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Trade and Integration Policy Analysis for Mercosur:
AMIDA Model with Imperfect Competition*

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Abstract

Regional integration initiatives re-emerge in Mercosur, as the bloc faces multiple challenges in external fronts. At the regional level, the group signed an Free Trade Agreement (FTA) with the Andean Community, while widening its membership. At the multilateral front, the ongoing WTO Round will deliver a package of resolutions and set main targets for future liberalization in key trade areas. This will inevitably trigger a new push for regional approaches. For the Southern Cone, the bloc will seek the pending regional agreements with the EU25 and the whole Western Hemisphere. The United States, while maintaining its position in the Free Trade Area of the Americas (FTAA), has recently signed several bilateral agreements with Central and South American groups of countries. This will change the direction of current trade flows. Rising China and other Asian countries adds additional complexity in the global trade flows. All of these dynamic developments call for a re-evaluation of trade and integration options for Mercosur, together with devising new scenarios. In this paper, we apply a brand new static CGE model, called *AMIDA* (Analysing Mercosur's Integration Decisions and Agreements) to help in shedding light on this diversity of options and opportunities. The model introduced several features both in modeling and database. First, it incorporates economies of scale and imperfect competition, applying a unique polynomial cost function. Second, for firm behavior, the model applies the Cournot-Nash oligopolistic competition. This allows analyzing strategic interaction among firms at home and with foreign competitors. Third, the model is built on the comprehensive hemispheric tariff database based on the FTAA database (IDB), incorporating a large number of ALADI (Latin American Integration Association) agreements. Fourth, scale economies are modeled on the basis of recent relevant studies. Finally, market concentration on the imperfect competition sectors is directly estimated from manufacturing data for key regions. We find that the north-south agreements with the United States and the EU25 have somewhat divergent consequences. As is already known, the greater integration of the Free Trade Area of the Americas (FTAA) is preferable to the bilateral FTA with the United States. The simulation results indicates that China is already an important and serious partner. The impact closely follows the pattern of the North-South agreement. We also measured the sectoral competitiveness for non-service sectors. It points to a key deficiency of the bloc, which possesses competitiveness in a few classical manufacturing industries and selected segments of the agribusiness with low value-added activities. All *non-competitive* sectors comprise key manufacturing industries. This suggests that though Mercosur's trade policy is correct in pushing for greater market access, particularly in agriculture in international trade forums, and in having been quite aggressive in exploiting regional and comparative advantages, as well as in opening new markets and improving distribution channels, the bloc continues to experience a serious deficit in trade with higher-technology-content goods.

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1.   Introduction

Regional integration initiatives re-emerge in Mercosur. In spite of continued internal conflicts over trade policies, the bloc reactivated its trade and integration agendas. Signing an Free Trade Agreement (FTA) with the Andean Community in late 2004, the group took a historic step to create the South American Community of Nation comprising South American countries. In the meantime, the bloc also attempted making the most of regionalism by enlarging its membership. In late 2005, Mercosur countries agreed to incorporate Venezuela as a full member. These movements give the group a greater political leverage particularly to counterbalance the US influence in Latin America.

At the multilateral front, the WTO Round will deliver a package of resolutions and set main targets for future liberalization in key trade areas. This will inevitably trigger a new push for regional initiatives for the group aiming at increasing gains under the new trade regime by pursuing regional approaches, or to complement the impact arising from the multilateral negotiations. For the Southern Cone, it is nearly a certainty that the bloc will seek the pending regional agreements with the EU25 and the whole Western Hemisphere, respectively, both of which have been put aside in recent years. The latter has already suffered many changes and the process has been stalled, and may even take place in a direct agreement with the United States.

At the same time, the United States, while keeping its face in the Free Trade Area of the Americas (FTAA), has recently signed several bilateral agreements with Central and South American groups of countries that, in a way or other, will change the direction of trade flows. In fact, in South America, there is a sort of subdued competition between Mercosur and other sub-regional bloc particularly with the Andean Community, to see which side will attract more partners, and gain first from greater market access.[1] Additional complexity is added by the increasing role of China, and the Asian continent in the global trade flows, affecting not only the major Northern blocs—EU25 and NAFTA—but also Mercosur, especially Brazil and Argentina.

All of these dynamic developments call for a re-evaluation of trade and integration options, which were carried out some time ago, together with the introduction of new scenarios. In this paper, we use a brand new static CGE model, *AMIDA*—Analysing Mercosur's Integration Decisions and Agreements—to help in shedding light on this diversity of options and opportunities. The *AMIDA* is a rather powerful model, which incorporates modern technical features of economies of scale and imperfect competition, and is built on a state-of-the-art database for the Western Hemisphere. In its present, first version, in spite of having two service sectors for closing the structure of the economy, it would be more suitable for the analysis of *market access for goods*.

In this paper, we considered 6 FTAs involving Mercosur with the respective partners: the United States, the EU25, Mexico, the Andean Community, FTAA and China. The main policy findings are as follows:

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[1] At the end of April 2006, Venezuela made the official request to joint Mercosur, while declaring to leave the Andean Community.

(i)   FTAs with either the United States or the EU25, though improving Mercosur's competitiveness, have somewhat divergent consequences: the former channels Mercosur's exports to the United States, all other partners loosing market share in the bloc; the latter has nearly the opposite effect, Mercosur drastically re-orienting its exports to the EU25, while increasing its import demand in most other markets;

(ii)   Between an FTA with the United States under the formation of the 4+1 agreement and the Free Trade Area of the Americas (FTAA), the latter is preferable to the former;

(iii)   The South-South agreement of the Mercosur-Andean Community FTA can, contrary to some established views, bring rewards to both partners;

(iv)   In spite of technical issues on the quality of Chinese data, the results of a Mercosur-China FTA signal that the Asian giant is already an important and serious partner. The impact closely follows the pattern of the North-South agreement.

As a part of policy evaluation, we also measured the sectoral competitiveness for non-service sectors, classified by *competitive*, *non-competitive* and *neutral*. Despite the aggregation level at stake, the assessment is fairly informative. It points to a key deficiency of the bloc, which possesses competitiveness in a few classical manufacturing industries and selected segments of the agribusiness with lower value-added activities. All *non-competitive* sectors comprise key manufacturing industries. This suggests that Mercosur's trade policy is correct in pushing for greater market access, particularly in agriculture in international trade forums, and in having been quite aggressive in exploiting regional and comparative advantages, as well as in opening new markets and improving distribution channels Yet the bloc is likely to experience a serious deficit in trade with higher-technology-content goods. Moreover, the bloc suffers a persistent deficit in services trade, and sustainability of the present Mercosur trade accounts is by no means guaranteed.

The structure of the paper is as follows. Section 2 outlines the model, focusing on key modeling framework and main assumptions. Section 3 presents the sectoral aggregation and regions, and discusses benchmark datasets with focus on trade and protection. Section 4 describes the alternative scenarios—6 Free Trade Agreements (FTAs)—and simulation results are analyzed in some detail, while section 5 assesses Mercosur's potentials and shortcomings, based on the evaluation of the policy simulations. Section 6 concludes, adding also further technical comments.

2.   The Structure of the *AMIDA* Model

In order to analyze trade and integration options for Mercosur, we developed a new CGE model, called *AMIDA*. The model is a multi-region, trade-focused, comparative static model with scale economies and imperfect competition at firm level. It consists of 25 sectors and 10 regions, and is benchmarked in 2001. Distinguished from other models in this line, however, our model incorporated several salient features in both modeling and database.

First, it introduced economies of scale and imperfect competition in certain sectors, key elements of new trade theory based on "industrial organization" literature. Our model is an extension of Flôres (1997, 2003), whose approach was fashioned in Gasiorek, Smith and Venables (1990,

1992)—drawing on a pioneer partial equilibrium structure by Smith and Venables (1988)—who used it to evaluate the impacts of the *Europe 92* Delors's initiative. The novel feature is, in expressing economies of scale, its unique application of a polynomial cost structure. This is at the heart of the model, differentiating it from other similar models.

Second, firms in imperfect competition sectors are symmetric and play a Cournot-Nash strategy in each market or region. This allows analyzing strategic interaction among firms at home and with foreign competitors. Under this framework, output is the strategic variable for the Cournot-competing firms. Third, scale economies are estimated on the basis of recent relevant. Fourth, market concentration of the imperfectly competitive sectors is directly estimated from manufacturing data for key regions. This measures the intensity of competition in industries, and is estimated by the Herfindahl index of concentration. Finally, the model was built on the comprehensive hemispheric tariff database, based on the FTAA database (IDB), which incorporates a number of ALADI (Latin American Integration Association) agreements, covering relevant regional trade agreements and preferential treatments in place in the Western Hemisphere.

The section below describes the main structure of the model and focuses on a key assumptions.

2. 1 Production Technology and Cost Function

The model incorporates two types of competitive and noncompetitive industries. Competitive industries have a constant returns to scale (CRTS) production technology, thereby total cost for these industries are proportional to industry outputs. Industries in noncompetitive markets exhibit an increasing returns to scale (IRTS) technology, and total costs are expressed by a polynomial cost function, pioneered by Smith and Venables (1988), and followed by Gasiorek, Smith and Venables (1990, 1992) and Flôres (1997, 2003).[2] In these industries, firms produces differentiated goods, products produced by different firms are imperfect but close substitutes. Firms within an industry are assumed to be symmetric; namely, each firm produces the same quantity of output and charges the same price. Thus, economies of scale are at the firm level, and therefore *internal* to the firm. As a result, variety is measured by the number of symmetric firms in an industry.

Equation (1) defines total costs $C(x)$ for imperfectly competitive industries as a product cost function coefficient $f(x)$ and unit cost UC, which is independent of the level of output.

$$C(x) = f(x) \cdot UC \qquad (1)$$
$$f(x) = a_0 + a_1 \cdot x + a_2 \cdot x^b \qquad (a_0, a_1, a_2 > 0, \ 0 < b < 1) \qquad (2)$$

where x is an output of the symmetric firms, a_0, a_1 and a_2 are all positive parameters for the polynomial coefficients, and b is a positive exponent with the values of less than unity. In the

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model, the parameter a_2 is set to zero for all developing regions including Mercosur, due largely to scarcity and inaccuracy on cost data. Then cost function collapses to a linear form. Thus, cost functions are differentiated between developed and developing regions.

Both industries use three factors—agricultural land, capital and labor—as primary factors plus intermediate inputs. The composite primary factor (quantity of value added) is specified with the CES (Constant Elasticity of Substation) among primary factors. On the other hand, intermediate inputs, which are the composite goods comprising domestically produced goods and imports from different origins, are used with the Leontief technology. Thus, the fixed-coefficient intermediate input use implies that the respective quantity mix required for the intermediate inputs per unit of output, and the combination between the quantities of value added and the respective intermediate inputs are solely determined by the technology of production, not by firms' decision making.

Firm's profit-maximizing decision yields the optimal level of respective factor demands. In each region, however, factors do not need to receive uniform wage or rental return across sectors. Instead, while factor market is perfectly competitive, the model incorporates factor market rigidity or distortions, using the "factor wage differential" parameters. The model incorporates several different factor treatments, depending upon market closures. Labor is a factor, which can move freely and costlessly across sectors, but is immobile over regions. For default closure, the aggregate supply of labor in each region is held fixed at benchmark. Capital is a sector-specific factor. While the economywide average rental return is fixed at benchmark, the sectoral "factor wage differentials" are instead endogenized, permitting differentiated returns over sectors. Finally, land is a factor used only in agriculture, and modeled as labor in the standard closure.

2.2 Demand System

The *AMIDA* model has two demand systems: final demand and intermediate demand. Final demand consists of 3 components: household consumption, government consumption and investment. In common with other CGE models, final demand is constructed in a nested structure. In each region, there is a representative household with a two-stage utility tree. At the upper stage, household preferences are defined in a Cobb-Douglas utility function. The regional representative household allocates a fixed amount of disposable income to consume sectoral composite goods. At the lower stage, the aggregate demand of the composite commodities is specified with the *a la* Armington-Dixit-Stiglitz-Spence CES aggregate as in equation (3).

$$QY_{is} = AY_{is} \cdot \left[\sum_{r \in R} n_{ir} \cdot \delta_{irs}^{(1-\rho_{is})} \cdot Q_{irs}^{\rho_{is}} \right]^{\frac{1}{\rho_{is}}} \qquad \left(\because \sigma_{is} = \frac{1}{1-\rho_{is}} \right) \qquad (3)$$

$$Q_{irs} = \delta_{irs} \cdot \left(\frac{PY_{is}}{P_{irs}} \right)^{\sigma_{is}} \cdot QY_{is} \qquad (4)$$

$$PY_{is} = \frac{1}{AY_{is}} \left[\sum_{r \in R} n_{ir} \cdot \delta_{irs} \cdot P_{irs}^{(1-\sigma_{is})} \right]^{\frac{1}{1-\sigma_{is}}} \qquad (5)$$

where QY_{is} is the quantity of the composite final demand in region s, AY_{is} denotes final demand shift parameter, n_{ir} is the equivalent number of symmetric firms in region r, δ_{irs} is share parameter, Q_{irs} is the quantity of goods demanded in region s, and produced in region r, and ρ_{is} is the CES Armington exponent.

The Armington-dual solution yields the optimal levels of quantities of final demand Q_{irs} from the respective regional origins. P_{irs} is the market price of goods i produced in region r and demanded in region s, including border protection, trade cost and margins. Equation (5) defines the CES dual price index (PY_{is}) of the composite final demand QY_{is}, as a function of the number of firms and the corresponding market prices.

The composite intermediate demand QZ_{is} is specified by the standard non-nested CES aggregate function, with the assumption of national product differentiation. As with final demand, equation (7) determines the aggregate intermediate demand from different origins, which is the sum of industry outputs produced by the symmetric firms in each region, as expressed in equation (8). The CES dual price index for the composite intermediate demand is defined in equation (9).

$$QZ_{is} = AZ_{is} \cdot \left[\sum_r \gamma_{irs} \cdot ZD_{irs}^{\rho z_{is}} \right]^{\frac{1}{\rho z_{is}}} \qquad \left(\because \ \sigma z_{is} = \frac{1}{1 - \rho z_{is}} \right) \qquad (6)$$

$$ZD_{irs} = \left(\frac{\gamma_{irs} \cdot PZ_{is}}{P_{irs}} \right)^{\sigma z_{is}} \cdot QZ_{is} \qquad (7)$$

$$ZD_{irs} = \begin{cases} Z_{irs} & (i \in PCO) \\ n_{ir} \cdot Z_{irs} & (i \in IMC) \end{cases} \qquad (8)$$

$$PZ_{is} = \frac{1}{AZ_{is}} \left[\sum_{r \in R} \gamma_{irs}^{\sigma z_{is}} \cdot P_{irs}^{(1 - \sigma z_{is})} \right]^{\frac{1}{1 - \sigma z_{is}}} \qquad (9)$$

2.3   Firm Behavior and Competition

Since the model accommodates two types of industries, firm's pricing strategies based on the profit maximization differ accordingly. For competitive industries, a representative firm facing perfectly competitive factor markets with the presence of sectoral factor differentials, behaves competitively in its relevant product markets. The representative firm takes price as given, and its actions on production do not have any influences on market prices.

For noncompetitive industries, it is assumed that firms behave and compete under the Cournot-oligopolistic hypothesis. Each firm recognizes that its own decision on outputs affects prices, but the output decisions by any firms do not affect outputs of others. Thus, each firm decides its own output level, taking sales from his rivals as given in each market. From the Lerner formula, firm's optimal mark-up prices are given in equation (10), differentiating market prices in

destination, applying *segmented* market hypothesis.[3] In equation, τ_{irs} represents the aggregate protection, inclusive of transport costs and trade margins, and MC_{ir} denotes marginal cost. Equation (11) defines the perceived elasticity of demand ε_{irs} under the Cournot competition and the market share of the single firm in final demand is expressed in equation (12).

