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IMPACTS OF AFTA AND MERCOEURO ON AGRIBUSINESS IN THE MERCOSUL COUNTRIES

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Two new opportunities to create free trade areas are open to the MERCOSUL member countries. One free trade area, AFTA, is made up of the countries forming MERCOSUL, NAFTA, and the other countries of the Americas; the second, MERCOEURO, is made up of the countries forming MERCOSUL and the European Union. Both NAFTA and the European Union, two very large economic blocks, allow their member countries to subsidize agriculture production and exports. Focusing on changes in agricultural policy, this paper examines the economic impacts on MERCOSUL member country economies arising from the creation of AFTA and of MERCOEURO. Four simulations are run using the Global Trade Analysis Project's (GTAP) applied general equilibrium model. The results suggest that these new trade alliances would cause a slight increase in MERCOSUL agribusiness production. In all scenarios, agricultural trade flows are greatly altered while manufactures' production suffers a small negative impact. Economic growth increases the most in the MERCOEURO scenarios, and the elimination of agriculture production and export subsidies by NAFTA and E.U. has only a small economic impact on the MERCOSUL member countries.

Key words: AFTA, MERCOEURO, Agribusiness, MERCOSUL, GTAP

Introduction

Two new opportunities to create free trade areas are open to the South American Common Market (MERCOSUL) countries. One is the Americas Free Trade Area (AFTA), which would liberalize trade between MERCOSUL, the North America Free Trade Area (NAFTA), and all the other countries in the Americas. The other is a free trade area formed by MERCOSUL and the European Union (E.U.): MERCOEURO. The objective of this paper is to determine the impacts of AFTA and MERCOEURO on the MERCOSUL economies both with and without agribusiness production and export subsidies.

Agricultural policy has been an area of controversy in multi-country trade discussions. The U.S. and the E.U. protect their agriculture sectors with import tariffs and heavy production and export subsidies, yet agriculture is an important source of export earnings and economic growth for the MERCOSUL countries. The economic impacts of these free trade areas on agribusiness, trade flow, economic growth, and welfare in the MERCOSUL countries is not well known.

In this paper, we bring three analytical innovations to the discussion of MERCOEURO and AFTA. The first is the use of scenarios to examine the proposed free trade areas after extreme trade negotiations have been completed: not only are tariffs eliminated in all four scenarios, but NAFTA and E.U. agricultural production and exports subsidies are also eliminated in two of the four

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scenarios. The second innovation is more relevant to Brazil. Since 1996, Brazilian exports of non-manufactured goods have been exempt from export taxation due to the Kandir Law. This condition is imposed on our base data by way of the Alter tax command. The last innovation imposes on the base data the total elimination of production and export subsidies and import tariffs on trade between Argentina, Brazil, Chile, and Uruguay, that is, MERCOSUL remains implemented.

International trade theory states that the formation of a free trade area improves welfare for the member countries if the total volume of trade increases inside the area: if trade creation among the members exceeds the diversion of trade away from non-member countries (Krugman e Obstfeld, 2000). A country gains if its high cost domestic production is substituted for by lower cost imports from other members of the new economic block. But, if participation in the free trade area leads to substitution of low cost imports from non-members for high cost goods from members, the country loses welfare.

Figueiredo et al. (2001) applied the GTAP model to investigate the impact of a trade agreement between the E.U. and all Latin American and Caribbean countries on the Brazilian and European economies. In their study, E.U. production and export subsidies were eliminated to create a sustainable free trade area. It was concluded that the benefits of trade liberalization would go to the Brazilian agribusiness sector and to the European manufactures sector. Cypriano and Teixeira (2001) also applied the GTAP model in two scenarios to investigate the impact of AFTA on the agribusiness sector of each MERCOSUL country. One scenario maintained NAFTA production and exports subsidies, and the other eliminated them. Their main conclusion was that the MERCOSUL countries would benefit more from AFTA if the agricultural production and export subsidies imposed by the United States were eliminated.

This paper next discusses the GTAP model, the data, and the analytical scenarios.

GTAP model, data and analytical scenarios

This study employs the Global Trade Analysis Project's (GTAP) applied general equilibrium model (AGE) to investigate all the markets as well as the influences of one market on the others. The Global Trade Analysis Project (GTAP) was developed by Hertel and Tsigas (1997). It includes a complete general equilibrium model to analyze policy reform and trade, GEMPACK software developed by Codsi and Pearson (1988) to run the simulations, and a large data base, Version 4, that contains data on 45 countries and 50 commodities. The regional aggregations used in our analysis, shown in Table 1, came from Version 4 data. Our results include effects on the MERCOSUL countries Brazil, Argentina, Chile, and Uruguay but exclude the MERCOSUL countries Paraguay and Bolivia because they do not individually take part in the database.

The GTAP database reflects the economic environment of 1995 and includes the input-output (IO) matrices of the considered regions. According to Gehlhar et al. (1997), not all the countries in a region have their data in the GTAP's database, which is why the IO tables are constructed by region using the concepts of economics and accounting.

Agents' economic behavior

Figure 1 exhibits the technology used by firms in each of the industries represented in the GTAP model synthesized on the technological tree. This tree is a convenient way to represent constant return, separable technologies.

The input combination used by a firm to produce some product, QO (i,s), depends on the assumptions made concerning production separability. In this case, it is assumed that the firms choose the optimal combination of primary factors regardless of intermediate inputs prices. The separability assumption imposes equal substitution elasticity between any pair of primary factors

and between any pair of intermediate inputs. This common elasticity allows the first knot of the tree to be marked out, enabling construction of the production tree. The first knot begins the branch where intermediate inputs and primary factors are combined. Within the group of primary factors, the substitution possibilities are reduced to a single parameter, admitting a CES function that can be represented by the expression:

$$Q = A[\delta K^{-\rho} + (1 - \delta) L^{-\rho}]^{-1}, \quad (1)$$

in which $A > 0$; $0 < \delta < 1$; $\rho > -1$, Q represents the quantity produced; K represents capital; L represents labor; and A, ρ, and δ are parameters. A is an efficiency parameter that can be understood as an indicator of the level of technology; δ is a distribution parameter that is related with the relative participations of the factors in the product; and ρ is a substitution parameter that determines the constant value of the substitution elasticity.

Thus, for CES functions, percentage changes in the price ratio, independent of magnitude, always reflect the substitutability of outputs or inputs in the same proportion (Chiang, 1982). From equation (1) it is possible to compute the substitution elasticity

$$\sigma = 1 / (1 + \rho). \quad (2)$$

Substituting (2) into (1), one arrives at the expression:

$$Q = A [\delta K^{(\sigma-1)/\sigma} + (1-\delta) L^{(\sigma - 1)/\sigma}]^{\sigma/(\sigma - 1)}. \quad (3)$$

Under this assumption, the inclusion of the primary factor, land in the case of agriculture, only requires that all the substitution elasticities among pairs of factors be alike. Land is only employed in the agricultural activity and is imperfectly mobile among sectors. Labor and capital are employed in all sectors and are considered perfectly mobile inside a region.

