1.0	Quantity
Metal products and machinery	2.82	-18.36	-1.0	Quantity
Passenger transport	9.80	n/d	-1.0	Quantity

Source: IMF, Chamber of Industries of Uruguay

Together with the negative price or demand shock on export sectors, the country also received a positive external shock as the international prices of the main import commodities also fell as a consequence of the crisis. Therefore, the price shock scenario combines the fall in international prices of the main export products and also of the main import products (mainly oil). Variation of prices of import products was taken from IMF and Bureau of Labor Statistics (US).

Table 11. Simulated shocks in main import sectors.

Description	Share of imports at benchmark, in percentage	Var imports Jan-June 2008/Jan-June 2009	Shock (percentage variation)	Type of shock
Crude petroleum and natural gas	18.03	-46.4	-49.3	Price
Refined petroleum products and nuclear fuel	4.2	-64.3	-52.2	Price

Source: IMF, USDA

In sum, we simulate the trade transmission channel through a price shock and an external demand scenario, taking the actual changes in international prices of key exports and imports and fall in demand of main trade partners between 2008 and 2009. Given that the ratio between exports and final global demand experienced only a minor change between 2005 (our benchmark) and 2008, we did not rescale the shocks.[8]

External financing restrictions scenario

Regarding the external financing channel, we simulate the negative financial restriction from the rest of the world via a negative shock in the rest of the world's savings. We took the reduction of FDI (the most important and structural part of capital inflows) to estimate the magnitude of the shock. FDI declined 48% between June 2008 and June 2009. We choose to simulate this shock via an equivalent reduction of the current account balance.

Crisis scenario

The external financing restriction scenario is combined with the trade shock scenario in order to try to replicate the external shock that the country faced in the second half of 2008 (Crisis scenario).

Policy response scenarios

Despite the deterioration of fiscal performance, the financial situation of the public sector did not appear as a significant source of vulnerability. The ratio gross public debt to GDP

---

[8] The ratio Exports/Final Demand was 23.6% and 21.4% in 2005 and 2008, respectively.

decreased considerably in the last four years, now being around 50% (in 2002 it was 100% of GDP). So, in practice, the government has allowed an increase in public deficit rather than cutting government spending (which would have implied a pro cyclical response).

Public consumption and investment increased 11% and 20% respectively, implying a clear countercyclical movement. We simulate the increase in these two components, first separately and then together. Since the adopted fiscal measures did not imply an increase in taxes, we simulate these scenarios contemplating an increase in public spending and allowing a broader fiscal deficit.

In addition, some "automatic devices" are turned on in downward economic cycles, as unemployment insurance. Although most up to 2005 studies indicate a relatively low coverage of unemployment insurance in Uruguay, formal employment has increased considerably during the last four years, mainly due to the re installation of collective wage bargaining. So, reasonably, unemployment insurance coverage is expected to act as a compensatory policy for a larger proportion of workers than it did in past years. Furthermore, as a compensatory policy to the crisis, the government temporarily extended the period of coverage of the unemployment insurance and modified benefit rates[9]. The observed facts for Uruguay indicate a rise in unemployment insurance requests and in unemployment insurance coverage during the crisis climax (September, 2008 – March, 2009). Thus, as a third countercyclical policy, we simulate a 15% increase in the coverage rate of unemployment insurance.

The three policy response scenarios are simulated together with the crisis scenario (trade shock and external financing shock altogether). A last scenario that simulates the three policy scenarios together with the crisis scenario tries to replicate the main economic facts during the economic crisis.

The simulated scenarios are summarized in the following table.

_____

[9] Benefits were increased the first months of the unemployment period and then gradually decreased.

Table 12. Simulation scenarios

Name	Brief description of scenario	Variable/parameter shocked
	Crisis shocks	
1. International prices (PRICE)	Export price fall in primary activities and food, textiles and leather manufacturing	PWX
	Import price fall in petroleum	PWM
2. External demand (DEMD)	Fall in external demand of basic chemicals, rubber and plastic, metal products and transport	EXD
3. Trade (TRADE)	International prices + External demand	
4. Finance (FIN)	External financing restriction: 48% fall	CAB
5. Crisis (CRISIS)	Trade + Finance	
	Policy response shocks	
6. Government consumption (PUBCON)	Crisis + 11% increase in real public consumption of commodities	CG
7. Public investment (PUBINV)	Crisis + 20% increase in public investment	ITPUB
8. Unemployment benefits (UNBEN)	Crisis + 15% increase in unemployment benefit coverage rate	bdelta
9. Complete policy response (PUBTOT)	Crisis + Pubsp + Pubinv + Unben	

4. Results

We first present and analyze results on main macroeconomic aggregates. Then, we focus on the sectoral impact and the effects on the labor and capital markets. Finally, we analyze the impact of the crisis on households' income and poverty and income distribution.

4.1 Macro results

Table 13 shows results for the main macroeconomic aggregates. The first column presents the base values for national accounts (in millions of Uruguayan pesos), price indices and fiscal variables (as a percentage of GDP). Columns (2) to (6) present variations of these indicators (with respect to the base scenario) for all the crisis scenarios. Finally, columns (7) to (10) present results derived from the full crisis simulation plus the alternative (and full) policy responses presented above.

The global crisis gives a 1.4 % decrease of real GDP, mainly explained by the trade channel. The fall in export and import prices, which were actually the largest external crisis shocks, mainly explain the negative results of the TRADE scenario (see PRICE column in Table 12). The world demand restriction for Uruguay was of a much smaller magnitude, so its effects on macro aggregates would have been practically negligible (DEM column in Table 12). The TRADE simulation provokes a 1.2% reduction of GDP at market prices, a 3.7% reduction of exports, and a 1.5% reduction in fixed investment. The fall in export prices provokes a reduction of exports leading to a decrease in production and factor demand of main export sectors, and therefore leading to a reduction in employment, wages and capital returns. The fall of production in export sectors also leads to a decrease in government indirect tax revenues.

Therefore, government income and savings fall, leading to a reduction in transfers to households (recall that in all the crisis simulations with no policy response we are keeping government consumption fixed). All these facts lead to a decline of household income and savings, consequently reducing private investment (recall we adopted a savings driven closure). Household real consumption keeps stable, because of the fall in consumer prices.

