Is There a Case for a Brazilian Exit from the *Mercado Común del Sur* (MERCOSUR)?
A Quantitative Assessment of Policy Options

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ABSTRACT

Using a sample of 39 countries and 35 industries, this essay investigates whether there are total welfare and real wage gains resulting from a Brazilian exit from the *Mercado Común del Sur* (MERCOSUR). Using the Caliendo and Parro Computable General Equilibrium Model, I assess nine counterfactual scenarios that model a Brazilian exit from the bloc, strategic responses from Argentina and Uruguay, and cases where the bloc remains intact, instead signing a Free Trade Agreement with the United States, China, or the European Union. I observe that remaining in MERCOSUR if the bloc signs a multilateral trade agreement with the United States, China, or the European Union leads to largest welfare and real wage gains for Brazil. I also observe that exiting MERCOSUR leads to welfare and real wage gains for Brazil regardless of Argentina and Uruguay's strategic response. Results are robust to alternative model specifications. These findings further corroborate the need for reform in MERCOSUR tariff regimes.

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All mistakes are my own.

AUTHOR'S NOTE

I first decided to write this Senior Essay partially because of my frustration with the ways the Brazilian government designs and carries out public policies. Growing up in Brazil, I experienced many instances in which the Brazilian government implemented certain policies because political advantages were attached to them. I also experienced many instances where the Brazilian government simply failed to consider and analyze the alternatives. It is my firm belief that the *Mercado Común del Sur* (MERCOSUR) is one of those cases. Although frustrating at times, the Senior Essay writing process has strengthened my interest in the intersection between policy and economics, and has showed me the role that research has in informing decision-making processes. While I left High School disenchanted with my own country, today I leave Yale with renewed hope and assurance that strong Economics reasoning can help design and carry out smart public policies in Brazil.

1. Introduction

In April of 2014, Aécio Neves – then leader of the largest opposition party in Brazil and a presidential candidate – stated that the *Mercado Común del Sur* (MERCOSUR)[1] did not meet Brazil's needs, and that it should be replaced by a free trade agreement with the United States and/or the European Union[2]. Shortly thereafter, the Brazilian government issued a statement in favor of the bloc, arguing that MERCOSUR fosters strong economic and political ties between its members and promotes regional development[3]. The debate surrounding Brazil's role in MERCOSUR is not limited to the political sphere: several industry leaders have repeatedly criticized the trade bloc, asserting that it diverts trade from other countries and forces Brazil to buy less quality inputs from its MERCOSUR peers, thus decreasing the quality of its own products, and reducing their competitiveness.

As MERCOSUR approaches its 25th anniversary, debates surrounding its economic and political successes invite us to reassess its strengths and weaknesses. That MERCOSUR promoted political and economic cooperation between Argentina, Brazil, Paraguay, Uruguay, and most recently Venezuela is not in question[4]. The fairly limited economic literature on MERCOSUR, however, highlights the negative effects of the regional trade agreement for all of its member countries—especially Brazil. These studies show that the implementation of MERCOSUR promoted trade in industries where its member countries did not possess comparative advantage, and that the bloc precludes Brazil from exporting manufactured goods to the United States and the European Union at more favorable terms. In this context, I examine if

[1] *Common Market of the South,* translation mine. Henceforth MERCOSUR.
[2] Puff, Jefferson. "Aliados de Dilma e Aecio divergem sobre Mercosul e comercio exterior." *BBC Brasil*, October 18, 2014.
[3] *Ibid*
[4] Venezuela became a member in 2012

there is a case for a Brazilian exit from the bloc. Using the Computable General Equilibrium Model developed by Caliendo and Parro (2009), I estimate the general welfare and real wage effects of changing tariffs following a Brazilian exit from the bloc. I model multiple scenarios to quantify the effects of policy decisions Brazil and other countries face, with the ultimate goal of answering whether Brazil should leave MERCOSUR, and if so, under what conditions?

Using a sample of 39 countries and 28 industries[5], I consider three base scenarios for a Brazilian exit from MERCOSUR: one in which the country does not raise tariffs to MERCOSUR nations but suffers retaliation from Argentina and Uruguay, one in which the country raises tariffs to MERCOSUR nations but does not suffer retaliation from Argentina and Uruguay, and one in which both Brazil and MERCOSUR nations raise tariffs. For each of these scenarios, I also model the impact of Brazil signing a Free Trade Agreement with the United States. Finally, I consider cases where Brazil does not exit MERCOSUR and where the bloc signs multilateral trade agreements with the United States, China, or the European Union. Brazil observes both welfare and real wage gains from exiting MERCOSUR and increasing tariffs for Argentine and Uruguayan products. Simultaneously signing a Free Trade Agreement with the United States augments these gains. Signing a multilateral Free Trade Agreement with the United States, China, or the European Union leads to larger welfare and real wage gains for Argentina, Brazil, and Uruguay and is preferred to counterfactual scenarios where Brazil unilaterally exits MERCOSUR. I show that these results are much larger when the model accounts for intersectoral trade, and that the results are generally robust to specifications that include trade deficit, only one sector, and no materials. While the model does not take into account

[5] I start with a sample of 35 different industries, and aggregate them into 28 final industries due to limited data on macroeconomic variables for Argentina and Uruguay. The final sample of industries includes all ISIC Revision 3 Industries. A detailed list is available in the Appendix.

components of regional trade agreements that are likely to influence policy options[6], it nonetheless shows that most counterfactual scenarios are preferred to the *status quo*.

My paper contributes to the Economics literature on regional trade agreements in three important ways. First, I bring the model developed by Caliendo and Parro (2009) closer to the realm of policy analysis and demonstrate how it may be used to guide macroeconomic decisions. Second, I perform the largest assessment of MERCOSUR to date, using an updated sample of 39 countries with the most recently available trade data. Third, I demonstrate that, from a pure tariff perspective, counterfactual scenarios where Brazil exits MERCOSUR or where the bloc signs multilateral Free Trade Agreements with the United States, China, or the European Union are preferred to the current *status quo*.

The remainder of this paper is organized as follows: Section 2 provides a brief overview of MERCOSUR and current policy debates. Section 3 reviews the literature on the Economics of regional trade agreements and of MERCOSUR. Section 4 describes the Caliendo and Parro (2009) Computable General Equilibrium Model. Section 5 describes the variables and the data. Section 6 presents the results and discusses. Section 7 concludes.

2. The *Mercado Común del Sur* (MERCOSUR): A Brief Introduction

2.1 Towards a Southern Cone Customs Union: From ALADI to MERCOSUR

In 1980, eleven Latin American countries signed the second Treaty of Montevideo, establishing the *Asociación Latinoamericana de Integración* (ALADI)[7]. ALADI failed to promote trade between member nations because its Regional Customs Preference (RCP) system lacked uniform policies for its members. ALADI's tiered tariff system allowed smaller Latin

[6] Examples of these components are monetary policy, foreign direct investment, and import quotas.
[7] Latin American Association for Integration, translation mine.

American economies to maintain high tariffs across multiple products, thereby limiting the agreement's effectiveness. By the end of the 1980s, ALADI's 130 bilateral agreements were responsible for only about 20% of interregional trade[8].

The changing political landscape in the Southern Cone in the early 1990s led Argentina and Brazil to partner on political and economic issues. Both countries had recently exited extended periods of military dictatorship and saw cooperation as the key to weathering the challenges associated with re-democratization. In July of 1986, Argentina and Brazil formalized their partnership through the *Programa de Integración y Cooperación Económica Argentina-Brazil* (PICE)[9]. PICE consisted of agreements across twelve industries, ranging from food to financial services and biotechnology, and led to increased trade between the two countries. In 1987, Argentina and Brazil expanded these agreements and proposed the creation of a common market and unified currency[10].

The success of the bilateral PICE agreements created interest from Paraguay and Uruguay in a regional integration project. Between 1987 and 1991, leaders of all four countries met multiple times to work out the terms of an agreement spanning both economic and political spheres. In March of 1991, Argentina, Brazil, Uruguay and Paraguay signed the Treaty of Asunción, establishing a common market and creating the basis for MERCOSUR[11]. Argentina, Brazil, Paraguay and Uruguay hoped that MERCOSUR would become more than a simple customs union. According to the Treaty of Asunción, the four countries committed to

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[8] Simonsen Associados. *MERCOSUL: o desafio do marketing de integração*. Makron Brooks do Brasil Editora, 1992: 6

[9] Program for Integration and Economic Cooperation, translation mine. Mallmann, Maria Izabel, and Vera Seitenfus. *Cronologia do Mercosul (1985-1999)*. Centro Brasileiro de Documentacao e Estudos da Bacia do Prata, Universidade Federal do Rio Grande do Sul .

[10] *Ibid*

[11] Esteradeordal, Antoni, Junichi Goto, and Raul Saez. "The New Regionalism in the Americas: The Case of Mercosur." *Journal of Economic Integration* (Center for Economic Integration, Sejong University) 16, no. 2 (June 2001): 180-202.

"eliminating obstacles to regional trade, such as high tariffs and income inequalities" in order to promote the security and the economic advancement of the region[12]. MERCOSUR had four distinctive characteristics. First, it had both political and economic objectives: free trade would not only boost economic growth, but it would also promote regional security. Second, its governing body would be inter-governmental to ensure an equitable decision-making process. Third, it foresaw an incremental integration process, with the ultimate objective of creating a full customs union between the four nations. Fourth, all countries agreed to coordinate agricultural, industrial, and currency exchange policies to ensure "adequate competitiveness" between all nations[13].

MERCOSUR's regional integration project was based on three distinct phases. First, in the transition phase between March 1991 and December 1994, MERCOSUR established individual tariff reduction and trade liberalization schedules for each member country. After the liberalization of trade and the creation of a regional trade area, the countries were to negotiate the implementation of a Common External Tariff (CET). Second, in early 1995, MERCOSUR created a dynamic customs union to facilitate the establishment of the Common External Tariff. By 2006, MERCOSUR was to implement a common market[14]. MERCOSUR, however, still lacks a full customs union, and its members apply the Common External Tariff erratically.

