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Regional, Multilateral and Unilateral Trade Policies of MERCOSUR for Growth and Poverty Reduction in Brazil

Glenn W. Harrison, Thomas F. Rutherford, David G. Tarr and Angelo Gurgel[†]

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Address correspondence to:
David Tarr
World Bank, Room MC3-323
1818 H. Street NW
Washington DC 20433
E-mail: DTARR@WORLDBANK.ORG
Fax: (202) 522-1159

[†] Glenn W. Harrison is Dewey H. Johnson Professor of Economics, University of South Carolina; Thomas F. Rutherford is Associate Professor, University of Colorado; David Tarr is Lead Economist, The World Bank; and Dr. Angelo Gurgel from the Federal University of Vicosa, Brazil.
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1. Introduction

Regional, multilateral and unilateral trade policy options are all on the table for the government of Brazil in 2002. In terms of regional arrangements, Brazil is part of the MERCOSUR customs union along with Argentina, Uruguay and Paraguay. Negotiations to implement the Free Trade Agreement of the Americas (FTAA) with the MERCOSUR countries as members are underway. The most notable bilateral regional arrangement that MERCOSUR is negotiating is a potential free trade agreement with the European Union (EU). Brazil has also supported further multilateral negotiations within the World Trade Organization (WTO).[1] Brazil is a member of the Cairns group supporting agricultural trade liberalization and believes that the best negotiating forum for obtaining freer agricultural markets is the WTO. The WTO agreement to launch the Doha Development Agenda suggests that further multilateral trade liberalization is likely. Finally, although political support for unilateral trade liberalization in Brazil and MERCOSUR may be less evident, each has undertaken considerable unilateral trade liberalization in the last ten years. Several Brazilian scholars[2] have noted a significant increase in Brazilian productivity associated with the trade liberalization, and this has cemented the intellectual support for an open trade regime.

As Brazil and MERCOSUR consider their trade policy options over the next few years, it would be useful for its policy-makers to have an assessment of some of the following questions. What is the impact of the FTAA or the potential EU-MERCOSUR free trade agreement? If the EU excludes agricultural products from the agreements, or if the US applies antidumping actions to its most protected sectors, do the agreements lose their attractiveness? What are the potential gains from multilateral liberalization compared with regional liberalization? How can Brazil and MERCOSUR optimally choose the combination of trade policy options? Would the FTAA and the EU-MERCOSUR agreement yield greater benefits taken together than separately? How much would further unilateral liberalization contribute to improved welfare, either independently or in combination with regional arrangements? We provide quantitative estimates to answer these and other questions.

It is well known that most results regarding the welfare effects of regional arrangements are typically ambiguous at the theoretical level, and that many questions are quantitative rather than qualitative. Thus we employ a 16-region global computable general equilibrium (CGE) model to quantitatively examine the regional, unilateral and multilateral arrangements. Our model includes the Brazilian economy as well as the economies of Argentina, Uruguay, Chile, Mexico, the United States, Canada, Central America, Venezuela, Colombia, Peru, Rest of Andean Pact, Rest of South America, the EU, Japan and an aggregate Rest of the World. We are therefore able to estimate the impact on partner and excluded countries from each of the agreements we evaluate.

Given the concern about the impact of trade policy changes on the poor, a significant focus of our work is on the impact of the trade policy changes under consideration on the poor. To do so, we incorporate 20 different types of

[1] See the *Trade Policy Review for Brazil* by the World Trade Organization (2000).
[2] For example, Rossi and Ferreira [1999].

Brazilian households in our model: ten rural and ten urban, where rural and urban households are further classified according to income levels. Our work in this area is innovative most notably in several empirical dimensions, as we describe in Appendices A, C and D. It is only as a result of the careful attention to detail in the empirical work on factor shares and income mapping from the survey data, that we are able to obtain results that can be sensibly used to analyze the poverty dimension of trade policy changes in an applied setting.[3]

Our basic policy results are in Table 5A (in percentage terms) and Table 6A (in U.S. dollars). The results suggest that the regional arrangements under consideration by MERCOSUR, namely the FTAA and an agreement with the EU, can both be expected to result in gains to Brazil. That is, by the standards of preferential trade arrangements, these potential agreements are relatively beneficial. The agreement with the EU is almost twice as valuable as the FTAA due to access to highly protected agricultural markets in the EU. The combined gains from both agreements will be greater than the gains obtained from the sum of the agreements separately due to a reduction of trade diversion. This indicates that the Brazilian strategy of pursuing both agreements, rather than either alone, is beneficial.

Both the US and the EU, however, may attempt to protect their markets despite a preferential trade agreement. What is the cost to Brazil of denial of preferential market access to the markets of the US or the EU? If the EU excludes it highly protected agricultural products from the EU-MERCOSUR agreement, the gains to Brazil are reduced to only one-ninth of the value of the gains with full preferential market access to the EU. If the US employs antidumping to exclude market access to Brazil for the most protected products in the US, the gains to Brazil would be reduced to two-thirds of the gains Brazil would obtain from full market access in a FTAA. If both agreements are implemented with excluded products, the FTAA will be more valuable to Brazil than the agreement with the EU.

We find that both unilateral tariff cuts in MERCOSUR or tariff uniformity in MERCOSUR also yields benefits for Brazil. We estimate that uniform tariffs in MERCOSUR (such that collected tariff revenue in Brazil is unchanged) would yield benefits even larger than a unilateral 50% tariff cut in MERCOSUR.

Most of the trade policy options we evaluate, either regional, multilateral or unilateral, result in a distribution of the gains to the different households that is progressive, so that the poorest households experience the greatest percentage increase in their incomes. This is because the trade policy changes tend to shift resources from capital intensive manufacturing toward unskilled labor intensive agriculture, thereby inducing an increase in the wage of unskilled labor relative to other factors of production. This in turn results in an increase in the incomes of the poorest households in Brazil relative to the richest. The percentage increase in the incomes of the eight poorest households (the four poorest rural and four poorest urban) is several times greater than the percentage increase in the income of the average for the economy as a whole. At a very disaggregate level some poor households could lose, especially in the short run. This emphasizes the need for effective safety net policies to be in place. But given that the sectors that are important to the poor tend to be disfavored by the structure of protection, the medium to long run effects of these trade reforms should be very positive for the poorest households.[4]

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[3] We show that the results change considerably without proper attention to detail on the factor shares.

[4] These results are consistent with two other analyses of the impact of trade liberalization on the poor in Brazil. Barros, Corseuil and Cury [2000]employed a CGE model of Brazil calibrated to 1995 data. They simulated an increase of protection to the levels that prevailed in Brazil in 1985. They find that trade liberalization benefits the economy as a

Our estimates indicate that the apparent Brazilian strategy of simultaneously pursuing a MERCOSUR agreement with the EU plus the FTAA, while supporting multilateral trade liberalization at the WTO, is well considered. Brazil can optimize its choice of trade policies by combining regional arrangements in both the Americas and the EU with multilateral liberalization. If tariff uniformity is added to the regional and multilateral liberalization, further gains would be realized.