Table 13. Main Macro Indicators by Simulation

	Base	PRICE	DEMD	TRADE	FIN	CRISIS	PUBCON	PUBINV	UNBEN	PUBTOT
National Accounts (million Uruguayan pesos)		Real percentage change with respect to base values								
HH Consumption	304,628	0.4	-0.1	0.3	-0.3	0.0	0.2	-0.1	-0.1	0.0
Fixed Investment	70,330	-1.1	-0.2	-1.5	-1.7	-3.1	-8.8	-3.5	-3.8	-9.4
Government Consumption	46,478	0.0	0.0	0.0	0.0	0.0	11.0	0.0	0.0	11.0
Exports	114,467	-3.6	0.0	-3.7	0.1	-3.6	-4.4	-3.7	-3.7	-4.5
Imports	-115,778	0.8	-0.1	0.5	-0.8	-0.2	-0.6	-0.5	-0.6	-1.0
GDP (market prices)	425,018	-1.1	0.0	-1.2	-0.2	-1.4	-1.1	-1.5	-1.5	-1.3
Net Indirect Taxes	56,450	-2.2	-0.1	-2.3	-0.4	-2.7	-3.0	-2.8	-2.9	-3.2
GDP (factor cost)	368,569	-0.9	0.0	-1.0	-0.2	-1.2	-0.8	-1.3	-1.3	-1.0
Prices (base=100)		Real percentage change with respect to base values								
Consumer Price Index	100	-4.5	-0.1	-4.8	-0.8	-5.4	-3.9	-5.7	-5.8	-4.3
Real Exchange Rate	100	5.5	0.1	5.7	0.6	6.3	5.1	6.5	6.6	5.5
Terms of Trade	100	4.4	-0.1	4.2	-0.3	4.0	4.4	3.8	3.7	4.1
Fiscal (% GDP)		% GDP								
Government savings	7.0	6.4	7.0	6.4	6.9	6.3	5.2	6.2	6.2	5.1
Government consumption	10.9	11.1	10.9	11.1	11.0	11.1	12.3	11.1	11.1	12.3
Government transfers	10.2	9.9	10.2	9.9	10.2	9.8	9.9	9.8	9.8	9.9
Government income	28.1	27.0	28.1	26.9	27.9	26.7	27.2	26.6	26.6	27.0

Source: own results from the CGE model

The full CRISIS scenario leads to slightly worse results. A financial restriction, simulated by a cut in the rest of the world's savings is added to the mechanisms described above. The reduction

of foreign savings has an additional negative effect in investment (see FIN scenario in Table 13). Consequently, the CRISIS scenario leads to a similar reduction of exports than the TRADE scenario, but a stronger reduction of in fixed investment (3.1%), leading to a 1.4% reduction of GDP.[10]

Columns (7) to (10) of Table 13 show the results with alternative policy instruments applied by the Uruguayan government during the crisis. In the PUBCON simulation we replicate the CRISIS scenario, but we simultaneously allow government consumption to increase 11% in real terms. This policy slightly reduces GDP fall (GDP falls by 1.1% while in the CRISIS scenario it fell 1.4%). The increase in government consumption leads to a substantial decrease in government savings (they reach 5.2% of GDP) thus reducing available savings in the economy and consequently, investment (fixed investment falls 8.8%). Another consequence of the increase in government consumption is a lower decline in consumer prices and real exchange rate depreciation (compared to the CRISIS scenario), thus provoking a greater reduction of exports (4.4%).

The PUBINV scenario keeps government consumption fixed and instead allows a 20% increase in public investment. In this case, the increase in public investment tends to crowd out private investment, so total fixed investment falls, slightly more than in the CRISIS scenario. This result derives from the reduction of available savings in the economy (government and household savings decrease, and recall our model closure is savings driven). Note that this result could change in a dynamic setting, if we introduced other options of financing public investment, like foreign borrowing. In that case, the crowd-out effect would not necessarily take place in the short (or medium) run.

The UNBEN scenario keeps government consumption fixed, and allows an increase in unemployment benefits. This reduces government savings and consequently has a negative impact on investment, fact that counteracts the initial positive effect on household income derived from the increase in unemployment transfers. The overall macro effect of the PUBINV and UNBEN is a GDP reduction of 1.5%, very similar to the one of the CRISIS scenario with no policy response.

---

[10] These results are consistent with the short-term impact of the crisis, when GDP, exports and investment declined significantly, as shown in the first chapter.

Finally, the PUBTOT scenario combines the three policy instruments described above (increase in public consumption, public investment and unemployment benefits). The result is a very slight effect on GDP compared to the crisis scenario (-1.3%, vs. -1.4%), although the demand composition varies significantly. This scenario implies an important increase in participation of public consumption and a significant reduction of public savings and overall investment. It also leads to an additional decrease in trade flows (exports and imports) and a lower real depreciation, compared to the CRISIS scenario.

4.2 Sectoral results

Table 14 presents sectoral results from all the simulations. We focus in export, import and value added variations. To facilitate presentation we aggregate sectors in primary, food manufacturing, other manufacturing, construction and services. The complete tables with disaggregated sectors are presented in the Annex.

Table 14. Sectoral results. Value added, export and imports, by simulation (aggregated sectors)

	BASE	Crisis Scenarios					Crisis + Policy Scenarios			
		PRICE	DEM	TRADE	FIN	CRISIS	PUBCON	PUBINV	UNBEN	PUBTOT
Value Added										
(million Uruguayan pesos)		*Real percentage change with respect to base values*								
Primary	32,444	-1.9	0.0	-1.9	0.0	-2.0	-1.9	-2.0	-2.0	-2.0
Food Manufacturing	18,913	-3.6	0.0	-3.6	0.0	-3.5	-3.4	-3.5	-3.5	-3.4
Other Manufacturing	27,886	0.1	-0.1	-0.2	-0.4	-0.4	-1.5	-0.7	-0.8	-1.8
Construction	19,296	0.1	-0.1	-0.1	-1.2	-1.4	-5.6	-1.7	-1.9	-6.1
Public services, education and health	38,843	-0.2	0.0	-0.3	-0.1	-0.4	5.6	-0.4	-0.4	5.5
Other services	168,353	-1.0	0.0	-1.0	-0.1	-1.2	-1.5	-1.2	-1.3	-1.6
Exports										
(million Uruguayan pesos)		*Real percentage change with respect to base values*								
Primary	8,204	-4.2	0.0	-4.2	0.1	-4.1	-4.4	-4.1	-4.1	-4.4
Food Manufacturing	44,891	-5.0	0.0	-4.9	0.3	-4.7	-5.1	-4.7	-4.6	-5.0
Other Manufacturing	39,212	-5.8	-0.1	-5.9	0.0	-5.9	-6.9	-6.0	-6.1	-7.1
Public services, education and health	107	1.7	0.1	1.8	0.3	2.1	6.6	2.3	2.3	6.8
Other services	22,054	3.3	-0.2	2.9	-0.1	3.0	1.5	2.7	2.5	1.0
Imports										
(million Uruguayan pesos)		*Real percentage change with respect to base values*								
Primary	23,398	7.8	-0.1	7.7	-0.4	7.3	6.7	7.1	7.0	6.5
Food Manufacturing	8,234	-3.0	-0.1	-3.2	-0.6	-3.7	-2.8	-4.0	-4.0	-3.1
Other Manufacturing	69,917	-0.3	-0.1	-0.6	-0.9	-1.4	-2.2	-1.8	-1.9	-2.7
Other services	14,229	-3.5	-0.2	-3.8	-0.7	-4.4	-3.7	-4.7	-4.9	-4.1

Source: own results from the CGE model

In the TRADE scenario, production and exports of the primary and food manufacturing sectors fall, due to the reduction of prices. The most negatively affected exports (in volume) would be dairy products, basic textiles, leather products, rice processing, cereals and the oil refinery. While exports of other manufactures also fall, total production keeps practically stable, as domestic demand is a major final destination of this sector. On the other hand, the real exchange rate depreciation has a positive impact in export of services, which tend to increase, more than compensating the negative impact of the reduction of the foreign demand. The fall in international prices also leads to an increase in imports in the primary sector, entirely explained by the increase of imports in the mining sector (linked to the fall of oil prices) (see Table A.4). The external balance restriction imposes an import reduction in all the other aggregated sectors. The fall in exports leads to a decline in production of all the above sectors except the oil refinery, which actually increases production oriented to the domestic market. This is explained by the fall in prices of crude oil, a main input of the sector.