Noncompetitive firms can potentially earn profits, as they operate in imperfectly competitive market. Equation (13) defines economic profits for the noncompetitive firms, derived from the total sales less total costs. This, however, depends on the assumptions of firms' entry and exit behavior. In the short-run equilibrium, the number of firms is held fixed, due to barriers to entry and institutional limitations to exit from an industry, so that the incumbent firms earn non-zero (positive or negative) profits. In the long-run equilibrium, however, free market entry and exit force firm's profits to zero, and the number of firm is endogenized in the model.

$$P_{irs} \cdot (1 - \tau_{irs}) \cdot \left(1 - \frac{1}{\varepsilon_{irs}}\right) = MC_{ir} \qquad\qquad (i \in IMC) \qquad\qquad (10)$$

$$\frac{1}{\varepsilon_{irs}} = \frac{1}{\sigma_{is}} + \left(1 - \frac{1}{\sigma_{is}}\right) \cdot \varphi_{irs} \qquad\qquad (i \in IMC) \qquad\qquad (11)$$

$$\varphi_{irs} = \frac{P_{irs} \cdot Q_{irs}}{\sum_{r'} n_{ir'} P_{ir's} \cdot Q_{ir's}} \qquad\qquad (i \in IMC) \qquad\qquad (12)$$

$$\pi_{ir} = \sum_{s} P_{irs} \cdot (1 - \tau_{irs}) \cdot (Q_{irs} + Z_{irs}) - C_{ir} \qquad\qquad (i \in IMC) \qquad\qquad (13)$$

2.4   Calibration Procedure for Sectoral Parameters under Imperfect Competition

Once the model framework departs from the standard neoclassical paradigm, calibration requires extreme care and caution. This is particularly the case when models incorporate economies of scale and imperfect competition. Calibration for the noncompetitive industries needs three sets of parameters: elasticity of substitution, degree of economies of scale, and market concentration. Due to firms' optimization behaviour, however, the Lerner formula governs the following structural relationship among these parameters:

$$\mu = f(\sigma, n_0) \qquad\qquad (14)$$

where μ denotes benchmark mark-up ratio, σ elasticity of substitution, and n_0 initial number of symmetric firms. Due to the above constraint, the three parameters are not independent of each other. Only two parameters must be estimated exogenously, while the last is to be

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[3] Other alternative pricing is the *integrated market* hypothesis, applied by Smith and Venables (1988), Gasiorek, Smith and Venables (1990, 1992), and Flores (1997), where firms set the same prices for integrated market, $P_{irs} \cdot (1 - \tau_{irs}) = P_{ir's} \cdot (1 - \tau_{ir's})$. In more extreme case, firms charge the identical prices for all market, as in Francois and Roland-Holst (1997).

calibrated. Hence, three alternative calibration approaches are technically possible, as made by some recent studies:

(i) Estimate μ and n_0 and calibrate σ: Smith and Venables, 1988; Gasiorek, Smith and Venables, 1992a,1992b; Willenbockel, 1994; Flôres, 1997, 2003;

(ii) Estimate σ and n_0, and calibrate μ: Brown, Deardorff, and Sterns, 2002, 2003;

(iii) Estimate μ and σ, and calibrate n_0: Devarajan and Rodrik, 1991.

The choice of these alternatives depends greatly on the availability of industrial survey data and their accuracy in regions under consideration. In principle, our model follows the first approach. However, in case the calibrated elasticities are considerably large beyond the normal range from other similar studies, the model adopts the second method. Data sources for these parameters are presented below.

(1) *Elasticity of substitution.* While region-specific elasticities are used for competitive sectors, they are identical for the noncompetitive sectors. For the former, the model uses the estimations by Gallaway, McDaniel and Rivera (2003) for the United States, Tourinho, Kume and Souza-Pedroso (2002) for Mercosur, which is also applied to the Andean, and the standard GTAP database for other regions. For the latter, these parameter values are residually calibrated, following the Lerner formula based on the estimates of the mark-up ratios and the equivalent number of symmetric firms. The values of the elasticities of substitution for intermediate demand are set to be larger than those of final demand, assuming that irrespective of geographic origin, firms are more sensitive to prices.

(2) Economies of Scale: Measurement of economies of scale takes several forms: cost disadvantage ratio *CDR*, mark-up ratio μ, or the changes in unit cost of the minimum efficiency scale (MES) of production. Primarily the model draws on the recent estimates made by Oliveira-Martin, Scarpetta and Pilat (1996a, 1996b) of the mark-up ratios for manufacturing industries in the OECD countries. These regions are adopted as reference, and used to estimate elasticity of substitution. Other related sources include Pratten (1988) for the European Union, Cline (1984) and Pratten (1991) for the United States, using the MES approach. Pratten (1988) applies this method to Brazil, as a percentage of the US production. But because industry classifications are considerably aggregated, they are used only for reference.[4]

(3) Market concentration: This measures the intensity of competition in industries, and is measured by the Herfindahl index of concentration. The inverse gives the equivalent number of symmetric firms in noncompetitive industries. The "Concentration Ratios in Manufacturing for 1997", classified by the NAICS (North American Industrial Classification System at 4-digit level), published by the US Census Bureau is used for

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[4] Based on the MES approach by Pratten (1988), Harrison, Rutherford, and Tarr (1994) estimate the CDR under the zero-profit condition. The recent elaborated approach is due to Bchir et al. (2002), minimizing the distance of the variance among three parameters (elasticity of substitution, economies of scale and industry concentration).

the United States, whereas the "Annual Enterprise Statistics on Industry and Construction broken down by Size Classes", grouped by the size of employee following the NACE Classification, estimated by the EUROSTAT, are applied for the EU25.[5] The estimates for Mercosur come from a study examining the competitiveness of the Brazilian manufacturing industries based on the ISIC (International Standard Industrial Classification) by López-Córdova and Moreira (2004).

Flôres and Watanuki (2005) provide a detailed description of the model equations, carefully discussing their role, and pros and cons. Calibration and data issues are also addressed in detail. Finally, the whole model is run in GAMS programming language.

3.   Benchmark Datasets

An outstanding database for the model was developed, combining information from the UN, EUROSTAT, OECD, TRAINS, USITC, ECLAC, the World Bank, the IDB, national statistical offices, central banks, and GTAP latest database.

In order to have a minimum compatibility among the different sources, the base year for all data refers to 2001, which was adapted to the regions and particular features of the model. We consider this a fairly ideal decision, as 2002 and 2003 were not very representative years for Brazil and, especially, Argentina, and much information for 2004 was still unavailable.

Production and demand structures received careful attention in the case of Mercosur. A key element relates to the I-O matrices for Brazil and Argentina. The 1996 and 2000 matrices, respectively, were updated and used for the model. Armington elasticities are based on regional studies, as much as possible. Capital remuneration rates were improved whenever possible. Economic data on the United States, Mexico, Andean Community, the European Union, Japan, China were also checked.

Trade and protection are, among others, the cores of the database to evaluate trade and integration policies. This is particularly the case with the multi-region models, which have no financial or monetary accounts and only deal with the real side of the economy. This is because trade is the sole agent to transmit policy shocks among partners, and protection is the key policy variable. They are discussed later.

3.1.   Sectors and Regions

We aimed at decomposing world regionalization and sectoral disaggregation as comprehensive as possible. The model comprises 25 sectors, identifying key industries from a Mercosur perspective. They are grouped into 6 macro-sectors: 6 agricultural sectors; 5 food-processing industries; 2 energy industries; 4 light manufacturing industries; 7 heavy manufacturing

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[5] Davies and Lyons (1996) made detailed and comprehensive industrial study in the European Union, analyzing four key elements of structure: concentration and the specialization of the EU production across the member countries at industry level; and diversification and multi-nationality at firm level.

industries; utilities and construction; and trade and services. Table 1 shows the sectors in the model, and Annex Table 1 presents the sectoral concordance with the GTAP database.

Table 1. Sectoral Classification of the Model

No.	Sectors	Description		No.	Sectors	Description	
	I. *Agriculture*				**IV. *Light Manufactures***		
1	GRAIN	Wheat, Corn and Other Grains		14	TXTIL	Textiles and Apparel	
2	VEGET	Vegetables and Fruits		15	LTMFG	Leather, Wood and Paper	
3	OLSYB	Oil seeds and Soybeans		16	OLMFG	Other Light Manufactures	
4	SUGAR	Sugar			**V. *Heavy Manufactures***		
5	OTCRP	Coffee, Rice and Other Crops		17	CHMCL	Chemical and Plastic Products	
6	LVSTK	Animal products		18	FRMTL	Ferrous metals	
	II. *Agribusiness*			19	NFMTL	Non-ferrous Metals	
7	BMEAT	Bovine Meat	#	20	VEHCL	Motor Vehicles	#
8	OMEAT	Poultry Meat	#	21	OTREQ	Other Transport Equipment	#
9	DAIRY	Dairy Products		22	ELCEQ	Electric Equipment	
10	BVTBC	Beverages and Tobaccos	#	23	MCHNY	Machinery	
11	OTHFD	Vegetable Oils			**VI. *Services***		
	III. *Energy*			24	UTLTY	Utilities and	
12	MINRL	Minerals		25	SERVC	Trade and Services	
13	ENRGY	Energy Products					

Note: Sectors with (#) are imperfect competition sectors.

The first five groups comprise the 23 trade-in-goods sectors, which will be the main focus of our analyses. Five out of them—those marked with an '#' above—were modeled under imperfect competition. These structures are better portrayed in the model regions related to Mercosur, the United States, Japan and the EU25. Arguments can be raised on the choice of the imperfect competition sectors; for instance, *dairy products* can be qualified at least as well as *bovine meat*, while *electric equipment* and *machinery* may be other important candidates. Notwithstanding, the availability of reliable data for characterizing these more complex markets had to be a key factor in directing the present choice.

Decisions on the regions must face one of the most classical dilemmas in CGE practice. Due attention to the areas of concern, and those which affect them together with care in not fragmenting too much the model, what, among other practical problems, may add distortions to its construction and operation. Because our main objective lies in analyzing different scenarios *from a Mercosur perspective*, we divided the world into 10 regions, as listed in Table 2.

As regards the quality of the data adaptation to these regions, the best ones are for Mercosur, the United States, Mexico, the Andean as well as the EU25 and Japan. The Rest of the Americas is naturally a simplification, though it includes, beyond the whole Central America, countries like Canada and Chile. Asia10 includes all the former New Tigers—Hong Kong, Korea, Singapore and Taiwan—beyond six new emerging Asian economies, like Indonesia, Malaysia or Vietnam, which are becoming more competitive either in specific agricultural goods or in traditional sectors like textiles. The Rest of the World comprises countries, which do not belong to the above regions, and covers Australia, New Zealand, and India that may be relevant for certain sectors for Mercosur.

Table 2. Countries and Regions in the Model

	Abbreviation	Countries and Regions	Member Countries and Sub-regions
	Western Hemisphere		
1	USA	United States	
2	MEX	Mexico	
3	A_C	Andean Community	Bolivia, Colombia, Ecuador, Peru, Venezuela
4	MERC	Mercosur	Argentina, Brazil, Paraguay, Uruguay
5	ROA	Rest of the Americas	Canada, Central American Common Market (CACM), Caribbean Community and Common Market (CARICOM), Chile, Rest of Latin America
	Extra-Hemispheric Partners		
6	EU25	EU25	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom
7	JPN	Japan	
8	CHN	China	
9	AS10	Asia10	Brunei, Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand, Vietnam
10	ROW	Rest of World	All countries not listed above

3.2. Trade Flows

Regarding trade, COMTRADE is the main source due to its global coverage. But in the meantime, FTAA and DATAINTAL databases (both from IDB) were also used to construct consistent trade flows. Figure 1 shows the Mercosur trade by country or region identified in the model, contrasting between the aggregate exports and imports. The United States is the second largest destination, absorbing 23 percent of exports from Mercosur. Globally, the most important partner is the EU25, which purchases 31 percent of the bloc's aggregate exports. The neighboring Andean is still a relatively new partner, with only 5 percent. Mexico is much fresh; the country has merely a 3-percent market share. Asian partners, including China, are all new markets for Mercosur, with market shares of 4 to 5 percent.

Figure 2 presents the composition of Mercosur exports to its trade partners, and Annex Table 2 shows the bloc's sectoral trade flows for all partners. In terms of the composition of exports, industrial goods, both light and heavy manufacturing products, dominate exports and account for 72 percent of the bloc's sales in the Americas. This share jumps to 80 percent to the US market. In Mexico, industrial exports have the share of more than three-quarter of the value of exports from Mercosur. Strikingly enough, the motor vehicles sector alone accounts for 44 percent of exports destined to Mexico. Like other hemispheric partners, heavy manufacturing goods dominate exports to the Andean, but agriculture is also important to that market.

Figure 1. Mercosur Trade with Partners (2001)

(1) Exports   **(2) Imports**
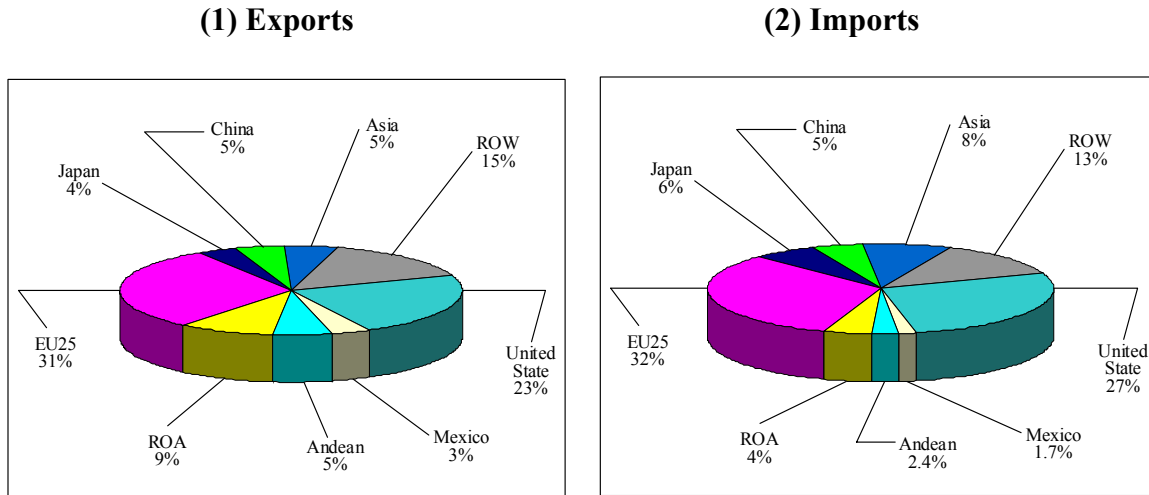
Source: Mercosur database.

The structure of exports with hemispheric destination sharply contrasts with that for partners outside the Americas. In the EU25, agriculture-related products account for more than half of exports. In fact, *vegetable oils* are the leading exports, with a share of 17 percent, while *oilseeds and soybean* account for another 10 percent. Even sensitive meat products (*bovine* and *poultry*) have a 6 percent share in the EU. For Asia, agricultural commodities dominate. In China, *oilseeds and soybeans* are the most important commodities (44 percent share). Energy products are also important exports to China, but its value is less than half that of agricultural sales at the base year.

Figure 3 demonstrates the composition of Mercosur imports by its partner. Market orientation follows the similar patterns as with the pattern of exports. The EU25 is the largest source of imports (32 percent), followed by the United States (27 percent). Other partners in the Americas—Mexico, Andean, and the rest of the Americas—have relatively smaller importance as a source of imports. Compared with exports, their market shares are half those of exports. Interestingly, the opposite appears for the Asian partners, except China. The market shares of Japan and Asia10 are twice larger than those of imports, whereas China has the same share on both exports and imports.