Both the FTAA and the EU-MERCOSUR arrangements are net trade-creating for the countries involved, but excluded countries almost always lose from the agreements. We estimate that multilateral trade liberalization of 50 percent in tariffs and export subsidies results in gains to the world more than four times greater than either the FTAA or the EU-MERCOSUR agreement. This shows the continued importance to the world trading community of the multilateral negotiations.

Our model does not incorporate growth or especially endogenous growth effects of trade policy. Several Brazilian researchers, Feijo and Carvalho [1994]; Bonelli and Fonseca [1998], Moreira [1999], Rossi and Ferreira [1999], Pinheiro and Moreira [2000] and Ferreira and Rossi [2001], have noted a correlation between the opening of Brazil to external trade in the early 1990s and an increase in productivity in Brazilian manufacturing. Recently, Muendler [2001] has been able to infer a causal relationship between the trade liberalization and increase in total factor productivity. This has contributed to the momentum for further trade liberalization in Brazil. A model which incorporated endogenous growth effects, such as that developed in Rutherford and Tarr [2002], would be expected to produce gains from trade liberalization several multiples of the estimated gains of our CRTS model. Numerical endogenous growth models, however, are not yet available that can produce results at the sector or household level such as is required of this analysis. We therefore adopt a more conventional comparative static modeling approach. We believe that in general that we characterize the ranking of the results and the estimated gains to the economy (or losses in some cases) would be a multiple of the gains or losses that we estimate.[5] There are, however, exceptions to this multiple benefits or losses. It is likely that trade (direct and indirect) with technologically advanced countries yields greater increases in productivity than trade with less advanced countries. In this case, the FTAA could provide dynamic benefits for Argentina, for example, even though our estimated static effects are negative.

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whole, but both the rural and urban poor gain more than proportionately from trade liberalization.

The large study of rural poverty in Brazil by the World Bank [2001, p. iv] concludes that "given that commercial agriculture produces the bulk of Brazil's export crops...a trade policy regime that moves toward relatively low tariffs on importables (of both inputs and final products) could significantly improve the sectors international competitiveness which would in turn lead to greater real wage rates and increased employment opportunities–both farm and downstream processing and transport."

[5] We have evaluated most of the trade policy options in a "comparative steady state" model, similar to our work with a comparative steady state model on the Uruguay Round. But since the rental rate on capital falls in most of our scenarios, the new equilibrium capital stock does not rise, and the estimated welfare gains to the economy do not rise as well. In general, the gains do not necessarily have to increase in a comparative steady state model, as we explain in Rutherford and Tarr [2001].

Some authors, such as Burfisher, Robinson and Theirfelder [2002], posit Hicks neutral technical change as a function of the share of GDP that is traded, or traded with industrial countries. Although this specification will achieve large welfare estimates from trade liberalization, we choose to avoid this specification since it does not have any microeconomic foundation. It ignores the innovation of the endogenous growth literature regarding technical change.

In Section 2 we describe the model and data. In Section 3 we present and explain the policy results for Brazil, the implications for the distribution of income, and the reallocation of output among sectors. Results for other countries in the model are also explained. The impact on partner and excluded countries of the regional arrangements are also evaluated and compared to the impact under multilateral trade liberalization. In Section 4 we examine how the various trade policy options may be combined to optimize the outcome for Brazil. The conclusions are in Section 5.

2. A Multi-Regional Trade Model

A. General Features

The quantitative model developed to evaluate the trade policy options facing Brazil is multi-regional and multi-sectoral. Table 1 lists the 16 regions included explicitly in the model, as well as the 22 sectors included in each region. The model is quite detailed in the Americas: there are 13 countries or regions in the Americas. Outside of the Americas, we have European Union 15, Japan and Rest of the World. The general specification of this model follows our earlier multi-regional model of the effects of the Uruguay Round and even more closely our model of the trade policy options for Chile.[6] There are however, several important data and modeling differences between this research and our earlier models. The most important innovation is the extension to multiple households in Brazil. We aggregated the approximately 5000 Brazilian households in the household expenditure survey into twenty households, ten urban and ten rural. Within rural and urban households, households were classified according to *household* income from poorest to richest. Key characteristics of the households in the LSMS survey are listed in Table 1.

Multiple households in the model for Brazil allows us to assess the distributional impacts of trade policy, not just the aggregate effects. In particular, the impact of trade policy options on the poor can be assessed due to the decomposition of households. Other than Brazil, all economies are modeled in the more traditional manner in which all consumers are represented by a "representative agent."

We employ the "GTAP5 dataset,"[7] but augment or alter the dataset in certain important dimensions to better capture the Brazilian economy. The most important are: we update to the 1996 input-output table of the Brazilian economy; we alter the protection data for Brazil to more closely capture the Brazilian economy (and we correct for some problems in the protection data in some other countries); we use the household expenditure survey for Brazil to construct information on multiple households in Brazil; and we have independently estimated factor shares in Brazilian industries. We elaborate on these extensions later and in the Appendices.

A natural question to ask is what percentage of the households are poor, based on the LSMS. Poverty lines are defined in several ways. Two well known measures are one dollar per day per person or two dollars per day per person at a purchasing power parity exchange rate. Based on the LSMS data, we calculate that 7.3% of the population lives on one dollar per day or less, and 17.8% of the population lives on two dollars per day or less. In order to calculate poverty

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[6] Harrison, Rutherford and Tarr [1997c][2002]. Web site HTTP://DMSWEB.BADM.SC.EDU/GLENN/UR_PUB.HTM provides access to the model and related publications.

[7] For documentation seeDimaranan and McDougall [2002].

in Brazil, Ferreira, Lanjouw and Neri [1999] have developed a measure of poverty that equals the "minimum food basket" in the reference region, metropolitan Sao Paulo, that would generate the FAO minimum coloric intake of 2,288 calories per day. They have also developed indices that allow them to define "equivalent" income levels across the individual households in different regions of the LSMS. We estimate that this measure (which is the lowest of the three measures Freerira et al. develop) amounts to $1.50 per capita per day, using our purchasing power parity adjustments for 1996.[8] Using the poverty headcounts for each region in Brazil, reported in Ferreira, Lanjouw and Neri [1999; Table 3], and sample weights for the individuals in each of the regions of the LSMS in Brazil, their measure implies a national poverty index of 13.03% for Brazil using the LSMS.[9]

Based on the Ferreira, Lanjouw and Neri [1999] measure of poverty incidence, we estimate that 13% of individuals in Brazil are below the poverty line. We calculate that 82% of the households in our poorest two, Uhhd1 and Rhhd1, fall below this poverty line. Some individuals in household two or three may be poorer than individuals in household 1, because they belong to large families and the groups are defined by household income not per capita income.[10]

Solution Algorithm. The model is formulated using the GAMS-MPSGE software developed by Rutherford [1999] and solved using the PATH algorithm of Ferris and Munson [2000]. Although the model has 16 regions and 22 sectors, and is large by historical standards, it is smaller than our Uruguay Round model. Use of demand elasticities as high as those we employ could pose numerical problems in general, but this model solved without difficulty. Details on the software needed to replicate and extend our model are provided in Appendix E.