The full CRISIS scenario also shows a negative impact on production of the construction sector and a major decline in imports of other manufactures. Both facts are linked to the fall in investment, provoked by the foreign savings restriction (see FIN scenario).

When we allow public consumption to increase in response to the crisis (PUBCON scenario), the major changes with respect to the CRISIS scenario are a decline in production of the construction sector, a greater reduction of production and imports of other manufactures, and an increase in value added of public services, education and health. The first two facts are a consequence of the significant reduction of investment, derived from the reduction of government savings. On the other hand, the government consumption expansion derives in the significant increase in public services, education and health, as public consumption is concentrated in these activities. Finally, exports of primary and manufacturing sectors decline more than in the CRISIS scenario, linked to the lower real depreciation.

In contrast, the scenario where we allow public investment in to increase (PUBINV scenario), sectoral results are very similar to the ones of the CRISIS scenario. This fact is linked to the relatively low participation of public investment in total aggregate demand, and the crowd out effect on private investment. The scenario of increased unemployment benefits (UNBEN scenario) shows similar results, mostly derived from the fall in government savings and consequently, investment.

Finally, when we simultaneously allow the three public responses to the crisis, the sectoral results are in general worse than the scenario with only public consumption increase. In particular, we find a greater decline of the construction sector, derived from a greater fall in investment. This last fact is linked to the crowd out effect and the additional reduction of government savings linked to the increase in transfers.

4.3 Factor market results

Table 15 displays the labor demand, wages and unemployment variations under the different simulated scenarios, as well as variations in returns to capital. Labor indicators are presented by type (considering skill and being employed in the agriculture sector).

Table 15. Factor Market results. Labor demand, wages, unemployment and returns to capital, by simulation

	Crisis Scenarios					Crisis + Policy Scenarios			
	PRICE	DEM	TRADE	FIN	CRISIS	PUBCON	PUBINV	UNBEN	PUBTOT
Labour demand (mill Ury pesos)	*Percentage change with respect to base values*								
Skilled labour, agriculture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Semi-skilled labour, agriculture	-2.3	0.0	-2.4	-0.2	-2.6	-2.3	-2.6	-2.7	-2.4
Unskilled labour, agriculture	-5.5	0.0	-5.6	-0.1	-5.7	-5.5	-5.8	-5.8	-5.6
Skilled labour, non agriculture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Semi -skilled labour, non agriculture	-1.9	-0.1	-2.1	-0.5	-2.5	-1.7	-2.7	-2.8	-2.0
Unskilled labour, non agriculture	-1.8	-0.1	-2.0	-0.6	-2.6	-2.5	-2.8	-2.9	-2.9
Wage rate (base=100)	*Percentage change with respect to base values*								
Skilled labour, agriculture	-4.8	-0.1	-4.9	-0.4	-5.3	-5.3	-5.4	-5.5	-5.5
Semi-skilled labour, agriculture	-2.7	0.0	-2.8	-0.2	-2.9	-2.7	-3.0	-3.0	-2.7
Unskilled labour, agriculture	-6.9	0.0	-7.0	-0.2	-7.1	-6.9	-7.2	-7.2	-7.0
Skilled labour, non agriculture	-4.3	-0.3	-4.9	-1.4	-6.1	0.6	-6.6	-6.9	-0.2
Semi -skilled labour, non agriculture	-2.0	-0.1	-2.2	-0.5	-2.6	-1.9	-2.8	-2.9	-2.1
Unskilled labour, non agriculture	-1.6	-0.1	-1.8	-0.6	-2.3	-2.2	-2.4	-2.5	-2.5
Unemployment rate	*Percentage change with respect to base values*								
Semi-skilled labour, agriculture	2.1	0.0	2.1	0.1	2.3	2.0	2.3	2.4	2.1
Unskilled labour, agriculture	5.1	0.0	5.2	0.1	5.3	5.2	5.4	5.4	5.2
Semi -skilled labour, non agriculture	1.6	0.1	1.8	0.4	2.2	1.5	2.4	2.5	1.8
Unskilled labour, non agriculture	1.5	0.1	1.7	0.5	2.3	2.2	2.5	2.6	2.5
	Percentage change with respect to base values								
Capital returns	-4.4	-0.2	-4.8	-1.0	-5.7	-4.7	-6.2	-6.3	-5.3

Source: own results from CGE model

The fall of international prices ok key Uruguayan exports leads to a decline of labor demand, of semi skilled and unskilled workers, which is somewhat more pronounced in the agriculture sector.[11] This is consistent with the fact that primary and food manufacturing sector (strongly

---

11 Recall we assume no unemployment of skilled labour, so adjustments in this segment are reflected entirely in wage variations.

linked to the agriculture sector) are the most affected by the international price decline. Wages (in terms of the nominal exchange rate) of all types of labor also fall, but the reduction is particularly important in the case of skilled workers (in which all the adjustment is via wages) and unskilled workers of the agriculture sector, in which case the reduction is of a greater magnitude than the one of the consumer prices. Reduction of labor demand leads to an increase in unemployment rates, particularly significant in the case of unskilled agriculture workers (5.5 percentage points). In sum, although the fall in export and import prices negatively affects all types of workers, the most affected would be unskilled workers of the agriculture sector, as they would experience a significant reduction of wages and a large increase in unemployment. The main trade partners´ demand restriction has small negative impact, mainly on non-agriculture type of labor (recall demand restriction is channeled through manufactures and services).

The cut in foreign savings has some negative impacts in labor demand and wages, especially in non-agriculture labor. Unemployment slightly increases between semi skilled and unskilled workers, while skilled non-agriculture workers are negatively affected by a real wage rate reduction. The full CRISIS scenario has negative consequences in all types of labor and capital. Unskilled workers in agriculture are the most affected (via reduction of wages and increase in unemployment). Semi skilled workers as well as unskilled workers in non-agriculture sectors are mostly affected by increase in unemployment. The negative impact for skilled workers is through a reduction of real wages.[12] Finally, capital returns fall by 5.7%.

The increase in public consumption response has a strong positive impact on remunerations of skilled non-agriculture workers. This is a consequence of the composition of government consumption, mainly directed to public services, education and health, which are all skilled intensive, especially the last two (see table A.1). It also has a positive effect on semi skilled non-agriculture workers, reducing unemployment growth and decline of wages with respect to the crisis scenario. As for all the other labor types, public consumption expansion has practically no effect, compared to the CRISIS scenario (see Table 15). An increase in public investment and an increase in unemployment benefits slightly reinforce the negative effects of the CRISIS, for all types of workers, linked to the negative total investment effect. So the simultaneous implementation of the three policies actually worsens (slightly) labor demand

---

12 Again, this result is linked to the assumption of no unemployment of skilled workers. In Uruguay, unemployment of skilled workers is very low, probably linked to frictional unemployment.

and unemployment of unskilled non-agriculture workers, and mostly benefits skilled and semiskilled non agriculture workers.