The striking evidence is that industrial goods are by far the dominant imports for Mercosur. Globally, imports of manufacturing products account for around 90 percent. Typical to semi-industrialized countries, Mercosur heavily relies on capital and intermediate goods to meet domestic demand and to export manufactured goods. *Heavy manufactures* alone share 80 percent of the bloc's aggregate imports. Among these products, *electric equipment* and *machinery* (capital goods) are the leading imports, with a 40 percent share, followed by *chemical and plastic products* (intermediate goods), with a 23 percent share.

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Figure 2. Composition of Mercosur Exports by Macro-sector (2001)
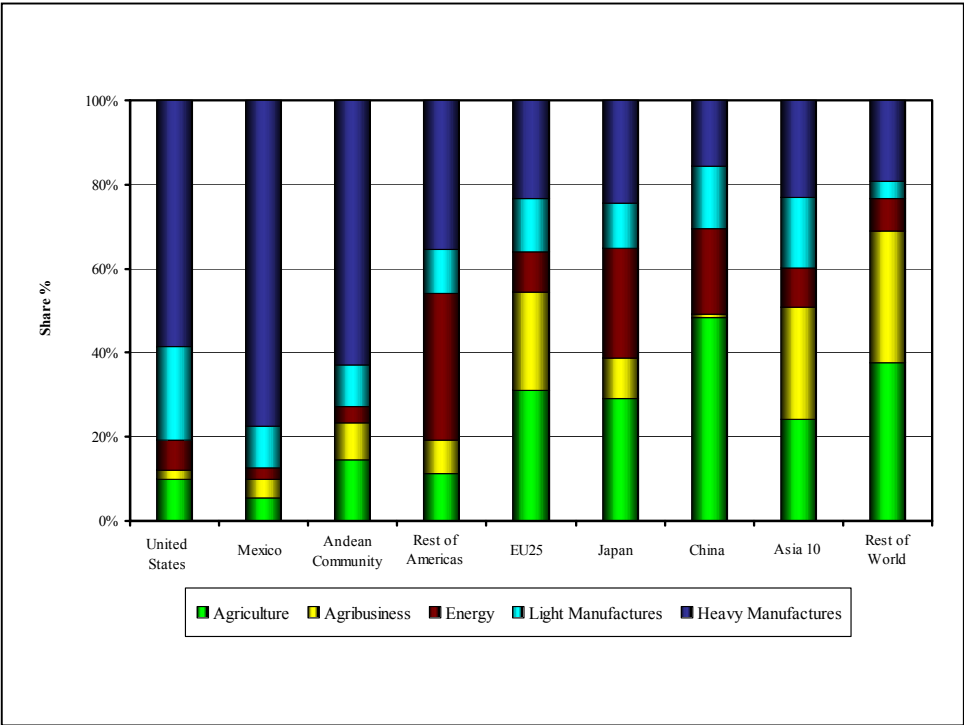
Figure 3. Composition of Mercosur Imports by Macro-sector (2001)
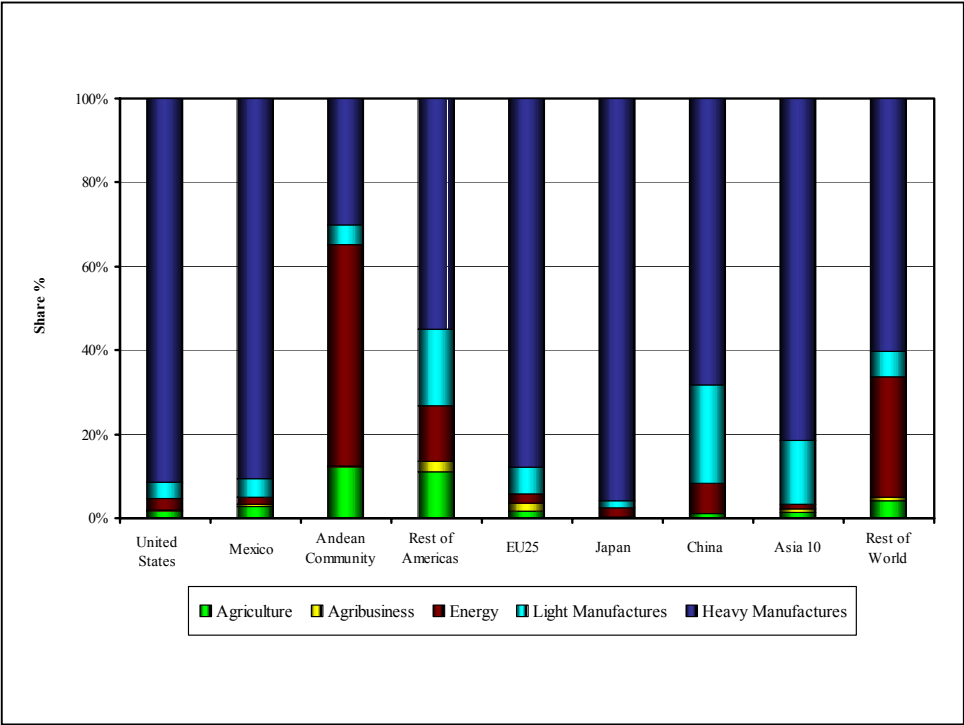
However, the composition of imports differs considerably by market, due largely to the partners comparative advantage. The share of imports for *Heavy Manufactures* jumps to 90 percent for the United States, Mexico, EU25, and Japan. In this regard, the Andean is in a unique position. *Energy* is the leading import, accounting for more than half of imports of the Andean origin.

3.3. Structure of Protection

For protection, a new database, the hemispheric tariff database, was constructed on the basis of the FTAA database (IDB). It accommodates the ALADI (Latin American Integration Association) agreements in place in the Americas. These include 5 sub-regional blocs, including intra-regional protection: the North American Free Trade Agreement (NAFTA), the Central America Common Market (CACM), the Caribbean Community and Common Market (CARICOM), the Andean Community (CAN), and the Southern Common Market (Mercosur). It also updates 4 bilateral agreements (Mercosur-Bolivia, Mercosur-Chile, Canada-Chile, Mexico-Chile), plus 11 FTAs, 10 Economic Complementation Agreements (ECA), and 6 Partial Scope Agreements (PCA). In addition, the database also incorporates 3 key US preferential treatments for Latin America (the Andean Trade Preference Act, ATPA; the Caribbean Basin Initiative, CBI; and the Generalized System of Preference: GSP), based on the USITC, and Canada's General Preferential Tariff (GTP). Outside the Americas, the European Union is included from the TRAINS database (World Bank), including the GSP applied to Mercosur.

Protection only covers tariffs, and does not include any non-tariff measures, and non-quantifiable barriers to trade. Specifically, tariff includes *ad valorem*, and *ad valorem* equivalents of specific and compound tariffs plus TRQ, applied by the NAFTA countries and the EU. For the United States, which imposes the largest number of non-*ad valorem* tariffs, the database is due primarily to the USITC official estimates. For Canada and Mexico, the *ad valorem* equivalent estimates are drawn from the database constructed by Jank, Fuchsloch, and Krutas (2002). For the European Union, TRAINS data are used for the estimates of *ad valorem* equivalents of specific and compound tariffs, plus GSP applied to Latin America. On the other hand, protection for services is set to zero, simply because there are very few studies and credible estimations. Tariffs are in principle estimated as a simple average from the HTS 8 digits for each sector and for the respective partners.

Table 3 reports tariffs imposed by Mercosur on its trade partners. As seen in the table, Mercosur has relatively high tariffs with low deviations over sectors. The bloc's trade-weighted average tariff is 11.7 percent. The aggregate protection with most trade partners is close to the global level except for the Andean Community and the rest of the Americas. This is due to the associate membership by Bolivia and Chile, plus several Economic Complementary Agreements between Mercosur and the Andean.

In Mercosur, a wide range of industries is protected by high tariffs. Among them, *beverages and tobaccos* impose the highest tariff of 20 percent, whereas *oilseeds and soybeans*, which has strong comparative advantage in trade and is highly competitive in the global market, has the lowest tariff of 5 percent. In agriculture, tariff escalation is present, as processed-food products have higher protection than raw agricultural products. In spite of huge demand for capital and

intermediate goods, the bloc keeps 10 to 12 percent tariffs on these imports. *Motor vehicles*, one of the strategic sectors in Mercosur, maintains the highest border protection due to their sensitivity.

Table 3. Applied Tariff Rates Imposed by Mercosur (2001)

(%)

Sectors	United States	Mexico	Andean Community	Rest of Americas	EU 25	Japan	China	Asia 10	Rest of World	Global
Wheat, Corn and Other Grains	6.21	6.21	5.63	4.94	6.21	6.21	6.21	6.21	6.21	5.64
Vegetables and Fruits	10.64	10.64	9.56	8.11	10.64	10.64	10.64	10.64	10.64	9.31
Oil seeds and Soybeans	5.60	5.60	5.04	4.31	5.60	5.60	5.60	5.60	5.60	5.21
Sugar	18.26	18.26	17.00	16.03	18.26	18.26	18.26	18.26	18.26	0.00
Coffee, Rice and Other Crops	9.11	9.11	8.29	6.74	9.11	9.11	9.11	9.11	9.11	8.92
Other Agricultural Products	12.07	12.07	10.99	9.10	12.07	12.07	12.07	12.07	12.07	11.52
Agriculture	**11.24**	**11.75**	**10.25**	**8.43**	**11.57**	**10.77**	**11.27**	**11.04**	**11.36**	**10.69**
Bovine Meat	11.55	11.55	10.82	8.53	11.55	11.55	11.55	11.55	11.55	11.04
Other Meat	13.59	13.59	12.48	10.25	13.59	13.59	13.59	13.59	13.59	12.76
Dairy Products	18.01	18.01	16.37	13.80	18.01	18.01	18.01	18.01	18.01	17.79
Beverages and Tobaccos	20.02	20.02	18.13	15.74	20.02	20.02	20.02	20.02	20.02	19.38
Vegetable Oils and Fats	11.72	11.72	10.67	8.95	11.72	11.72	11.72	11.72	11.72	11.70
Agribusiness	**17.13**	**19.78**	**13.01**	**14.79**	**17.81**	**16.73**	**20.02**	**11.92**	**17.91**	**17.11**
Minerals	10.43	10.43	9.58	7.91	10.43	10.43	10.43	10.43	10.43	9.76
Energy Products	0.75	0.75	0.71	0.56	0.75	0.75	0.75	0.75	0.75	0.74
Energy	**3.95**	**10.43**	**1.77**	**6.06**	**8.76**	**5.87**	**2.96**	**6.42**	**1.29**	**2.92**
Textiles and Apparel	19.36	19.36	17.87	15.33	19.36	19.36	19.36	19.36	19.36	19.21
Leather, Wood and Paper	14.25	14.25	13.05	11.40	14.25	14.25	14.25	14.25	14.25	13.66
Other Light Manufactures	18.88	18.88	17.30	14.40	18.88	18.88	18.88	18.88	18.88	18.78
Light Manufactures	**16.12**	**17.88**	**15.33**	**11.93**	**16.10**	**17.55**	**18.01**	**18.40**	**18.17**	**16.58**
Chemical and Plastic Products	9.83	9.83	9.16	7.63	9.83	9.83	9.83	9.83	9.83	9.75
Ferrous metals	13.54	13.54	12.52	10.19	13.54	13.54	13.54	13.54	13.54	13.46
Non-ferrous Metals	14.26	14.26	13.14	10.81	14.26	14.26	14.26	14.26	14.26	13.66
Motor Vehicles	18.72	18.72	18.26	16.36	18.72	18.72	18.72	18.72	18.72	18.69
Other Transport Equipment	10.82	10.82	9.99	8.30	10.82	10.82	10.82	10.82	10.82	10.76
Electric Equipment	11.14	11.14	10.88	9.24	11.14	11.14	11.14	11.14	11.14	11.10
Machinery	12.63	12.63	11.74	9.63	12.63	12.63	12.63	12.63	12.63	12.58
Heavy Manufactures	**11.53**	**12.48**	**11.06**	**9.50**	**12.52**	**13.26**	**11.57**	**11.87**	**11.50**	**11.98**
Utilities and Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade and Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Utilities and Services	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	**11.51**	**12.69**	**6.26**	**9.50**	**12.76**	**13.17**	**12.45**	**12.79**	**9.01**	**11.65**

Sources: Hemispheric Tariff Database (IDB) for Latin America, USITC for the United States, TRAINS for the EU25
    and Asian countries and regions, and GTAP database v.6.0 for the rest of world.

Table 4 presents the applied tariffs imposed on Mercosur by its trade partners. As clearly demonstrated, Mercosur trade is constrained by high protection in the global market. The bloc faces an aggregate trade-weighted tariff of 8 percent worldwide, although this is 3-percentage points lower than the bloc's overall protection. *Agriculture* is more protected than industrial goods, and *agribusiness* has a slightly higher border protection than *agriculture*.

The structure of protection differs greatly by partner. The United States has the lowest aggregate trade-weighted protection of 2.5 percent against Mercosur goods. Yet, some sensitive agricultural products are guarded by high protection. Tariffs on *dairy products* are still 20 percent, and *oilseeds and soybeans* has 17 percent. While the protection on products of *heavy manufactures*, the bloc's main exports to the US market, is marginal; Mercosur faces modest tariffs on *light manufactures* (4 percent).

In the Americas, other partners impose higher protection than the United States. Mexico is the most protected market, with an aggregate protection of 13 percent, and the most heterogeneous protection structure. All agricultural sectors except for *oilseeds and soybeans* are heavily protected, with the highest tariffs of 57 percent on *wheat, corn and other grains*. Among the

industrial sectors, *motor vehicles*, which account for more than three-quarters of the bloc's exports to Mexico, has the lowest, but still a considerably high protection (8.5 percent).

Table 4. Applied Tariff Rates Imposed on Mercosur (2001)

(%)

Sectors	United States	Mexico	Andean Community	Rest of Americas	EU 25	Japan	China	Asia 10	Rest of World	Global
Wheat, Corn and Other Grains	0.56	57.20	8.75	3.77	16.20	32.97	1.05	256.45	8.12	35.23
Vegetables and Fruits	2.56	20.86	11.65	4.19	7.95	13.20	20.30	8.62	15.94	7.52
Oil seeds and Soybeans	17.07	3.20	8.03	1.30	0.00	0.56	0.14	71.70	29.00	6.13
Sugar	11.16	14.30	13.72	10.05	31.44	283.28	20.71	28.94	25.07	23.70
Coffee, Rice and Other Crops	11.51	13.06	8.15	2.67	16.96	6.65	18.34	29.06	14.72	14.73
Other Agricultural Products	5.56	18.72	12.43	6.73	13.24	14.56	17.41	23.65	15.40	12.27
Agriculture	**7.32**	**13.10**	**10.05**	**5.46**	**9.12**	**12.78**	**1.98**	**95.89**	**18.27**	**14.59**
Bovine Meat	4.87	29.12	14.21	5.59	40.33	40.75	22.52	2.31	29.95	27.07
Other Meat	1.61	21.10	15.69	34.31	21.46	29.66	11.90	1.12	15.35	16.55
Dairy Products	20.52	34.27	15.28	18.46	45.62	64.36	13.80	8.48	12.04	23.32
Beverages and Tobaccos	14.04	34.28	13.86	7.14	7.81	34.31	20.65	28.11	22.57	16.23
Vegetable Oils and Fats	3.03	19.79	12.46	6.42	8.96	0.95	7.71	1.95	23.37	12.86
Agribusiness	**6.07**	**33.96**	**13.11**	**7.83**	**14.38**	**27.61**	**9.25**	**2.10**	**22.13**	**15.54**
Minerals	1.89	16.06	8.60	1.98	1.25	0.01	0.80	1.42	5.74	2.02
Energy Products	0.38	9.88	5.57	2.37	0.65	0.34	1.51	3.60	10.82	2.35
Energy	**1.09**	**15.96**	**7.37**	**2.33**	**1.19**	**0.01**	**0.83**	**1.42**	**6.76**	**2.15**
Textiles and Apparel	9.76	15.95	15.08	4.75	7.24	8.17	20.01	6.66	11.80	10.41
Leather, Wood and Paper	3.76	17.35	11.38	3.58	3.26	2.74	6.40	2.56	11.86	4.52
Other Light Manufactures	0.73	21.58	11.99	3.86	0.75	0.30	18.82	6.62	9.41	3.98
Light Manufactures	**4.24**	**17.25**	**12.88**	**3.85**	**3.68**	**3.35**	**9.30**	**2.75**	**11.74**	**5.28**
Chemical and Plastic Products	0.83	11.56	6.58	1.92	1.26	0.30	10.94	5.97	9.93	3.75
Ferrous metals	1.40	12.78	7.25	1.78	0.96	0.22	4.81	4.54	10.41	3.62
Non-ferrous Metals	0.54	16.97	9.12	2.39	1.40	0.21	7.52	3.25	4.79	2.35
Motor Vehicles	1.53	8.54	5.12	1.37	4.85	0.00	29.92	24.70	20.76	6.51
Other Transport Equipment	0.95	15.12	8.94	2.54	1.72	0.00	8.77	3.35	0.49	1.37
Electric Equipment	0.79	15.67	7.92	1.50	2.55	0.00	9.94	3.93	6.81	2.55
Machinery	0.62	14.33	8.31	2.03	0.31	0.00	10.23	4.94	9.01	3.88
Heavy Manufactures	**0.97**	**10.73**	**6.94**	**1.85**	**1.87**	**0.21**	**13.63**	**5.50**	**9.45**	**3.71**
Utilities and Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade and Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Utilities and Services	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	**2.45**	**12.65**	**8.54**	**3.10**	**7.20**	**6.77**	**4.68**	**25.71**	**16.62**	**8.17**

Sources: Hemispheric Tariff Database (IDB) for Latin America, USITC for the United States, TRAINS for the EU25 and Asian countries and regions, and GTAP database v.6.0 for the rest of world.