[8] Specifically, they report an indigence poverty level of 65.07 Reals per month. This is divided by 30.417, the average number of days in a month, and then divided further by 1.44 to get the PPP-equivalent in U.S. dollars. This is $1.48656, which we round to $1.50 for ease of recollection.

[9] They also report comparable numbers from an alternative survey, known as the PPD, which imply a national poverty index of 24.7% using comparable income measures. Ferreira, Lanjouw and Neri [1999; p.13] note some important differences which could account for the higher poverty index derived from the PPD: unlike the LSMS, it only asks about one aggregate non-wage source of income, using a single question, despite the considerable heterogeneity of non-wage sources of income. They also note that there may be measurement errors associated with the way in which the wage income question is asked, particularly since the same form of the question is applied to employees of firms and self-employed individuals.

[10] In subsequent work we intend to investigate the impact of defining our households such that the *individuals* on the first household earn less than one dollar per day, individuals in the second earn between $1 and $1.49, and those in the third household earn between $1.50 and $1.99. This would allow a more detailed estimate of poverty impacts according to different measure. On the other hand, the model results are generally quite uniform for the poorest households, so the main policy conclusions with respect to the effect of poverty would not change.

3. Policy Results

We first discuss how Brazil and all other countries in our model will be impacted at the aggregate level from its various trade policy options. We report the change in welfare in our model as a percent of consumption[11] and in 1996 US dollars. The change in welfare is the "Hicksian equivalent variation," which in less technical terms can be thought of as the change in real income. Our aggregate estimate for the change in welfare is the sum of the welfare changes for the twenty individual households in our model. We emphasize our central elasticity results, but also present results for low elasticities,[12] along with results for the impact on the real exchange rate and the percentage change in government revenue resulting from the tariff reductions. Subsequently, we present the results of our model of the Brazilian production sectors, with estimates of the impact on prices, output, imports and exports. Finally, we examine the impact of the trade policy options on the multiple households with a focus on the poor.

A. Aggregate Results for Brazil and Other Countries

The overall welfare results for the trade policy options of MERCOSUR are presented in Table 5A for central elasticities (low elasticity results are in Table 5B). Welfare impacts in these tables are presented as a percent of personalconsumption of the respective country or region. They represent changes on a recurring, annual basis, so a 1% welfare gain should be interpreted as a 1% increase in real income *each year in the future*. In Tables 6A and 6B we present results for the same scenarios in 1996 US dollars. In Table 7 we present the impact on macroeconomic variables in Brazil as a result of these trade policy options.

Free Trade Agreement of the Americas. In this scenario we assume that all countries in the Americas agree to offer tariff free access on all products reciprocally, while their external tariffs on countries outside of the Americas are not affected by the FTAA. The results for the FTAA with central elasticities are presented in the first column of Table 5A. We estimate that Brazil will gain from the FTAA by about six-tenths of a percent of Brazilian personal consumption (or from Table 6A, about US $3 billion).

The impact of regional trade arrangements is often discussed using the concepts of trade diversion and trade creation. Regional trade arrangements can produce negative welfare results on participating countries, since it is possible that trade is diverted away from more efficient low cost trading partners who are excluded from the agreement toward imports from members of the free trade agreement which are not subject to a tariff. This is known as trade diversion. Trade creation occurs when the partner country is the most efficient supplier of the product on world markets, so even though tariffs are lowered only preferentially, the result is nonetheless an increase in imports from the most efficient supplier in the world. When the agreement is with small countries only, the lack of competition among members of the agreement can lead to a significant increase in the cost of imports for member countries, i.e., trade diversion. In the case

[11] Welfare as a percent of GDP would be about 70% of our estimate of welfare as a percent of consumption.

[12] Systematic sensitivity analysis of the effect of uncertainty about key elasticity estimates on our main results is currently underway, using the methods of Harrison and Vinod [1993] and Harrison, Jones, Kimbell and Wigle [1992]. Those results will be reported later. Preliminary results indicate that the conclusions we rely on here are qualitatively very robust.

of the FTAA, the agreement includes a very large economic area. For most products, there are suppliers within the Americas who are either the most efficient supplier of the product on world markets or else they are close to the most efficient supplier. Moreover, competition among the many countries and suppliers prevents the supply price for imports from partner countries from rising significantly.

For these reasons, we estimate that Brazil and most countries in the Americas will gain from a FTAA. The one exception to this pattern in the Americas is Argentina, which we estimate to lose slightly from the FTAA. The reason Argentina is estimated to lose from the FTAA is that prior to the FTAA, it enjoys preferential access to the markets of the other MERCOSUR countries. The FTAA provides equivalent access to the other countries in the Americas to the MERCOSUR markets, thereby eroding the preferential access of Argentina. The loss of preferential access for Argentina, combined with trade diversion effects, are larger than the trade creation effects.

On the other hand, countries that are excluded from the agreement (the EU, Japan and Rest of the World) all lose as a result of the FTAA. Their combined loss is $8.4 billion. The reason is that the excluded countries suffer a decline in demand for their exports to the Americas as importers in the Americas shift demand toward suppliers from the Americas. The EU is estimated to lose $2.6 billion, slightly more than the $2.3 billion the United States is estimated to gain.

From Table 7 we see that the estimated loss of tariff revenue is about six-tenths of one percent of GDP. This is over half of the tariff revenue available in the benchmark equilibrium The Brazilian authorities will have to be cognizant of the need to replace the tariff revenue with alternate taxes so as not to contribute to the fiscal deficit. We estimate that the real exchange rate will depreciate as a result of the FTAA by about 2.6%. In general, the reduction in home country (MERCOSUR) tariffs leads to an increase in the demand for imports. The real exchange rate in MERCOSUR countries has to depreciate to restore equilibrium in the balance of trade. A real depreciation results in an increase in the supply of foreign exchange from exports and a decrease the demand for foreign exchange from imports, which together restore equilibrium in the balance of trade. Mitigating against the real exchange rate depreciation is the improved access or terms of trade improvement in the markets of partner countries. Improved terms of trade in partner markets results in an increase in the supply of foreign exchange and induces an appreciation in the real exchange rate. On balance, the tariff reduction dominates our assessment of the impact on the real exchange rate.