4.3 Household income results

The global crisis has a negative effect on households' income (in terms of nominal exchange rate), disregarding the income quintile. The fall is higher for household belonging to the poorest quintile, but the less harmed households are in the upper tier but in the middle segments. Again, the main negative shock is through the trade channel. Under the trade shock scenario, income falls 5.3% for households belonging to the poorest quintile and 4.7% for richest households. Poorest households (the ones of the first quintile) are the ones that face a real income reduction, as their income decline is stronger than the consumer price fall. The negative impact on poorest households is related to the higher impact of this scenario on unskilled wages in agriculture sector, where poorest households are concentrated. On the contrary, the external financing scenario affects richer households stronger, because under this scenario, it is skilled wages and capital that are more affected. The effect on income under this scenario is around 1% for all quintiles, but implies a real income fall in all cases, as consumer prices fall very slightly in this scenario. The combination of both shocks (CRISIS scenario), gives a real income fall in the poorest and richest households, but particularly strong in the poorest quintile. Thus we might expect an increase in poverty (and perhaps, inequality).

Of the three policies implemented by the government, only the increase in public consumption mitigates the fall in income for all households, although the benefit is higher for richer households. We should keep in mind that the public consumption increase goes to sectors that use more intensively skilled labor. An increase in public investment and an increase in unemployment benefits actually reinforce (slightly) the fall in households' income, and again the most harmed households are the poorest ones.

The net result of the implementation of the three policies, compared to the crisis scenario without policy response, is a lower fall in income, provoked by the increase in public consumption, a policy that despite being effective in counteracting the negative effects of the crisis, is strictly regressive (the benefit increases along the income distribution).

Table 16. Household income results

	Crisis Scenarios					Crisis + Policy Scenarios			
	PRICE	DEM	TRADE	FIN	CRISIS	PUBCON	PUBINV	UNBEN	PUBTOT
	Percentage change with respect to base values								
Total income									
HH-1	-4.9	-0.2	-5.3	-0.9	-6.0	-5.0	-6.4	-6.5	-5.5
HH-2	-4.4	-0.2	-4.8	-1.0	-5.6	-4.4	-6.0	-6.1	-4.9
HH-3	-4.2	-0.2	-4.6	-1.0	-5.5	-4.1	-5.8	-5.9	-4.6
HH-4	-4.2	-0.2	-4.6	-1.0	-5.4	-3.8	-5.8	-6.0	-4.3
HH-5	-4.3	-0.2	-4.7	-1.1	-5.6	-3.7	-6.0	-6.2	-4.3
Labor income									
HH-1	-5.2	-0.2	-5.6	-0.9	-6.4	-5.5	-6.7	-6.9	-6.0
HH-2	-4.5	-0.2	-4.9	-1.0	-5.7	-4.6	-6.1	-6.3	-5.1
HH-3	-4.2	-0.2	-4.6	-1.1	-5.5	-3.9	-5.8	-6.0	-4.5
HH-4	-4.0	-0.2	-4.5	-1.1	-5.4	-3.4	-5.8	-6.0	-4.0
HH-5	-4.1	-0.2	-4.6	-1.2	-5.5	-2.3	-6.0	-6.2	-3.0

Source: own results from CGE model

4.5 Poverty and inequality results

In order to analyze the effect of some of the scenarios on poverty and income distribution, we complemented the analysis with microsimulations. We apply the methodology proposed in Vos et al (2006). It is a top-down approach that takes the results of the CGE model on unemployment rates, employment, wage rates, returns to capital and consumer prices and feeds them into a microsimulation module with data from Continuous Household Survey for Uruguay for 2005. Table 17 reports the value of poverty headcount, extreme poverty headcount and Gini index for benchmark and the effects of the crisis scenario, the policy response of increase in public spending and the scenario with the three policy responses.

The financial crisis affects poverty through two opposite effects. On one hand, as presented before, income falls. However, on the other hand, consumer prices fall, and so does poverty lines. The net result is an increase in extreme poverty by 7%, and a slight fall in poverty. The negative effect of a fall in income for poorest households prevails over the positive effect of a fall in consumer prices. The already poor population is the most affected by the crisis. The effect on income distribution is negative but slight.

Table 17. Effects on poverty and income distribution

	Value 2005	Effect of scenarios (% change)		
		CRISIS	CRISISG	CRISIST
Poverty headcount	29.23	-2.2	-0.6	-0.8
Extreme poverty headcount	3.78	6.9	8.6	9.2
Gini index	0.452	0.6	1.4	1.4

Source: Microsimulation results

Public responses do not contribute to improve poverty and income distribution indicators. As a matter of fact, all poverty and inequality indicators worsen with respect to the scenario of the crisis with no policy response. Extreme poverty increases more and poverty falls less. Even though the increase in public consumption policy has a positive effect on private income, under this scenario prices fall less, and this explains the worsening of poverty indicators. This policy turns out to be regressive, and under this scenario income distribution worsens.

5. Summary and concluding remarks

This paper uses a static computable general equilibrium model linked to a microsimulation model to analyze how the global crisis and different adopted policy responses may have affected the Uruguayan economy. The focus is on the trade and foreign flows channel, since they are the most important mechanisms through which the global crisis affected the Uruguayan economy. In this way, we mainly simulated the crisis through price reduction of key export and import sectors; a demand reduction coming from our main trade partners (Argentina and Brazil); and a foreign savings restriction via a cut in the current account balance. As well as running the full crisis simulation, we also analyzed each channel separately, in order to disentangle their effects.

We then simulated the full crisis scenario jointly with three policy responses (increase public consumption by 11%, increase in public investment by 20%, and increase in unemployment benefits (15% coverage rate)). In the same fashion as in the crisis simulation we opted to run the simultaneous three policy responses as well as each one separately.

In general, we find the crisis had a strong impact on exports and fixed investment, result that is consistent with what actually happened in the Uruguayan economy during the first year after the beginning of the crisis[13]. Reduction of exports derived from the simulated price and demand shocks and the foreign savings restriction would lead to a 1.4% reduction of GDP. Poorest households would be the most affected, as they face a stronger reduction in real wages and a rise in unemployment. This is linked to the fact that output contraction is mainly

---

[13] Between the third quarter of 2008 and the third quarter of 2009, exports fell by 15% and private investment declined 2.7%.

focused on trade sectors, especially those related to primary and food manufactures, which are mostly unskilled labor intensive.

The global crisis increases extreme poverty. The negative effect of a fall in income for poorest households is not counteracted by the fall in consumer prices. However, this last fact does seem to positively affect poverty headcount, which actually falls under the crisis scenario. Decline in prices would have a positive effect on households below (but near) the poverty line, not so much affected by reduction of wages and rise of unemployment.