The Andean Community has lower and less heterogeneous protection than Mexico on aggregate and over sectors. *Agribusiness* is the most protected across the board, with tariffs of 13 percent. The bloc maintains similar high level of protection on *light manufactures*. The protection on *heavy manufactures* is low, but the aggregate tariff is still 7 percent at macro-sector.

Outside the Americas, in the EU25, protection is considerably distorted in favor of *agriculture*. The aggregate tariff on *agriculture* is 9 percent, whereas it jumps to 14 percent on *agribusiness*. In particular, sensitive products are heavily protected by lofty tariffs: *dairy products* by 45 percent, *bovine meat* by 40 percent, and *sugar* by 31 percent, respectively. Due to high tariffs on *agriculture*, the aggregate trade-weighted protection on Mercosur products reaches 7 percent, 3 times higher than that of the United States.

In Asia, the structure of protection is heterogeneous. Similar to the EU25, Japan maintains high protection in *agriculture*. Overall, *agribusiness* is more protected than *agriculture*. At the sectoral level, *sugar* has a prohibitive tariff of more than 280 percent, and *dairy products* by 64 percent. In Asia10, *agriculture* is the most sensitive sector. The aggregate protection in *agriculture* is 96 percent, with the highest tariff of 250 percent on *wheat, corn and other grains*.

In sharp contrast, China has a protection regime completely different from the other partners. At the macro-level, the industrial sectors enjoy higher protection than *agriculture*: *heavy manufactures* with 14 percent, and *light manufactures* with 9 percent. At the sectoral level, *motor vehicles* has the highest tariffs of 30 percent.

4. Alternative Scenarios and Policy Simulations

4.1 Alternative Scenarios

We tried to run a diversified set of scenarios to produce a global idea on the different options nowadays on the table for Mercosur. The main options are, naturally, the FTAs with, respectively, the United States and the European Union. Both can be contrasted to the FTAA initiative—in its original form—as well as to a set of alternatives, comprising different international positions Mercosur may assume. Moreover, they should also be confronted with possible outcomes from the present WTO Doha Round, which has not been done in this paper.[6]

Table 5 lists the alternative scenarios to analyze Mercosur trade and integration options. Five scenarios, which will be called *basic*, have then been defined. These basic options may be translated into manifold ways as well as combined in multiple forms. A sixth scenario, involving a FTA with China is also considered.

Policy variable is tariffs. Of course, it is also desirable to evaluate the impact of not-so-perfect FTAs, something that will be pursued later, following lines in Flôres (2003). At present, full FTAs are implemented in all cases, allowing a clearer cross evaluation of them.

Table 5. Alternative Scenarios for Mercosur Simulations

Scenario	Partners	Description
A	US	Mercosur closes a full FTA with the US
B	EU25	Mercosur closes a full FTA with EU25
C	Mexico	Mercosur closes a full FTA with Mexico
D	Andean	Mercosur closes a full FTA with the Andean Community
E	FTAA	A full FTA in the Americas
F	China	Mercosur closes a full FTA with China

4.2 Simulation Results

The alternative scenarios are evaluated, with focus on the impacts in trade flows measured in terms of percentage changes from the benchmark. All deserve careful analysis and will be briefly

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[6] The main reason for this absence is that, even after the December 2005 Hong Kong Ministerial, the format of the final agreement remains quite open.

discussed below. It is worth reminding—specially given the previous remarks on the database and the aggregate level of the study—that all the figures should be basically evaluated in relation to each other, within and between tables, and not taken separately, as a precise single value for the changes. The importance of this section is to identify areas or situations, or rather sectors and scenarios, where things can go better *or* worse. Detailed quantification of profits or losses should be made at a greater level of detail, ultimately with the aid of partial equilibrium models.[7]

(1)   Scenarios A (FTA with the United States) and B (FTA with the EU25)

Figure 4 describes the changes in trade flows in macro-sectors under the two main scenarios: FTAs with the United States (scenario A) and the EU25 (scenario B). In the scenario A, Mercosur enjoys higher export growth of manufacturing goods relative to agriculture-related products to the United States: 21 percent for *light manufactures* and 17 percent for *heavy manufactures*. In the scenario B, *agribusiness* will penetrate into the EU market with the highest export growth of 62 percent. At sectoral level, traditional products such as textiles and apparel, and leather, wood and paper will expand exports to both the United States and the EU 25. Annex Table 3 reports the sectoral impact on both scenarios.

In a rough overall picture, the EU25 FTA favours demand for more traditional exports, while an FTA with the United States promotes some higher value-added exports. Even so, there are sensible increases in Mercosur's exports of *non-ferrous metals* and *machinery*, for instance.

The very protectionist European CAP (Common Agricultural Policy) shows itself indirectly in the significant increases in *bovine* and *poultry* meat; US figures in *agribusiness* sectors are more modest. However, the EU25 remains competitive in this area and, either due to this, or to compensate the demand surge in the EU25, or both, Mercosur's imports changes in commodities of *agriculture* and *agribusiness* are, but for exception of *bovine meat*, considerably higher in the EU25 FTA. Indeed, this is also valid for most of the remaining sectors, only exceptions being *chemical products* and *electric equipment*.

The value of the correlation coefficients excluding services between each two corresponding vectors are calculated. Given high increase in bovine meat exports to the EU market in Scenario B, the coefficients for exports were computed with and without this sector. There is no linear relation between the two exports patterns: minus (-) 0.08 without *bovine meat* and minus(-) 0.21 with *bovine meat*, while the coefficient for imports show a certain degree of common behaviour with the coefficient of 0.27. Nearly all these contrasting results may be partially explained by the more open, in relative terms, US protectionist structure.

Tables 6 deepens the insight, showing the regional distribution of the increases, according to the five macro-sectors. Both regional agreements present limited territorial externalities, with however certain nuances. The US FTA seems to provide either advantages or efficiency gains in *light* and *heavy manufactures* sectors,[8] where Mercosur is able to increase exports to other

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[7] Given all the methodological caveats already mentioned, we decided not to translate the results into monetary values, something that could easily be misleading.
[8] Strictly speaking, efficiency gains only take place in sectors under imperfect competition.

Figure 4. Impact of Mercosur's FTAs with the US and EU25: Total Trade Flow Changes

(1) Scenario A: Mercosur-US FTA   **(2) Scenario B: Mercosur-EU25 FTA**
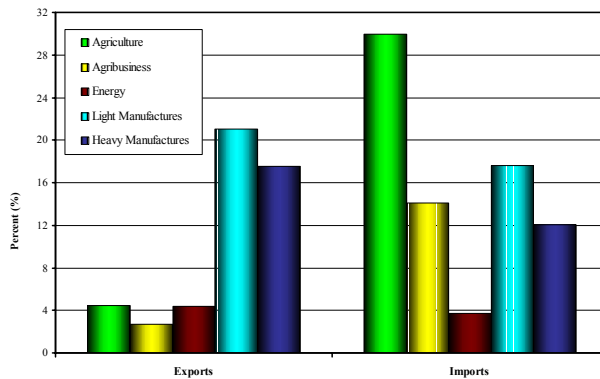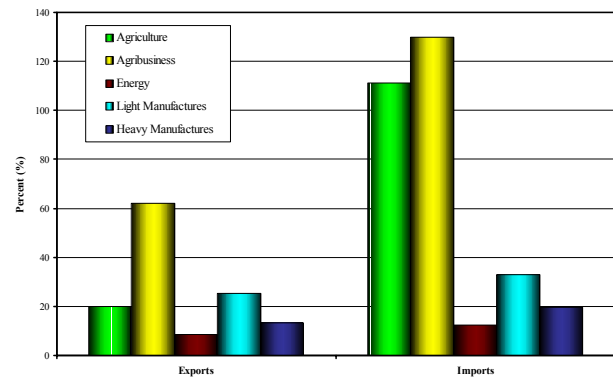
regions in the world. In the latter group, sensible increases take place in three Asian regions, the EU25 and the Rest of the World. Nevertheless, the export patterns are largely dominated by high penetration of the flows to the US market, with slight decreases in the demand for *agriculture* elsewhere. Though these are usually small, the impact on two groups of *manufacture'* become more significant, particularly for *heavy manufactures*, exactly in the same regions already mentioned. Very clearly, the agreement will provoke trade deviation, in these sectors, from Asia and the EU25 to US suppliers. A similar pattern, reasonably significant, also takes place with the *energy* group. Globally, the EU25 loses around US$ 2.4 billion of exports to the Southern Cone market, and even the bloc's "neighbours" experience losses from US$ 52.6 million in the Andean Community to 169.4 US$ million in the Rest of the Americas.

Increases in exports to the partners are usually more modest in scenario A than in B. This very often also corresponds to lower absolute values. Manufacturing industries sell to the United States, under scenario A, extra values of US$ 1.98 billion by *light manufactures* and US$ 3.30 billion by *heavy manufactures* respectively, while the much higher European percentages under scenario B amount to US$ 2.83 billion and US$ 3.55 billion respectively: a sizeable difference in the first case.

It is worth noticing that the EU25 FTA pattern is nearly opposite to the agreement with the United States. The considerable rise in exports to the EU takes place at the expense of generalised decreases in all other regions, for every sector but *heavy manufactures*, where only the Mexican and US flows decrease. Imports, however, increase almost everywhere, with exceptions for the Asian regions and Mexico in *light manufactures*, and all destinations in *heavy manufactures*, where, as happened in the US FTA, there is a clear trade deviation in favour of the partner's exports.

Table 6. Impact of Mercosur's FTAs: Total Flow Changes

(1) Scenario A: Mercosur FTA with the United States

(a) Exports

Macro-sectors	United States	Mexico	Andean Community	Rest of Americas	EU25	Japan	China	Asia 10	Rest of World
Agriculture	56.92	-1.67	-0.26	-0.51	-1.64	-1.57	-0.93	-0.57	-0.30
Agribusiness	60.67	0.50	0.48	0.85	0.71	1.46	1.01	0.88	0.79
Energy	21.24	0.62	1.00	0.42	2.18	2.36	2.46	2.33	2.27
Light Manufactures	52.44	0.57	1.04	0.75	1.32	1.89	2.39	1.00	1.89
Heavy Manufactures	33.39	7.16	5.27	6.35	8.96	8.96	10.77	7.81	9.20
Total	39.70	5.55	3.46	2.48	2.12	2.69	2.09	2.27	2.16

(b) Imports

Macro-sectors	United States	Mexico	Andean Community	Rest of Americas	EU25	Japan	China	Asia 10	Rest of World
Agriculture	175.50	-0.56	0.39	0.01	0.31	2.94	0.67	2.02	0.90
Agribusiness	192.49	-1.73	-1.34	-1.76	-1.59	-1.69	-1.30	-1.12	-1.57
Energy	54.44	-2.74	-1.58	-2.39	-2.43	-1.41	-1.73	-1.54	-1.52
Light Manufactures	141.28	-3.17	-2.28	-0.95	-2.23	-5.21	-5.06	-3.59	-3.16
Heavy Manufactures	64.45	-9.06	-7.55	-9.37	-12.01	-12.09	-10.94	-9.26	-9.20
Total	69.26	-8.42	-3.16	-5.69	-10.76	-11.70	-8.77	-8.08	-6.16

(2) Scenario B: Mercosur FTA with the EU25

(a) Exports

Macro-sectors	United States	Mexico	Andean Community	Rest of Americas	EU25	Japan	China	Asia 10	Rest of World
Agriculture	-17.08	-18.51	-21.89	-17.26	79.72	-26.65	-17.32	-21.28	-17.19
Agribusiness	-6.49	-2.75	-8.28	-5.71	144.99	-5.72	-16.08	-11.20	-8.89
Energy	-3.51	-3.15	-5.45	-2.15	54.04	-11.30	-11.35	-11.89	-11.71
Light Manufactures	-4.05	-2.84	-0.96	-3.05	100.41	-7.99	-8.14	-7.79	-7.68
Heavy Manufactures	-2.09	-2.39	1.02	1.52	69.21	3.36	3.75	3.46	2.40
Total	-4.20	-3.36	-3.59	-2.94	92.67	-11.30	-11.45	-9.77	-10.00

(b) Imports

Macro-sectors	United States	Mexico	Andean Community	Rest of Americas	EU25	Japan	China	Asia 10	Rest of World
Agriculture	57.04	51.61	43.52	44.76	312.61	66.33	49.09	62.53	58.03
Agribusiness	10.19	8.11	16.76	6.66	201.38	9.35	8.21	26.85	10.22
Energy	5.02	4.38	5.08	4.52	86.58	2.18	5.12	2.51	5.49
Light Manufactures	0.28	-0.34	0.16	1.51	117.17	-2.11	-2.04	-0.78	-0.41
Heavy Manufactures	-9.82	-7.38	-6.89	-8.04	73.11	-10.72	-8.97	-6.89	-7.73
Total	-7.93	-5.11	5.98	1.52	82.93	-10.10	-5.69	-4.58	-0.68

Source: Authors' estimation.

The combination of all results till now suggests a few things. First, both FTAs with a Northern bloc will enhance Mercosur's competitiveness in heavy manufactures, very likely at the cost of inducing a considerable, though needed, readjustment in this group of sectors. Second, while Scenario A transforms the United States into the major Mercosur supplier, in spite of probably also turning the Southern Cone into a more competitive bloc, Scenario B strongly channels Mercosur exports to the EU, in such a way that it is impelled to demand more goods from all other regions. Clearly, this signals to the more distorting EU protection structure, but also warns on the higher United States dependency the sole completion of Scenario A may entail. Both situations seem, in principle, undesirable.

(2) Scenarios C (FTA with Mexico) and D (FTA with the Andean)

The US Scenario A has two variations and one widening, the FTAA itself: an FTA with Mexico (scenario C) and with the Andean (scenario D). The impacts are more modest, though the increases in exports of *manufactures* are somewhat higher in the case of scenario C. The Andean

Community, on the other hand, shows its competitiveness in *agriculture* and *energy*, where the highest changes in Mercosur's imports take place.