European Union-MERCOSUR agreement. In this scenario we assume that MERCOSUR and the EU agree to offer tariff free access to all their markets reciprocally. In column 3 of Tables 5A and 6A we present our central elasticity estimates of the impact of a free trade agreement between MERCOSUR and the EU, in percent of consumption and US dollars, respectively (low elasticity estimates are in Tables 5B and 6B).

The gains to Brazil from a MERCOSUR agreement with the EU are about 1.5 times the gains from a FTAA. The gains to Argentina and Uruguay are dramatically larger than with the FTAA. The reason for this can be seen from Table 3: the EU has several agricultural and food products with very high tariffs. If Brazil, Argentina and Uruguay could obtain tariff free access to these EU markets, while the EU continues to apply these tariffs on other countries, they would obtain a very large terms of trade gain in EU markets. In the case of the relatively small economy of Uruguay, the

large increase in prices available in the EU induces a large shift of exports toward the EU to take advantage of the increase in prices.

As with the FTAA, countries excluded from the agreement typically lose due to the shift in demand toward partner country suppliers. One exception is Japan. As the EU and MERCOSUR countries shift toward the markets of each other, Japan obtains a small terms of trade improvement in the markets of the Rest of the World. The gains to Japan, however, are very small, and round to zero at the nearest one-tenth of a percent of Japan's consumption.

Excluded Products in the EU-MERCOSUR Agreement. Some would argue that MERCOSUR will have great difficulty negotiating an agreement with the EU in which the EU would grant tariff free access in its highly protected agricultural products. The EU has steadfastly refused to do so in its Association Agreements with the Central and Eastern European countries, in its customs union agreement with Turkey, and in its free trade area agreements with various Mediterranean countries such as Morocco and Tunisia. Hence it is unlikely to offer concessions to MERCOSUR that it has refused to offer to other countries for which it might be viewed as having more to gain geo-politically. What is the cost to Brazil of denial of full market access in a MERCOSUR-EU agreement? In this scenario we assume that the EU fails to provide improved market access to its highly protected products. These products and the tariff rates in the EU in our data set are: paddy rice (65%), cereal grains (44%), processed rice (86%), other food products (28%), bovine meat products (95%), dairy products (90%), other meat products (61%) and sugar (76%).

The central elasticity results are presented in Tables 5A and 6A. For Brazil we see that if the EU fails to provide full market access, the value of the EU-MERCOSUR agreement is reduced to one-tenth of a percent of consumption from nine-tenths of a percent, i.e., the agreement contains very little value. The estimated gains for Uruguay are reduced dramatically. The highly protected agriculture and food product markets in the EU are products in which the MERCOSUR countries have a comparative advantage. Consequently, if the free trade agreement between the EU and MERCOSUR excludes these products, the expected benefits would be significantly reduced. These results demonstrate the importance of improved access in preferential trade agreements, emphasized by Wonnacott and Wonnacott [1981]. In addition, the gains to the EU are reduced from 0.5% of its consumption to 0.1%, reflecting the importance of agriculture liberalization in the EU for the EU to reap gains.

Excluded Products in the FTAA (by the United States against Brazil). There is also a potential for excluded products in the FTAA, although the exclusion is likely to be implicit rather than explicit. Despite a proposal by Chile to limit the use of antidumping actions as part of the FTAA, the US has heretofore strongly resisted efforts to limit the use of antidumping actions as part of the FTAA. In addition, the Brazilian authorities have expressed the fear that the benefits of improved access to the markets of the US will be denied by antidumping actions. In this scenario we provide an estimate of the costs to Brazil of continued US protection of its most protected markers even if a FTAA is implemented. We focus on the most highly protected products in the US market: oil seeds (18%), other crops (14%),[13]

[13] Our category other crops is an aggregate of the following sectors from the full GTAP dataset: wheat, vegetables and fruits, fiber based plants, wool, forestry, fishing and the category other crops. We have also performed simulations with wheat as part of grains rather than other crops. Argentina gains more from the EU-MERCOSUR

dairy products (42%) and sugar (53%). In this scenario we assume that on the most sensitive and highly protected products in the US, the US employs antidumping duties to neutralize the impact of the FTAA on the exports of Brazil. That is, the US tariff applied on exports from Brazil of these products does not change in the counterfactual when we implement the FTAA with excluded products in the US. This is not a full treatment of the potential use of antidumping within the FTAA or of the impact on Brazil. Such a treatment would have to account for antidumping duties by the US against other partners in the Americas as well, and the use of antidumping by countries other than the US. But this scenario should provide an assessment of the *potential* costs to Brazil of US antidumping.

The impact of excluded products in the US is to reduce the benefits to Brazil to about two-thirds of the gains Brazil would receive with full market access in a FTAA. The reduction in benefits from denied market access in the US is not as severe as the impact of excluded products with the EU agreement. There are two principal reasons why denial of market access is more important in the agreement with the EU. First, the tariff peaks in the United States market are not as high as the tariff peaks in the EU. The large impacts tend to be driven by the tariff peaks, so the impact of excluding the tariff peak products in the EU is very large. Second, there are other markets in the Americas that open up to Brazil as part of the FTAA. If the US fails to provide preferential access to its highly protected products, Brazil may sell these products in the other markets of the Americas since, in the FTAA, Brazil obtains preferential access to these markets compared to countries outside the Americas. On the other hand, if the EU denies preferential access as part of a free trade agreement between Brazil and the EU, there are no alternate markets in which Brazil has preferential access for these products as part of the agreement.

Combining the Free Trade Agreement of the Americas with the MERCOSUR-EU Agreement. Some authorities in Brazil have expressed a desire for an agreement with the EU to come into effect together with the FTAA. Our results, in Tables 5A, 5B, 6A and 6B, indicate that the benefits to Brazil from the two agreements together exceed the sum of the benefits for each of the agreements separately. This is because the combined economic area of the Americas plus the EU is rather vast, and Brazil is more likely to find the most efficient world supplier in this combined economic area than in either region separately. That is, the trade diversion effects that are part of either agreement separately are reduced by combining the two agreements. Thus, the strategy of negotiating an agreement with the EU in addition to the FTAA appears to be a useful strategy that is likely to increase the welfare gains to Brazil.[14]

Unilateral Trade Liberalization by 50 Percent. We estimate that a 50% cut in the tariffs of MERCOSUR will result in an increase in welfare by about four-tenths of a percent of Brazilian consumption, or about $1.9 billion per year. Thus, the gains from the FTAA with excluded access to the US market on selected products results in approximately the same gains as a unilateral tariff cut by MERCOSUR of 50%.

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agreement, but otherwise most of the results change by extremely small amounts.

[14] These results are similar to the results Harrison, Rutherford and Tarr [2002] found for Chile when they found that the "additive regionalism" strategy of Chile resulted in significantly larger benefits than the agreements taken separately.