The intermediary inputs are separable from the primary factors; that is, the optimal mix of intermediate inputs is independent of the price of the primary factors. Also, separability between domestic and imported intermediate inputs is assumed. This implies that the firm initially decides the source of imports and then determines the optimal combination of domestic and imported intermediates based on prices. This specification employs the Armington formulation in import demand modeling. International trade clears the market, each product being differentiated by origin (Armington's assumption applied at the country level).

The analysis of the behavior of individuals verifies that regional consumption is governed by a function of aggregate utility that depends on private consumption (CP), on government expenses (CG), and on savings(S). Thus, regional income is distributed according to a Cobb-Douglas utility function,

$$U = K.CP^{\theta CP}.CG^{\theta CG}.S^{\theta S}, \quad (4)$$

where U is total utility in each region K, and θ is the function's parameters. Maximization of the above utility function determines the allocation of income to the three demands in each region. Once the utility function is a Cobb-Douglas, GTAP's standard closure sets the participation of each item in total income as a constant.

Analytical scenarios

Before simulating the free trade areas AFTA and MERCOEURO, MERCOSUL, made up of Brazil, Argentina, Uruguay, and Chile, is included in the GTAP database using the command "Alter Tax." In this way, agricultural production and export subsidies and import tariffs for trade among the MERCOSUL countries are eliminated from the data base; and the block's Common External Tariff (CET) (Table 2), a characteristic of the custom union, is implemented. Export taxes on primary and semi-manufactured goods are also eliminated, particularly the ICMS in Brazil to impose Kandir's Law of 1996. As they are not in GTAP's database, the inclusion of MERCOSUL and Brazil's Kandir Law makes the scenarios more realistic.

Two scenarios are simulated and then analyzed for each free trade area: AFTA 1 and 2 and MERCOEURO 1 and 2.

Scenario AFTA 1 simulates the creation of a free trade area in the Americas by imposing zero import tariffs on goods traded between member countries. The countries of NAFTA apply their tariffs only to goods from non-AFTA members, and MERCOSUL countries only apply their CET on goods from non-AFTA members (Table 2).

Scenario AFTA 2 is the same as AFTA 1 except that it also simulates total elimination of subsidies to agricultural production and exports by the member countries. This is expected to have a great impact on production and exports of agricultural products by the NAFTA countries, given that the United States offers strong protection to that sector. As these subsidies are eliminated in this scenario, a comparison between it and the AFTA 1 scenario makes possible an analysis of the impacts of this strong agricultural protectionism, mostly by the NAFTA countries, on the AFTA member countries' economies.

Scenario MERCOEURO 1 simulates the creation of a free trade area among members of MERCOSUL and European Union, imposing zero tariffs on commerce between MERCOEURO member countries. In this scenario, the European Union retains its tariffs on products from non-MERCOEURO countries and the MERCOSUL countries retain their CET on products from non-MERCOEURO countries.

The last scenario, MERCOEURO 2, is the same as MERCOEURO 1 except that the European Union's subsidies to agricultural production and exports are eliminated. This is expected to have a great impact on the production and exports of agricultural products by the European Union. By comparing the effects of this scenario with those of MERCOEURO 1, an analysis of the commerce distortions arising from the strong European Union subsidies to agricultural production and exports is permitted.

Scenarios AFTA 2 and MERCOEURO 2 are considered extreme, since elimination of subsidies to agricultural production and exports by the United States and the European Union would generate exceedingly negative reactions by the agricultural lobbies in the affected countries. When negotiating the creation of a free trade area with either the U.S. or the European Union, it is evident that the MERCOSUL countries should seek elimination of all distortions to commerce among member countries

Results

The first part of this section presents a cursory view of the values for production, exports, imports, and the distortion on production and trade for the regions analyzed in this study. The values are from GTAP's database version 4, representing the economic environment of 1995, and are the basis for the results from the four simulations, AFTA 1 & 2 and MERCOEURO 1 & 2. These results are later submitted in the form of percentage changes in production, commerce,

economic growth, and welfare.

Table 3 presents the value of production in millions of dollars. It is important to highlight that NAFTA and the European Union (EU) are major producers of most of the agricultural commodities addressed in this study. Though the MERCOSUL block is a less significant producer of these commodities, Brazil itself is a relatively important producer of rice, soybeans, sugar, milk, meats, other agribusiness products (OAgribusiness) and manufactures, and Argentina produces considerable meat and soybean.

Table 4 presents the value of exports at world prices. The performance of NAFTA and the European Union are very impressive for all products. Argentina exports significant amounts of wheat, soybean, and meat, while Brazil exports significant amounts of sugar, meats, OAgribusiness, manufactures, and products from the soybean complex.

Table 5 presents the value of imports at world prices. NAFTA and European Union stand out as the largest importers. Brazil stands out as the largest importer among the MERCOSUL countries, importing significant amounts of wheat, OAgribusiness, and manufactures.

Table 6 presents the distortions in domestic production. No significant production subsidy is observed in the MERCOSUL countries; however, NAFTA and the European Union apply large subsidies to agricultural products. The largest production subsidies offered by NAFTA go to wheat, 18.6%, and rice, 15.7%. The largest production subsidies offered by the European Union go to wheat, 58%, and corn, 53.1%, much higher than the subsidizes offered within NAFTA to produce these commodities.

In accord with the GTAP database, distortions in trade are shown in terms of subsidies to exports and tariffs on imports, shown in Tables 7 and 8. The European Union subsidizes exports of corn by 44.20%, sugar by 76.60%, and milk by 116.30% when exporting to Argentina, Brazil, and NAFTA (Table 7). NAFTA subsidizes export of milk and sugar to Brazil by 59.8 percent and 60.9 percent. MERCOSUL countries do not provide any export subsidies except for a Brazilian subsidy to meat, 10.40% for exports to NAFTA, and 11.10% for exports to the European Union.

Table 8 reflects the very high NAFTA and E.U. import tariffs, zero import tariffs between Brazil and Argentina, and the MERCOSUL Common External Tariff applied to imports from countries outside the block. The GTAP database presents negative tariffs for imports of some products and from some regions. This implies an import subsidy, which is not a sensible commercial policy; therefore, these negative tariffs were set to zero in the four simulations.

Simulation results are presented from two perspectives. In Tables 9 through 12, we present percent change in quantities produced, exported, and imported for each scenario. In Figures 2, 3, & 4, we graphically represent change in economic growth and welfare for NAFTA, the E.U., and the four MERCOSUL countries in each scenario.

Impacts on production and trade flow

Scenario AFTA 1

Scenario AFTA 1 simulates formation of an Americas Free Trade Area (AFTA) in which import tariffs between AFTA member countries are eliminated while MERCOSUL's Common External Tariff and NAFTA's import tariffs are retained for imports from regions outside AFTA. In this scenario, agricultural production and export subsidies are kept in place. Table 9 shows changes in production, exports, and imports caused by the tariff modifications simulated in this scenario.

Production of Brazilian agricultural goods other than sugar and OAgribusiness presents a very small decrease. The most accentuated production decrease is in the wheat segment, as Brazilian wheat production drops 3.25%.