The agreement with the Andean Community causes deviation of Mercosur exports in all other regions, though in general low; the highest is uniformly in the grains.[9] It dramatically unlocks Mercosur exports of *sugar*, *animal* and *dairy products*, but the increases are significant for all sectors: *electric equipment* with 29.5 percent increase is the lowest. The sectoral impact on trade flows under the South-South integration scheme for main regions is presented in Annex Table 4.

Table 7: Mercosur's FTAs with Mexico and the Andean Community: Total Trade Flows

Macro-sectors	Scenario C: Mexico FTA		Scenario D: Andean FTA	
	Exports	Imports	Exports	Imports
Agriculture	0.36	5.02	2.72	16.02
Agribusiness	1.72	3.07	1.73	3.14
Energy	-0.04	1.31	0.96	4.64
Light Manufactures	2.62	2.93	1.51	3.20
Heavy Manufactures	6.69	2.82	4.45	1.61
(Services)	-0.89	1.06	-1.13	1.37
Total	**2.47**	**2.36**	**2.20**	**2.11**

Source: Authors' estimation.

Contrasting the impacts on exports and imports, evidences of intra-industry trade between the two blocs, among others, emerge in *beverages and tobacco*, *machinery*, *textiles and apparel*, *other light manufactures* and *motor vehicles*. These last two sectors account for the highest percentage increases in Andean exports to Mercosur, due largely to the highest protection imposed by Mercosur. Combining them with the impacts on *coffee, rice ans other crops*, *animal products*, *vegetable oils* and *electric machinery*, there is an interesting evidence on the complementarities between the two blocs.

Of course, the Andean Community becomes a main supplier of energy products to Mercosur, the negative though very small decreases taking place in all other regions. The opposite applies to *vegetables and fruits*, whose exports marginally increase in all market. Apart from this, the FTA does not much induce the bloc's exports to other regions. Finally, the effects on the United States and the EU25 are strikingly similar, as synthesised by the two correlation coefficients: 0.84 for exports and 1.0 for imports.

(3)   Scenario E (FTAA)

The FTAA under Scenario E provides the integrated picture for scenarios A, C and D, in which the United States is responsible for a few non-linearities. Figure 5 shows the impact on trade by macro-sector for major markets. While Annex Table 5 reports the sectoral impact of the FTAA

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[9] This pattern also repeats itself in the other five regions.

on trade for major markets, Table 6 in Annex gives the difference of impacts between FTAA and the corresponding FTA with the United States under Scenario A. They reveal that the effects of Scenario A are thoroughly enhanced. As expected, the FTAA induces Mercosur 'coming closer' to its hemispheric partners. Though the impact outside the Americas is somewhat negligible; Japan even shows no decrease in the case of exports. For imports, the changes are both uniform and remarkable, notwithstanding increases in *agriculture* and *agribusiness*, Japan now loses nearly half a US$ billion of its exports to Mercosur. Even so, losses are slightly lower than in the US-Mercosur FTA.[10]

Figure 5. Impact of FTAA on Major Market: Trade Flow Changes
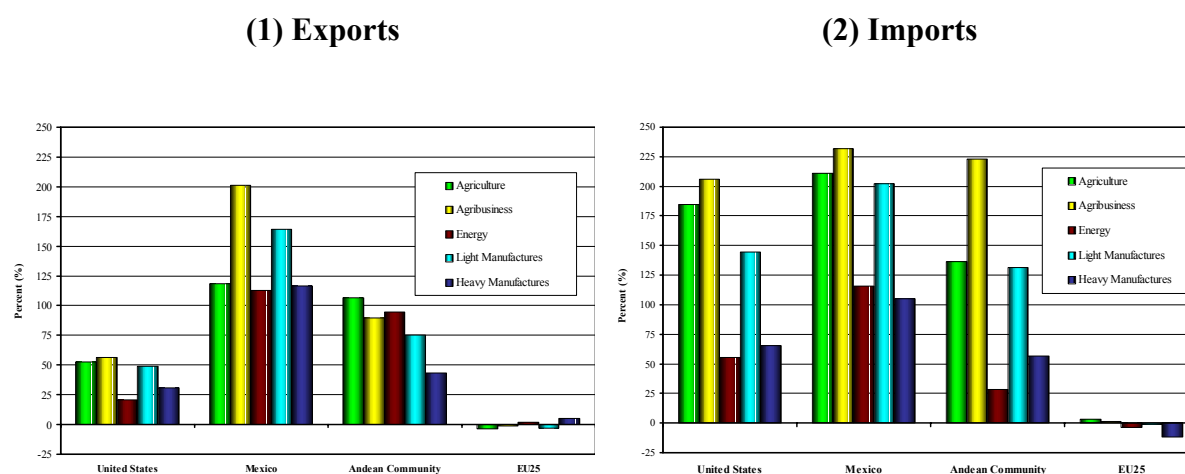
(1) Exports   **(2) Imports**

Exports increases are usually superior in the full FTAA case, while imports are always the case. For exports, *dairy products*, *motor vehicles*, *beverages and tobacco*, and *textiles and apparel*, in this order, present the greatest impacts, sectors where Mercosur, but perhaps for *motor vehicles*, clearly has an advantage *vis à vis* more competitive blocs/economies. Notwithstanding, increases are also positive in all remaining non-services sectors. On imports, the pattern is somehow reverted, with substantial increases now in the agricultural group. However the impact by percentage changes can be misleading, and the interpretation requires due care: for instance, a 117.80 percent rise in *grains* amounts to mere US$ 39.3 million, while an increase of 15.45 percent in *machinery* leads to US$ 2.7 billion gains!

Table 8 adds a further insight, by comparing the total flow changes for the four scenarios dealing with Hemispheric integrations. The Tables shows that the FTAA is as distorting—with respect to regions outside the agreement—as the Mercosur-US FTA, though, in the latter, Mercosur still increases its exports to all other regions. Overall, the FTAA is roughly as beneficial to Mexico and the Andean Community, in terms of their trade relations with Mercosur , as the individual scenarios C and D. It is undoubtedly a competitive choice within the realm of these four agreements.

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[10] The EU25 now loses 2.3 instead of US$ 2.4 billion.

Table 8: Comparison of the Hemispheric Approaches on Mercosur Trade:

Total Trade Flow Changes

Trade Scenarios Regions	Exports				Imports			
	A	C	D	E	A	C	D	E
	US FTA	Mexico FTA	Andean FTA	FTAA	US FTA	Mexico FTA	Andean FTA	FTAA
United States	39.70	-1.06	-1.10	36.75	69.26	0.54	1.19	70.43
Mexico	5.55	119.58	-1.08	124.65	-8.42	138.96	0.83	113.18
Andean Community	3.46	-0.81	78.64	61.54	-3.16	0.66	55.33	55.59
Rest of the Americas	2.48	-0.72	-0.92	38.03	-5.69	0.65	0.87	70.23
EU25	2.12	-1.24	-1.77	-0.53	-10.76	0.19	1.07	-10.33
Japan	2.69	-1.67	-2.21	0.34	-11.70	-0.12	0.97	-11.66
China	2.09	-1.26	-1.93	-0.66	-8.77	0.57	1.07	-7.79
Asia 10	2.27	-1.52	-2.32	-0.88	-8.08	0.26	1.00	-7.43
Rest of the World	2.16	-1.09	-1.97	-0.67	-6.16	0.42	0.60	-5.02

Source: Authors' estimation.

The additional insight refers to the bilateral trade positions caused by the FTAA. Taking, for instance, the differences of the impact of Mercosur with the Andean Community shows that the bloc tends to reduce trade surplus with the Andean, especially in 9 manufacturing industries. Indeed, with the exceptions of *leather, wood and paper*, *chemical products*, and *non-ferrous metals*, the losses are significant. In the case with the United States, trade balance further deteriorate the bloc's trade accounts in all manufacturing industries with the exception of *chemical products* and *electric equipment*.

(4)   Scenario F: FTA with China

With the proviso that statistical data for China probably are the more disputable ones in our database, Table 9 displays the regional impact by macro-sector groups by generated the agreement. Close examination reveals that qualitatively the Mercosur-China FTA induces a pattern similar to the one generated by the Mercosur-EU25 FTA. The difference in exports lies in *heavy manufactures*, where Mercosur exports now suffer a deviation in Asian countries and the rest of the world, while the patterns of exports to other regions are not affected. Deviations in *heavy manufactures* are, however, more modest. In the case of imports, *light manufacture* are now affected in all regions. Annex Table 7 gives the impact on total trade and bilateral impact with China.

In general, though the magnitudes of the impact for China are usually high to very high, the values of impact in terms of trade flows are small. Even so, the fact that many negative impacts due to trade diversion appear on trade outside the partner must be taken into account. Definitely, however, China is a partner whose role will evolve.

(5)   Impact on Labor and Production

Changes in trade flows have no clear, unidirectional relation with what happens to output and,

Table 9: Impact of Mercosur-China FTA: Trade Flow Changes

(a) Exports

Macrosectors	United States	Mexico	Andean Community	Rest of Americas	EU25	Japan	China	Asia 10	Rest of World
Agriculture	-1.47	-1.49	-1.09	-1.21	-1.75	-2.07	31.20	-1.54	-1.71
Agribusiness	-1.06	-0.54	-0.60	-0.72	-0.66	-1.23	117.26	-0.85	-0.73
Energy	-0.19	-0.10	-0.54	-0.26	-0.81	-0.80	10.29	-0.75	-0.97
Light Manufactures	-0.83	-0.53	-0.01	-0.56	-1.64	-1.50	311.57	-1.90	-1.49
Heavy Manufactures	0.93	1.57	0.40	0.22	0.20	-1.48	490.03	-1.30	-0.05
Total	0.18	1.06	0.02	-0.27	-0.94	-1.45	141.13	-1.29	-1.02

(b) Imports

Macrosectors	United States	Mexico	Andean Community	Rest of Americas	EU25	Japan	China	Asia 10	Rest of World
Agriculture	2.32	1.81	1.39	1.29	2.28	3.95	196.71	3.35	2.66
Agribusiness	1.35	1.45	1.15	1.48	1.39	1.43	339.17	0.99	1.47
Energy	0.44	-0.05	0.63	0.22	0.20	0.06	35.77	0.05	0.73
Light Manufactures	-2.75	-2.75	-2.03	-0.44	-2.29	-7.40	286.55	-3.21	-2.50
Heavy Manufactures	-0.86	-1.41	-0.15	-0.49	-1.51	-1.97	103.92	-1.18	-0.76
Total	-0.84	-1.34	0.37	-0.14	-1.40	-2.01	142.74	-1.40	-0.27

Source: Authors' estimation.

most importantly, welfare—the ultimate goal of any CGE evaluation. Synthetic information on all the scenarios shows, respectively, the changes in labor, output and welfare. Reminding that labor is reallocated in each scenario, keeping its total supply constant, the analysis shows that, in general, changes induced by the six scenarios are not very drastic. As expected, the directions of change are the similar between labor and production. Table 10 shows the impact of all scenarios on labor market by macro-sector, and Table 11 on production. Annex Tables 8 detail the impact on labor market by sector, and Annex Table 9 reports the impact on production.

The Mercosur-EU25 agreement induces a more worrying contraction on the sectors of *heavy manufactures* such as *motor vehicles*, *other transport equipment* and *machinery*, what, for the two last ones, also happens with the US or FTAA agreements, though with less intensity. This might be due to the impact of the major unleashing of *agribusiness* exports to the EU, what might be distorting somewhat the results. Moreover, given the more traditional sides of the European economy, there is less scope for Mercosur manufactures in that market, the reverse taking place.

Table 10: Impact on Labor Market: Percentage Change from Base

Sectors/ Macro-sectors	Base Labor*	Scenarios/Partners					
		A	B	C	D	E	F
		US	EU25	Mexico	Andean	FTAA	China
Agriculture	10,851.7	0.57	4.16	-0.06	0.15	0.67	0.12
Agribusiness	1,905.5	0.66	10.34	0.64	0.51	2.28	-0.10
Energy	1,497.0	0.43	0.60	-0.16	-0.41	0.09	-0.24
Light Manufactures	4,077.4	2.90	1.90	0.30	0.00	3.07	-1.17
Heavy Manufactures	6,259.6	-2.68	-6.94	0.53	0.63	-1.63	1.23
Services	65,879.7	-0.05	-0.46	-0.07	-0.09	-0.21	-0.05
Total	90,470.9	0.00	0.00	0.00	0.00	0.00	0.00

Source: Mercosur database and Authors' estimation.

Note: * in 1,000 workers.

Table 11: Impact on Production: Percentage Change from Base

Sectors/ Macro-sectors	Base Values*	Scenarios/Partners					
		A	B	C	D	E	F
		US	EU25	Mexico	Andean	FTAA	China
Agriculture	111.4	0.28	1.92	-0.03	0.09	0.33	0.08
Agribusiness	68.2	0.47	8.31	0.26	0.17	1.37	-0.07
Energy	61.3	0.07	-0.76	-0.15	-0.37	-0.02	-0.17
Light Manufactures	87.2	1.84	1.23	0.18	0.01	1.95	-0.48
Heavy Manufactures	191.8	-1.18	-4.95	0.35	0.45	-0.39	1.48
Services	766.2	-0.05	-0.26	0.00	0.03	-0.14	-0.03
Total	1,286.0	-0.03	-0.21	0.15	0.15	0.09	0.17

Source: Mercosur database and Authors' estimation.
Note: * in US$billion.

The FTAA reduces output in the *other light manufactures*, *chemicals and plastics*, *non-ferrous metals* and, especially, in *other transport equipment* and *machinery* sectors. The most notable increase takes place in *motor vehicles* due largely to the bloc's robust exports to Mexico and relatively high Mexican protection at benchmark. This shows increasing intra-industry trade between two markets. Apart from this, a production loss could be anticipated for *other transport equipment*, where the corresponding exports increase less in the FTAA than in the US-Mercosur FTA on one hand, and domestic demand is substituted by strong imports from partners on the other.

(6) Impact on Welfare and Macroeconomic Indicators

Judging from a single figure of merit, Table 12 easily ranks the options. Irrespectively whether GDP or EV (Equivalent Variation) is used, the competing pairs of scenarios are 'EU25' *versus* 'FTAA' and 'US' *versus* 'China'. The latter means that China, if on one hand inducing, via its FTA with Mercosur, a trade flows pattern similar to that created by the EU25-Mercosur FTA, on the other hand, in welfare gains, is already competing with a US-Mercosur FTA.

Table 12. Impact on Welfare and Macroeconomic Indicators: Total Variations

Indicators	Base Values	Scenarios/Partners					
		A	B	C	D	E	F
		US	EU	Mexico	Andean	FTAA	China
Real GDP	438.1	0.19	0.79	0.16	0.16	0.65	0.30
Welfare (EV)	75.7	0.38	0.48	0.08	0.06	0.63	0.26
Exports*	72.8	11.09	23.52	3.09	2.82	19.41	6.18
Imports*	68.5	12.31	23.40	2.77	2.34	19.86	5.93

Source: Authors' estimation.
Note: * only merchandise trade.

Welfare results, both in plain real GDP variation, or in EV computation, are however relatively low, for a model including imperfect competition. The explanation probably lies on the fact that most gains, in all agreements, derive from the perfect competition sectors, those in strategic interaction many times suffering a contraction. This is linked to an important policy issue to be developed in the next section.