Multilateral Trade Liberalization. Brazilian authorities have also encouraged multilateral trade negotiations, and supported the Doha Development Agenda. In part, this is due to the view that the most likely venue in which agricultural liberalization (which is important to Brazil) will take place is through the World Trade Organization. We consider a scenario in which all countries in the world reduce their tariffs and export subsidies and taxes by 50%.

Brazil gains about eight tenths of a percent of personal consumption from multilateral trade liberalization in our static model, or about $4.5 billion. This is larger than the gains from the FTAA and larger than the gains from an agreement with the EU that excludes the highly protected agricultural and food products. Given the likely exclusion of agriculture from a MERCOSUR agreement with the EU, these results support the strategy of the Brazilian authorities that it is important to pursue multilateral liberalization together with the regional options. In fact, it is most important.

FTAA with no change in the external tariffs of MERCOSUR. We can also evaluate the impact of the Free Trade Agreement of the Americas in which no improved access to the markets of MERCOSUR is offered. That is, in this scenario we assume that the countries in the Americas outside of MERCOSUR lower their tariffs preferentially to all countries in the Americas (so Brazil obtains improved market access), but the countries in MERCOSUR do not lower MERCOSUR tariffs against the partner countries in the Americas (so Brazil does not offer any improved market access). The purpose of this scenario is to assess how much of the gains to Brazil will come from improved market access to the markets of the Americas and how much is due to lowering the tariffs of MERCOSUR, thereby achieving improved resource allocation in Brazil. One could imagine active use of antidumping policy in Brazil and Argentina that denies improved access to the countries of the Americas. This is analogous to our scenario above in which we assumed the FTAA was implemented but the United States failed to provide improved market access to Brazil through the use of antidumping.

In column (8) of table 5A we see that the gains to Brazil are reduced to 0.4 percent of consumption, i.e., about two-thirds of the gains remain. This shows that improved market access in responsible for about two-thirds of the gains to Brazil from the FTAA; the remaining one-third of the gains comes from the lowering of the MERCOSUR tariff preferentially. From Tables 8A and 9A, however, we see that the gains to the poorest households are reduced much more dramatically. That is, poor households gain much more from the reduction in MERCOSUR tariffs in the FTAA than from improved market access. We explain why below.

Impact on Partner and Excluded Countries–Comparison with Multilateral Liberalization. Experience with regional trade arrangements has shown that if the agreement is not mutually beneficial to all parties, then it is unlikely to be effectively implemented or sustained (World Bank [2000]). Agreements may exist *de facto*, but are not implemented effectively. Thus the impact of the FTAA or EU-MERCOSUR on Brazil's partner countries in the trade agreements is relevant to the likely success of the agreements in the long run. Moreover, even if the agreements are beneficial to Brazil and its partners, if the benefits are derived from losses to countries that are excluded from the agreements, then clearly the agreements would be unattractive from the perspective of the multilateral trading system. Thus, it is important to estimate the impact on partner and excluded countries as well. We compare the results to multilateral trade liberalization of 50% tariff and export subsidy cuts. In order to be able to compare gains and losses

across countries, in Table 6A and 6B we add the dollar estimates across countries to arrive at a sum for countries included in the agreement or a sum for those excluded from the agreements.

All the agreements considered result in net benefits for virtually all the included countries.[15] These agreements are roughly all trade creating agreements. This reflects the fact that all the agreements create large economic areas, where it may be expected that competition prevails for most products and the most efficient suppliers are likely to be close to the most efficient in the world.

Regarding excluded countries, virtually all excluded countries lose from regional agreements (the impact on Japan of EU-MERCOSUR is an exception for the reasons mentioned above).[16] The agreements are sufficiently trade creating, however, that these agreements generate gains to the world as a whole. For the world as a whole, we estimate that multilateral liberalization generates gains to the world of more than four times the gains from the best of the regional arrangements we consider. This emphasizes the importance to the world trading community of multilateral negotiations.

B. Impact on Production Sectors: Changes in Output, Price, Imports and Exports

In Tables 10A (and 10B for low elasticities) we present the estimates of the impacts on production sectors as a results of the trade policy options. The percentage change in output, exports, imports and the consumer price in Brazil are presented. Although the impact on the sectors depends on the specific agreement, there is a pattern. In general, the oil seeds, other agriculture (excluding grains and wheat), other crops (which includes fruits and vegetables and wheat), processed food and leather sectors expand production and exports, while several manufacturing sectors, including motor vehicles, other metal products and the sector we call manufacturing, decline. This reflects relative protection in Brazil, which favors manufacturing at the expense of agriculture and processed food products. When protection is reduced in the economy, resources shift toward the agriculture and food sectors that had been disadvantaged relative to manufacturing. We also note that the expanding sectors tend to be less capital intensive than the contracting sectors, and this has implications for the impact on the poor.

The reduction in tariffs generally depreciates the real exchange rate (see Table 7 for estimates); this is because the increased demand for imports accompanying the decline in tariffs induces and increase in the price of foreign exchange. **The depreciation of the real exchange rate encourages exports** and mutes the import expansion. **The depreciated real exchange rate results in the export sectors having an increased incentive to export even if the tariffs in the export markets are unchanged.** This is one of the primary reasons that international trade economists say that an import tariff is equivalent to a tax on exports. Given our view that Brazil will neither give nor receive a "free lunch" from the rest of the world in the long run, we assume that there must be an increase in the value of exports to match the increase in the value of imports accompanying tariff reduction. The real exchange rate is the principal variable that induces the equilibrium between the change in imports and exports.

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[15] Argentina loses slightly from the FTAA in our central elasticity case dur to the erosion of preferential access in the MERCOSUR markets.

[16] Losses appear for most countries reported to have zero welfare change when the data are reported to an additional decimal place.

At the sector level, we see that the export expansion is rather broad in the FTAA and the multilateral and unilateral scenarios. The biggest export expansion comes from the sectors that are expanding production, namely the sectors that received relatively little protection initially. The combined export expansion from the sectors expanding exports must offset the increased in imports plus the decline in exports from the few manufacturing sectors that contract exports. Since (from Table 2) we see that the manufacturing sector was the most export intensive sector in Brazil among the sectors of our model (at 29% of the value of domestic output); and manufacturing has the highest value of initial exports, the export expansion in other sectors must be more substantial.

Different agreements have disparate impacts on different sectors. The EU-MERCOSUR agreement could induce an enormous percentage increase in agriculture and food exports. Exports of the products highly protected in the EU are estimated to expand from 63% (grains) to several multiples of the current level of exports in the case of bovine meat products. However, if the EU excludes the highly protected agriculture and food products from the agreement then the expansion of exports of these products would be very modest.

In Table 10B, the results for the low elasticity scenario is presented. In general, as expected from economic theory, the impact on the sectors is muted with lower elasticities.