Elimination of elevated U.S. sugar tariffs gives rise to a significant fall in NAFTA sugar

production of 10.99%. This causes an increase in Brazilian sugar exportation (+5.32%) and production (+1.29%), as was expected. In order to supply domestic consumption, NAFTA countries would need to elevate sugar importation by 18.20%. This commodity also presents strong variations in production, export, and import by Argentina, Chile, and Uruguay in this scenario; however, sugar is not of great relevance in their economies.

In this scenario, the volume of MERCOSUL milk and dairy exports increases considerably. Uruguayan milk and dairy exports increases 11.15%, and production increases 2.19%. Argentine milk and dairy exportation grows 20.56%, though production only increases 0.71%.

Simulation of scenario AFTA 1 has a small impact on production in the aggregated products category OAgribusiness (coffee, concentrated orange juice, tobacco) in all countries and blocks; however, the increase in their exports and imports by the MERCOSUL countries suggests increased trade.

Though manufactures production within MERCOSUL falls slightly in this scenario, -0.98% in Brazil and -1.11% in Chile, international trade flow for Brazilian and Chilean manufactures is significantly affected. Brazilian manufactures exports increases 7.39% and imports increases 9.40% while Chilean manufactures exports increases 5.84% and importation increases 6.15%. Manufactures production within NAFTA grows only a miniscule 0.09%.

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Scenario AFTA 2

In this scenario the formation of the Free trade Area of the Americas is again simulated. All conditions imposed in AFTA 1 remain, and NAFTA subsidies to agricultural production and exportation are also eliminated. This scenario is considered an extreme case. The complete elimination of agricultural production and export subsidies would have strong internal consequences in the United States and cause powerful American agricultural lobbies to act against implementation of this scenario's.

Table 10 presents the impacts of this simulation on production, exportation, and importation by the several countries and regions considered. The table also delineates the differences between these impacts and those resulting from the simulation of scenario AFTA 1.

As expect, the biggest impact of the simulation of scenario AFTA 2 was a generalized decrease in NAFTA agricultural sector production, most significantly for rice, wheat, sugar, and soybeans. Except for sugar, all these products present a greater production decrease in AFTA 2 than in AFTA 1. Contrary to what was expected, NAFTA sugar production shows 3.78 percentage point smaller decrease in AFTA 2 than in AFTA 1. Small impacts were also observed in European Union production, especially of wheat, rice, and soybeans. The E.U. is characterized by its common agricultural policy, which sets agricultural protection and subsidization at elevated levels.

The effects of this scenario on production within MERCOSUL are felt most strongly in Brazil and Argentina. The greatest impacts occur in both countries' wheat production, which increases by 5.20% in Argentina and by 4.26% in Brazil. Relative to the previous scenario, wheat production increases 7.17 percentage points in Argentina and 7.51 percentage points in Brazil. Soybean production is also affected in Brazil, increasing 1.41%, a 1.86 percentage point increase over AFTA 1. The results for manufactures production are coherent with that expected: elevated production in NAFTA and reduced production in MERCOSUL.

The simulated end of agricultural production and export subsidies has a strong negative impact on agricultural commodity exportation by NAFTA. The percentage differential between AFTA 2 and AFTA 1 shows that AFTA 2 reinforces the export losses suffered by NAFTA in scenario AFTA 1. Though the effects of the end of subsidization on exportation are not evenly distributed among MERCOSUL countries, there are strong increments in Brazilian soybean and sugar exportation, Argentine wheat, soybean and milk exportation, Chilean wheat, soybean, milk and meat

exportation, and Uruguayan wheat, rice, milk and meat exportation. When AFTA 2 is analyzed comparatively with AFTA 1, the observed impacts are indeed very strong and negative for the agricultural exports of NAFTA and generally positive for the other countries and blocks. This clearly demonstrates the harmful effects caused by NAFTA subsidies to agribusiness production and exportation.

Elimination of production and export subsidies has little impact on importation in almost all the regions and countries within AFTA. This was anticipated as production and exportation subsidies should not be expected to affect importation to the extent that they affect production and exportation. In general, the impacts on importation of the changes simulated in scenario AFTA 2 reinforce the importation impacts from scenario AFTA 1: the variations are in the same direction but of greater intensity.

Scenario MERCOEURO 1

Scenario MERCOEURO 1 simulates the formation of a free trade area between MERCOSUL and the European Union. Import tariffs between the member countries are eliminated while MERCOSUL's CET and the European Union's tariff base are retained for imports from countries outside the MERCOEURO trade zone. In this scenario, production and exportation subsidies are unaffected.

Table 11 presents the change in production, exportation, and importation by NAFTA, the European Union, and the MERCOSUL countries resulting from simulation of scenario MERCOSUL 1.

Except for soybeans, agribusiness production in the European Union shows a generalized decrease while the production of manufactures and services slightly increases. In spite of the remaining distortions caused by E.U. production and exportation subsidies, meat production by the MERCOSUL countries, the most affected activity, increases significantly: 8.85% in Argentina, 16.66% in the Uruguay, 4.04% in Brazil, and 2.64% in Chile. Wheat production falls in Argentina (-1.45%) and increases in Brazil (1.32%) while soybean production decreases in both Brazil (-1.39%) and Argentina (-3.73%). The production of manufactures decreases slightly in the MERCOSUL countries and increases slightly in the European Union, a fruit of E.U. competitiveness.

Under the conditions imposed by this scenario, agribusiness export volumes remain essentially unchanged in the European Union, though meat exportation falls 5.97%. It is believed that this small impact is due to the continued impact of Europe's agricultural production and export subsidies. The MERCOSUL countries are very affected by the removal of E.U. tariffs. This is highlighted by the over 33% increase in meat exportation by Brazil, Argentina, Chile, and Uruguay, the over 4.5% decrease in soybean exportation by the same countries, and a decrease in Brazilian sugar exportation. The scenario's impact on the exportation of manufactured products and services was to increase exportation by the European Union and decrease exportation by the MERCOSUL countries. Argentina and Uruguay show the largest decrease in manufactures exportation, 8.83% and 10.12% respectively.

The change in agricultural product importation was of no significance in MERCOSUL and only slight in the E.U. The scenario did bring about increased importation of manufactures by the MERCOSUL countries while only causing a miniscule 0.02% increase in the E.U.

Scenario MERCOEURO 2

In this scenario, all conditions imposed in MERCOEURO 1 remain, and agricultural production

and export subsidies are eliminated, thus removing the distortions arising from the European Union's Common Agricultural Policies. The impacts of this simulation are to intensely reduce agribusiness production in the European Union.

The production and trade flow variations occurring in this simulation are presented in Table 12, as well as the production and trade differences between MERCOEURO 2 and MERCOEURO 1 (2-1).

The simulation of MERCOEURO 2 causes an intense reduction in agribusiness production by the European Union, primarily due to the termination of E.U. agricultural production subsidies. The reductions are highlighted by a 24.35% decrease in wheat production, a 22.18% decrease in corn production, and a 9.21% decrease in soybean production, all much greater reductions than found in scenario MERCOEURO 1. In terms of MERCOSUL, the impacts of MERCOEURO 2 are small and generally positive, highlighted by a 3.08% increase in Brazilian soybean production, reversing the 1.39% production decline in scenario MERCOEURO 1. In Argentina, corn production is elevated by 4.02%, soybean production by 2.30%, and wheat production by 1.32%. Relative to scenario MERCOEURO 1, these production variations within MERCOSUL are larger and the decline in wheat and soybean production is reversed. Uruguay showed generally positive production variations in this scenario, with a 2.52% increase in meat production being the largest; however, this increase is 14.14 percentage points less than that found in MERCOEURO 1.