5.   Mercosur: Opportunities and Deficiencies

The simultaneous analysis on several integration possibilities provides additional insights on the performance of the "invariant" partner, namely Mercosur. In particular, questions of efficiency and adjustment may be identified in a more consistent way. It is tempting to divide the respective results in order to evaluate the variations in gross labor productivity by sector for each agreement; this, however, is not very informative in the present exercise. The constant total labor closure enhances the absolute value of the changes in this factor, which, as mentioned above, have the similar directions as those for output. This implies that, uniformly, productivity *decreases* for a sector where output expands, and *increases* for those that suffer a contraction. Though this can make sense, the fact that it is a consequence of the mechanics of the model makes the productivity analysis less realistic.

The issue of adjustment, called upon in a CGE context by Giordano and Watanuki (2001) and Flôres (2003), remains a major one, especially for a bloc with mixed characteristics like Mercosur. Based on the sectoral impact on production, we classified the sectors into winning (W), neutral (N), conflicting (C) and losing (L) categories. Neglecting variations less than 1 per cent in absolute value, a sector is defined as:

(i)   Winning: if all other output variations are positive;
(ii)   Neutral: if no variations outside the 1 per cent range take place;
(iii)   Conflicting: if positive and negative variations appear outside the range; and
(iv)   Losing: if all other output variations are negative.

Table 13 shows the result of directly applying the above criteria. The outcome is informative. Among the globally competitive groups of *agriculture* and *agribusiness*, one loser appears *beverages and tobacco* due to its contraction in the EU25 FTA. It is worth pointing out that orange juice, a very performing Brazilian export is grouped in this sector. Also, *oilseeds and soybeans* turns out as a neutral sector.

In *light manufactures* group, the situation is not very encouraging, but for *leather, wood, paper,* where a basket of goods from Argentina, Brazil and Uruguay have established market niches, with growth potential. *Textiles and apparel* manages to be a winner, thanks to China, but *other light manufactures* is a total loser. Things get worse in *heavy manufactures*. The analysis finds three losing industries—*chemical and plastic products*, *machinery* and *non-ferrous metals*, what is both surprising and worrying—and two conflicting cases: *motor vehicles*, and *other transport equipment*. Out of the latter category, *motor vehicles* are more of a winner, but will be big loser for the strong contraction in the EU25 scenario. On the other hand, *other transport equipment* is

more of a loser, if an increase in exports due to China FTA does not take place. The competitive Brazilian middle-sized aircraft are included in this last sector.

Table 13. Winners and Losers Evaluation based on Total Output Changes

Sectors	Categories	Scenarios/Partners					
		A	B	C	D	E	F
		US	EU	Mexico	Andean	FTAA	China
Agriculture							
Wheat, Corn and Other Grains	W	-	2.50	-	-	-	-
Vegetables and Fruits	W	-	1.65	-	-	-	-
Oil seeds and Soybeans	N	-	-	-	-	-	-
Sugar	W	1.54	1.28	-	-	1.79	-
Coffee, Rice and Other Crops	W	-	2.19	-	-	-	-
Animal products	W	-	2.12	-	-	-	-
Agribusiness							
Bovine Meat	W	-	20.63	-	-	1.54	-
Poultry Meat	W	1.67	23.06	-	-	3.48	-
Dairy Products	W	-	-	1.28	-	1.97	-
Beverages and Tobaccos	L	-	-4.28	-	-	-	-
Vegetable Oils	W	-	8.56	-	-	-	-
Energy							
Minerals	N	-	-	-	-	-	-
Energy Products	L	-	-1.60	-	-	-	-
Light Manufactures							
Textiles and Apparel	W	-	-	-	-	-	1.52
Leather, Wood and Paper	W	3.81	3.31	-	-	3.97	-
Other Light Manufactures	L	-1.80	-2.71	-	-	-1.96	-6.74
Heavy Manufactures							
Chemical and Plastic Products	L	-1.14	-1.96	-	-	-1.08	-
Ferrous metals	W	2.32	-	-	-	3.15	-
Non-ferrous Metals	L	-	-2.11	-	-	-1.68	-
Motor Vehicles	C	-	-16.34	1.59	2.37	5.62	11.14
Other Transport Equipment	C	-4.37	-13.81	-	-	-4.77	2.58
Electric Equipment	W	1.08	-	-	-	1.87	-
Machinery	L	-4.56	-5.28	-	-	-3.63	-

Source: Authors' estimation.
Note: In Categories; W: Winning; N: Neutral; C: Conflicting: and L: Losing.

Finally, the pattern in the *energy* group is faithful to Mercosur's relatively neutral standing in the two aggregate sectors. It is also important to highlight that, out of the 13 winning sectors, 5 sectors are classified by a single FTA evaluation, namely the EU FTA: all are in *agriculture* and *agribusiness* groups. The FTA with the EU25, as mentioned in the previous section, presents perhaps the more distorted, though not uninteresting, result, driven by the opening of the CAP-protected market.

Summing up the previous analysis, three broad groups can be extracted from the outcome in Table 13:

(i) Mercosur is clearly competitive in the sectors: *sugar; bovine and poultry meat; dairy products; leather, wood, paper; ferrous metals; electric equipment* and *motor vehicles*; the last one presenting problems in a EU25 FTA;

(ii)   Mercosur has competitiveness problems in the sectors: *other light manufactures; chemicals and plastics; non-ferrous metals; other transport equipment* and *machinery;*

(iii)   For the remaining 10 sectors, the bloc is roughly:
- neutral for 6 sectors presenting some competitiveness, depending on agreements: *wheat, corn and other grains; vegetable and fruits; coffee, rice and other crops; animal products; vegetable oils; and textiles and apparel;*
- more of a loser character of 2 sectors: *beverages and tobaccos;* and *energy products;* and
- true neutral of 2 sectors: *oil seeds and soybeans;* and *minerals.*

Despite the proviso that the aggregation level at stake mixes positive and negative situations, some exemplified above, and the inevitably arbitrary character of any "classification", the final synthesis doesn't look absurd. It lays bare a key deficiency of the bloc, which, unfortunately, is really competitive in a few classical manufactures sectors and selected segments of the *agribusiness* plus *sugar* with lower value-added products. All non-competitive sectors comprise key manufacturing industries. Table 14 gives a more concrete and dramatic round-up of this situation, by grouping merchandise trade balance into our three categories.

Table 14: Mercosur's Trade Account by Thee Competitiveness Group

Categories	Nos. of Sectors	Trade in Goods Account				
		Exports		Imports		Balance
		(US$ bn)	(%)	(US$ bn)	(%)	(US$ bn)
Competitive	8	24.9	34.2	18.4	26.8	6.5
Non-Competitive	5	15.3	21.0	40.7	59.4	-25.4
Neutral	10	32.6	44.8	9.4	13.8	23.2
Total	23	72.8	100.0	68.5	100.0	4.3

Source: Authors' estimation cited in text and Mercosur database.

The table highlights important features of the present state of Mercosur's trade policy. First, the bloc is right in pushing for greater *market access*, particularly in *agriculture* in all international trade negotiations. Its competitive sectors reap a surplus of US$ 6.5 billion, which could be much bigger, were key markets more open to its competitive goods. Second, the bloc has correctly been quite aggressive in the 'neutral' sectors, exploiting regional and comparative advantages, as well as opening new markets and improving distribution channels, in a way that has procured a sizeable surplus in this category. This surplus is, however, lower than the deficit it experiences in 'higher technology goods' trade. Adding to the latter a US$ 8.1 billion deficit in services trade (see Annex Table 2), sustainability of the present Mercosur trade accounts is by no means guaranteed, if it cannot either extract or induce positive structural changes in the international trade flows.

It is of course not necessarily bad to have the bloc's own trade assets in low value-added sectors. Creativity, upgrading and top quality are important tools for improving the terms of trade, as the Brazilian '*sandálias havaianas*', the Argentine '*dulce de leche*'-based goods and the Uruguayan

talabarteria[11] respectively show, beyond the persistent upgrading that meat exporters are accomplishing. But, this is not enough. As evidenced even in this aggregate CGE exercise, the bloc must seriously consider an industrial adjustment process, in order to enhance its overall competitiveness and to provide it a better insertion in the world value-added chains. Whether this will be pursued through a coordinated, internal political will, or forced, in a less planned and worse way, via the route of FTAs, is a decision already in the realm of politics.

6.   Conclusions

It seems that the imperfect competition sectors, by keeping the segmented markets strategy, are able, in all scenarios, to practice a kind of reciprocal dumping, cited by *à la* Brander and Krugman (1983), what partially "saved" them from more drastic outcomes. Indeed, compared with a carefully conducted study like Harrison et al. (2002), our corresponding results are much less dramatic as regards output changes; decreases in these quantities are relatively small, even in the full FTAA scenario.

Imperfect competition accounts also for less volatile changes than in full perfect competition exercises, where though welfare doesn't vary much, output, imports and exports vary wildly to accommodate the changes in the equilibrium price vector. Nevertheless, welfare changes were somewhat low, signalling perhaps perfect competition effects were still strong. One needed development then is the inclusion of more sectors under imperfect competition; the sectors in a*gribusiness* group, among them, will be the first natural candidates. Nevertheless, given the aggregation level of the model, it will not be easy to portray a minimally coherent strategic interaction for some of them, like *chemicals and plastics*.

We point out again that the study focussed mainly on market access for goods. The dynamics of other crucial concessions—regarding, for instance, foreign direct investment—may greatly affect the results here discussed. Moreover, better treatment of the services sector seems mandatory.

Another key issue is rules of origin (RoO). Brenton and Manchin (2002) call attention to the fact that, in 1999, two-thirds of the products eligible to preferences of different forms, which entered the EU from developing countries, did so under the most-favoured-nation (MFN) tariff, thanks to the appallingly cumbersome and costly red tape needed to prove that one complied with the specific RoO. Since at least Hoekman (1993) and Garay and Estevadeordal (1996), specialists have been emphasizing the role played by RoO in concessions and preferential agreements, like the Generalised System of Preferences or the North America Free Trade Agreement (NAFTA). Adequate treatment of RoO in the CGE framework is only beginning though, and in fairly debatable ways. The IDB has been making efforts to develop a system that may allow an easier and more systematic way of treating these questions, something to be incorporated in later versions of the model.[12]

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[11] This Spanish word refers to the whole set of leather goods and implements used in horseriding, from saddles to the rider's boots.

[12] See, for approaches within the CGE context, Bouët et al. (2003) and Gasiorek et al. (2001), and Garay and Cornejo (2002), as one of the documents related to the IDB efforts.

It is also worth pointing out that an indirect sensitivity analysis has been performed, when contrasting the 6 sets of FTA results, but this doesn't exclude the need for further investigations in this line.

In qualitative terms, a main message stands out. With being a less competitive economy, Mercosur, while facing FTA's with the United States or the EU, will be able to reap profits or welfare gains in its performing traditional sectors, where, to its competitive advantages, one must add the richness of related natural endowments. In the more value-added sectors, the situation is not very clear. In general, there will be a domestic contraction, imports will raise and, rather than from a competitiveness effect, which would set the sector in better shape for surviving in the world arena, welfare gains in imperfect competition are mostly due to the sheer reduction in tariffs. This pattern is reasonably serious in the FTAA and in an FTA with the United States, but also arises, in a more distorted way, when the United States is discarded for the EU25.

The broad finding above raises a flag for the timing of tariff liberalisation or, thinking on the negotiation strategies, for perhaps a Grossman and Helpman (1995) approach of mere sector exclusions in some of the FTAs examined, be it either to appease legitimate internal (sector) fears or to control the development of possibly competitive ones.

Agriculture, which fits into the basic message just highlighted, shows the usually promising figures, both for commodities and *agribusiness*, being of interest now to allocate the results among the four members. It is also important because, in our optimistic versions of FTAs, subsidies were disregarded. Given that most production subsidies lie in the CAP, this signals that the EU25 will be an extremely competitive partner, *vis à vis* the United States, for an FTA with Mercosur, provided a move beyond tariffs is made.

From a regional viewpoint, the results showed that South-South agreements, like the one with the Andean Community, can turn out better than expected. Moreover, the signs of China getting closer to the US and the EU25—in terms of "after FTA" effects—only add to the certainty of its importance in the very near future.

Finally, it is worth reminding the WTO dimension, due to its interrelationships with the final objectives of this study. Indeed, it is somehow ironic that in sectors, where the bloc will undoubtedly reap gains in almost any FTA scenario, like *leather, wood, paper* or *textiles and apparel*, and even agriculture in general, multilateral liberalisation will have an impact on these very *gains*, by enhancing the market access of other competitors, not only underdeveloped ones, but the likes of India, China or other Asiatic countries, not forgetting the United States. It is perhaps not too radical to bring back the importance and precedence of multilateral negotiations. Also, given the encompassing character of the FTA proposals here evaluated, in areas like services, where Mercosur in principle lags behind, the multilateral forum seems a better locus for exchanges.

It is undoubtedly important to clinch FTAs, however, negotiations must not be conducted with a short-term perspective; nowadays appealing gains may become vapid conquests even before full implementation of the agreement. Market access concessions and demands must be designed keeping in mind the bloc's global competitiveness and potentialities, as well as the possible

outcomes of the different negotiations. Moreover, it is high time for Mercosur to decide whether it will, moved primarily by its internal forces, streamline and upgrade its exports profile, or will let it at the mercy of distinct integration shocks, many not in the desired directions.

Annex

Annex Table 1: Sectoral Concordance of the AMIDA and the GTAP Classification

No.	AMIDA Model				GTAP Database	
	Commodities	Description		Commodities	Description	
I.	**Agriculture**					
1	GRAIN	Wheat, Corn and Other Grains	2	WHT	Wheat	
			3	GRO	Corn, Cereal grains nec*	
2	VEGET	Vegetables and Fruits	4	V_F	Vegetables, fruit, nuts	
3	OLSYB	Oil seeds and Soybeans	5	OSD	Oil seeds and Soybeans	
4	SUGAR	Sugar	6	C_B	Sugar cane, sugar beet	
			24	SGR	Sugar	
5	OTCRP	Coffee, Rice and Other Crops	1	PDR	Paddy rice	
			8	OCR	Coffee Crops nec*	
			23	PCR	Processed rice	
6	LVSTK	Animal products	9	CTL	Bovine cattle, sheep and goats, horses	
			10	OAP	Animal products nec*	
II.	**Agribusiness**					
7	BMEAT	Bovine Meat	19	CMT	Bovine meat products	
8	OMEAT	Poultry Meat	20	OMT	Meat products nec*	
9	DAIRY	Dairy Products	11	RMK	Raw milk	
			22	MIL	Dairy products	
10	BVTBC	Beverages and Tobaccos	26	B_T	Beverages and tobacco products	
11	OTHFD	Vegetable Oils	7	PFB	Plant-based fibers	
			12	WOL	Wool, silk-worm cocoons	
			13	FOR	Forestry	
			14	FSH	Fishing	
			21	VOL	Vegetable oils and fats	
			25	OFD	Food products nec*	
III.	**Energy**					
12	MINRL	Minerals	18	OMN	Minerals nec*	
			34	NMM	Mineral products (china, glass, cement) nec*	
13	ENRGY	Energy Products	15	COL	Coal	
			16	OIL	Oil	
			17	GAS	Gas	
			32	P_C	Petroleum, coal products	
IV.	**Light Manufactures**					
14	TXTIL	Textiles and Apparel	27	TEX	Textiles	
			28	WAP	Wearing apparel	
15	LTMFG	Leather, Wood and Paper	29	LEA	Leather products, footwear	
			30	LUM	Wood products (furniture)	
			31	PPP	Paper products, publishing	
16	OLMFG	Other Light Manufactures	42	OMF	Manufactures nec*	
V.	**Heavy Manufactures**					
17	CHMCL	Chemical and Plastic Products	33	CRP	Chemical, rubber, plastic products	
18	FRMTL	Ferrous metals	35	I_S	Ferrous metals	
19	NFMTL	Non-ferrous Metals	36	NFM	Metals nec*	
			37	FMP	Metal products	
20	VEHCL	Motor Vehicles	38	MVH	Motor vehicles and parts	
21	OTREQ	Other Transport Equipment	39	OTN	Transport equipment nec*	
22	ELCEQ	Electric Equipment	40	ELE	Electronic equipment	
23	MCHNY	Machinery	41	OME	Machinery and equipment nec*	
VI.	**Services**					
24	UTLTY	Utilities and Construction	43	ELY	Electricity	
			44	GDT	Gas manufacture, distribution	
			45	WTR	Water	
			46	CNS	Construction	
25	SERVC	Trade and Services	47	TRD	Trade	
			48	OTP	Transport nec	
			49	WTP	Water transport	
			50	ATP	Air transport	
			51	CMN	Communication	
			52	OFI	Financial services nec	
			53	ISR	Insurance	
			54	OBS	Business services nec	
			55	ROS	Recreational and other services	
			56	OSG	Public Administration, Defense, Education, Health	
			57	DWE	Dwellings	