2.2 The Customs Union that Never Was?

Although MERCOSUR established a Common External Tariff in 1995 for more than 80% of imported items, the bloc has systematically failed to enforce these common tariffs.

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[12] Klonsky, Joanna, Stephanie Hanson, and Brianna Lee. "Mercosur: South America's Fractious Trade Bloc ." *Council on Foreign Relations*. July 31, 2012. http://www.cfr.org/trade/mercosur-south-americas-fractious-trade-bloc/p12762 (accessed November 02, 2015).

[13] Caliendo, Lorenzo, and Fernando Parro. "Welfare gains from changing partners in a trade bloc. The case of MERCOSUR." 2010: 8

[14] Esteradeordal, Antoni, Junichi Goto, and Raul Saez. "The New Regionalism in the Americas: The Case of Mercosur." *Journal of Economic Integration* (Center for Economic Integration, Sejong University) 16, no. 2 (June 2001): 185

Initially, the Common External Tariff varied between 0% and 20% for 11 different industries, but MERCOSUR allowed each country to create industry exceptions on a case-by-case basis[15]. According to the Treaty of Asunción, tariffs would converge by 2001 (Argentina and Brazil) and 2006 (Paraguay and Uruguay). Because of the economic crises of the late 1990s and early 2000s, Argentina and Brazil agreed to delay the implementation of the Common External Tariff. After negotiations, all MERCOSUR countries agreed to apply a uniform Common External Tariff by 2006. Ten years later, however, member countries still apply different tariffs in some industries. For example, for mining and quarrying products imported from China, Argentina and Uruguay apply a maximum tariff of 4%, whereas Brazil applies a maximum tariff of 8%[16]. While the Common External Tariff exists on paper, "the adoption of a Common External Tariff, a common commercial policy, and a unified position before third parties have been achieved only partially"[17]. According to Juan Tokatlian, this happened because MERCOSUR has failed to create mechanisms that monitor the application of the Common External Tariff, and does not possess arbitration systems to solve bilateral trade disputes[18].

MERCOSUR has been much more successful in reducing tariffs within the bloc. Similarly to the Common External Tariff, interregional tariffs initially followed a staggered reduction scheme to avoid changes to the production structure of the economy. Starting in 1991 and ending in 1995, tariffs were to initially drop 47% and then reduce by 7% per semester until 1994[19]. Similarly to the Common External Tariff, MERCOSUR allowed each country to create industry exceptions with smaller initial reductions, but with full tariff reduction by 1995. This

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[15] Caliendo, Lorenzo, and Fernando Parro. "Welfare gains from changing partners in a trade bloc. The case of MERCOSUR." 2010.
[16] World Integrated Trade Solution
[17] Haskel, Guillermo. "Two decades on, Mercosur trade bloc fails to live up to expectations." *Buenos Aires Herald*, July 13, 2013.
[18] *Ibid*
[19] Caliendo and Parro (2010) 9-10

had the goal of reducing the negative effects of sudden tariff changes. Unlike the Common External Tariff, however, interregional tariffs have been enforced much more strongly, and today all member countries do not apply tariffs for MERCOSUR imports[20].

Therefore, MERCOSUR has failed to achieve its original goal of establishing a full customs union. To some degree, however, the bloc has been successful in the economic, political, and international security spheres. Between 1991 and 1995, MERCOSUR facilitated 95% of interregional trade between Argentina, Brazil, Paraguay, and Uruguay. Between 1991 and 1997, trade between member nations increased from $5.2 billion to $20.3 billion, and the share of intra-regional trade rose from 8.9% to 24.5%. Although there was a significant decrease in trade due to external shocks between 199 and 2002, by 2008 trade was 143% higher than what it was in 2002[21]. This number, however, results from an absolute increase in trade volume, both within MERCOSUR and outside it. Furthermore, MERCOSUR has been successful in attracting Foreign Direct Investment: according to Doctor (2012), much of the $400 billion in FDI that MERCOSUR received was because of the increased interconnectedness of the region[22]. Finally, the region has also reaped political and international security benefits: there has been a decrease in border disputes, improved relations between member nations, and increase in diplomatic prominence of smaller countries (Paraguay and Uruguay) due to the importance of Brazil and Argentina globally[23].

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[20] With the exception of Venezuela
[21] Doctor, Mahrukh. "Prospects for Deepening Mercosur Integration: Economic Asymmetry and Institutional Deficits." *Review of International Political Economy* (Routledge) 20, no. 3 (May 2012): 537
[22] *Ibid:* 520
[23] Simonsen Associados. *MERCOSUL: o desafio do marketing de integração*. Makron Brooks do Brasil Editora, 1992: 16

2.3 Political and Economic Controversies

In 2012, MERCOSUR voted to admit Venezuela as a full member of the trading bloc. As The New York Times explains, Venezuela' ascension to the bloc reflects the political strength of Brazil within the bloc[24]. While Venezuela was a provisional member since 2006, its ascension to full member had been delayed by the Paraguayan Senate, which refused to ratify the country's admission. When Brazil voted to temporarily suspend Paraguay from the trading bloc, it received support from both Argentina and Uruguay. As soon as the temporary suspension was announced, Chavez lobbied heavily with the Brazilian government to admit Venezuela as a full member of the trading bloc. Once Venezuela obtained Brazilian support, it easily convinced both Argentina and Uruguay to vote in favor of its ascension. Brazilian academics and politicians widely criticized the ascension of Venezuela into the bloc because of claims regarding Chavez's concentration of power, erosion of the judicial system, and human rights violations. Yet, four years after the country's ascension, little has been done to economically integrate the country economically into the bloc[25]. According to the Council on Foreign Relations, Venezuela's ascension to the bloc reflects its increasingly political nature, and its departure from its economic integration goals. To the authors of "Mercosur: South America's Fractious Trade Bloc", this foreshadows the union's demise, and indicates that the current structure may not be sufficient to maintain the bloc united[26].

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[24] Simon, Romero. "With Brazil as Advocate, Venezuela Joins Trade Bloc." *The New York Times*, July 31, 2012.
[25] *Ibid*.
[26] Klonsky, Joanna, Stephanie Hanson, and Brianna Lee. "Mercosur: South America's Fractious Trade Bloc ." Council on Foreign Relations. July 31, 2012. http://www.cfr.org/trade/mercosur-south-americas-fractious-trade-bloc/p12762

Figures 1 to 5 present the evolution of share of MERCOSUR trade flows as total share of trade between 1994 and 2013 for all member nations[27]. These images clearly demonstrate that there has not been significant increase in trade between MERCOSUR nations throughout the years. While there is an initial jump in the share of trade after the implementation of the bloc in 1994, exports to MERCOSUR and imports from MERCOSUR have been very volatile across different years. In general, for the larger nations and Venezuela, trade with MERCOSUR makes up less than 30% of trade. For the two smaller economies – Paraguay and Uruguay, trade with MERCOSUR countries represents a large share of total trade, but has been declining in the past few years. Overall, these figures demonstrate that trade within MERCOSUR did not increase significantly in the years following the implementation of the bloc, and has in fact declined for most member nations in the past 5-10 years. This evinces the hypothesis Konsky, Hanson, and Lee raise regarding the decreased momentum of the bloc, and strengthens the idea that MERCOSUR's current political and economic arrangement may not be sustainable for much longer.

[27] Because Venezuela only ascended to MERCOSUR in 2012, I only include the country as part of MERCOSUR starting in 2013.