It seems that the policy response based on increasing public current consumption does (moderately) counteract some negative impacts of the crisis, but it is regressive, as the benefits increase along the income distribution. Besides, it is not directed towards the most harmed by the crisis (unskilled, mainly agriculture and food manufacturing workers). Government consumption is directed to skilled labor-intensive activities, so skilled workers are the most benefited with this type of policy. A general increase in public investment and unemployment benefits do not seem to act as countercyclical policies.

Nevertheless, we have to remark that we have not analyzed other options of financing the increased government consumption, investment or transfers. Increased investment could have been financed by increasing external public debt, fact that was actually exploited by the Uruguayan government, as the economy had substantially lowered the ratio debt/GDP during the years prior to the global crisis. In this case, the crowd out effects and the savings restriction may not act in the short and medium run, and results could be certainly different.

Finally, simulation results suggest that poorer households are the most harmed by this type of crisis. This highlights the importance of counting with specific policies aimed at counteracting the negative impact on this population.

References

Blanchflower, D. and A. Oswald (1995). "An Introduction to the Wage Curve". *The Journal of Economic Perspectives*. Volume 9, Issue 3 pp. 153-167.

Bucheli, M. and C. González (2007) "An Estimation of the Wage Curve for Uruguay",Working Paper 11/07, Department of Economics, Faculty of Social Sciences, UdelaR.

Carneiro, F.G. and Arbache, J.S. (2003) "The Impacts of Trade on the Brazilian Labor Market: A CGE Model Approach", World Development Vol. 31, No. 9, pp. 1581–1595.

Cassoni, A. (1998). "Estimaciones econométricas de elasticidades de sustitución entre factores de producción", in: Impacto de la Apertura Comercial del MERCOSUR sobre el mercado de trabajo uruguayo. Documento N° 4. CINVE - GEOPS

ECLAC (2009). *La reacción de los gobiernos de las Américas frente a la crisis internacional: una presentación sintética de las medidas de política anunciadas hasta el 31 de agosto de 2009,* press release, http://www.cepal.org/publicaciones/xml/5/37395/2009-659-LareacciondelosgobiernosdelasAmericas-31agosto-WEB.pdf

Decaluwé, Bernard, A. Patry, Luc Savard, and Eric Thorbecke, 1999. "Poverty Analysis within a General Equilibrium Framework," Working Paper No. 99-09, African Economic Research Consortium.

Decaluwe B. Lemelin, A. Maissonave, H. Robichaud, V. (2009). "The PEP Standard Computable General Equilibrium Model. Single country, Static Version, PEP-1-1", Second revised edition, October 2009, Poverty and Economic Policy (PEP) Network.

Decaluwe B. Lemelin, A. Maissonave, H. Robichaud, V. (2010). "The PEP Standard Computable General Equilibrium Model. Single country, Recursive Dynamic Version, PEP-1-t", January 2010, Poverty and Economic Policy (PEP) Network.

Flores, M (2008). *Elasticidades de Armington: Discusión teórico-metodológica y estimaciones para Uruguay.* (Licenciatura en Economía), UDELAR - Universidad de la República - Facultad de Ciencias Económicas.

Freund, C. (2009). "The Trade Response to Global Downturns", in: Baldwin, R. (ed.). *The Great Trade Collapse: Causes, Consequences and Prospects*, CEPR, Voxeu, London.

González, V. (2003). *La expansión del mercado interno vía la redistribución de los ingresos: un ejercicio de simulación para la economía uruguaya.* (Licenciatura en Economía), UDELAR - Universidad de la República - Facultad de Ciencias Económicas.

Terra, M.I, Bucheli, M., Laens, S., Estrades, C. "Poverty assessment from integration and employment policies in Uruguay: A CGE modelling analysis", in: de Miguel, C., Durán Lima, J., Giordano, P., Guzmán, J., Schuschny, A., Watanuki, M. (eds.), *Modeling Public Policies in Latin America and the Caribbean*, ECLAC, IADB: Santiago de Chile.

Vos R., E. Ganuza, S. Morley, and S. Robinson (2006), *Who Gains from Free Trade? Export-led-Growth, Inequality and Poverty in Latin America*, London: Routledge.

Willem te Verde, D. (2008). "The global financial crisis and developing countries. Which countries are at risk and what can be done?", ODI Background Note, Overseas Development Institute, October 2008.

World Bank (2009). "Swimming Against the Tide: How Developing Countries Are Coping with the Global Crisis", Background Paper prepared by World Bank Staff for the G20 Finance Ministers and Central Bank Governors Meeting, Horsham, United Kingdom on March 13-14, 2009.

Annex
Table A 1. Value added and exports structure in Uruguay at the baseline (2005)

		Value added	Exports	Skilled labor	Semi skilled labor	Unskilled labor	Capital	Total
Primary	Rice	0.6	0.0	0.0	2.5	19.8	77.7	100
	Other cereals	0.8	3.2	4.9	9.9	20.6	64.6	100
	Vegetables	0.5	0.0	2.7	28.3	49.3	19.8	100
	Fruit	0.6	1.5	5.1	13.8	27.1	54.1	100
	Raw milk	1.1	0.0	0.0	10.3	61.5	28.2	100
	Livestock	5.6	0.7	4.0	11.6	20.4	64.0	100
	Poultry	0.3	0.3	6.9	39.4	39.1	14.6	100
	Forestry	0.6	1.2	1.8	4.5	9.4	84.4	100
	Fishing	0.3	0.1	6.1	27.5	25.0	41.4	100
	Mining	0.2	0.1	1.3	7.7	9.0	82.0	100
Food Manufacturing	Meat processing	1.5	19.2	2.0	17.0	16.3	64.7	100
	Fish products	0.5	2.9	0.5	20.5	15.5	63.4	100
	Other food industry	0.1	0.1	2.8	15.6	11.1	70.4	100
	Vegetable oils	0.0	0.0	6.1	7.6	20.1	66.2	100
	Dairy products	1.0	5.2	3.9	28.4	14.7	53.0	100
	Rice processing	0.2	4.2	3.9	26.6	17.5	52.0	100
	Mills	0.1	0.1	0.0	41.2	45.9	12.9	100
	Animal food	0.1	0.1	2.4	11.8	17.2	68.5	100
	Bread and pasta	0.7	0.1	7.9	45.5	35.3	11.4	100
	Sugar	1.2	5.0	1.3	6.1	3.6	88.9	100
	Wine	0.1	0.1	7.7	25.5	30.3	36.5	100
	Beverages from barley	0.2	1.6	1.9	23.2	8.4	66.5	100
	Other beverages	0.4	0.0	5.4	19.8	9.7	65.0	100
	Tobacco	0.1	0.5	8.1	28.5	12.6	50.8	100
Other manufacturing	Basic Textiles	0.7	3.9	8.7	14.0	7.0	70.3	100
	Other textiles	0.1	0.6	4.4	60.5	30.4	4.7	100
	Clothing	0.7	1.4	4.9	33.2	20.5	41.4	100
	Leather products	0.3	5.2	0.0	35.1	12.6	52.2	100
	Footwear	0.1	0.1	1.9	46.0	40.3	11.8	100
	Wood	0.7	1.8	1.9	38.4	29.7	30.0	100
	Paper	0.3	1.1	8.3	34.6	19.1	37.9	100
	Press	0.5	0.3	17.2	35.6	9.6	37.6	100
	Oil refinery	1.0	6.4	7.1	10.1	1.6	81.2	100
	Plaguicides	0.1	0.3	10.1	19.8	9.9	60.2	100
	Laboratories	0.4	1.3	27.6	34.3	6.2	31.9	100
	Basic Chemicals	0.6	2.8	10.0	25.0	9.1	55.9	100
	Rubber and plastic	0.6	3.0	6.8	39.6	11.6	42.0	100
	Mineral products	0.5	0.5	8.8	29.6	28.2	33.4	100
	Metal products and machinery	1.8	2.8	6.1	35.3	12.9	45.7	100
	Vehicles	0.3	1.6	17.0	29.4	16.5	37.1	100
	Other manufactures	0.5	1.0	5.0	51.3	28.7	15.0	100
Services	Electricity, gas and water	3.3	0.3	5.4	9.9	5.1	79.6	100
	Construction	6.3	0.0	5.5	26.4	34.8	33.3	100
	Commerce	13.7	0.0	7.4	44.1	18.4	30.0	100
	Hotels and restaurants	2.7	0.1	5.1	43.7	23.9	27.3	100
	Other transport	3.2	1.1	2.3	45.1	25.7	27.0	100
	Passenger transport/cargo shipping	2.6	9.8	6.2	30.7	6.5	56.6	100
	Communications	3.5	0.0	9.5	19.2	4.3	67.0	100
	Financial services	5.7	4.8	16.7	27.8	1.8	53.8	100
	Real estate	12.1	0.1	0.4	2.5	0.2	96.9	100
	Services to enterprises	4.0	2.4	52.2	30.3	6.1	11.4	100
	Public services	4.6	0.1	27.5	48.8	22.5	1.2	100
	Education	3.3	0.0	51.1	35.7	5.7	7.4	100
	Health	4.8	0.0	48.3	30.3	7.0	14.4	100
	Other services	3.1	0.0	12.0	35.7	14.0	38.2	100
	Services to Households	1.4	0.0	0.6	37.8	61.4	0.2	100
	Total	100.0	100.0	12.3	27.1	14.9	45.7	100