The impacts of subsidy elimination on the exportation of European Union agricultural commodities are all negative, as shown by the exports percentage point differential between MERCOEURO 1 and MERCOEURO 2 in Table 12. The E.U. commodities most sensitive to these export impacts are wheat, corn, soybeans, and meats. Relative to scenario MERCOEURO 1, E.U. exportation of these products falls by 57.43, 48.64, 30.56, and 6.03 percentage points respectively. Though it was not directly affected by the trade alterations simulated in the MERCOEURO scenarios, E.U. subsidy elimination had important impacts on NAFTA. The elimination of trade distortions arising from the European Union's subsidy policy and their retention by NAFTA causes exportation of wheat, corn, and soybeans by the North American trade block to grow significantly.

In this scenario, Brazil presents significant growth in the exportation of soybeans, meats, and milk, increasing 11.99%, 12.36%, and 5.52% respectively. Brazilian exportation of wheat and corn also increases, 6.95% and 39.63% respectively; though, the country is not known as an exporter of these two products. In Argentina, exportation of corn, meats, soybeans, and wheat increases 12.30%, 8.75%, 6.36%, and 3.97% respectively. With some exceptions, the increase in agricultural product exportation for Brazil and Argentina is greater in this scenario than in MERCOEURO 1.

In the European Union, the simulation of MERCOEURO 2 causes a more than 2.94% increase in the importation of soybeans and wheat and a less than 1% change in the importation of other products. Importation by the MERCOSUL countries decreases in this scenario; however, since these countries are traditionally agricultural product exporters not importers, the impact of this fall is minimal.

Economic growth and welfare

In this section, we compare the impacts of the conditions imposed in each scenario on economic growth and welfare to evaluate the potential benefits of each free trade area to the regions and countries under study. GTAP allows the calculation of variations in gross domestic product (GDP), per capita utility, and equivalent variation.

Figure 2 presents percentage change in GDP. Except for Argentina in scenario AFTA 1, the MERCOSUL countries show economic growth in all four scenarios. NAFTA and the European Union show, at most, a slight change in GDP. These results support the hypothesis that trade

liberalization would elevate production growth in the studied countries and regions.

The behavior of the variations in GDP also indicates that the MERCOSUL countries would realize more growth through union in MERCOEURO than in AFTA. MERCOEURO 1, the scenario in which agricultural production and export subsidies were kept in place, presents the largest MERCOSUL GDP increase. In this scenario, Argentine GDP grows 2.78%, Brazilian GDP grows 1.67%, Chilean GDP grows 1.05%, and Uruguayan GDP grows 4.17%. GDP growth of this dimension should certainly stimulate MERCOSUL to develop new strategies for multilateral negotiations in an attempt to create free trade areas with NAFTA and the European Union.

Per capita utility and equivalent variation were chosen as our welfare indicators. In the GTAP model, utility is represented by the values for private consumption, government consumption, and savings. Equivalent variation, according to Varian (1992), quantifies the change in income needed to maintain consumer utility as prices change from those found in the initial equilibrium to those in the final equilibrium.

According to the variations in utility shown in Figure 3, the studied MERCOSUL countries gain welfare in all proposed scenarios with the exception of Brazil and Chile in scenario AFTA 2. Similar to the behavior of GDP, MERCOSUL enjoys a greater increase in per capita utility through the formation of MERCOEURO than the formation of AFTA. This result allows us to infer that creation of MERCOEURO elevates the levels of income, consumption, and welfare within MERCOSUL to a greater degree than the creation of AFTA. The greatest utility increase for the MERCOSUL countries is found in MERCOEURO 1, the scenario that maintains E.U. subsidies to agribusiness production and exportation.

Equivalent variation is an indicator that considers the size of the affected economy and the change in welfare level (arrived at from the change in per capita utility). It therefore enables an evaluation of the impact of changes in welfare on economies of different size. Variation is expressed in US$ millions and is the product of initial income multiplied by the percent change in per capita utility.

Figure 4 shows the behavior of equivalent variation in each scenario and for each country or trade block under study. There are distinct behavioral differences between NAFTA and the European Union. In scenarios AFTA 1 and 2, an increase in equivalent variation is observed for NAFTA and a decrease in equivalent variation is observed for the European Union. In scenarios MERCOEURO 1 and 2, nearly the opposite occurs: equivalent variation in the European Union increases while there is only a very small change in NAFTA equivalent variation. The greatest increase in equivalent variation is found in the MERCOEURO 2 scenario for the European Union. The size of this trading block's economy combined with this scenario's elimination of import tariffs and subsidies to production and exportation results in a decrease in European Union prices and taxes and an increase in real income. These changes jointly elevate consumption levels in the E.U. and generate the largest welfare gain found by this study. The AFTA 1 and 2 scenarios resulted in similar changes within NAFTA, though to a lesser magnitude than those found within the European Union in the MERCOEURO 2 scenario, due, mostly, to the smaller change in NAFTA per capita utility.

In all scenarios, equivalent variation values for Chile and Uruguay were small and almost the same, reflecting their comparable economic size and variation in per capita utility. Brazil presents better performance in the scenarios where production and exports distortions are kept in place, scenarios AFTA 1 and MERCOEURO 1, with AFTA 1 stimulating the greatest Brazilian per capita utility increase.

Conclusion

Economic integration of the scope considered in this study marks a new phase in the restructuring of international trade, mostly through tariff reorganization. This reorganization tends to cause significant impacts in the economies taking part in the process.

There are discussions within MERCOSUL that focus on the opportunities presented by the creation of a free trade area with NAFTA and with the European Union. In our study, the impacts of the creation of these two free trade areas have been analyzed from the agribusiness sector's perspective in four distinct scenarios: AFTA 1, which considers the creation of the Americas Free Trade Area with maintenance of current subsidies to agricultural production and exportation; AFTA 2, which considers the same free trade area with the elimination of the international trade distortions caused by these subsidies; MERCOEURO 1, which simulates a free trade area between MERCOSUL and the European Union with the retention of current subsidies to agribusiness production and exportation; and MERCOEURO 2, which considers the same free trade area with the elimination of these agricultural production and exportation subsidies.

In all scenarios, there is an increase in both agricultural production and exports by the MERCOSUL countries. The major MERCOSUL agribusiness impacts are felt in Brazil, followed by Argentina, and, to a much smaller extent, in Chile and Uruguay. Of the four scenarios analyzed, MERCOEURO 2, which eliminates tariffs and production and exportation subsidies within the MERCOEURO area, is the most favorable to production and exportation by MERCOSUL agribusinesses.

All scenarios stimulated economic and welfare growth within the MERCOSUL countries while causing no relevant changes within NAFTA and the European Union. The small participation of the agricultural sector in the formation of the NAFTA and E.U. countries' national product and income perhaps explains that small impact.