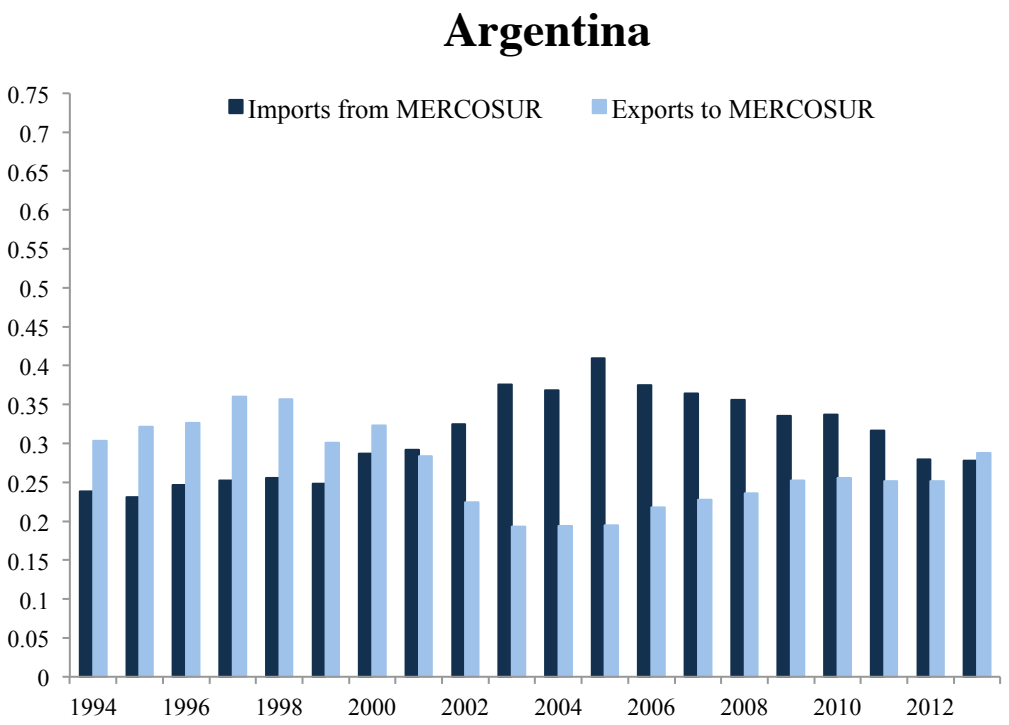

Figure 1: Exports/Imports to MERCOSUR as share of total trade for Argentina

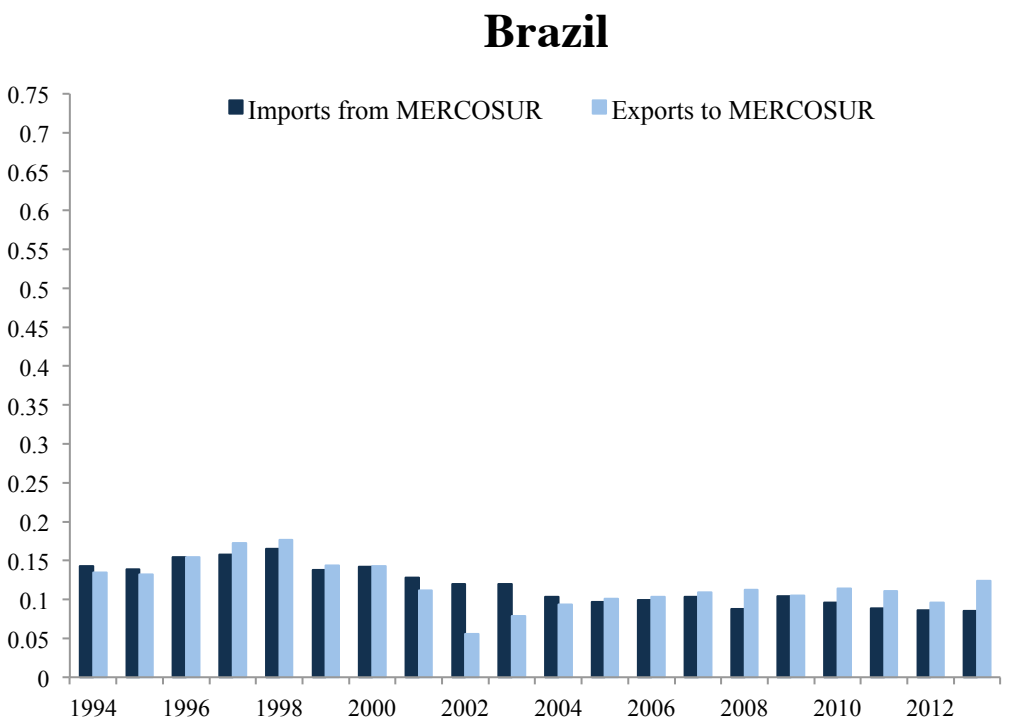

Figure 2: Exports/Imports to MERCOSUR as share of total trade for Brazil

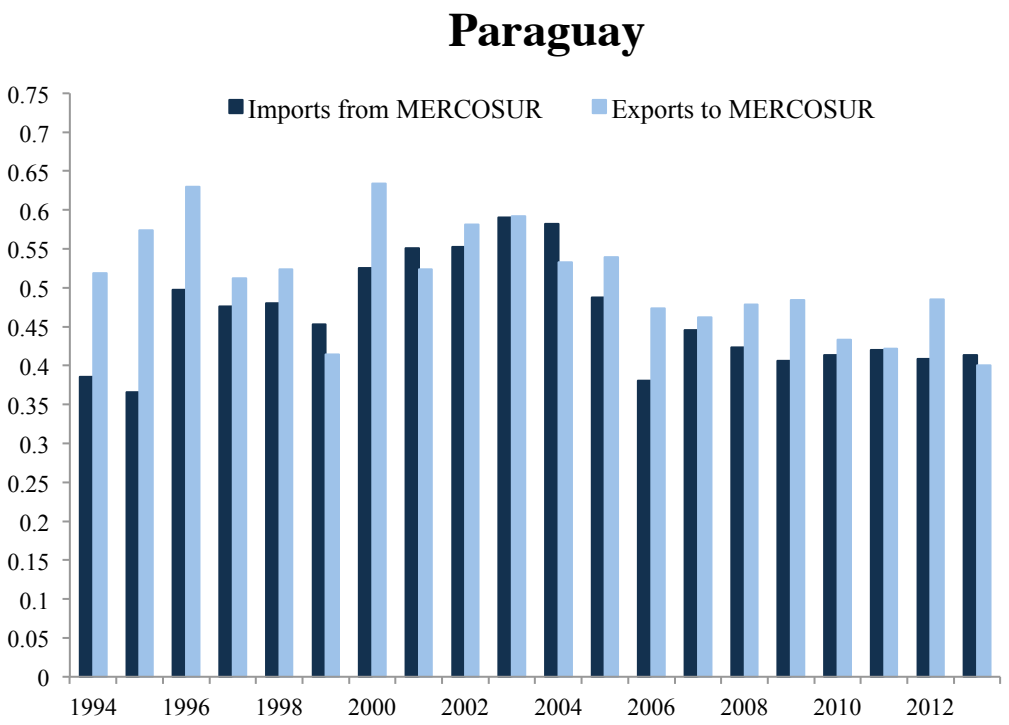

Figure 3: Exports/Imports to MERCOSUR as share of total trade for Paraguay

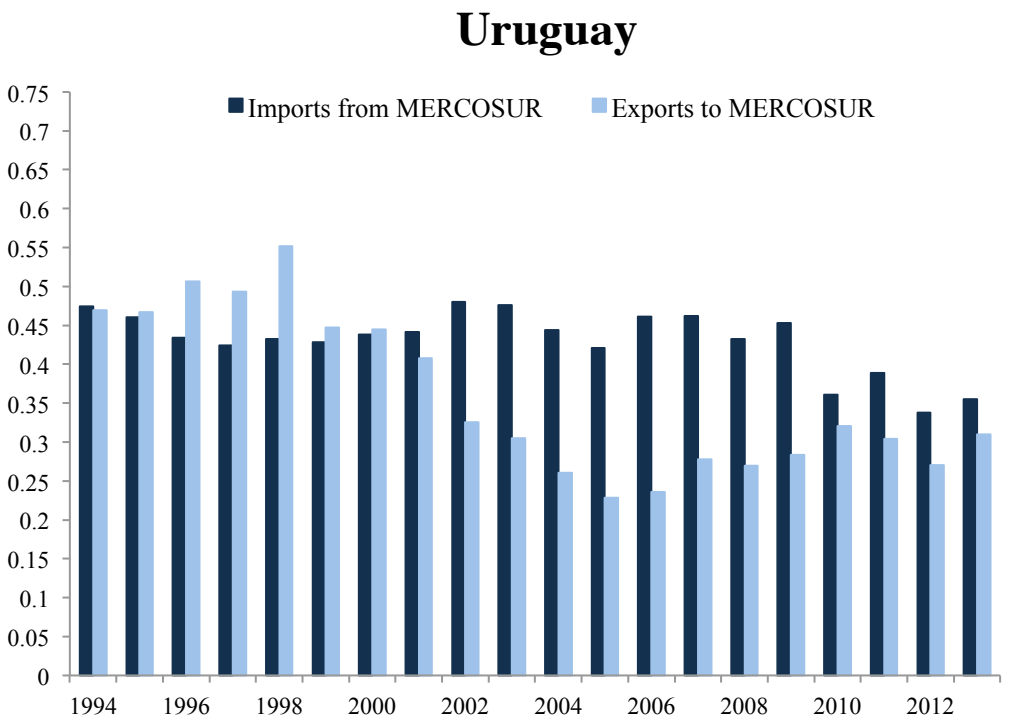

Figure 4: Exports/Imports to MERCOSUR as share of total trade for Uruguay

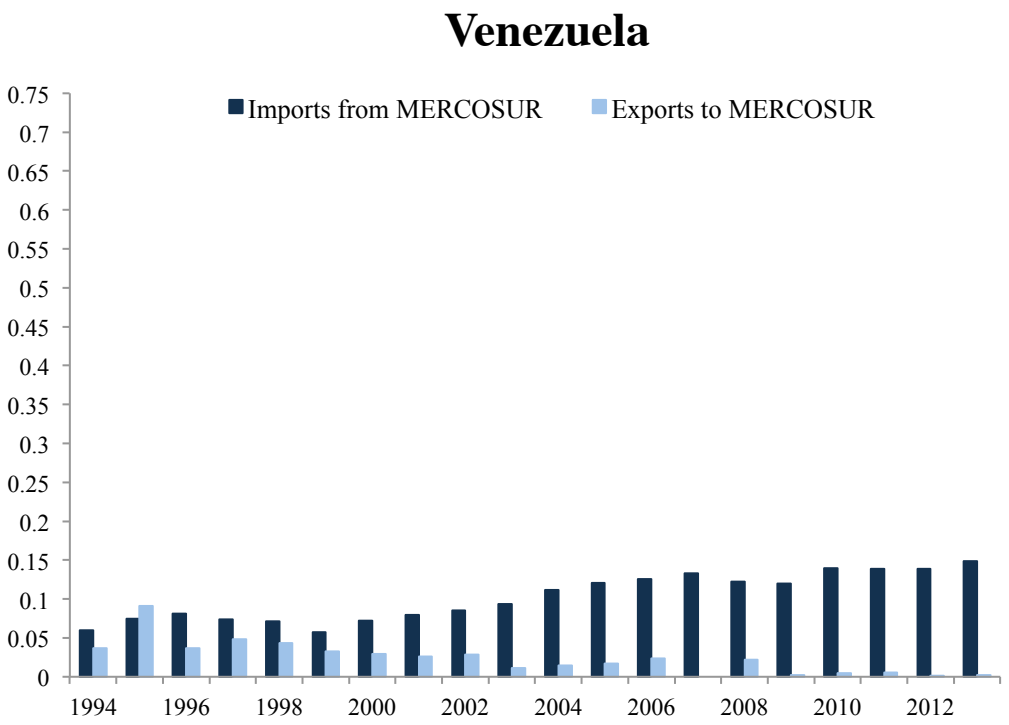

Figure 5: Exports/Imports to MERCOSUR as share of total trade for Venezuela

In the context of these relatively meager results, several Brazilian academics and politicians have argued that MERCOSUR generates export dependency between member nations. According to Duda Teixeira, former head of International Trade for Federation of Industries for the State of Sao Paulo (FIESP), MERCOSUR has forced Brazil to become dependent on the markets from unstable countries because low tariffs generate demand from these countries, and divert trade from other markets. If Argentina, for example, were to default on its debt, the ensuring crisis would significantly decrease demand for Brazilian exports. Such crisis, coupled with the presence of low tariffs for Brazilian imports in Argentina, and of median tariffs for Brazilian imports in Europe, for example, could significantly decrease demand for Brazilian imports in Argentina, but prevent European customers from demanding them. This scenario would have very negative outcomes for the Brazilian economy; the presence of trade

distorting tariffs is likely to preclude Brazil from undergoing the appropriate adjustment processes.