Source: SAM

Table A.2. Production results. Variations with respect to base scenario, by simulation (%, real)

	Crisis Scenarios					Crisis + Policy Scenarios			
	PRICE	DEM	TRADE	FIN	CRISIS	PUBCON	PUBINV	UNBEN	PUBTOT
Rice	-5,5	0,0	-5,5	0,2	-5,3	-5,6	-5,3	-5,2	-5,5
Other cereals	-5,8	0,0	-5,8	-0,3	-6,1	-6,9	-6,2	-6,3	-7,0
Vegetables	10,7	-0,2	10,2	-1,1	9,3	12,1	8,8	8,6	11,4
Fruit	4,4	0,0	4,4	-0,2	4,2	4,5	4,2	4,1	4,4
Milk	-19,3	0,0	-19,3	0,0	-19,4	-19,2	-19,5	-19,5	-19,3
Livestock	0,0	0,0	0,1	0,1	0,1	0,0	0,1	0,1	0,1
Poultry	1,2	0,0	1,1	-0,1	1,1	1,7	1,0	1,0	1,7
Forestry	2,2	0,0	2,2	0,0	2,2	2,3	2,2	2,2	2,2
Fishing	1,3	0,0	1,4	0,3	1,6	1,2	1,7	1,8	1,4
Mining	-7,5	0,0	-7,5	0,0	-7,4	-7,8	-7,4	-7,4	-7,8
Meat processing	1,7	0,0	1,8	0,1	1,8	1,8	1,9	1,9	1,9
Fish products	-0,7	0,1	-0,6	0,3	-0,3	-0,8	-0,2	-0,2	-0,6
Other food industry	0,8	0,0	0,7	0,0	0,7	1,0	0,7	0,7	0,9
Vegetable oils	2,5	0,0	2,4	-0,1	2,3	3,1	2,3	2,2	3,0
Dairy products	-22,7	0,0	-22,8	0,1	-22,8	-22,6	-22,8	-22,8	-22,7
Rice processing	-7,8	0,0	-7,7	0,2	-7,5	-7,9	-7,4	-7,4	-7,8
Mills	0,6	-0,1	0,5	-0,2	0,4	1,7	0,2	0,2	1,6
Animal food	-1,9	0,0	-1,9	0,0	-1,9	-1,1	-2,0	-2,0	-1,1
Bread and pasta	0,6	-0,1	0,5	-0,3	0,3	1,2	0,1	0,1	1,0
Sugar	-1,2	0,0	-1,1	0,1	-1,1	-1,2	-1,0	-1,0	-1,2
Wine	1,6	-0,1	1,5	-0,3	1,3	2,1	1,1	1,1	1,9
Beverages from barley	2,0	0,1	2,1	0,3	2,4	2,1	2,5	2,6	2,3
Other beverages	-0,2	-0,1	-0,4	-0,2	-0,6	-0,2	-0,7	-0,7	-0,4
Tobacco	1,2	0,0	1,2	0,0	1,2	1,3	1,2	1,2	1,2
Basic Textiles	-20,0	0,0	-19,9	0,2	-19,8	-20,2	-19,7	-19,7	-20,1
Other textiles	2,4	0,0	2,3	0,0	2,3	1,7	2,3	2,3	1,6
Clothing	0,0	0,0	-0,1	-0,1	-0,2	0,2	-0,2	-0,2	0,1
Leather products	-15,4	0,1	-15,2	0,6	-14,8	-15,7	-14,6	-14,5	-15,4
Footwear	-3,7	-0,3	-4,3	-1,4	-5,5	-1,8	-6,1	-6,2	-2,6
Wood	2,2	0,0	2,2	-0,1	2,1	0,7	2,1	2,1	0,6
Paper	3,0	0,0	3,1	0,2	3,3	3,1	3,3	3,4	3,2
Press	-0,9	0,0	-1,0	-0,1	-1,1	-0,8	-1,2	-1,2	-0,9
Oil refinery	6,4	-0,1	6,3	-0,3	6,0	5,9	5,9	5,9	5,7
Plaguicides	-3,1	-0,1	-3,2	-0,3	-3,5	-3,4	-3,6	-3,7	-3,6
Laboratories	1,6	0,0	1,7	0,2	2,0	1,5	2,0	2,1	1,7
Basic Chemicals	3,5	-0,4	2,8	-0,6	2,6	1,4	1,8	1,5	0,4
Rubber and plastic	1,6	-0,3	0,8	-0,7	0,5	-0,7	-0,2	-0,5	-1,7
Mineral products	11,5	-0,1	11,3	-1,1	10,2	6,4	10,0	9,8	6,0
Metal products	0,3	-0,3	-0,3	-0,9	-1,0	-3,1	-1,5	-1,8	-3,9
Vehicles	1,1	0,0	1,1	0,0	1,1	-0,4	1,1	1,1	-0,4
Other manufactures	0,3	-0,1	0,2	-0,4	-0,2	-0,8	-0,3	-0,4	-1,0
Electricity, gas and water	0,5	0,0	0,4	-0,1	0,3	0,6	0,2	0,2	0,6
Construction	0,1	-0,1	-0,1	-1,2	-1,4	-5,6	-1,7	-1,9	-6,1
Commerce	-5,1	0,0	-5,1	-0,1	-5,3	-6,4	-5,3	-5,3	-6,4
Hotels and restaurants	-0,4	-0,1	-0,6	-0,3	-0,8	-0,3	-1,0	-1,0	-0,5
Other transport	5,3	0,0	5,1	-0,2	4,9	5,1	4,8	4,8	5,0
Passenger transport cargo shipping	2,8	-0,3	2,3	-0,3	2,2	1,0	1,7	1,4	0,2
Comunications	-0,5	0,0	-0,5	-0,1	-0,7	-0,7	-0,7	-0,8	-0,7
Financial services	-0,2	0,0	-0,2	0,0	-0,2	-0,4	-0,2	-0,2	-0,4
Real estate	-0,1	0,0	-0,1	0,0	-0,1	-0,1	-0,1	-0,1	-0,1
Services to enterprices	-0,2	0,0	-0,2	-0,3	-0,5	-2,3	-0,6	-0,6	-2,4
Public services	-0,3	0,0	-0,3	-0,1	-0,4	7,7	-0,4	-0,4	7,7
Education	-0,1	0,0	-0,1	-0,1	-0,2	6,5	-0,2	-0,2	6,5
Health	-0,3	0,0	-0,3	-0,1	-0,5	2,9	-0,5	-0,5	2,9
Other services	-0,6	0,0	-0,7	-0,2	-0,9	-0,4	-1,0	-1,0	-0,5
Services to households	-1,2	-0,1	-1,4	-0,4	-1,8	-0,8	-2,0	-2,0	-1,1