It is evident that the countries within MERCOSUL enjoy greater international agribusiness competitiveness when agricultural subsidies are eliminated by the European Union and NAFTA. This detail should be considered in any discussion regarding the creation of AFTA and MERCOEURO.

It may be concluded that there are advantages for the MERCOSUL countries from the creation of these free trade areas and that MERCOEURO has been shown as a good alternative to AFTA. The positive results for MERCOSUL arising from the creation of both NAFTA and MERCOEURO point out that there is more than one option for a negotiated international agreement that favors the MERCOSUL countries' economic growth and welfare.

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Table 1 – Regional and Commodity Aggregation

Regional Aggregation	Commodity Aggregation
1. NAFTA	1. Rice: Paddy rice and processed rice
2. European Union (EU)	2. Wheat
3. Argentina (ARG)	3. Corn: Cereal grains
4. Brazil (BRA)	4. Soybean: Oil seeds and vegetable oils
5. Chile (CHI)	5. Sugar: Sugar cane, sugar beet, and sugar
6. Uruguay (URY)	6. Milk: Raw milk and dairy products
7. Central America and Caribbe (CAM)	7. Meat: cattle, animal products, and meat products
8. Rest of South America (RSA)	8. OAgribusiness: Coffee, COJ, wood products, fiber, wool, food, vegetables, and fruits.
9. Rest of World(ROW)	9. Manufactures: Machines, tractors, chemicals, other manufactures
	10. Services and public administration

Source: GTAP.

Table 2- MERCOSUL Common External Tariff (CET)

Commodity	CET (%)
Rice	13
Wheat	13
Corn	11
Soybean	13
Sugar	19
Milk	19
Meat	15
Other Agribusiness (OAgribusiness)	15
Manufactures	17

Source: Diário Oficial da União (1997).

Table 3 – Value of Production, 1995 (US$ millions)

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	3,151	4,297	881	10,395	86	421
Wheat	16,215	16,373	2,547	2,794	904	233
Corn	57,208	17,276	2,434	4,490	370	135
Soybean	44,267	56,398	12,318	11,794	98	168
Sugar	14,709	50,475	3,058	26,191	777	290
Milk	99,737	187,244	9,485	18,638	1,305	666
Meats	256,382	335,592	25,121	44,337	5,467	2,027
OAgribusiness	685,591	781,969	51,117	117,987	16,299	3,369
Manufactures	3,778,375	4,597,828	166,709	454,696	30,163	5,106
Service	8,729,504	10,245,013	160,097	694,262	60,581	15,492

Source: GTAP.

Table 4 – Export value at market price, 1995 (US$ million)

Commodity	NAFTA	E.U.	ARG	BRA	CHI	URY
Rice	959	825	97	3	0	104
Wheat	8,349	5,154	1,012	0	0	12
Corn	9,454	4,382	732	11	25	4
Soybean	9,256	7,229	3,054	1,953	15	33
Sugar	633	5,399	188	3,469	2	13
Milk	1,023	23,082	227	3	27	82
Meat	14,894	39,241	1,743	1,610	273	412
OAgribusiness	64,631	153844	4,586	9,780	4,544	471
Manufactures	680,864	1,593,102	9,681	31,758	10,163	1,246
Services	209,702	420,677	2,291	5,362	2,767	950
Total	999,769	2,252,939	23,616	53,953	17,820	3,332

Source: GTAP,

Table 5 – Import value at market price, 1995 (US$ million)

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	336	1,224	1	208	22	0
Wheat	428	4,114	4	919	91	0
Corn	1,363	4,678	12	206	96	26
Soybean	2,813	13,151	17	501	121	17
Sugar	2,399	6,125	116	38	64	47
Milk	1,330	20,103	44	534	58	6
Meat	7,991	41,945	179	535	197	24
OAgribusiness	63,654	180,611	1,152	3,604	666	390
Manufactures	889,173	1,608,888	18,084	47,211	13,920	2,943
Services	164,001	415,708	4,452	12,177	3,081	710
Total	1,133,493	2,296,553	24,065	65,939	18,320	4,167

Source: GTAP.

Table 6 – Production distortion (TO>1, subsidy; TO<1, taxation)

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	1.157	1.009	1.000	1.002	0.984	0.993
Wheat	1.186	1.580	1.000	1.008	0.969	0.991
Corn	1.101	1.531	1.000	1.008	0.971	0.990
Soybean	1.040	1.095	1.000	1.003	0.990	0.991
Sugar	1.024	1.001	1.000	1.004	0.988	0.990
Milk	1.013	1.034	1.000	1.002	0.996	0.986
Meat	1.023	1.049	1.000	1.003	0.997	0.982
OAgribusiness	0.997	0.951	1.000	1.002	0.991	0.982
Manufactures	0.997	0.980	1.000	1.001	0.996	0.995
Services	0.995	0.977	1.000	1.021	0.978	0.965

Source: GTAP.

Table 7 - Export subsidy (TXS>0 %), taxation (TXS<0 %)

Commodity	ARGENTINA			BRAZIL			NAFTA			EUROPEAN UNION		
	NAFTA	EU	BRA	NAFTA	EU	ARG	EU	ARG	BRA	NAFTA	ARG	BRA
Rice	-0.10	128.70	0.00	0.30	128.70	0.00	128.70	0.00	0.00	0.30	-16.40	0.00
Wheat	0.30	0.00	0.00	0.90	12.40	0.00	12.40	0.00	0.00	-1.60	-25.00	0.00
Corn	0.00	44.20	0.00	0.10	44.20	0.00	44.20	0.00	0.00	0.00	-1.00	0.00
Soybean	-0.70	0.00	0.00	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sugar	56.10	76.60	0.00	60.90	76.60	0.00	76.60	0.00	0.00	10.90	0.00	0.00
Milk	53.00	116.30	0.00	59.80	116.30	0.00	116.30	0.00	0.00	72.60	0.00	0.00
Meat	1.40	21.60	0.00	1.70	33.50	0.00	31.10	0.00	10.40	0.70	0.00	11.10
OAgribusiness	-2.40	0.30	0.00	-3.70	-0.20	0.00	-0.60	0.00	0.00	-1.90	0.00	0.00
Manufactures	-1.20	-0.60	0.00	-1.40	-0.50	0.00	-0.40	0.00	-3.00	-1.20	0.00	-3.40
Services	-8.00	-0.90	0.00	-8.50	-0.70	0.00	-0.70	0.00	-0.70	-6.50	0.00	-0.70

Source: GTAP.