Furthermore, MERCOSUR limits Brazil's ability to sign favorable trade agreements with the United States, the European Union, or China. MERCOSUR has been negotiating a Free Trade Agreement with the European Union for the past fifteen years. While Brazilian negotiators have given strong signals that the country desires to sign the FTA, Argentina has time and again undercut the negotiations because of political reasons. Because MERCOSUR needs to reach its decisions via consensus, Brazil can only achieve a FTA with the EU unilaterally if it leaves MERCOSUR. Vera Thorstensen, head of the Center on Global Trade and Investment from Fundação Getúlio Vargas, argues that Brazil should leave MERCOSUR because the bloc artificially maintains high levels of trade in sectors in Brazil does not possess comparative advantage[28]. Leaving MERCOSUR and signing a Free Trade Agreement with the United States, the European Union, or China, in sectors in which the country has comparative advantage would help spur growth, give Brazil access to cheaper inputs, force the Brazilian industry to become more competitive, and lead to welfare gains.

Finally, several commentators have also criticized MERCOSUR from the political side. Ricardo Setti, a prominent Brazilian journalist, has argued that MERCOSUR failed to achieve its economic objectives, and that the bloc's increasingly political agenda threatens its initial *raison d'être*[29]. Venezuela's ascension to the trade block in 2012 represented the ultimate shift from an economic to a political agenda. Setti, along with others, argues that remaining in MERCOSUR does not make strategic sense for Brazil.

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[28] Thorstensen, Vera, Emerson Marçal, and Lucas Ferraz. "EU-Mercosur Trade Relations: Impacts of Exchange Rate Misalignments on Tariffs." *CEPS: Thinking Ahead for Europe*. February 13, 2013.
[29] Setti, Ricardo. "O Brasil deve esquecer o Mercosul, deixar a Argentina de lado e fazer, sozinho, um acordo de livre comercio com a Uniao Europeia." *Veja*, July 13, 2014.

3. Review of Literature on MERCOSUR, Customs Unions and General Welfare Models

Despite controversies surrounding its role in promoting trade and welfare in the region, literature on the Economics of MERCOSUR is limited and emphasizes analyses of the years immediately following the implementation of the bloc. Benegas (1994) was the first to investigate trade creation/diversion in the context of MERCOSUR. She builds a Ricardian model where changing tariffs lead to the redistribution of factors of production and efficiency across industries, affecting comparative advantage, terms of trade and volume of trade. Like Caliendo and Parro (2010), she constructs a set of counterfactuals assuming certain trade levels and projects bilateral trade flows between Argentina, Brazil, Paraguay, and Uruguay. Benegas concludes that the formation of MERCOSUR had limited effect on trade, as well as on the welfare of member countries. An important limitation to this study, however, is that it projects counterfactuals based on the initial Treaty of Asunción, which was not fully implemented. Furthermore, the author of this study does not take into account intersectoral trade, which makes up a large portion of trade between nations, and especially between MERCOSUR countries.

Like Benegas, Yeats (1998) also developed a model for understanding trade creation and diversion effects in light of MERCOSUR. The author develops four simplified indexes (Intensity of Trade, Regional Orientation, Revealed Comparative Advantage and Factor Intensity) to quantify trade diversion resulting from the introduction of regional trade agreements. Although Yeats does not attempt to model general welfare effects resulting from the establishment of MERCOSUR, he concludes that member nations diverted trade from abroad into the bloc in the years following the introduction of the agreements. These trade patterns, however, did not follow the comparative advantage of MERCOSUR countries: although trade between member countries

increased, these characteristics demonstrates that MERCOSUR had negative effects for its member countries. This result is not surprising: low inter-regional tariffs likely contributed to the diversion of trade because local producers had strong incentives to buy and sell their products within MERCOSUR. Although Yeats paints a starker picture of MERCOSUR than Benegas, I believe we should interpret his results with caution, because Yeats focuses solely on quantifying trade patterns, leaving out general welfare effects resulting from the introduction of the trade bloc. Furthermore, the results of his study are likely to be distorted because of the presence of high interregional tariffs between MERCOSUR members before the implementation of the Treaty of Asunción.

Eaton and Kortum (2002) develop a model that incorporates geographic characteristics into general equilibrium and then use the model to explore the effects of tariff changes in trade levels. The model takes into account technological differences that lead to comparative advantages, which in turn drive trade, and geographic features (transport costs, quotas, tariffs, information asymmetries) that inhibit it. Trade in intermediate products has important implications for the relationship between geographic features, price of inputs, and volume of trade. Using counterfactual scenarios, the authors show that multilateral moves to free trade tend to benefit most countries, but unilateral changes lead to negative effects. In general, however, the extent to which potential gains from comparative advantage are realized depends on the presence of geographic barriers to trade which may distort specialization and lead to diversion. Eaton and Kortum thus greatly add to the literature on trade by demonstrating the importance of including these trade-inhibiting mechanisms into models for trade analysis.

Magee (2008) builds on the theoretical literature on welfare effects of customs union to study the effects of regional agreements on trade flows between countries. By controlling for

country-pair, importer-year, and exporter-year fixed effects, the author shows that regional trade agreements have smaller impacts on trade between countries, but that regional agreements affect trade for up to eleven years after their establishment. Furthermore, the author finds that Customs Unions tend to create the most interregional trade, followed by Free Trade Agreements and Preferential Trade Agreements.

Caliendo and Parro (2009) extend a Ricardian model of trade by adding intersectoral linkages, trade in intermediate goods, and sectoral heterogeneity and use this model to estimate trade, welfare, and real wage effects resulting from the implementation of NAFTA. Their study greatly adds to the empirical literature on the welfare effects of regional trade agreements and demonstrates the importance of paying attention to trade in intermediate goods when estimating benefits of trade. Perhaps more importantly, Caliendo and Parro contribute to the literature by simplifying otherwise complex computable general equilibrium models, greatly reducing the number of parameters that need to be estimated. Finally, the authors show how this model can be used to obtain consistent estimates of the welfare effects of trade unions through the case of NAFTA. While the introduction of NAFTA lead to real wage gains for all countries, the presence of different structures of production ultimately affect the welfare results for each country. This underscores the importance of taking into account intersectoral linkages when performing counterfactual trade policy analysis.

Caliendo and Parro (2010) bring the model developed in Caliendo and Parro (2009) closer to the realm of policy analysis to determine welfare effects from changing trading partners and tariffs in the context of MERCOSUR. Using 5 countries and 48 industries, the authors evaluate counterfactual scenarios where Uruguay leaves MERCOSUR and reduces tariffs while signing Free Trade Agreements with other countries. The authors demonstrate that exiting

MERCOSUR and signing Free Trade Agreements with important economies gives Uruguay access to cheaper intermediate products and enhances welfare in the country. Furthermore, the authors show that most of the trade between Brazil and Argentina is in industries in which the countries do not possess comparative advantage, so reductions in tariffs in the trade bloc lead to an increase in imports of intermediate inputs from the United States and expansion of imports to other countries. Two limitations of this study are that it only includes five countries in the sample (Argentina, Brazil, Uruguay, United States, and Rest of World), thus aggregating countries with very different production structures together and that data is limited to 2006. Ultimately, the authors demonstrate how this Computable General Equilibrium Model can be a strong tool for trade policy analysis, but may be limited because it does not take into account non-tariff barriers, foreign direct investment, and technological transfers.

4. The Caliendo and Parro Computable General Equilibrium Model (2009) [30]

I employ the Computable General Equilibrium model developed by Caliendo and Parro (2009) for counterfactual trade policy analysis to answer whether there are welfare and real wage gains resulting from a Brazilian exit from MERCOSUR. I choose this model for several reasons. First, the Caliendo and Parro model allows for the inclusion of multiple sectors and countries, as well as for trade in intermediate goods and factors of production. This is important because it provides us with more robust estimates of the welfare effects of the regional trade agreement. Second, there are low computational and data requirements for solving the model's equilibrium variables under different trade policies. Finally, the model allows me to investigate and compare

[30] This section closely follows the description of the model in Caliendo and Parro (2009). I greatly summarize parts of the model – a more complete description can be found in Caliendo and Parro (2009). The reproduction of the equations follows permission and guidance of the author.

different policy options, as well as isolate the effects of tariff changes on general welfare results across countries and industries.

The model is composed of multiple countries (N) and multiple sectors (J). For each sector, goods are produced using intermediate input goods and labor. Different sectors are connected across the economy, allowing for composite intermediate goods to be used for the production of final goods within their own industry or in other industries, both domestically and abroad.

Like most economic models, the Caliendo and Parro model begins with utility-maximizing households. Households derive utility from consuming a basket composed of goods C_n^j, subject to income derived from labor and transfers from the government:

$$u(C_n) = \prod_{j=1}^{J} C_n^{j\,\alpha_n^j}$$

Where the sum of Alphas is equal to 1.