Table A.3. Exports results. Variations with respect to base scenario, by simulation (%, real)

	Crisis Scenarios					Crisis + Policy Scenarios			
	PRICE	DEM	TRADE	FIN	CRISIS	PUBCON	PUBINV	UNBEN	PUBTOT
Rice	6,0	0,0	6,1	0,1	6,2	6,0	6,3	6,3	6,1
Other cereals	-14,5	0,0	-14,5	0,0	-14,5	-15,0	-14,5	-14,5	-15,0
Vegetables	10,6	-0,1	10,3	-0,5	9,9	11,4	9,7	9,6	11,1
Fruit	4,9	0,0	4,9	0,1	5,0	4,9	5,1	5,1	5,0
Livestock	3,0	0,0	3,0	0,1	3,2	3,0	3,2	3,2	3,1
Poultry	3,1	0,0	3,1	0,1	3,3	3,4	3,3	3,3	3,5
Forestry	3,6	0,0	3,7	0,2	3,9	3,6	3,9	4,0	3,7
Fishing	6,2	0,1	6,3	0,4	6,7	6,0	6,9	7,0	6,2
Mining	8,2	0,0	8,4	0,3	8,6	8,2	8,7	8,8	8,3
Meat processing	2,0	0,0	2,1	0,2	2,3	2,0	2,4	2,4	2,1
Fish products	-1,0	0,1	-0,8	0,4	-0,5	-1,1	-0,4	-0,3	-0,9
Other food industry	2,0	0,0	2,1	0,3	2,4	2,0	2,5	2,5	2,1
Vegetable oils	3,3	0,0	3,3	0,2	3,5	3,6	3,6	3,6	3,6
Dairy products	-36,9	0,0	-36,9	0,3	-36,8	-37,0	-36,7	-36,7	-36,9
Rice processing	-8,7	0,0	-8,6	0,3	-8,3	-8,9	-8,2	-8,2	-8,7
Mills	2,5	0,0	2,5	0,2	2,7	3,5	2,7	2,7	3,6
Animal food	0,9	0,0	1,0	0,3	1,2	1,5	1,3	1,3	1,6
Bread and pasta	2,3	0,0	2,3	0,1	2,5	2,6	2,5	2,5	2,6
Sugar	-1,8	0,0	-1,7	0,2	-1,6	-1,9	-1,5	-1,5	-1,8
Wine	3,2	0,0	3,2	0,2	3,4	3,4	3,4	3,4	3,5
Beverages from barley	2,6	0,1	2,7	0,4	3,1	2,7	3,3	3,4	2,9
Other beverages	1,6	0,0	1,6	0,2	1,8	1,3	1,8	1,9	1,4
Tobacco	2,2	0,0	2,3	0,3	2,5	2,1	2,6	2,7	2,2
Basic Textiles	-25,3	0,1	-25,2	0,3	-25,0	-25,6	-24,9	-24,9	-25,5
Other textiles	2,9	0,0	3,0	0,2	3,1	2,3	3,2	3,2	2,4
Clothing	1,1	0,0	1,2	0,2	1,4	1,0	1,5	1,5	1,2
Leather products	-15,7	0,1	-15,5	0,6	-15,0	-16,0	-14,8	-14,8	-15,7
Footwear	-1,6	-0,2	-2,0	-0,7	-2,5	-0,4	-2,9	-3,0	-0,7
Wood	3,0	0,1	3,1	0,3	3,3	2,1	3,4	3,4	2,2
Paper	4,1	0,1	4,3	0,4	4,6	4,0	4,8	4,8	4,2
Press	1,0	0,0	1,1	0,2	1,3	0,7	1,3	1,4	0,8
Oil refinery	-10,9	0,0	-10,8	0,0	-10,8	-11,2	-10,7	-10,7	-11,2
Plaguicides	-0,8	0,0	-0,9	0,0	-0,9	-1,2	-0,9	-1,0	-1,3
Laboratories	2,5	0,1	2,7	0,4	3,1	1,9	3,3	3,3	2,2
Basic Chemicals	4,0	-0,5	3,0	-0,7	2,8	1,2	1,8	1,3	-0,2
Rubber and plastic	2,2	-0,5	1,3	-0,8	1,0	-0,5	0,0	-0,5	-2,0
Mineral products	16,0	0,0	16,0	-0,4	15,6	12,7	15,6	15,5	12,5
Metal products and machinery	1,5	-0,4	0,7	-0,9	0,2	-1,6	-0,6	-1,0	-2,8
Vehicles	2,0	0,0	2,1	0,3	2,3	0,9	2,4	2,5	1,0
Other manufactures	1,6	0,0	1,6	0,0	1,6	0,8	1,6	1,6	0,8
Electricity, gas and water	3,7	0,1	3,9	0,4	4,2	3,2	4,4	4,5	3,4
Commerce	0,5	0,0	0,5	0,2	0,7	-0,2	0,7	0,8	-0,1
Hotels and restaurants	1,4	0,0	1,4	0,1	1,5	1,3	1,5	1,6	1,4
Other transport	6,9	0,0	6,9	0,1	7,0	6,7	7,1	7,1	6,8
Passenger transport and cargo shipping	4,2	-0,4	3,4	-0,5	3,3	1,8	2,5	2,1	0,6
Comunications	1,5	0,1	1,6	0,4	1,9	0,9	2,1	2,1	1,1
Financial services	1,5	0,1	1,6	0,4	2,0	0,6	2,1	2,2	0,8
Real estate	2,2	0,1	2,5	0,6	3,0	2,2	3,3	3,4	2,5
Services to enterprises	1,9	0,1	2,0	0,3	2,3	-0,6	2,4	2,5	-0,4
Public services	1,7	0,1	1,8	0,3	2,1	6,6	2,3	2,3	6,8
Other services	1,4	0,0	1,4	0,2	1,6	1,1	1,7	1,8	1,2