Multilateral trade liberalization is also estimated to have a positive impact on agriculture and food exports, and has a strong impact on reducing agriculture and food imports. The reduction in imports of these products is explained by the fact we assume that export subsidies (mostly relevant in the EU) are also reduced by 50% with multilateral trade liberalization.

The FTAA is estimated to lead to a substantial expansion of the leather sector, but also of the sugar sector. Exports of these products plus oil seeds and "other crops" expand significantly with the FTAA even if we assume that the US excludes Brazilian access to its most highly protected markets.[17]

C. Impact on Households and the Poor

Although we have seen that the trade policy changes under consideration are generally beneficial for the Brazilian economy as a whole, in this section we present our estimates and explanations of the impact of the trade policy changes on the different households in Brazil. We focus especially on the impact on poor households.

In our model we have twenty households in Brazil: ten rural and ten urban, grouped according to income. In Tables 8A and 8B we present the results on the households in percentage terms and in Tables 9A and 9B we present the impacts in terms of US dollars. Consider the FTAA as an example. With central elasticities, we can see from Table 8A that while the overall impact is an increase in Brazilian welfare by six-tenths of a percent of consumption, the impact on the poorest rural and urban household is an increase in welfare by about four times this amount: that is, an increase of 2.5 percent of the value of household consumption. For the basic seven scenarios considered in Tables 8A and 8B, we estimate that the poorest household will typically gain several multiples of the aggregate gains for the economy expressed as a percent of household consumption.

[17] Burfisher et al. [2002] found only small increases in agricultural imports in the US as a result of the FTAA.

Although the impact on the income of households is not strictly progressive, the four poorest urban households and four poorest rural households are among the biggest gainers from the reforms as a percent of their own household consumption.[18] The reason for this result, as shown in Table 4, is that the poorest households earn the majority of their income from unskilled labor and the wage rate of unskilled labor increases significantly more that the skilled labor wage rate and the rent on capital (see Table 7). The poor typically do not have significant real assets or financial assets accumulated so they do not earn significant capital income or income from the rent of land. Nor do the poor typically have much human capital accumulated, so they earn a much smaller share of their income from skilled labor that the middle income classes. Although these facts are intuitive, they are documented in Appendix D based on the Brazilian LSMS.

The value of land rises even more than the wage rate of unskilled labor. As a result of their land ownership, two of the richest rural households are the biggest gainers from the reforms.

To document this interpretation, we decompose the impact of the FTAA on households and present the results in Table 11. In column (1) we reproduce the base results from Table 8A for the FTAA. In column (2) we counterfactually assume that all households consume the commodities in the same proportions. We observe that while the gains to the poorest households are slightly reduced compared to the total for the economy, the percentage gains in household income of the poorest households remain between three to four times the percentage gains for all households together. Thus, disparate consumption shares do not explain why the poor households gain more from the trade policy changes. On the other hand, in column (3) we present the results of our FTAA scenario where we counterfactually assume that all households earn their income from the factors of production in the same proportions. That is, we ignore the data in Table 4 from the LSMS as to how the different households earn their income. Instead we assume that all households earn the same share of their income from the wages of unskilled labor, wages of skilled labor, rent on capital, and rent on land. We see in column (3) that most of the poorest households would only obtain a slightly greater increase in income compared to the average of six-tenths of a percent if they earned their income in the same manner as the average for the economy as a whole. This confirms that what is critical for explaining why poor households are estimated to gain more from the trade policy options is that the price of the factors of production important to the income of the poor households rise more than proportionately. From Table 4 we see that the factor most important to the poor is the wage rate of unskilled labor. Data in Table 7 show that the unskilled labor wage rate rises the fastest among the important household income factors.

Why do we estimate that the wage rate of unskilled labor rises the fastest among the factors of production (except for land)? International trade theory argues that, following trade liberalization, the price of the factor of production used intensively in the protected sector should fall relative to the price of the factor of production in the

[18] The Gini coefficient does improve with the main policy scenarios we are considering. For example, it changes from 0.5850 in our benchmark to 0.5826 in scenario FTAA. For reasons explained in Harrison, Rutherford and Tarr [2001], however, we caution against use of simple measures of inequality such as the Gini when the concern is really with the impact on the poor. It is quite possible, as illustrated there, for the Gini to indicate an improvement in the distribution of welfare (an improvement being defined as a more egalitarian distribution) while poverty increases. There are ways to modify the Gini to give greater weight to the poor, but we prefer to utilize the detailed results from the simulations directly rather than debate the virtues of alternative summary statistics.

unprotected sector.[19] In countries where unskilled labor is relatively abundant (as in most developing countries), the country has a comparative advantage in the goods that use unskilled labor intensively, and these countries often protect the capital intensive sectors which can't compete in open competition on world markets. Trade liberalization would therefore move resources from the capital intensive sectors to the unskilled labor intensive sectors, and would be expected to increase the wage rate of unskilled labor. This is precisely what happens in our trade policy scenarios for Brazil. Sectors such as motor vehicles, other metal products, and other manufacturing, which are among the most capital intensive sectors in Brazil, are the sectors that decline. On the other hand, it is the key agriculture sectors that, due to export expansion, are expanding output. And these sectors are the most intensive in unskilled labor in our data.

To further verify this explanation, we perform one additional simulation in column (4) of Table 11. As explained in appendix C, input-output tables notoriously provide inaccurate information about factor shares.[20] In particular, the capital intensity estimates for agriculture are often strongly biased upward. Thus, we estimated factor shares from additional information not in the Brazilian input-output table and presented those estimates in Table 2. In column (4) of Table 11 we present the estimated percentage welfare gains from the FTAA to Brazilian households if we use the biased factor shares available in the original GTAP data. The results show that if we use the uncorrected factor shares in the GTAP dataset, there is a dramatic difference in the results. The poorest rural (urban) household is estimated to gain five-tenths (four-tenths) of a percent of its consumption, equal or slightly less than the aggregate average percentage gain. This shows that the corrections we performed to the factor share data are crucial to the results at the level of the household and supports the interpretation that the shift of resources toward agriculture is important in increasing the incomes of the poor and reducing poverty.

Our results also show (in column (8) of Tables 5, 6, 8 and 9) that internal resource reallocation is relatively more important to the poor than improved market access. As explained above, in this scenario, MERCOSUR does not change its own tariffs but obtains improved market access to the markets of the Americas. The gains to the economy on average fall by about one-third compared to the FTAA, but the gains to the poorest households fall by two-thirds. This is because it is internal resource reallocation that increases the unskilled wages relative to other factor prices, not improved market access. With only improved market access, the poor gain, but not progressively as they do with internal liberalization in MERCOSUR.

Although we find that the reforms are significantly pro-poor, our model implicitly assumes a time long enough to re-establish equilibrium after some policy shock. Thus, it is possible that during the transition to a new equilibrium some poor households will be hurt. This is especially likely among the households that are moving out of the declining sectors, such as the more highly protected manufacturing sectors. This emphasizes the need to have an effective safety net in place to assist the poor.