Each sector j produces a set of intermediate goods $\omega^j \in [0,1]$ with labor or composite intermediate goods from other sectors as inputs. Each country n produces intermediate good ω^j with efficiency level $z_n^j(\omega^j)$. The production technology for each good can be described as:

$$q_n^j(\omega^j) = z_n^j(\omega^j)\,[l_n^j(\omega^j)]^{\gamma_n^j} \prod_{k=1}^{J} [m_n^k(\omega^j)]^{\gamma_n^k}$$

Where $l_n^j(\omega^j)$ represents labor and $m_n^k(\omega^j)$ represents composite intermediate goods used to produce intermediate good (ω^j). The gamma parameter on labor represents the share of value added, and the gamma parameter on composite intermediate goods represents the share of each material used in the production of the intermediate good.

Accordingly, the cost of the input bundle is:

$$c_n^j = \Upsilon_n^j w_n^{\gamma_n^j} \prod_{k=1}^{J} P_n^{k\gamma_n^{kj}}$$

Where P is the price of the composite intermediate good from sector k, and Υ_n^j is a constant. According to Caliendo and Parro, this cost equation demonstrates one of the advantages of the multi-sector model with interrelated sectors, as it shows how a change in policy in any one sector may indirectly affect all other sectors in the economy.

Similarly, demand for composite intermediate goods is given by the following equation:

$$r_n^j(\omega^j) = \left(\frac{p_n^j \omega^j}{P_n^j}\right)^{-\sigma^j} Q_n^j$$

And the unit price of the composite intermediate good is:

$$P_n^j = \left[\int p_n^j (\omega^j)^{1-\sigma^j} d\omega^j\right]^{\frac{1}{1-\sigma^j}}$$

The $p_n^j(\omega^j)$ term represents the lowest price across all countries. These composite intermediate goods are used for the production of the intermediate goods described above.

Trade between any country-pair is possible: producers and consumers may purchase and sell goods from any producer worldwide. These producers and consumers, however, incur two types of trade costs: iceberg trade costs and flat-rate tariffs. Iceberg costs are the excess physical units that must be produced by a sector in a country *i* so that *x* units may be sent to country *n*[31]. Ad-valorem flat-rate tariffs are tariffs applied over unit prices by country *n* to imports of a specific sector in country *i*. These costs can be summarized as:

$$k_{ni}^j = (1 + \tau_{ni}^j) d_{ni}^j$$

Where τ_{ni}^j are the tariffs, and d_{ni}^j are the iceberg trade costs. Taking these trade costs into account, the price of an intermediate good in a country is then given by:

[31] These iceberg trade costs capture the geographical barriers to trade described by Eaton and Kortum (2002)

$$P_n^j(\omega^j) = \min_i \left\{ \frac{c_i^j k_{ni}^j}{z_i^j(\omega^j)} \right\}$$

For non-tradable sectors, demand is simply given by the cost of producing the good divided by the efficiency measure.

The Price index in a country is thus defined as

$$P_n^j = A^j \left[\sum_{i=1}^{N} \lambda_i^j (c_i^j k_{ni}^j)^{-\theta^j} \right]^{\frac{-1}{\theta^j}}$$

Where A^j is a constant, λ_i^j is a location parameter of a Fréchet distribution that varies by country and sector and θ^j is a shape parameter that varies by sector. While the location parameter relates to the average productivity within a sector (absolute advantage), the shape parameter relates to the dispersion of productivity across goods (comparative advantages). Caliendo and Parro assume Cobb-Douglas preferences, thus showing the consumption price index as:

$$P_n = \prod_{j=1}^{J} \left(\frac{P_n^j}{\alpha_n^j} \right)^{\alpha_n^j}$$

Total expenditure on a specific sector by a country is $X_n^j = P_n^j Q_n^j$, and total share of expenditure of goods from a specific country is given by $\pi_{ni}^j = \frac{x_{ni}^j}{x_n^j}$, which can be re-written as function of technology, price, and trade cost:

$$\pi_{ni}^j = \frac{\lambda_i^j [c_i^j k_{ni}^j]^{-\theta^j}}{\sum_{h=1}^{N} \lambda_h^j [c_h^j k_{nh}^j]^{-\theta^j}}$$

The total expenditure on goods is given by the sum of the expenditure on composite intermediate goods by firms and the expenditure by households, which is

$$X_n^j = \sum_{k=1}^{J} \gamma_n^{j,k} \sum_{i=1}^{N} X_i^k \frac{\pi_{in}^k}{1+\tau_{in}^k} + \alpha_n^j I_n$$

I_n is composed of the sum of labor L, tariff revenues R, and trade deficit D. This is best summarized by the condition

$$\sum_{j=1}^{J} \sum_{i=1}^{N} X_i^k \frac{\pi_{ni}^k}{1+\tau_{ni}^k} - D_n = \sum_{j=1}^{J} \sum_{i=1}^{N} X_i^j \frac{\pi_{in}^k}{1+\tau_{in}^k}$$

This demonstrates that total expenditure minus trade deficit in country n equals the sum in country n.

Because the Caliendo and Parro Computable General Equilibrium model focuses on the relative changes in prices, wages, and trade flows given pure tariff changes, equilibrium conditions can be calculated without needing to estimate parameters such as productivity and iceberg trade costs. The equilibrium under new tariffs satisfies all of the equations described above, with the difference that all variables (except gamma, theta, and alpha) represent the relative change given the base year.

The cost of input bundles now is:

$$\hat{c}_n^j = \hat{w}_n^{\gamma_n^j} \prod_{k=1}^{J} \hat{\hat{P}}_n^{k\gamma_n^{kj}}$$

The new price index is:

$$\hat{\hat{P}}_n^j = \left[\sum_{i=1}^{N} \pi_{ni}^j (\hat{c}_i^j \hat{k}_{ni}^j)^{-\theta^j} \right]^{\frac{-1}{\theta^j}}$$

Bilateral trade shares are:

$$\hat{\pi}_{ni}^j = \left[\frac{\hat{c}_i^j \hat{k}_{ni}^j}{\hat{P}_n^j} \right]^{-\theta^j}$$

Total expenditure is:

$$X_n^{j\prime} = \sum_{k=1}^{J} \gamma_n^{j,k} \sum_{i=1}^{N} X_i^k \frac{\pi_{in}^{k\prime}}{1+\tau_{in}^{k\prime}} + \alpha_n^j I'_n$$

And finally new trade balance is:

$$\sum_{j=1}^{J} \sum_{i=1}^{N} X_n^{j\prime} \frac{\pi_{ni}^{j\prime}}{1+\tau_{ni}^{k\prime}} - D_n = \sum_{j=1}^{J} \sum_{i=1}^{N} X_i^{j\prime} \frac{\pi_{in}^{j\prime}}{1+\tau_{in}^{j\prime}}$$

Given the equilibrium conditions under the new tariff structure, the changes in real wages can be described as the share of expenditure on domestic goods.

$$\ln \frac{\widehat{w}_n}{\widehat{P}_n} = -\sum_{j=1}^{J} \frac{\alpha_n^j}{\theta^j} ln\hat{\pi}_{nn}^j - \sum_{j=1}^{J} \frac{\alpha_n^j}{\theta^j} \frac{1-\gamma_n^j}{\gamma_n^j} ln\hat{\pi}_{nn}^j - \sum_{j=1}^{J} \frac{\alpha_n^j}{\gamma_n^j} ln \prod_{k=1}^{J} \left(\frac{\hat{P}_n^k}{\hat{P}_n^j}\right)^{\gamma_n^{k\,j}}$$

The first term on the right hand side represents final goods, the middle term in the right hand side represents intermediate goods, and the final term on the right hand side represents sectoral linkages. Here, it is important to highlight that general real wage effects are dependent on changes in share of domestic expenditure in each sector and in changes in sectoral prices.

Similarly, welfare effects from tariff changes can be given by the sum of the changes of Terms of Trade (ToT), and Volume of Trade (VoT):

$$dlnW_n = \frac{1}{I_n} \sum_{j=1}^{J} \sum_{i=1}^{N} \left(E_{ni}^j dlnc_n^j - M_{ni}^j dlnc_i^j\right) + \frac{1}{I_n} \sum_{j=1}^{J} \sum_{i=1}^{N} \tau_{ni}^j M_{ni}^j \left(dlnM_{ni}^j - dlnc_i^j\right)$$

Given bilateral trade flows, share of value added, gross production, Input-Output shares, estimates of trade elasticities and tariff values, I am able to calculate the equilibrium solving conditions for each of these equations. I can then use the initial year equilibrium solving conditions to calculate the new equilibrium solving conditions given tariff changes. This shows the effects of pure tariff changes on general welfare and real wage. It is important to note, that

while it takes into account differences in pricing and comparative advantage and allows for those to change, the model does not take into account changes in quotas, Foreign Direct Investment and monetary policies given certain policy outcomes.

5. Empirical Framework[32]

5.1 Data

In order to calculate the welfare and real wage effects resulting from a Brazilian exit of MERCOSUR, I follow the methodology established in Caliendo and Parro (NAFTA). I first calculate the equilibrium conditions in 2011 given bilateral trade flows, bilateral tariffs, Input-Output coefficients, share of value added, and gross output. I choose 2011 because this is the most recently available year for the World Input Output Database.

I calculate Input-Output coefficients based on the World Input-Output Database (WIOD), which contains Input-Ouput information for 35 industries across 40 countries and the Rest of the World (RoW). Because the WIOD does not contain information on Uruguay and Argentina, I retrieve input-output shares for these two countries from Caliendo and Parro (2010). Although Caliendo and Parro uses 2006 as base year, this difference should not affect my final results, given that there is a strong positive correlation between Input-Output coefficients across different years[33]**.** Data for Paraguay and Venezuela was unavailable with their Central Banks. For this reason, I remove these countries from my analysis. Despite being part of MERCOSUR, they do not contribute significantly to interregional trade. Furthermore, Venezuela was only fully admitted to MERCOSUR in 2012, thus still applying different tariffs than bloc members for my base year.

[32] A full list of countries and sectors is available in the appendix
[33] Caliendo, Lorenzo, and Fernando Parro. "Estimates of the Trade and Welfare Effects of NAFTA." Review of Economic Studies (Oxford University Press), 2009.