Table 8 - Import tariff (TMS>0 %)

Commodity	ARGENTINA			BRAZIL			NAFTA			EUROPEAN UNION		
	NAFTA	EU	BRA	NAFTA	EU	ARG	EU	ARG	BRA	NAFTA	ARG	BRA
Rice	0.00	128.70	0.00	0.00	128.70	0.00	128.70	13.00	13.00	0.20	13.00	13.00
Wheat	0.00	12.40	0.00	0.00	0.00	0.00	12.40	13.00	13.00	1.80	0.00	13.00
Corn	0.10	44.20	0.00	0.10	44.20	0.00	44.20	11.00	11.00	0.00	11.00	11.00
Soybean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.00	13.00	0.00	13.00	13.00
Sugar	63.40	76.60	0.00	61.80	76.60	0.00	76.60	19.00	19.00	40.30	19.00	19.00
Milk	51.60	116.30	0.00	16.40	116.30	0.00	116.30	19.00	19.00	42.70	19.00	19.00
Meat	0.10	99.80	0.00	0.30	71.40	0.00	56.60	15.00	15.00	1.00	15.00	15.00
OAgribusiness	3.60	9.40	0.00	4.50	5.50	0.00	5.80	15.00	15.00	10.20	15.00	15.00
Manufactures	1.70	4.20	0.00	3.30	3.40	0.00	3.40	17.00	17.00	3.80	17.00	17.00
Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: GTAP.

Table 9 – Scenario AFTA 1, percentage change in production and trade

Percentage change in PRODUCTION

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	0.45	0.72	-0.16	-0.02	-0.72	-0.20
Wheat	0.19	0.19	-1.97	-3.25	-1.08	-0.54
Corn	0.00	0.19	0.07	-0.21	-2.10	-0.11
Soybean	-0.15	0.09	1.24	-0.45	0.01	0.29
Sugar	-10.99	0.32	5.08	1.29	-1.37	1.16
Milk	0.05	-0.02	0.71	-0.02	0.53	2.19
Meat	-0.01	0.05	0.02	-0.10	-0.08	-0.42
OAgribusiness	0.01	0.03	0.21	0.04	0.89	-0.16
Manufactures	0.09	-0.06	-0.30	-0.98	-1.10	-0.93
Services	-0.02	0.01	0.00	0.31	0.23	0.17

Percentage change in EXPORTATION

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	1.52	1.62	-0.98	-1.69	2.13	-0.81
Wheat	0.30	0.41	-4.93	-0.89	-0.70	-8.35
Corn	-0.05	0.44	-0.17	-1.91	2.15	0.01
Soybean	-0.41	0.25	3.35	-0.99	2.58	1.20
Sugar	-9.86	0.96	51.63	5.32	5.03	47.52
Milk	4.26	-0.09	20.56	19.93	23.19	11.15
Meat	-0.10	0.16	0.35	-1.29	-0.01	-1.12
OAgribusiness	0.67	0.04	3.50	3.15	3.86	0.82
Manufactures	1.40	-0.16	-3.06	7.40	5.87	0.54
Services	-1.07	0.53	1.22	-1.30	-1.37	0.23

Percentage change in IMPORTATION

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	0.40	0.21	-0.75	2.80	2.37	5.19
Wheat	0.04	-0.03	-1.49	1.15	14.23	0.93
Corn	0.07	0.02	-0.48	3.67	9.40	0.49
Soybean	0.30	-0.14	2.94	2.84	0.57	0.33
Sugar	18.20	-0.21	2.77	9.56	11.36	6.26
Milk	2.38	-0.02	-0.05	3.07	4.36	3.24
Meat	0.23	-0.04	-0.56	4.87	4.39	2.34
OAgribusiness	0.96	-0.14	3.98	4.62	9.82	1.89
Manufactures	1.00	-0.13	-0.14	9.39	6.13	1.41
Services	0.67	-0.29	-0.70	0.85	0.85	0.19

Source: Research results.

Table 10 - Scenario AFTA 2, percent change in production and trade, and percentage point differential between scenarios AFTA 1 & AFTA 2 (AFTA 2 – AFTA 1)

Percentage change in PRODUCTION and percentage point differential between scenarios AFTA 1 & 2

Commodity	NAFTA		EU		ARG		BRA		CHI		URY	
	%	Diff. AFTA 2-1	%	Diff. AFTA 2-1	%	Diff. AFTA 2-1	%	Diff. AFTA 2-1	%	Diff. AFTA 2-1	%	Diff. AFTA 2-1
Rice	-18.52	-18.97	2.62	1.90	0.44	0.60	0.05	0.07	1.43	2.15	1.75	1.95
Wheat	-18.07	-18.26	5.51	5.32	5.20	7.17	4.26	7.51	2.13	3.21	0.91	1.45
Corn	-0.74	-0.74	-0.18	-0.37	-0.89	-0.96	0.11	0.32	-0.46	1.64	0.03	0.14
Soybean	-4.95	-4.80	1.15	1.06	0.91	-0.33	1.41	1.86	1.47	1.46	0.26	-0.03
Sugar	-7.21	3.78	0.20	-0.12	0.32	-4.76	0.30	-0.99	-0.01	1.36	0.44	-0.72
Milk	-1.35	-1.40	0.39	0.41	0.23	-0.48	0.22	0.24	0.79	0.26	1.41	-0.78
Meat	-1.60	-1.59	0.29	0.24	0.08	0.06	-0.10	0.00	0.38	0.46	0.60	1.02
OAgribusiness	-0.16	-0.17	0.05	0.02	-0.17	-0.38	-0.03	-0.07	-0.02	-0.91	-0.09	0.07
Manufactures	0.21	0.12	-0.06	0.00	-0.21	0.09	-0.09	0.89	-0.11	0.99	-0.99	-0.06
Services	0.03	0.05	-0.02	-0.03	0.02	0.02	-0.01	-0.32	-0.02	-0.25	0.06	-0.11

Percentage change in EXPORTATION and percentage point differential between scenarios AFTA 1 & 2

Commodity	NAFTA		EU		ARG		BRA		CHI		URY	
	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.
Rice	-48.58	-50.10	5.91	4.29	3.44	4.42	4.29	5.98	2.21	0.08	7.20	8.01
Wheat	-30.27	-30.57	13.55	13.14	14.59	19.52	-10.30	-9.41	30.19	30.89	17.51	25.86
Corn	1.20	1.25	-0.94	-1.38	-2.83	-2.66	-1.58	0.33	-3.11	-5.26	-1.99	-2.00
Soybean	-14.41	-14.00	4.20	3.95	2.55	-0.80	3.28	4.27	5.06	2.48	0.72	-0.48
Sugar	-69.12	-59.26	0.55	-0.41	4.07	-47.56	1.29	-4.03	1.06	-3.97	0.22	-47.30
Milk	-54.20	-58.46	0.99	1.08	5.00	-15.56	10.54	-9.39	8.36	-14.83	6.74	-4.41
Meat	-10.34	-10.24	1.04	0.88	0.89	0.54	-2.48	-1.19	4.98	4.99	2.33	3.45
OAgribusiness	-0.14	-0.81	0.17	0.13	-1.39	-4.89	-0.24	-3.39	-0.13	-3.99	-0.91	-1.73
Manufactures	0.64	-0.76	-0.13	0.03	-1.66	1.40	-0.49	-7.89	-0.20	-6.07	-3.77	-4.31
Services	0.42	1.49	-0.17	-0.70	-1.23	-2.45	-0.31	0.99	-0.19	1.18	0.28	0.05

Percentage change in IMPORTATION and percentage point differential between scenarios AFTA 1 & 2