At a methodological level, these decompositions of the source of changes in welfare across households represent a general equilibrium analogue, and extension, of the type of factor decompositions of the source of inequality proposed by Shorrocks [1982]. His decompositions allowed an exact identification of the contribution from each of the

[19] This is known as the Stolper-Samuelson theorem.

[20] Researchers at the International Food Research Institute such as Arndt et al [1998], Thomas and Bautista [1999] and Hausner [1999] have noted this problem.

factor components of *factor* income, assuming that those factor components added up to factor income for each of the units of analysis. Our approach considers the (aggregate) factor-income contribution to welfare changes as well as the expenditure-pattern contribution.

4. Optimizing Brazilian Trade Policy

In this section we assume that the most likely outcome of negotiations with the EU is that the EU will exclude the highly protected agricultural products from the agreement with MERCOSUR, and that the United States will continue to apply antidumping actions against nations in the Americas, even with a FTAA. Given that these agreements are likely to have what we refer to as "excluded products," how can Brazil combine various policies to optimize its trade policy, or more precisely optimize the trade policy of MERCOSUR? In Table 12 we present five scenarios that represent combinations of policies to evaluate the impacts.

See the paper on the website for a discussion of the eight scenarios we examine in this section.

FTAA plus EU-MERCOSUR (with excluded products) combined with 50% Multilateral Trade reform in goods combined with tariff uniformity in MERCOSUR. In the sixth column of Table 12 we present estimates of the impact of pursuing all avenues –- regional, multilateral and unilateral (where the unilateral action in uniformity). That is, we evaluate the combined impact of a FTAA (with US exclusions), plus an agreement between the EU and MERCOSUR (with excluded agricultural products), plus an across- the-board multilateral trade liberalization (in tariffs and export subsidies), plus tariff uniformity in MERCOSUR. This scenario adds tariff uniformity to the grand strategy scenario evaluated in column (4) of Table 12.

The gains from this scenario are, as expected, the largest of the options considered. Comparing columns (4) and (6), we see that adding tariff uniformity adds about 0.21 of a percent to the overall welfare gain to the economy. The gains from adding uniformity are less than when we consider uniformity alone. Uniformity achieves benefits from chopping off the tariff peaks, and the benefits increase geometrically with the height of the tariff. Since the regional and multilateral policies reduce the tariff peaks significantly, there are less gains from uniformity. Nonetheless, this combined scenario produces the largest aggregate gains for Brazil.

5. Systematic Sensitivity Analysis

Since elasticity estimates are subject to a margin of error, our "remedy" for this problem, which is endemic to any large-scale model of this kind, is to undertake systematic sensitivity analyses of our major results with respect to plausible bounds on these elasticities. Essentially these procedures amount to a Monte Carlo simulation exercise in which a wide range of elasticities are independently and simultaneously perturbed from their benchmark values following prescribed probability distributions. The results of simulating the impact of the FTAA 500 times were tabulated as a distribution, with equal weight being given (by construction) to each Monte Carlo run. The upshot is a probability distribution defined over the endogenous variables of interest. In our case we focus solely on the welfare impacts of the full FTAA scenario.

Based on the distribution of results, we find there is virtually no chance that Brazil will gain less than 0.3 percent of the value of its consumption from the FTAA. We find that the FTAA members will gain at least $12 billion per year with virtual certainty, and excluded countries will lose at least $6.7 billion US dollars from the FTAA with virtual certainty. The European Union will lose around $3 billion per year with virtual certainty. Global welfare will increase by more than $3 billion per year with virtual certainty. The sensitivity results confirm the conclusions drawn from the point estimates regarding who the gainers and losers are at the aggregate country level.

Our results suggest that the poorest urban and rural households will gain more than one percent of the value of their consumption with probability close to one. In general, our point estimates are robust with respect to the probability distributions we have assumed.

6. Conclusions

Our results suggest that the regional arrangements under consideration by MERCOSUR, the FTAA and an agreement with the EU, can both be expected to result in gains to Brazil. The agreement with the EU is about 1.5 times as valuable as the FTAA due to access to highly protected agricultural markets in the EU. The combined gains from both agreements will be greater than the gains obtained from the sum of the agreements separately due to a reduction of trade diversion. The big countries in these agreements, however, may exclude their most protected products from the agreements. In that case, the FTAA will be more valuable to Brazil than the agreement with the EU.

We find that tariff uniformity also yields benefits for Brazil. Unilateral application of uniform tariffs in MERCOSUR, such that collected tariff revenue in Brazil is unchanged, would yield benefits even larger than a unilateral 50% tariff cut in MERCOSUR.

Most of the trade policy options we evaluate, either regional, multilateral or unilateral, result in a distribution of the gains to the different households that is progressive, such that the poorest households experience the greatest percentage increase in their incomes. This is because the trade policy changes tend to shift resources from capital intensive manufacturing toward unskilled labor intensive agriculture, thereby inducing an increase in the wage of unskilled labor relative to the other prices of factors of production. This is turn results in a percentage increase in the incomes of the poorest households in Brazil relative to the richest. The percentage increase in the incomes of the poorest households is three to four times greater than the percentage increase in the income of the average for the economy as a whole.

Our estimates indicate that the apparent Brazilian strategy of simultaneously pursuing a MERCOSUR agreement with the EU plus the FTAA, while supporting multilateral trade liberalization at the WTO, is well considered. Brazil can optimize its choice of trade policies by combining regional arrangements in both the Americas and the EU with multilateral liberalization. If tariff uniformity is added to the regional and multilateral liberalization, still further gains would be realized.

Both the FTAA and the EU-MERCOSUR arrangements are net trade-creating for the countries involved, but excluded countries almost always lose from the agreements. Multilateral trade liberalization results in gains to the world more than four times greater than either of these relatively beneficial regional arrangements, showing the importance to the world trading community of the multilateral negotiations.

References

References are available on the website version of the paper.