I also derive bilateral trade flows, share of value added and gross output from the World Input Output Database. Exports from country *j* and *i* of industry *n* are defined as the sum of *n* produced by *j* that is consumed by *i* as intermediate inputs and final consumption. These bilateral trade relations are constructed for all countries and sectors for 2011. Share of value added is defined as total value added divided by gross output for each country and sector. Finally, gross output is simply the gross output produce in each sector for each country. Reliable data on Petroleum production was unavailable for three countries – Cyprus, Latvia, Luxembourg. I remove these countries from the dataset. I consolidate sectors in order to eliminate observations with Gross Output or Share of Valued Added that are equal to 0. I retrieve information on bilateral trade flows between Argentina, Uruguay, and the other countries in the dataset from the World Integrated Trade Solutions platform. I retrieve data on Value Added and Gross output for Uruguay and Argentina from the Central Bank of Uruguay (*Banco Central del Uruguay*) and from the Argentine National Institute for Statistics and Census (*Instituto Nacional de Estadística y Censos*). Values are adjusted to U.S. dollars using the official currency exchange rate for 2011.

I retrieve tariff data from the TRAINS Tariff Measures, also available in the World Integrated Trade Solutions Platform. For the year 2011, I retrieve all available effectively applied tariffs for each industry and country-pair. In the cases in which the tariff is unavailable, I retrieve the nearest available tariff for the industry and country-pair. Since I am interested in analyzing welfare and real wage effects from a Brazilian exit of MERCOSUR, I develop counterfactual tariff matrices as described in the following sub-section[34].

[34] Estimates for trade elasticities are retrieved following Caliendo and Parro (2010)

5.2 Scenario Specification

The Caliendo and Parro (2009) Computable General Equilibrium model allows me to calculate new welfare and real wage levels given changes in tariff structures. Because I am interested in investigating whether there are benefits from a Brazilian exit from MERCOSUR, I develop 9 counterfactual scenarios describing the applied tariff structures[35]

- Scenario 0: Status quo – Brazil remains in MERCOSUR.
- Scenario 1: Brazil exits MERCOSUR and maintains 0 tariff for Argentine and Uruguayan imports. Argentina and Uruguay retaliate against Brazil by applying median tariff for Brazilian imports[36].
- Scenario 2: Brazil exits MERCOSUR and maintains 0 tariff for Argentine and Uruguayan imports. Argentina and Uruguay retaliate against Brazil by applying median tariff for Brazilian imports. Brazil and the United States sign a Free Trade Agreement.
- Scenario 3: Brazil exits MERCOSUR and applies median tariff for Argentine and Uruguay imports. Argentina and Uruguay do not retaliate against Brazil, instead maintaining 0 tariff for Brazilian imports.
- Scenario 4: Brazil exits MERCOSUR and applies median tariff to Argentine and Uruguayan imports. Argentina and Uruguay do not retaliate against Brazil, instead maintaining 0 tariff for Brazilian imports. Brazil signs a Free Trade Agreement with the United States.

[35] Graphical representation of these tariffs is available in the Appendix.
[36] I choose the median tariff because this value is sensitive to outliers, particularly in industries that may have large variation in tariffs from country to country.

- Scenario 5: Brazil exits MERCOSUR and applies median tariff for Uruguay and Argentina. Argentina and Uruguay retaliate against Brazil by applying median tariff for Brazilian imports.
- Scenario 6: Brazil exits MERCOSUR and applies median tariff for Uruguay and Argentina. Argentina and Uruguay retaliate against Brazil by applying median tariff for Brazilian imports. Brazil signs a Free Trade Agreement with the United States.
- Scenario 7: Brazil does not exit MERCOSUR. MERCOSUR multilaterally signs a Free Trade Agreement with the United States.
- Scenario 8: Brazil does not exit MERCOSUR. MERCOSUR multilaterally signs a Free Trade Agreement with China.
- Scenario 9: Brazil does not exit MERCOSUR. MERCOSUR multilaterally signs a Free Trade Agreement with the European Union.

6. Results

I run the nine counterfactual scenarios described above using the Caliendo and Parro Computable General Equilibrium model. Following Caliendo and Parro (2009), I first compute the no-deficit equilibrium conditions for 2011 by imposing a zero aggregate deficit. Using the initial no-deficit equilibrium conditions and adjusting the tariff vectors for each counterfactual scenario in 2016, I then calculate the new equilibrium conditions, as well as welfare and real wage effects from tariff changes. The results for these specifications are described in section 6.1 Base Specifications.

I then perform a check for robustness by maintaining the initial trade deficits. I also check for robustness by running the model with only sector, with no materials, and without

intersectoral linkages. The results for these specifications are presented and described in section 6.2 Robustness Checks.

6.1 Base Specifications

Table 1 displays the results for scenarios 1-6. Brazil is unlikely to leave MERCOSUR while maintaining zero tariffs for Uruguayan and Argentine imports. In Scenario 1, where Brazil exits MERCOSUR while suffering retaliation from Argentina and Uruguay, the country observes a total welfare loss of -0.06%, and a real wage loss of -0.04%. While these results may initially seem small, it is important to note that they reflect the change in welfare and real wages in each counterfactual scenario – the absolute welfare and real wage values are likely to be large. Table 2 displays the bilateral trade effects of counterfactual scenario 1. As we can see, there is a reduction of 52.90% in Argentine imports of Brazilian products, and a reduction of 42% in Uruguayan imports of Brazilian products. While Argentina demands more imports from Uruguay to partially offset this reduction in Brazilian imports, Uruguay demands less Argentine imports, likely because of improved terms of trade due to increased Argentine demand. Table A.11 of the Appendix shows the Sectoral Contributions to Welfare Effects, and Table A.12 of the Appendix shows the Export Shares by Sector under Scenario 1. From both of these tables we observe that Brazil exports less manufactured goods after exiting MERCOSUR, consistent with the theory that Brazil sells these goods “cheaply” to MERCOSUR nations.

Table 1: Change in Welfare and Real Wage under Scenarios 1-6

	Welfare			
	Total Welfare	Terms of Trade	Volume of Trade	Real Wage
Scenario 1				
Argentina	0.30%	0.18%	0.12%	-0.11%
Brazil	-0.06%	-0.04%	-0.03%	-0.04%
Uruguay	0.19%	0.07%	0.12%	-0.14%
Scenario 2				
Argentina	0.30%	0.21%	0.09%	-0.13%
Brazil	0.08%	-0.21%	0.29%	0.11%
Uruguay	0.13%	0.05%	0.08%	-0.19%
United States	0.03%	0.03%	0.00%	0.03%
Scenario 3				
Argentina	-0.14%	-0.07%	-0.07%	-0.11%
Brazil	0.05%	0.02%	0.02%	-0.03%
Uruguay	-0.33%	-0.24%	-0.09%	-0.30%
Scenario 4				
Argentina	-0.16%	-0.05%	-0.11%	-0.09%
Brazil	0.18%	-0.16%	0.34%	0.12%
Uruguay	-0.37%	-0.24%	-0.13%	-0.26%
United States	0.03%	0.03%	0.00%	0.03%
Scenario 5				
Argentina	0.11%	0.05%	0.06%	-0.07%
Brazil	-0.01%	-0.01%	0.00%	-0.07%
Uruguay	-0.15%	-0.17%	0.02%	-0.40%
Scenario 6				
Argentina	0.13%	0.10%	0.04%	-0.27%
Brazil	0.12%	-0.19%	0.31%	0.09%
Uruguay	-0.15%	-0.15%	0.00%	-0.39%
United States	0.03%	0.03%	0.00%	0.03%

Table 2: Bilateral Trade Effects under Scenarios 1, 3, 5			
	Argentina	Brazil	Uruguay
Scenario 1			
Argentina's imports	-	-52.90%	7.80%
Brazil's imports	-10%	-	-7%
Uruguay's imports	-4%	-42%	-
Scenario 3			
Argentina's imports	-	-9%	3%
Brazil's imports	-53%	-	-68%
Uruguay's imports	-4%	-8%	-
Scenario 5			
Argentina's imports	-	-56%	13%
Brazil's imports	-56%	-	-70%
Uruguay's imports	-5%	-47%	-

Signing a Free Trade Agreement with the United States decreases the welfare and real wage losses observed in Scenario 1. Scenario 2 describes the case where Brazil exits MERCOSUR, suffers retaliation from Argentina and Uruguay, and signs a Free Trade Agreement with the United States. In this scenario, the country observes welfare gains of 0.08% and real wage gains of 0.11%. Similarly, Argentina, Uruguay, and the United States also incur welfare gains. Table 3 shows that there is a 163% increase in the Brazilian demand for American imports. This is likely the case because Brazil now has access to cheaper, more efficient American products. Access to these inputs decreases the cost for producing certain manufactured goods in Brazil, which leads to an increase in the export shares of Plastics, Metals and Metal Products, and Manufacturing. Increased demand for these 'more complex' sectors increases domestic demand for labor, which in turn leads to an increase in real wages in Brazil. Indeed, as Table A.17 in the Appendix demonstrates, almost of the welfare increase in Brazil can be explained by increased Volume of Trade between Brazil and the World. Not surprisingly, there are large total welfare gains for both Argentina and Uruguay in this scenario: because the two countries still export to Brazil with zero tariffs but apply a retaliation tariff to Brazil, they

observe improved terms of trade with MERCOSUR. Real wages fall in Argentina and Uruguay because there is a decreased demand for exports from these countries from the part of Brazil, and sometimes from the United States.