Commodity	NAFTA		EU		ARG		BRA		CHI		URY	
	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.
Rice	15.97	15.57	0.81	0.60	0.35	1.10	-1.61	-4.41	-3.02	-5.39	-7.90	-13.09
Wheat	-3.91	-3.95	-1.02	-0.99	-20.88	-19.39	-1.44	-2.59	-17.23	-31.46	-2.87	-3.80
Corn	-1.12	-1.19	0.10	0.08	0.99	1.47	0.09	-3.58	0.86	-8.54	-0.46	-0.95
Soybean	2.19	1.89	-1.15	-1.01	-1.32	-4.26	-5.91	-8.75	0.14	-0.43	-1.03	-1.36
Sugar	-4.03	-22.23	0.06	0.27	0.46	-2.31	-4.95	-14.51	-0.07	-11.43	-1.76	-8.02
Milk	-16.69	-19.07	0.10	0.12	-6.89	-6.84	-3.63	-6.70	-8.27	-12.63	-2.25	-5.49
Meat	2.24	2.01	-0.02	0.02	0.09	0.65	-1.56	-6.43	-0.66	-5.05	-1.53	-3.87
OAgribusiness	-0.05	-1.01	0.00	0.14	0.54	-3.44	-0.04	-4.66	-0.27	-10.09	-0.70	-2.59
Manufactures	-0.19	-1.19	0.02	0.15	0.54	0.68	0.14	-9.25	0.00	-6.13	-0.62	-2.03
Services	-0.22	-0.89	0.08	0.37	0.72	1.42	0.21	-0.64	0.11	-0.74	-0.19	-0.38

Source: Research results.

Table 11 - Scenario MERCOEURO 1, percent change in production and trade

Percentage change in PRODUCTION

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	0.01	-0.31	-0.39	0.15	0.45	-0.59
Wheat	0.16	-0.32	-1.45	1.32	0.37	-1.74
Corn	0.01	-1.38	2.69	0.83	2.32	-1.82
Soybean	0.23	0.07	-3.73	-1.39	0.47	-4.14
Sugar	0.20	-0.65	3.40	-0.13	0.88	1.64
Milk	0.00	-0.02	-0.26	0.03	-0.00	-2.73
Meat	-0.03	-2.04	8.85	4.04	2.64	16.66
OAgribusiness	0.01	-0.17	0.50	0.43	0.51	-2.10
Manufactures	0.00	0.09	-1.32	-0.79	-0.59	-4.16

Percentage change in EXPORTATION

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	0.02	-0.58	-2.15	0.10	-5.14	-3.32
Wheat	0.27	0.30	-6.22	-6.21	9.98	-12.79
Corn	0.11	-1.77	0.53	36.24	30.57	-18.13
Soybean	0.71	1.11	-10.12	-5.91	-4.55	-14.17
Sugar	0.14	-1.33	35.53	-1.37	130.58	44.57
Milk	0.07	0.12	-6.08	-2.41	0.85	-12.64
Meat	-0.48	-5.97	76.82	65.60	33.14	63.87
OAgribusiness	-0.02	-0.19	5.49	5.18	1.26	-9.39
Manufactures	0.03	0.20	-8.83	-3.00	-0.55	-10.12
Services	0.01	0.18	-8.53	-4.29	-2.49	-11.05

Percentage change in IMPORTATION

Commodity	NAFTA	EU	ARG	BRA	CHI	URY
Rice	0.02	-0.23	0.74	-0.37	-0.83	2.39
Wheat	0.03	-0.18	4.61	-0.38	0.93	2.28
Corn	-0.05	-0.27	5.71	-1.05	1.35	1.61
Soybean	-0.12	-0.73	3.39	1.06	-0.19	-0.41
Sugar	-0.26	0.54	4.80	2.20	0.25	3.82
Milk	0.03	-0.06	3.49	0.37	1.56	7.82
Meat	-0.28	-0.14	7.23	-2.24	-2.70	15.46
OAgribusiness	-0.12	0.17	4.72	1.63	0.62	4.07
Manufactures	0.00	0.02	3.36	2.47	0.45	1.44
Services	0.04	-0.06	4.65	2.82	1.49	5.82

Source: Research results

Table 12 – Scenario MERCOEURO 2, percent change in production and trade, and percentage point differential between MERCOEURO 2 and MERCOEURO 1

Percent change in PRODUCTION and percentage point differential between MERCOEURO 1 & 2

Commodity	NAFTA		EU		ARG		BRA		CHI		URY	
	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.
Rice	-0.11	-0.12	-1.52	-1.21	-0.18	0.21	0.04	-0.11	0.21	-0.24	-0.13	0.46
Wheat	8.58	8.42	-24.35	-24.03	1.32	2.77	1.91	0.59	0.37	0.00	0.12	1.86
Corn	2.44	2.43	-22.18	-20.80	4.02	1.33	0.78	-0.05	3.01	0.69	1.78	3.60
Soybean	3.29	3.06	-9.21	-9.28	2.30	6.03	3.08	4.47	2.69	2.22	1.17	5.31
Sugar	-0.05	-0.25	-0.84	-0.19	-0.47	-3.87	-0.09	0.04	0.17	-0.71	-0.14	-1.78
Milk	0.33	0.33	-2.77	-2.75	0.11	0.37	0.25	0.22	0.32	0.32	0.59	3.32
Meat	0.57	0.60	-4.63	-2.59	1.01	-7.84	0.81	-3.23	0.78	-1.86	2.52	-14.14
OAgribusiness	0.07	0.06	-0.84	-0.67	-0.27	-0.77	-0.01	-0.44	0.24	-0.27	-0.29	1.81
Manufactures	-0.17	-0.17	0.47	0.38	-0.46	0.86	-0.31	0.48	-0.31	0.28	-0.88	3.28
Services	0.00	0.00	0.18	0.15	0.02	0.03	0.02	-0.04	-0.02	0.06	-0.06	0.25

Percent change in EXPORTATION and percentage point differential between MERCOEURO 1 & 2

Commodity	NAFTA		EU		ARG		BRA		CHI		URY	
	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.
Rice	-0.35	-0.37	-2.31	-1.73	-1.08	1.07	0.12	0.02	0.24	5.38	-0.36	2.96
Wheat	15.37	15.10	-57.13	-57.43	3.97	10.19	6.95	13.16	37.22	27.24	5.02	17.81
Corn	12.45	12.34	-50.61	-48.84	12.30	11.77	39.63	3.39	31.19	0.62	3.77	21.90
Soybean	10.04	9.33	-29.45	-30.56	6.36	16.48	11.99	17.90	7.04	11.59	3.83	18.00
Sugar	-0.38	-0.52	-0.46	0.87	-2.82	-38.35	-0.49	0.88	-0.68	-131.26	-1.42	-45.99
Milk	6.28	6.21	-4.83	-4.95	2.84	8.92	5.52	7.93	5.60	4.75	2.53	15.17
Meat	4.50	4.98	-12.00	-6.03	8.75	-68.07	12.36	-53.24	8.76	-24.38	9.59	-54.28
OAgribusiness	0.45	0.47	-1.27	-1.08	-2.24	-7.73	-0.32	-5.50	0.57	-0.69	-1.35	8.04
Manufactures	-0.65	-0.68	0.99	0.79	-3.39	5.44	-1.79	1.21	-0.72	-0.17	-2.31	7.81
Services	-0.63	-0.64	0.76	0.58	-2.74	5.79	-1.15	3.14	-0.43	2.06	-1.99	9.06