Table 5A: The Impact of MERCOSUR Trade Policy Options on Different Countries
(welfare change as a percent of consumption-- central elasticities)

	AGREEMENTS *							
Country	FTAA (1)	FTAA (excluded products) (2)	EU - MERCOSUR (3)	EU - MERCOSUR (excluded products) (4)	FTAA and EU - MERCOSUR (5)	Unilateral 50% tariff cut (6)	Multilateral Tariff Liberalization by 50% (7)	FTAA no MERCOSUR Liberalization (8)
Brazil	0.6	0.4	0.9	0.1	1.8	0.4	0.9	0.4
Argentina	-0.2	-0.2	2.3	0.2	2.2	0.2	0.8	0.2
Uruguay	1.7	1.6	43.9	1.2	43.4	1.4	7.8	0.4
Chile	1.1	1.1	-0.2	0.0	0.9	0.1	1.3	0.8
Columbia	1.7	2.0	-0.1	-0.1	1.7	0.0	1.0	1.7
Peru	1.0	1.0	-0.1	0.0	0.9	0.0	1.3	1.0
Venezuela	1.1	1.1	0.0	-0.1	1.1	0.0	0.9	1.1
Rest of Andean Pact	1.9	2.0	0.0	0.0	1.9	0.1	2.5	1.8
Mexico	0.3	0.4	0.0	0.0	0.3	0.0	0.5	0.0
Central America and Caribbean	4.3	4.8	0.0	0.0	4.4	0.0	2.1	4.6
Rest of South America	0.8	0.8	-1.2	0.1	0.0	0.3	4.1	0.1
Canada	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1
United States of America	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
European Union 15	-0.1	0.0	0.5	0.1	0.4	0.0	0.8	-0.1
Japan	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0
Rest of the World	-0.1	-0.1	0.0	0.0	-0.1	0.0	2.3	-0.2

* **FTAA** Free Trade Agreement of the Americas

FTAA (excluded products) Free Trade Agreement of the Americas, with US antidumping policy denying improved access to its four protected sectors

EU-MERCOSUR A Free Trade Agreement between MERCOSUR and the European Union

EU-MERCOSUR Excluded Products-- A Free Trade Agreement between MERCOSUR and the European Union , with the most seven most protected food and agricultural products in the European Union excluded from the agreement.

FTAA and EU-MERCOSUR Free Trade Agreement of the Americas combined with a free trade agreement between MERCOSUR and the European Union

Unilateral 50% tariff cut—a MERCOSUR only tariff cut by 50%.

Multilateral tariff liberalization—All regions reduce tariffs and export subsidies by 50%.

FTAA (no MERCOSUR liberalization) Free Trade Agreement of the Americas, but MERCOSUR does not change its own external tariff to the rest of the Americas.

Table 6A: The Impact of MERCOSUR Trade Policy Options on Different Countries
(welfare gain in billions of 1996 US dollars -- central elasticities)

	AGREEMENTS *							
Country	FTAA (1)	FTAA (excluded products) (2)	EU - MERCOSUR (3)	EU - MERCOSUR (excluded products) (4)	FTAA and EU - MERCOSUR (5)	Unilateral 50% tariff cut (6)	Multilateral Tariff Liberalization by 50% (7)	FTAA no MERCOSUR Liberalization (8)
Brazil	3.1	2.3	5.0	0.5	9.5	1.9	4.6	2.3
Argentina	-0.5	-0.5	5.9	0.5	5.7	0.5	2.0	0.5
Uruguay	0.2	0.2	6.5	0.2	6.4	0.2	1.2	0.1
Chile	0.5	0.6	-0.1	0.0	0.5	0.1	0.7	0.4
Columbia	1.1	1.3	-0.1	-0.1	1.1	0.0	0.6	1.1
Peru	0.4	0.4	0.0	0.0	0.4	0.0	0.6	0.4
Venezuela	0.7	0.7	0.0	0.0	0.7	0.0	0.5	0.6
Rest of Andean Pact	0.4	0.4	0.0	0.0	0.4	0.0	0.5	0.3
Mexico	0.9	1.0	0.0	0.0	0.7	0.0	1.2	0.0
Central America and Caribbean	3.4	3.8	0.0	0.0	3.5	0.0	1.7	3.6
Rest of South America	0.1	0.1	-0.1	0.0	0.0	0.0	0.3	0.0
Canada	0.1	0.3	0.0	0.0	-0.1	0.0	0.8	0.2
United States of America	2.3	2.0	-0.4	-0.4	1.7	0.3	3.0	-0.5
European Union 15	-2.6	-2.2	25.0	5.6	21.2	1.6	39.3	-3.2
Japan	-1.0	-0.9	0.7	0.4	-0.5	0.3	45.7	-1.2
Rest of the World	-4.8	-4.2	-0.2	-0.2	-5.0	1.3	83.6	-5.6
Sum for Included Countries	12.7	12.4	42.3	6.9	51.6	NA	NA	9.1
Sum for Excluded Countries	-8.4	-7.2	-0.2	-0.4	-5.5	NA	NA	-9.9
Sum over all countries	4.3	5.2	42.2	6.4	46.1	NA	186.0	-0.9

* See Table 5A for description of Agreements.

Table 8A: The Impact of MERCOSUR Trade Policy Options on Brazilian Households (welfare change as a percent of consumption-- central elasticities)

Household types	AGREEMENTS *							
	FTAA (1)	FTAA (excluded products) (2)	EU - MERCOSUR (3)	EU - MERCOSUR (excluded products) (4)	FTAA and EU - MERCOSUR (5)	Unilateral 50% tariff cut (6)	Multilateral Tariff Liberalization by 50% (7)	FTAA no MERCOSUR Liberalization (8)
Rhh1	2.5	1.7	4.0	2.1	5.5	1.5	2.9	0.8
Rhh2	2.3	1.5	3.9	1.8	5.4	1.2	2.8	1.0
Rhh3	2.5	1.5	4.5	1.9	6.2	1.1	3.5	1.3
Rhh4	2.5	1.8	3.9	2.2	5.4	1.5	3.1	0.8
Rhh5	1.3	0.8	2.3	0.7	3.5	0.6	1.8	0.8
Rhh6	1.5	1.0	2.3	0.8	3.6	0.7	1.7	0.8
Rhh7	1.3	0.9	2.0	0.7	3.2	0.6	1.6	0.7
Rhh8	3.1	2.0	4.8	2.4	6.9	1.2	4.1	1.4
Rhh9	0.9	0.4	1.7	0.6	2.6	0.4	1.8	0.7
Rhh10	3.7	2.3	6.0	2.8	8.3	1.4	4.9	1.6
Uhh1	2.5	1.8	3.8	2.1	5.2	1.5	2.7	0.7
Uhh2	2.3	1.6	3.8	1.8	5.2	1.3	2.6	0.8
Uhh3	2.2	1.4	3.6	1.7	5.0	1.2	2.6	0.9
Uhh4	2.0	1.3	3.1	1.5	4.5	1.0	2.4	0.8
Uhh5	1.3	0.7	2.4	0.8	3.5	0.7	1.8	0.8
Uhh6	1.6	1.0	2.6	1.0	3.9	0.7	1.9	0.8
Uhh7	0.4	0.3	0.9	0.0	1.6	0.3	0.7	0.4
Uhh8	0.3	0.2	0.7	-0.1	1.4	0.3	0.7	0.4
Uhh9	-0.5	-0.4	-0.3	-0.7	-0.1	0.0	0.1	0.2
Uhh10	0.0	0.2	-0.2	-0.5	0.5	0.1	0.0	0.2

* See Table 5A for description of Agreements.