Table 3: Bilateral Trade Effects under Scenarios 2, 4, 6

	Argentina	Brazil	Uruguay	United States
Scenario 2				
Argentina's imports	-	-48%	9%	4%
Brazil's imports	-19%	-	-22%	163%
Uruguay's imports	-5%	-36%	-	1%
US' imports	-6%	36%	1%	-
Scenario 4				
Argentina's imports	-	1%	2%	-13%
Brazil's imports	-56%	-	-72%	172%
Uruguay's imports	-4%	4%	-	-12%
US' imports	9%	31%	13%	-
Scenario 6				
Argentina's imports	-	-51%	13%	-1%
Brazil's imports	-60%	-	-73%	166%
Uruguay's imports	-5%	-40%	-	-4%
US' imports	0%	34%	9%	-

While exiting MERCOSUR, raising tariffs for Argentine and Uruguayan imports, and not suffering retaliation leads to significant welfare gains for Brazil, this scenario is unlikely to occur. Under this specification (described by Scenario 3), Brazil observes welfare gains of about 0.05%, while Argentina and Uruguay observe welfare losses of -0.14% and -0.33%, respectively. Argentina and Uruguay would never chose not to retaliate, because in all scenarios where they retaliate they never observe larger welfare losses than when they do not retaliate. As Table 2 shows, there is an overall decrease in demand for imports from MERCOSUR countries. As a result of decreased demand for products produced in MERCOSUR countries, there is a decrease in the demand for labor, which drives real wages down for all MERCOSUR countries. Table A.21 of the Appendix shows that most of the welfare gains are driven by improved Terms of Trade between Brazil and other countries – this is not surprising given that Brazil is still able to

buy imports at the same price as before, while raising the amount it charges for its exports to MERCOSUR countries.

Signing a Free Trade Agreement with the United States magnifies the general welfare gains Brazil observes in Scenario 3. Table 1 demonstrates that exiting MERCOSUR, raising tariffs for Argentine and Uruguayan imports, not suffering retaliation from Argentina and Uruguay, and signing a Free Trade Agreement with the United States leads to a 0.18% increase in total welfare for Brazil, and a 0.12% increase in real wages. While the U.S also observes total welfare and real wage gains, these results are minimal when compared to those Brazil observes. As a result of the new tariff regime, there demand for American imports in Brazil increases 163%, while demand for Brazilian imports in the United States increases 31%. Similar to Scenario 2, there is an increase in demand for cheaper, more advanced inputs from the United States in Brazil, which in turn decreases the cost of producing certain final products in the country. This decreased cost translates into increased demand from abroad, which in turn increases domestic demand for labor and increases real wages. Table A.24 demonstrates these effects pretty clearly: there is an increase in exports for manufactured goods from the Textile, Paper, Chemicals, Plastics, Metal and Metal products, and Manufacturing sectors. Although the changes to the export structures for Brazil are not major, they still demonstrate a transition from exporting basic products and intermediate inputs to exporting more sophisticated final goods. Here, it is important to note that Argentina and Uruguay incur larger total welfare and real wage losses than in Scenario 3 because they now buy “cheap” Brazilian imports while selling “expensive” products to Brazil, which decreases their Terms of Trade. This imbalance is compounded by the fact that Brazil now has access to cheap products from the United States, which further decreases the terms of Trade between Argentina and Uruguay and the World.

A scenario where Brazil raises tariffs for Argentine and Uruguayan imports while suffering retaliation from its counterparts is more realistic, but has limited welfare and real wage effects for Brazil. As Table 1 shows, such scenario leads to a negligible total welfare loss for Brazil (-0.01%). Table 2 demonstrates that once again there generally is a decrease in the imports of Argentine, Brazilian, and Uruguayan products by the three countries; there is only an increase in Argentina's imports of Uruguayan products. Table A.30 indicates that most of the changes in welfare happen due to decreased Terms of Trade between Argentina, Brazil, Uruguay and the Rest of the World. Since 'retaliation' in this scenario means applying the median tariff to the counterparty's imports, it may be the case that there are decreased Terms of Trade because the median tariffs applied by Brazil and Uruguay are smaller than the median tariff applied by the Rest of the World. Similarly, there may be an increase in the terms of trade for Argentina because the median tariff applied by Argentina may be larger than the median tariff applied by the Rest of the World.

Scenario 6 describes the same counterfactual as above; with the exception that Brazil signs a Free Trade Agreement with the United States. Under this Scenario, Argentina and Brazil observe welfare gains of 0.13% and 0.12%, respectively. Uruguay observes welfare losses of 0.15%, while the United States observes negligible changes to Total Welfare. There is a 166% increase in Brazil's demands for American imports, with a 34% increase in the U.S.' demands for Brazilian imports. As with every counterfactual scenario where Brazil signs a Free Trade agreement with the United States, there is an increase in real wage resulting from larger demand for Brazilian manufactured goods. Here, I observe once again that there is a shift in Brazilian exports patterns towards more advanced products. While this scenario still leads to welfare losses for Uruguay, if Brazil was guaranteed a Free Trade Agreement with the United States, this would

be the scenario likely adopted by both parties (Brazil and Argentina/Uruguay). This is the case because all scenarios where only one side act multilaterally are the scenarios that maximizes losses for the other side – retaliation is always preferred to not-retaliation.

Table 4 describes the changes in welfare and real wages in Scenarios 7-9, where Brazil remains in MERCOSUR, and the bloc multilaterally signs a Free Trade agreement with the United States, China, or the European Union[37]. In Scenario 7, where MERCOSUR signs a multilateral Free Trade Agreement with the United States, all three member-countries incur welfare gains: there is an increase in 0.17% in total welfare for Argentina, an increase in 0.12% in total welfare for Brazil, and an increase in 0.06% in total welfare for Uruguay. Similarly, there are major real wage gains for Argentina, Brazil and Uruguay: 0.22%, 0.15%, and 0.26%, respectively. Table 5 shows that while there are decreases in demand for MERCOSUR imports within the bloc, there are significant increases in American demand for MERCOSUR products, and in MERCOSUR demand for American products. This happens because all three member-countries now have access to cheaper, more advanced American products, which decreases the cost of production of final manufactured goods in each of these three countries. This increases foreign demand for goods manufactured in MERCOSUR, which in turn increases real wages in

[37] I only include 24 countries of the European Union for reasons described in the *Section 4. Data*

all three countries.

Table 4: Change in Welfare and Real Wage under Scenarios 7-9

	Welfare			
	Total Welfare	Terms of Trade	Volume of Trade	Real Wage
Scenario 7				
Argentina	0.17%	-0.12%	0.29%	0.22%
Brazil	0.12%	-0.18%	0.31%	0.15%
Uruguay	0.06%	-0.17%	0.23%	0.26%
United States	0.04%	0.03%	0.01%	0.04%
Scenario 8				
Argentina	0.55%	-0.16%	0.71%	0.37%
Brazil	0.46%	-0.14%	0.60%	0.35%
Uruguay	1.10%	0.04%	1.00%	1.00%
China	0.23%	0.06%	0.18%	0.14%
Scenario 9				
Argentina	0.31%	-0.10%	0.41%	0.32%
Brazil	0.72%	-0.33%	1.10%	0.79%
Uruguay	0.24%	-0.14%	0.38%	0.46%
Austria	0.03%	0.03%	0.00%	0.03%
Belgium	0.04%	0.03%	0.01%	0.05%
Bulgaria	0.01%	0.00%	0.01%	0.02%
Czech Republic	0.03%	0.03%	0.01%	0.04%
Germany	0.05%	0.04%	0.01%	0.05%
Denmark	0.02%	0.02%	0.00%	0.02%
Spain	0.04%	0.04%	0.01%	0.05%
Estonia	0.03%	0.02%	0.00%	0.03%
Finland	0.05%	0.04%	0.00%	0.05%
France	0.02%	0.02%	0.00%	0.03%
United Kingdom	0.02%	0.02%	0.00%	0.02%
Greece	0.01%	0.00%	0.00%	0.01%
Hungary	0.02%	0.01%	0.01%	0.02%
Ireland	0.00%	-0.01%	0.00%	0.00%
Italy	0.04%	0.04%	0.00%	0.05%
Lithuania	0.01%	0.00%	0.01%	0.02%
Malta	0.05%	0.03%	0.02%	0.07%
Netherlands	0.03%	0.01%	0.02%	0.06%
Poland	0.02%	0.02%	0.00%	0.03%
Portugal	0.04%	0.04%	0.01%	0.05%
Romania	0.03%	0.02%	0.01%	0.04%
Slovakia	0.04%	0.03%	0.01%	0.04%
Slovenia	0.10%	0.09%	0.01%	0.11%
Sweden	0.03%	0.03%	0.00%	0.03%

Table 5: Bilateral Trade Effects under Scenario 7				
	Argentina	Brazil	Uruguay	United States
Scenario 7				
Argentina's imports	-	-9%	-16%	125%
Brazil's imports	-3%	-	-9%	165%
Uruguay's imports	-4%	-1%	-	97%
US' imports	45%	34%	44%	-

Scenarios 8 and 9 describe counterfactuals where Brazil remains in MERCOSUR, and the bloc signs multilateral Free Trade Agreements with China and the European Union[38], respectively. These Scenarios tell a consistent story with that of Scenario 7. A multilateral move to liberalize trade with a major trading partner leads to both welfare and real wage gains, due to increased demands for products from the counterparty. In all of these cases, access to cheaper inputs from China and the European Union decreases the prices of final goods for Argentina, Brazil and Uruguay, thus giving the countries comparative advantage that they did not possess otherwise. Similarly, access to cheaper base products such as agriculture and basic metals is advantageous for Chinese and European industries. All countries appear to benefit from these multilateral scenarios.