Annex Table 2: Mercosur Trade Flows at Benchmark (2001)

(1) Exports ($million)

Sectors/ Macro-sectors	United States	Mexico	Andean Community	Rest of Americas	EU25	Japan	China	Asia 10	Rest of World	Total
Wheat, Corn and Other Grains	19.0	3.0	191.6	155.5	301.4	134.6	2.5	207.1	1,112.2	2,127.0
Vegetables and Fruits	210.7	2.7	18.2	54.7	797.0	1.4		10.2	88.7	1,183.6
Oil seeds and Soybeans	26.1	44.4	116.4	52.6	2,312.9	171.3	1,496.7	286.5	308.6	4,815.4
Sugar	105.6		6.0	107.7	24.4	0.2	25.1	106.1	1,639.2	2,014.3
Coffee, Rice and Other Crops	464.6	37.6	47.0	112.9	1,441.3	194.0	88.3	84.4	423.1	2,893.1
Animal products	838.0	53.0	207.5	271.7	1,976.7	299.2	56.3	179.6	526.6	4,408.7
Agriculture	**1,663.9**	**140.7**	**586.7**	**755.0**	**6,853.6**	**800.7**	**1,669.0**	**874.0**	**4,098.4**	**17,442.1**
Bovine Meat	39.5	2.6	14.7	215.7	547.8	7.4	1.0	103.1	324.1	1,255.9
Poultry Meat	186.7		5.3	18.9	828.8	177.8	6.2	206.5	731.1	2,161.2
Dairy Products	33.9	94.7	55.0	29.9	0.5	1.9		4.4	40.2	260.6
Beverages and Tobaccos	62.0	9.8	15.6	36.9	91.2	43.9	0.4	9.6	28.6	298.0
Vegetable Oils	39.0	1.3	256.6	221.6	3,653.7	31.1	21.5	638.9	2,285.3	7,149.0
Agribusiness	**361.2**	**108.4**	**347.2**	**523.0**	**5,122.0**	**262.0**	**29.1**	**962.6**	**3,409.4**	**11,124.8**
Minerals	556.7	72.9	87.4	228.2	1,857.8	716.9	668.4	336.0	668.2	5,192.4
Energy Products	639.1	1.4	61.0	2,104.2	226.9		27.3		168.8	3,228.6
Energy	**1,195.9**	**74.3**	**148.4**	**2,332.4**	**2,084.6**	**716.9**	**695.6**	**336.0**	**837.0**	**8,421.1**
Textiles and Apparel	357.0	49.8	158.8	152.6	329.2	40.6	126.2	17.8	66.2	1,298.2
Leather, Wood and Paper	3,306.2	188.2	215.3	512.3	2,438.9	240.3	387.0	580.2	371.1	8,239.6
Other Light Manufactures	115.9	11.4	27.1	24.7	48.8	16.6	1.4	7.8	20.7	274.4
Light Manufactures	**3,779.2**	**249.4**	**401.2**	**689.6**	**2,816.9**	**297.5**	**514.6**	**605.8**	**458.0**	**9,812.2**
Chemical and Plastic Products	1,033.9	204.6	745.4	732.6	954.0	107.4	78.4	159.3	357.4	4,373.2
Ferrous metals	1,382.3	154.9	303.6	275.8	695.5	113.2	116.3	429.8	385.5	3,857.1
Non-ferrous Metals	861.4	70.7	134.5	206.7	837.7	385.3	24.3	52.5	379.7	2,952.8
Motor Vehicles	1,356.0	1,142.6	593.8	445.0	931.1	9.3	130.0	31.7	332.4	4,972.0
Other Transport Equipment	2,430.4	9.7	25.1	44.1	707.2	0.8	60.9	18.9	256.1	3,553.2
Electric Equipment	1,417.6	104.7	131.3	136.9	213.9	19.1	25.6	40.2	36.0	2,125.2
Machinery	1,387.2	283.2	578.3	519.3	793.2	36.6	101.9	94.6	354.6	4,148.9
Heavy Manufactures	**9,868.8**	**1,970.6**	**2,512.1**	**2,360.3**	**5,132.6**	**671.7**	**537.4**	**827.1**	**2,101.8**	**25,982.4**
Utilities and Construction				28.3						28.3
Trade and Services	2,166.4	139.5	85.5	487.1	5,839.4	837.2	205.6	1,552.5	2,159.8	13,473.0
Services	**2,166.4**	**139.5**	**85.5**	**515.4**	**5,839.4**	**837.2**	**205.6**	**1,552.5**	**2,159.8**	**13,501.3**
Total (Merchandise)	**16,869.0**	**2,543.4**	**3,995.5**	**6,660.3**	**22,009.8**	**2,748.8**	**3,445.7**	**3,605.4**	**10,904.7**	**72,782.5**
Total (Gross)	19,035.4	2,682.9	4,081.0	7,175.7	27,849.2	3,586.0	3,651.3	5,157.9	13,064.5	86,283.8

(2) Imports ($million)

Sectors/ Macro-sectors	United States	Mexico	Andean Community	Rest of Americas	EU25	Japan	China	Asia 10	Rest of World	TOTAL
Wheat, Corn and Other Grains	17.6		0.1	15.0	0.2				0.7	33.4
Vegetables and Fruits	9.7	3.3	79.1	114.5	32.5		10.5	3.3	28.2	281.2
Oil seeds and Soybeans	1.8	0.7	0.1	2.0	1.1		0.1		1.1	6.9
Coffee, Rice and Other Crops	38.4	0.7	13.3	13.6	48.7	4.5	4.6	27.7	68.6	219.9
Animal products	224.2	29.5	110.9	180.1	310.5	5.8	21.4	53.2	257.3	1,192.9
Agriculture	**291.7**	**34.2**	**203.4**	**325.3**	**392.9**	**10.3**	**36.5**	**84.1**	**355.9**	**1,734.3**
Bovine Meat	4.9			2.3	3.7			0.3	2.8	14.0
Poultry Meat	3.5		0.6	8.2	21.0	0.2			0.4	33.8
Dairy Products	11.0	0.2		4.2	41.1				21.0	77.5
Beverages and Tobaccos	26.4	5.0	1.2	60.5	272.3	0.4	0.1	0.8	42.7	409.3
Vegetable Oils	8.6	0.1	2.4	0.2	81.9	0.1		33.4	11.8	138.4
Agribusiness	**54.4**	**5.3**	**4.2**	**75.4**	**420.0**	**0.6**	**0.1**	**34.5**	**78.6**	**673.2**
Minerals	166.9	21.1	105.3	298.6	381.5	47.8	54.8	38.6	143.0	1,257.5
Energy Products	337.8		773.5	100.3	79.4	42.6	185.6	27.4	2,399.6	3,946.1
Energy	**504.7**	**21.1**	**878.8**	**398.9**	**460.9**	**90.4**	**240.4**	**65.9**	**2,542.6**	**5,203.6**
Textiles and Apparel	163.7	32.5	31.3	60.5	357.7	18.4	302.7	597.2	368.0	1,932.0
Leather, Wood and Paper	446.7	14.6	40.9	464.3	894.7	23.6	177.0	149.3	117.4	2,328.5
Other Light Manufactures	109.8	4.9	6.8	15.5	177.8	33.6	295.7	100.5	37.2	781.9
Light Manufactures	**720.2**	**52.1**	**79.1**	**540.3**	**1,430.1**	**75.6**	**775.4**	**847.1**	**522.6**	**5,042.4**
Chemical and Plastic Products	4,950.9	470.2	252.1	485.1	5,389.5	532.5	550.4	805.6	2,582.7	16,018.9
Ferrous metals	105.3	13.4	5.9	20.2	438.1	68.6	23.0	59.4	186.5	920.4
Non-ferrous Metals	545.4	16.2	172.3	423.3	964.1	143.8	117.0	111.5	263.0	2,756.6
Motor Vehicles	537.4	232.8	9.8	69.6	2,516.1	847.5	8.2	301.7	307.7	4,830.8
Other Transport Equipment	2,075.4	0.7		92.1	951.9	135.3	87.5	70.2	90.5	3,503.7
Electric Equipment	3,633.5	200.3	0.7	254.0	1,784.6	807.1	644.8	2,110.5	735.9	10,171.5
Machinery	5,211.3	147.8	58.3	292.8	7,367.9	1,496.2	830.6	1,053.0	1,156.7	17,614.5
Heavy Manufactures	**17,059.2**	**1,081.4**	**499.0**	**1,637.1**	**19,412.3**	**4,031.0**	**2,261.5**	**4,512.0**	**5,322.9**	**55,816.5**
Services	**4,129.2**	**209.0**	**98.8**	**1,002.9**	**9,650.2**	**699.7**	**297.4**	**2,614.2**	**2,948.1**	**21,649.5**
Total (Merchandise)	**18,630.1**	**1,194.1**	**1,664.4**	**2,977.0**	**22,116.3**	**4,207.9**	**3,314.0**	**5,543.6**	**8,822.7**	**68,470.1**
Total (Gross)	22,759.3	1,403.1	1,763.2	3,979.9	31,766.5	4,907.6	3,611.4	8,157.8	11,770.8	90,119.6

Source: Mercosur database constructed on the basis of COMTRADE.

Annex Table 3: Impacts of Mercosur's FTAs with the US and the EU25: Total Trade Flows Changes

Sectors/ Macro-sectors	Scenario A: US FTA		Scenario B: EU FTA	
	Exports	Imports	Exports	Imports
Wheat, Corn and Other Grains	1.09	66.74	11.86	59.48
Vegetables and Fruits	3.70	5.69	28.67	46.25
Oil seeds and Soybeans	0.39	34.03	-5.26	62.06
Sugar	6.01		7.59	
Coffee, Rice and Other Crops	7.95	35.52	41.61	135.55
Animal products	7.81	33.57	40.98	123.91
Agriculture	**4.48**	**29.94**	**20.08**	**111.31**
Bovine Meat	3.76	34.42	269.02	25.99
Poultry Meat	4.36	6.70	81.55	60.92
Dairy Products	13.02	32.65	0.33	114.67
Beverages and Tobaccos	25.71	10.67	10.23	118.95
Vegetable Oils	0.70	13.62	24.32	198.44
Agribusiness	**2.71**	**14.10**	**62.12**	**129.96**
Minerals	5.89	12.87	14.03	33.53
Energy Products	2.04	0.80	-0.08	5.72
Energy	**4.42**	**3.74**	**8.62**	**12.37**
Textiles and Apparel	25.09	14.44	42.36	31.80
Leather, Wood and Paper	20.87	12.00	23.30	23.88
Other Light Manufactures	6.21	42.02	9.34	62.56
Light Manufactures	**21.02**	**17.59**	**25.43**	**32.91**
Chemical and Plastic Products	15.08	7.89	12.37	8.44
Ferrous metals	13.52	7.63	15.75	26.12
Non-ferrous Metals	12.83	9.38	24.88	15.86
Motor Vehicles	19.11	22.27	9.95	100.34
Other Transport Equipment	26.05	41.32	4.42	25.21
Electric Equipment	20.73	5.61	8.91	3.71
Machinery	16.35	11.61	18.26	15.76
Heavy Manufactures	**17.53**	**12.06**	**13.40**	**19.55**
Services	**0.97**	**-1.10**	**-2.67**	**3.29**
Total	**9.51**	**9.09**	**19.42**	**18.57**

Source: Authors' estimation.

Annex Table 4: Impact of Mercosur's FTAs with the Andean community:
Total Trade Flows Changes

(1) Exports

Sectors/ Macro-sectors	United States	Mexico	Andean Community	EU25
Wheat, Corn and Other Grains	-6.24	-3.39	93.95	-7.75
Vegetables and Fruits	0.61	0.42	94.11	0.85
Oil seeds and Soybeans	-1.50	-1.31	55.83	-1.22
Sugar	-0.94		216.24	-1.52
Coffee, Rice and Other Crops	-1.08	-1.09	112.01	-1.40
Animal products	-1.40	-1.63	236.17	-3.09
Agriculture	**-1.08**	**-1.39**	**139.38**	**-1.84**
Bovine Meat	-2.02	-1.25	134.36	-1.35
Poultry Meat	-1.92	0.00	109.05	-1.86
Dairy Products	-1.06	-1.18	208.28	-2.84
Beverages and Tobaccos	-1.13	-0.89	110.64	-1.12
Vegetable Oils	-2.21	-1.42	77.28	-1.43
Agribusiness	**-1.75**	**-1.16**	**102.43**	**-1.48**
Minerals	-0.49	-0.27	100.47	-0.89
Energy Products	-0.04	-0.08	62.59	-0.25
Energy	**-0.25**	**-0.27**	**84.90**	**-0.82**
Textiles and Apparel	-1.20	-0.80	121.99	-2.74
Leather, Wood and Paper	-1.24	-1.01	44.83	-2.29
Other Light Manufactures	-0.10	-0.38	105.26	-1.78
Light Manufactures	**-1.20**	**-0.94**	**79.45**	**-2.34**
Chemical and Plastic Products	-1.75	-0.93	39.23	-1.72
Ferrous metals	-1.56	-1.18	40.80	-3.47
Non-ferrous Metals	-0.99	-0.65	46.76	-2.26
Motor Vehicles	-0.37	-1.09	92.93	-0.89
Other Transport Equipment	-1.31	-1.48	135.58	-1.54
Electric Equipment	-1.03	-0.88	29.51	-2.03
Machinery	-0.92	-1.43	72.64	-2.74
Heavy Manufactures	**-1.14**	**-1.10**	**60.67**	**-2.04**
Services	**-1.23**	**-1.10**	**-2.89**	**-1.09**
Total	**-1.11**	**-1.08**	**76.93**	**-1.63**

(2) Imports

Sectors/ Macro-sctors	United States	Mexico	Andean Community	EU25
Wheat, Corn and Other Grains	10.48		136.54	9.46
Vegetables and Fruits	-2.37	-2.38	83.05	-2.43
Oil seeds and Soybeans	3.37	3.61	170.06	2.58
Sugar				
Coffee, Rice and Other Crops	1.66	1.56	114.01	1.49
Animal products	2.98	3.01	146.95	2.88
Agriculture	**3.09**	**2.47**	**119.97**	**2.27**
Bovine Meat	1.83	0.00	0.00	1.80
Poultry Meat	1.97	0.00	70.22	1.95
Dairy Products	3.65	3.59	0.00	3.58
Beverages and Tobaccos	1.52	1.53	182.32	1.48
Vegetable Oils	3.30	3.38	204.06	2.87
Agribusiness	**2.29**	**1.66**	**177.37**	**1.98**
Minerals	0.21	0.23	87.28	0.17
Energy Products	-0.46		21.15	-0.55
Energy	**-0.24**	**0.23**	**29.07**	**0.05**
Textiles and Apparel	1.73	1.74	180.89	1.70
Leather, Wood and Paper	0.70	0.71	52.07	0.69
Other Light Manufactures	1.92	1.94	299.15	1.89
Light Manufactures	**1.12**	**1.47**	**124.48**	**1.09**
Chemical and Plastic Products	0.75	0.76	41.77	0.73
Ferrous metals	1.45	1.48	69.24	1.43
Non-ferrous Metals	0.61	0.62	65.25	0.60
Motor Vehicles	0.31	0.34	304.48	0.29
Other Transport Equipment	2.87	2.90	0.00	2.82
Electric Equipment	0.66	0.66	34.76	0.66
Machinery	1.48	1.49	109.73	1.45
Heavy Manufactures	**1.20**	**0.76**	**63.27**	**1.05**
Services	**1.38**	**1.39**	**2.87**	**1.36**
Total	**1.22**	**0.92**	**52.39**	**1.16**

Source: Authors' estimation.