Percent change in IMPORTATION and percentage point differential between MERCOEURO 1 & 2

Commodity	NAFTA		EU		ARG		BRA		CHI		URY	
	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.	%	Diff.
Rice	0.37	0.35	-0.82	-0.59	0.59	-0.15	-0.18	0.19	-0.34	0.49	-0.36	-2.75
Wheat	0.64	0.61	2.95	3.13	0.10	-4.51	-0.65	-0.27	-1.38	-2.31	-1.46	-3.74
Corn	-0.63	-0.58	0.44	0.71	-6.61	-12.32	-6.38	-5.33	-1.59	-2.94	-6.85	-8.46
Soybean	-1.55	-1.43	5.52	6.25	-3.11	-6.50	-1.11	-2.17	0.32	0.51	-0.72	-0.31
Sugar	0.23	0.49	-0.99	-1.53	0.75	-4.05	0.17	-2.03	-0.20	-0.45	0.12	-3.70
Milk	-5.45	-5.48	-0.53	-0.47	-2.25	-5.74	-4.02	-4.39	-2.38	-3.94	-3.79	-11.61
Meat	-0.82	-0.54	0.30	0.44	-2.51	-9.74	-1.80	0.44	-1.89	0.81	0.53	-14.93
OAgribusiness	-0.07	0.05	-0.45	-0.62	0.93	-3.79	-0.10	-1.73	-0.40	-1.02	0.27	-3.80
Manufactures	0.19	0.19	-0.10	-0.12	1.11	-2.25	0.61	-1.86	-0.06	-0.51	0.13	-1.31
Services	0.39	0.35	-0.24	-0.18	1.45	-3.20	0.66	-2.16	0.19	-1.30	1.06	-4.76

Source: Research results

GTAP Technological Tree

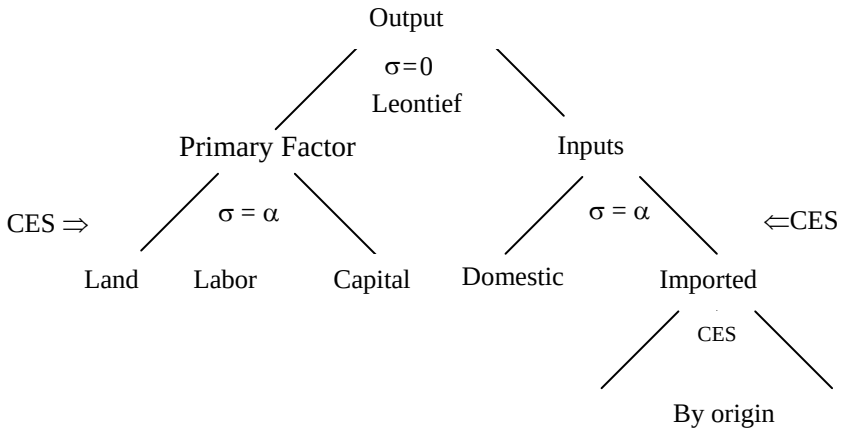

Figure 1 – Production structure.
Source: Hertel and Tsigas (1997)

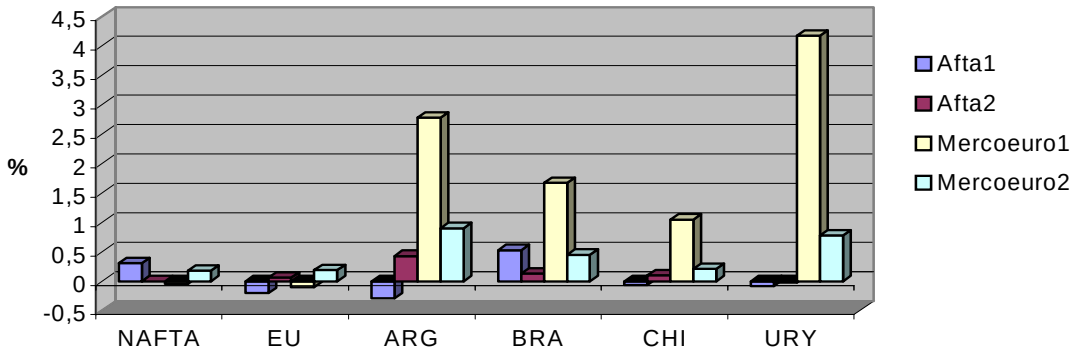

Figure 2 - Percent change in gross domestic product (GDP).

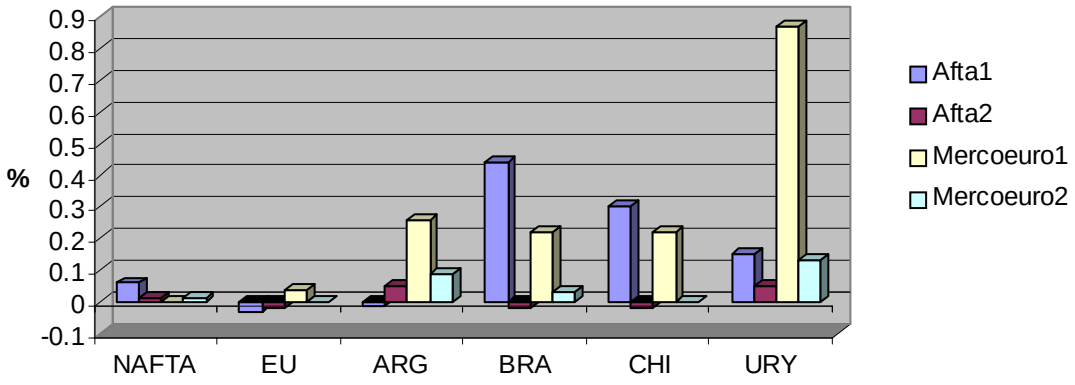

Figure 3 – Percent change in per capita utility

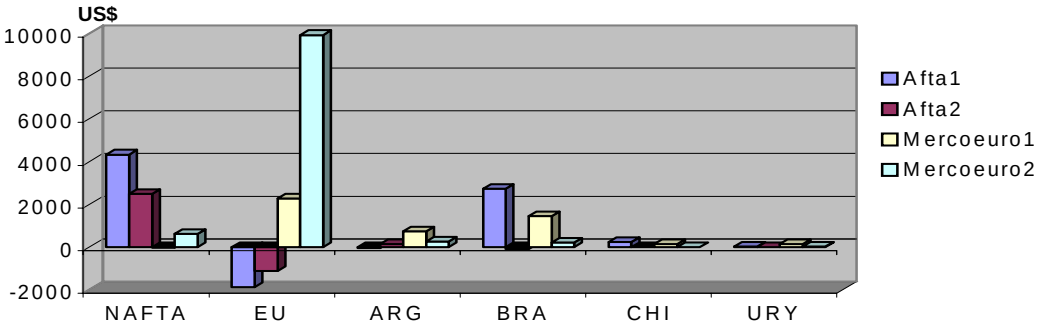

Figure 4 - Equivalent variation (US$ million)