Table A.4. Imports results. Variations with respect to base scenario, by simulation (%, real)

	Crisis Scenarios					Crisis + Policy Scenarios			
	PRICE	DEM	TRADE	FIN	CRISIS	PUBCON	PUBINV	UNBEN	PUBTOT
Rice	-18,6	0,0	-18,6	0,2	-18,5	-18,7	-18,4	-18,4	-18,7
Other cereals	-4,3	-0,1	-4,6	-0,9	-5,4	-6,5	-5,7	-5,8	-6,9
Vegetables	-3,5	-0,1	-3,7	-0,6	-4,2	-3,3	-4,5	-4,5	-3,6
Fruit	-2,9	-0,1	-3,2	-0,8	-4,0	-3,6	-4,3	-4,4	-4,0
Raw milk	-25,0	0,0	-25,1	-0,2	-25,3	-24,9	-25,4	-25,5	-25,0
Livestock	-4,2	0,0	-4,2	-0,1	-4,3	-4,2	-4,3	-4,3	-4,2
Poultry	-2,7	-0,1	-2,9	-0,4	-3,2	-2,4	-3,4	-3,4	-2,6
Forestry	-2,8	-0,1	-3,0	-0,6	-3,6	-3,2	-3,8	-3,9	-3,6
Fishing	-7,0	0,0	-7,0	-0,1	-7,1	-6,9	-7,2	-7,2	-6,9
Mining	9,3	-0,1	9,1	-0,4	8,7	8,1	8,6	8,5	7,9
Meat processing	-4,6	-0,1	-4,8	-0,6	-5,3	-4,4	-5,5	-5,6	-4,7
Fish products	-3,0	-0,1	-3,2	-0,5	-3,6	-2,8	-3,8	-3,9	-3,1
Other food industry	-2,5	-0,1	-2,8	-0,6	-3,3	-2,2	-3,5	-3,6	-2,6
Vegetable oils	-1,5	-0,1	-1,8	-0,5	-2,2	-1,4	-2,4	-2,5	-1,7
Dairy products	-0,6	-0,1	-0,9	-0,7	-1,4	-0,3	-1,7	-1,8	-0,7
Rice processing	-5,3	-0,1	-5,5	-0,6	-6,0	-4,7	-6,3	-6,4	-5,0
Mills	-3,1	-0,1	-3,4	-0,6	-3,9	-3,1	-4,2	-4,3	-3,4
Animal food	-5,5	-0,1	-5,7	-0,4	-6,1	-5,2	-6,2	-6,3	-5,5
Bread and pasta	-2,8	-0,1	-3,1	-0,6	-3,6	-2,5	-3,9	-4,0	-2,8
Sugar	-2,8	-0,1	-3,0	-0,5	-3,4	-2,6	-3,7	-3,7	-2,9
Wine	-2,9	-0,2	-3,3	-0,8	-4,0	-2,7	-4,3	-4,4	-3,2
Beverages from barley	-3,2	-0,1	-3,5	-0,7	-4,1	-2,9	-4,4	-4,5	-3,3
Other beverages	-2,7	-0,1	-3,0	-0,8	-3,7	-2,4	-4,0	-4,1	-2,8
Tobacco	-2,7	-0,2	-3,0	-0,8	-3,7	-2,5	-4,0	-4,1	-2,9
Basic Textiles	-4,6	-0,1	-4,8	-0,4	-5,2	-4,4	-5,3	-5,4	-4,7
Other textiles	-2,5	-0,1	-2,8	-0,8	-3,5	-3,4	-3,8	-4,0	-3,8
Clothing	-2,6	-0,1	-2,9	-0,8	-3,6	-2,4	-3,9	-4,0	-2,8
Leather products	-9,8	-0,1	-9,9	-0,4	-10,3	-10,1	-10,5	-10,5	-10,3
Footwear	-2,7	-0,1	-3,0	-0,8	-3,6	-2,6	-3,9	-4,0	-3,0
Wood	-1,8	-0,2	-2,2	-1,3	-3,3	-5,2	-3,7	-3,9	-5,8
Paper	-3,4	-0,1	-3,6	-0,4	-4,0	-3,1	-4,1	-4,2	-3,3
Press	-3,2	-0,1	-3,5	-0,7	-4,1	-2,4	-4,4	-4,5	-2,8
Oil refinery	35,2	-0,1	34,7	-0,7	33,8	34,5	33,4	33,2	33,9
Plaguicides	-4,7	-0,1	-4,8	-0,4	-5,2	-5,1	-5,3	-5,4	-5,4
Laboratories	-2,1	-0,1	-2,3	-0,6	-2,8	-0,4	-3,0	-3,1	-0,7
Basic Chemicals	-1,5	-0,2	-1,8	-0,6	-2,3	-2,2	-2,6	-2,8	-2,7
Rubber and plastic	-1,9	-0,1	-2,1	-0,6	-2,6	-2,9	-2,8	-2,9	-3,1
Mineral products	-7,6	-0,2	-8,0	-1,5	-9,4	-12,5	-9,8	-10,0	-13,1
Metal products and machinery	-3,0	-0,2	-3,4	-1,4	-4,7	-7,2	-5,1	-5,4	-7,9
Vehicles	-2,7	-0,2	-3,1	-1,0	-4,0	-5,3	-4,3	-4,5	-5,8
Other manufactures	-3,0	-0,2	-3,4	-1,1	-4,3	-4,7	-4,7	-4,8	-5,2
Electricity, gas and water	-4,4	-0,2	-4,7	-0,8	-5,4	-3,3	-5,8	-5,9	-3,7
Commerce	-3,0	-0,1	-3,3	-0,8	-4,0	-3,2	-4,3	-4,4	-3,6
Hotels and restaurants	-2,8	-0,2	-3,2	-0,8	-3,8	-2,4	-4,1	-4,3	-2,9
Other transport	-5,4	-0,1	-5,7	-0,7	-6,3	-5,4	-6,6	-6,7	-5,8
Passenger transport and cargo shipping	-3,3	-0,1	-3,6	-0,5	-4,1	-4,0	-4,3	-4,5	-4,4
Comunications	-3,2	-0,2	-3,5	-0,8	-4,2	-2,6	-4,6	-4,7	-3,1
Financial services	-3,1	-0,2	-3,4	-0,9	-4,2	-1,9	-4,5	-4,7	-2,4
Real estate	-3,3	-0,2	-3,6	-0,9	-4,5	-3,3	-4,8	-5,0	-3,8
Services to enterprises	-3,6	-0,2	-4,0	-1,1	-4,9	-4,2	-5,3	-5,5	-4,8
Other services	-3,1	-0,1	-3,4	-0,8	-4,1	-2,3	-4,4	-4,5	-2,7