Annex Table 5: Impact of FTAA on Major Markets: Total Trade Flows Changes

Sectors/ Macro-sectors	Exports				Imports			
	United States	Mexico	Andean Community	EU25	United States	Mexico	Andean Community	EU25
Wheat, Corn and Other Grains	38.76	401.71	16.11	-5.20	120.10		301.14	6.22
Vegetables and Fruits	27.21	128.89	95.39	1.62	118.52	134.33	81.99	-6.07
Oil seeds and Soybeans	187.37	37.25	41.94	-2.15	137.37	162.12	224.22	4.23
Sugar	101.94		220.63	-4.09				
Coffee, Rice and Other Crops	74.15	115.61	131.48	-9.39	183.96	225.30	121.76	10.44
Animal products	37.43	171.34	218.03	-4.35	193.44	220.28	177.15	3.36
Agriculture	**52.85**	**118.19**	**106.44**	**-4.01**	**184.93**	**210.90**	**136.61**	**3.46**
Bovine Meat	75.85	461.25	130.09	-0.39	107.64	0.00	0.00	0.91
Poultry Meat	29.73	0.00	103.83	0.09	87.14	0.00	76.94	-1.22
Dairy Products	89.98	186.29	202.35	-5.56	276.22	426.20	0.00	7.02
Beverages and Tobaccos	114.22	277.37	112.92	-1.06	195.97	220.68	197.72	0.14
Vegetable Oils	45.76	167.57	61.66	-1.71	251.80	308.65	275.00	2.90
Agribusiness	**56.67**	**200.92**	**89.79**	**-1.26**	**206.15**	**231.57**	**223.08**	**1.29**
Minerals	36.64	114.03	102.58	2.34	109.75	115.74	87.37	-4.55
Energy Products	6.32	32.18	82.68	-3.03	28.69		20.45	0.94
Energy	**20.43**	**112.50**	**94.40**	**1.76**	**55.50**	**115.74**	**28.47**	**-3.60**
Textiles and Apparel	78.19	95.98	120.70	0.80	211.24	227.52	184.53	-2.13
Leather, Wood and Paper	47.37	185.85	40.55	-3.47	64.87	71.60	57.16	0.36
Other Light Manufactures	5.71	97.69	85.22	5.27	368.88	422.67	331.51	-7.64
Light Manufactures	**49.01**	**163.88**	**75.29**	**-2.82**	**144.49**	**202.07**	**131.36**	**-1.26**
Chemical and Plastic Products	41.66	99.62	34.22	4.81	40.51	43.48	38.08	-6.01
Ferrous metals	28.14	103.33	35.89	-2.96	85.01	96.95	74.40	0.74
Non-ferrous Metals	23.26	114.72	45.06	5.11	71.03	76.69	57.29	-6.08
Motor Vehicles	45.49	102.22	66.02	6.81	277.67	307.65	234.80	-15.15
Other Transport Equipment	32.40	361.28	98.09	2.30	90.43	245.32	0.00	-20.18
Electric Equipment	24.25	158.49	15.53	6.82	26.56	26.97	31.10	-4.96
Machinery	18.08	169.35	37.84	13.05	83.12	91.66	105.97	-16.67
Heavy Manufactures	**30.59**	**116.40**	**43.01**	**5.18**	**65.35**	**105.18**	**56.91**	**-11.69**
Services	**-0.89**	**-1.07**	**-5.28**	**-1.36**	**1.15**	**1.47**	**5.12**	**1.61**
Total	**32.47**	**118.11**	**60.14**	**-0.70**	**57.86**	**96.54**	**52.76**	**-6.70**

Source: Authors' estimation.

Annex Table 6: Impact of FTAA: Total Trade Changes and Differences with Scenario A

Sectors/ Macro-sectors	Exports		Imports	
	Scenario E	Scenario E - A	Scenario E	Scenario E - A
Wheat, Corn and Other Grains	3.27	2.18	117.80	51.06
Vegetables and Fruits	9.49	5.78	60.05	54.36
Oil seeds and Soybeans	0.23	-0.16	87.97	53.94
Sugar	7.44	1.42		0.00
Coffee, Rice and Other Crops	9.44	1.49	55.67	20.16
Animal products	20.62	12.81	81.32	47.75
Agriculture	**8.74**	**4.26**	**75.35**	**45.41**
Bovine Meat	14.12	10.36	51.78	17.36
Poultry Meat	10.37	6.01	23.53	16.83
Dairy Products	132.73	119.71	57.09	24.45
Beverages and Tobaccos	45.45	19.74	37.90	27.23
Vegetable Oils	2.22	1.53	23.48	9.87
Agribusiness	**9.36**	**6.65**	**36.71**	**22.61**
Minerals	10.56	4.67	40.72	27.85
Energy Products	12.70	10.65	8.01	7.21
Energy	**11.38**	**6.96**	**15.90**	**12.17**
Textiles and Apparel	44.86	19.77	27.59	13.15
Leather, Wood and Paper	25.50	4.63	24.80	12.80
Other Light Manufactures	20.50	14.29	56.40	14.38
Light Manufactures	**27.92**	**6.90**	**30.77**	**13.18**
Chemical and Plastic Products	27.65	12.56	11.67	3.78
Ferrous metals	17.76	4.24	13.69	6.06
Non-ferrous Metals	16.84	4.01	22.41	13.03
Motor Vehicles	51.98	32.87	37.03	14.76
Other Transport Equipment	25.59	-0.46	50.51	9.19
Electric Equipment	28.02	7.28	7.60	1.99
Machinery	33.30	16.96	15.45	3.85
Heavy Manufactures	**30.26**	**12.73**	**17.32**	**5.26**
Services	**-1.21**	**-2.18**	**1.50**	**2.60**
Total	**16.18**	**6.68**	**15.45**	**6.36**

Source: Authors' estimation.

Note: Scenario A: FTA with United States and scenario E: FTAA.

Annex Table 7: Impact of Mercosur-China FTA:

Total Trade and Bilateral Trade with China

Sectors/ Macro-sectors	TotalTrade		Bilateral Trade with China	
	Exports	Imports	Exports	Imports
Wheat, Corn and Other Grains	-0.46	0.63	10.46	
Vegetables and Fruits	-0.01	5.56		154.81
Oil seeds and Soybeans	-0.05	1.73	0.40	88.76
Sugar	3.23		427.89	
Coffee, Rice and Other Crops	3.61	8.80	264.23	140.81
Animal products	2.29	6.09	308.42	229.70
Agriculture	**1.48**	**6.22**	**31.20**	**196.71**
Bovine Meat	-0.67	1.39	514.65	0.00
Poultry Meat	-0.94	1.41	122.58	0.00
Dairy Products	-0.82	1.61	0.00	0.00
Beverages and Tobaccos	-0.84	1.58	192.63	339.17
Vegetable Oils	-0.18	0.91	95.92	0.00
Agribusiness	**-0.42**	**1.43**	**117.26**	**339.17**
Minerals	0.72	5.73	9.99	130.07
Energy Products	-0.26	1.08	17.68	7.91
Energy	**0.35**	**2.20**	**10.29**	**35.77**
Textiles and Apparel	83.24	42.45	863.32	281.98
Leather, Wood and Paper	4.73	5.80	129.30	72.66
Other Light Manufactures	9.92	148.71	970.99	419.25
Light Manufactures	**15.26**	**42.01**	**311.57**	**286.55**
Chemical and Plastic Products	2.20	2.00	158.52	52.93
Ferrous metals	1.10	3.94	87.85	100.15
Non-ferrous Metals	0.28	4.54	165.61	95.67
Motor Vehicles	43.81	-3.47	1,551.86	462.18
Other Transport Equipment	3.05	12.58	110.77	411.27
Electric Equipment	3.27	1.62	233.41	35.33
Machinery	6.19	4.50	218.07	156.30
Heavy Manufactures	**10.62**	**3.07**	**490.03**	**103.92**
Services	**-1.12**	**1.40**	**-1.64**	**1.62**
Total	**5.04**	**4.84**	**133.09**	**131.12**

Source: Authors' estimation.

Annex Table 8: Impact on Labor Market: Percentage Change from Base

Sectors/ Macro-sectors	Base Labor*	Scenarios/Partners					
		A	B	C	D	E	F
		US	EU25	Mexico	Andean	FTAA	China
Wheat, Corn and Other Grains	1,045.0	0.26	4.41	0.01	0.88	0.66	-0.22
Vegetables and Fruits	745.0	0.54	3.08	-0.12	-0.52	-0.81	-0.28
Oil seeds and Soybeans	1,350.0	0.52	2.08	-0.15	0.09	0.47	-0.20
Sugar	695.1	3.33	3.66	-0.40	-0.32	3.97	1.51
Coffee, Rice and Other Crops	1,228.2	1.13	5.51	0.03	-0.04	1.02	0.49
Animal products	5,788.4	0.19	4.51	-0.03	0.21	0.44	0.05
Agriculture	**10,851.7**	**0.57**	**4.16**	**-0.06**	**0.15**	**0.67**	**0.12**
Bovine Meat	425.0	0.71	24.87	0.09	-0.13	1.83	-0.02
Poultry Meat	141.8	2.02	28.16	-0.40	-0.92	4.23	-0.48
Dairy Products	509.6	0.45	-0.86	2.68	1.40	4.52	0.05
Beverages and Tobaccos	506.0	0.43	-4.39	0.13	0.05	0.13	-0.04
Vegetable Oils	323.1	0.69	24.14	-0.59	1.26	1.87	-0.35
Agribusiness	**1,905.5**	**0.66**	**10.34**	**0.64**	**0.51**	**2.28**	**-0.10**
Minerals	1,131.0	0.39	0.77	-0.09	-0.21	-0.22	-0.18
Energy Products	366.0	0.56	0.10	-0.36	-1.03	1.05	-0.46
Energy	**1,497.0**	**0.43**	**0.60**	**-0.16**	**-0.41**	**0.09**	**-0.24**
Textiles and Apparel	965.0	1.16	0.04	-0.26	0.75	1.51	2.78
Leather, Wood and Paper	2,321.4	5.70	4.96	0.66	-0.35	5.95	0.82
Other Light Manufactures	791.0	-3.21	-4.82	-0.06	0.12	-3.50	-11.84
Light Manufactures	**4,077.4**	**2.90**	**1.90**	**0.30**	**0.00**	**3.07**	**-1.17**
Chemical and Plastic Products	1,885.0	-2.46	-4.22	-0.20	0.31	-2.33	-0.21
Ferrous metals	387.0	4.74	-1.44	1.03	0.49	6.44	1.28
Non-ferrous Metals	1,057.5	-1.40	-3.19	0.19	-0.39	-2.56	-0.06
Motor Vehicles	625.8	1.62	-15.06	2.50	2.81	8.11	13.09
Other Transport Equipment	645.8	-3.89	-13.83	0.01	0.20	-4.27	2.70
Electric Equipment	304.4	2.96	1.63	1.58	0.39	5.15	0.43
Machinery	1,354.1	-8.76	-10.12	0.78	1.17	-6.99	-1.79
Heavy Manufactures	**6,259.6**	**-2.68**	**-6.94**	**0.53**	**0.63**	**-1.63**	**1.23**
Utilities and Construction	4,773.7	-2.75	-0.81	0.45	0.80	-1.64	0.48
Trade and Services	61,106.0	0.16	-0.43	-0.12	-0.16	-0.10	-0.10
Services	**65,879.7**	**-0.05**	**-0.46**	**-0.07**	**-0.09**	**-0.21**	**-0.05**
Total	**90,470.9**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Source: Mercosur database and Authors' estimation.

Note: * in 1,000 workers.

Annex Table 9: Impact on Production: Percentage Change from Base

Sectors/ Macro-sectors	Base Values*	Scenarios/Partners					
		A	B	C	D	E	F
		US	EU25	Mexico	Andean	FTAA	China
Wheat, Corn and Other Grains	7.9	0.11	2.50	0.01	0.57	0.34	-0.13
Vegetables and Fruits	5.3	0.28	1.65	-0.08	-0.31	-0.60	-0.17
Oil seeds and Soybeans	12.5	0.24	0.90	-0.08	0.06	0.18	-0.10
Sugar	9.6	1.54	1.28	-0.20	-0.13	1.79	0.78
Coffee, Rice and Other Crops	12.4	0.47	2.19	0.02	-0.01	0.40	0.23
Animal products	63.6	0.08	2.12	-0.01	0.11	0.20	0.03
Agriculture	**111.4**	**0.28**	**1.92**	**-0.03**	**0.09**	**0.33**	**0.08**
Bovine Meat	16.8	0.61	20.63	0.08	-0.11	1.54	-0.01
Poultry Meat	7.0	1.67	23.06	-0.32	-0.77	3.48	-0.39
Dairy Products	16.3	0.10	-0.88	1.28	0.70	1.97	0.04
Beverages and Tobaccos	13.0	0.37	-4.28	0.11	0.04	0.04	-0.04
Vegetable Oils	15.1	0.26	8.56	-0.22	0.47	0.70	-0.13
Agribusiness	**68.2**	**0.47**	**8.31**	**0.26**	**0.17**	**1.37**	**-0.07**
Minerals	25.8	0.21	0.39	-0.05	-0.12	-0.15	-0.10
Energy Products	35.5	-0.03	-1.60	-0.22	-0.55	0.07	-0.23
Energy	**61.3**	**0.07**	**-0.76**	**-0.15**	**-0.37**	**-0.02**	**-0.17**
Textiles and Apparel	26.2	0.64	0.02	-0.14	0.41	0.82	1.52
Leather, Wood and Paper	45.2	3.81	3.31	0.44	-0.24	3.97	0.55
Other Light Manufactures	15.8	-1.80	-2.71	-0.03	0.07	-1.96	-6.74
Light Manufactures	**87.2**	**1.84**	**1.23**	**0.18**	**0.01**	**1.95**	**-0.48**
Chemical and Plastic Products	60.0	-1.14	-1.96	-0.09	0.14	-1.08	-0.10
Ferrous metals	20.8	2.32	-0.71	0.51	0.24	3.15	0.63
Non-ferrous Metals	27.0	-0.92	-2.11	0.12	-0.25	-1.68	-0.04
Motor Vehicles	23.6	0.60	-16.34	1.59	2.37	5.62	11.14
Other Transport Equipment	15.7	-4.37	-13.81	0.01	0.19	-4.77	2.58
Electric Equipment	13.6	1.08	0.60	0.58	0.14	1.87	0.16
Machinery	31.0	-4.56	-5.28	0.40	0.60	-3.63	-0.92
Heavy Manufactures	**191.8**	**-1.18**	**-4.95**	**0.35**	**0.45**	**-0.39**	**1.48**
Utilities and Construction	124.2	-0.85	-0.25	0.14	0.24	-0.51	0.15
Trade and Services	641.9	0.10	-0.27	-0.07	-0.10	-0.06	-0.06
Services	**766.2**	**-0.05**	**-0.26**	**0.00**	**0.03**	**-0.14**	**-0.03**
Total	**1,286.0**	**-0.03**	**-0.21**	**0.15**	**0.15**	**0.09**	**0.17**

Source: Mercosur database and Authors' estimation.

Note: * in US$billion.

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