Table 6: Bilateral Trade Effects under Scenario 8				
	Argentina	Brazil	Uruguay	China
Scenario 8				
Argentina's imports	-	-14%	-25%	125%
Brazil's imports	-2%	-	-14%	165%
Uruguay's imports	-2%	-8%	-	97%
China's imports	64%	120%	340%	-

These scenarios shed light on three complicated policy questions: Does Brazil benefit from exiting MERCOSUR? If so, should Brazil sign a free trade agreement with the United States? And; in case Brazil exits MERCOSUR, what is the best strategic response from Argentina and Uruguay? Except for the case in which Brazil exits MERCOSUR without raising

[38] I have not included the Bilateral Trade Effects for the European Union due to space constraints.

tariffs for Argentine and Uruguayan imports while suffering retaliation from these countries (Scenario 1), and for the case where Brazil exit MERCOSUR, raises tariffs for Argentine and Uruguayan imports while suffering retaliation from these countries (Scenario 5), all counterfactual scenarios lead to total welfare gains for Brazil. Thus, the best strategy for Brazil is to exit MERCOSUR and raise tariffs for imports from Argentina and Uruguay. Brazil benefits from signing a Free Trade Agreement with the United States after exiting MERCOSUR in all scenarios. If possible, thus, Brazil should attempt to sign a Free Trade Agreement with the United States. If Brazil indeed exits MERCOSUR, the best response from the part of Argentina and Uruguay is to apply the median tariff to Brazilian imports. This is the strategic option that minimizes welfare and real wage losses for both Argentina and Uruguay in the case of a Brazilian exit.

Can Argentina and Uruguay prevent Brazil from exiting MERCOSUR? Simply put, the answer is yes. MERCOSUR signing a multilateral Free Trade Agreement with the United States, China, or the European Union leads to larger total welfare and real wage gains for Brazil. Such multilateral Free Trade Agreements also lead to large total welfare and real wage gains for Argentina and Uruguay, thus making this arrangement preferable to allowing Brazil to exit MERCOSUR. Given these results, Brazil should move that MERCOSUR sign a Free Trade Agreement with the United States, China, or the European Union. In case Argentina and Uruguay irrationally refuse to accept such multilateral trade agreement, Brazil should exit MERCOSUR[39]. Indeed, it appears that there is a case for a Brazilian exit from the current *status quo*.

[39] As mentioned beforehand, this analysis is only from a pure tariff perspective, and does not take into account any other components of the MERCOSUR agreement, such as technological exchanges, that may outweigh the welfare and real wage gains observed in this study. Further research should focus on quantifying these other aspects of MERCOSUR so that there countries can make a more informed policy decision.

6.2 Robustness Checks

While this study predicts changes to total welfare and real wages by employing a Computable General Equilibrium model, and thus does cannot expound significance levels or R^2, it can still check for the robustness of results by changing certain aspects of the model and observing whether the model remains consistent with the initial results.

6.2.1 Model Including Trade Deficits

Because trade deficits may be endogenous to each country for a specific year, I run the main counterfactuals described in Section 6.1 eliminating trade deficits and assuming they are equal to 0 across countries. Although this may initially seem like an unreasonable assumption, I force deficit to be 0 both in the initial equilibrium conditions and in the counterfactual scenarios. By fixing deficit in both scenarios, I am still able to isolate the effects of the counterfactual tariff changes under each scenario. As a check for robustness, I run Scenarios 1-8[40] by fixing the trade deficit in the counterfactual equilibrium equal to the trade deficit in the first year. The total welfare and real wage changes under this model-fixing deficit are presented in table 7 and table 8. While the magnitude of these deficits varies according to the Scenario specification, they are still directionally consistent with the results presented in Tables 1 and 4. I observe that in some cases, the models that take include deficits or surplus tend to predict larger positive total welfare changes. This is not a source for concern for the results presented in this paper, for it is better to err on the conservative side when calculating welfare and real wage changes.

[40] I do not include Scenario 9 for brevity.

Table 7: Change in Welfare and Real Wage under Scenarios 1-6 (Deficit)				
	Welfare			
	Total Welfare	Terms of Trade	Volume of Trade	Real Wage
Scenario 1				
Argentina	0.08%	0.03%	0.05%	0.09%
Brazil	-0.01%	0.00%	-0.01%	-0.11%
Uruguay	0.13%	0.02%	0.11%	-0.08%
Scenario 2				
Argentina	0.09%	0.04%	0.05%	0.05%
Brazil	0.26%	-0.04%	0.29%	-0.19%
Uruguay	0.14%	0.04%	0.10%	-0.12%
United States	0.00%	0.00%	0.00%	0.07%
Scenario 3				
Argentina	0.09%	0.04%	0.05%	0.05%
Brazil	0.26%	-0.04%	0.29%	-0.19%
Uruguay	0.14%	0.04%	0.10%	-0.12%
Scenario 4				
Argentina	-0.04%	0.00%	-0.05%	-0.26%
Brazil	0.31%	-0.02%	0.33%	-0.11%
Uruguay	-0.03%	0.01%	-0.04%	-0.41%
United States	0.00%	0.00%	0.00%	0.07%
Scenario 5				
Argentina	0.06%	0.02%	0.04%	-0.26%
Brazil	0.02%	0.01%	0.01%	-0.12%
Uruguay	0.10%	0.02%	0.08%	-0.46%
Scenario 6				
Argentina	0.07%	0.03%	0.04%	-0.27%
Brazil	0.29%	-0.02%	0.32%	-0.21%
Uruguay	0.11%	0.03%	0.08%	-0.47%
United States	0.00%	0.00%	0.00%	0.07%

Table 8: Change in Welfare and Real Wage under Scenarios 7-9 (Deficit)				
	Welfare			
	Total Welfare	Terms of Trade	Volume of Trade	Real Wage
Scenario 7				
Argentina	0.28%	-0.02%	0.30%	0.01%
Brazil	0.27%	-0.03%	0.30%	-0.11%
Uruguay	0.22%	-0.02%	0.23%	0.13%
United States	0.00%	0.00%	0.00%	0.09%
Scenario 8				
Argentina	0.82%	-0.03%	0.85%	0.08%
Brazil	0.63%	-0.07%	0.71%	0.15%
Uruguay	0.89%	-0.09%	0.97%	1.20%
China	0.15%	-0.01%	0.16%	0.31%

6.2.2 One-sector, no materials and no intersectoral linkages models

Following Caliendo and Parro (2009), I also make minor changes to the Computable General Equilibrium and re-run counterfactual scenarios 1-8. I first consider a model where there is only 1 sector in each country, representing an aggregation of all of the 14 different tradable sectors. I then consider a model without materials. Finally, I consider a model where there are no input-output linkages; that is, there is no trade across sectors and intermediate factors of production. The results for these three specifications are presented in Table 9 and Table 10. There are three main conclusions that can be drawn from these alternative specifications. First, the model that only includes one sector presents directionally consistent results, albeit smaller in magnitude. The same is true for the model that does not include materials. Although there is some variation in how directionally consistent these results are with those presented in section 6.1, this is not a major source for concern, given that each model answers a slightly different question. Third, the model that does not include input-output linkages also tends to present results that are smaller in magnitude than those presented in Section 6.1. Once again, this is not surprising, and is consistent with the extant literature on Trade, as evinced by Eaton and Kortum

(2002), and Caliendo and Parro (2009). I conclude that the results presented in this paper are thus robust to alternative specifications and are consistent with the literature on the topic[41].

Table 9: Trade and Welfare Effects from Scenarios 1-6 across specifications

	Welfare		
		Multi sector	
	One Sector	No materials	No I-O
Scenario 1			
Argentina	0.29%	0.15%	0.15%
Brazil	-0.07%	-0.03%	-0.04%
Uruguay	0.19%	0.10%	0.13%
Scenario 2			
Argentina	0.28%	0.15%	0.16%
Brazil	-0.11%	0.04%	0.05%
Uruguay	0.17%	0.07%	0.08%
Scenario 3			
Argentina	-0.19%	-0.09%	-0.10%
Brazil	0.05%	0.02%	0.03%
Uruguay	-0.25%	-0.19%	-0.25%
Scenario 4			
Argentina	-0.20%	-0.10%	-0.11%
Brazil	0.01%	0.10%	0.12%
Uruguay	-0.27%	-0.20%	-0.27%
Scenario 5			
Argentina	0.08%	0.05%	0.05%
Brazil	-0.02%	-0.01%	-0.01%
Uruguay	-0.07%	-0.08%	-0.12%
Scenario 6			
Argentina	0.09%	0.06%	0.06%
Brazil	-0.06%	0.06%	0.08%
Uruguay	-0.07%	-0.09%	-0.12%

[41] Here, it is important to highlight that Caliendo and Parro (2010) observe much larger magnitudes in their calculation of total welfare and real wage gains from changing partners in a trade bloc. It is important to note, however, that their study included only 5 countries, and also fixed a Common External Tariff for MERCOSUR. As it was previously discussed, although the Common External Tariff for MERCOSUR exits on paper, member countries do not consistently apply it.

Table 10: Trade and Welfare Effects from Scenarios 7-8 across specifications

	Welfare		
		Multi sector	
	One Sector	No materials	No I-O
Scenario 7			
Argentina	0.02%	0.08%	0.09%
Brazil	-0.05%	0.07%	0.08%
Uruguay	-0.04%	0.03%	0.04%
United States	0.03%	0.02%	0.03%
Scenario 8			
Argentina	0.23%	0.29%	0.29%
Brazil	0.20%	0.28%	0.28%
Uruguay	0.15%	0.42%	0.42%
China	0.09%	0.08%	0.08%

7. Conclusion

This paper attempts to shed light on contemporary policy debates regarding the *Mercado Común del Sur* (MERCOSUR). Using the Caliendo and Parro Computable General Equilibrium Model, I assess a set of counterfactual scenarios where Brazil exits MERCOSUR, raises tariffs for former allies, suffers from retaliation, and/or signs a Free Trade Agreement with the United States. I also assess a set of counterfactuals where Brazil does not exit MERCOSUR, with the bloc instead signing multilateral Free Trade Agreements with the United States, China, or the European Union.

MERCOSUR multilaterally signing a Free Trade Agreement with the United States, China, or the European Union leads to the largest welfare and real wage gains for Argentina, Brazil and Uruguay. In the cases in which the bloc does not sign the multilateral free trade agreement, however, exiting MERCOSUR appears to be a dominant strategy for Brazil because it leads to welfare and real wage gains compared to the current *status quo*. These results appear

to be robust to alternative specifications, such as including trade deficit, and removing materials and/or intersectoral linkages.

While these results strongly support claims that reforming MERCOSUR would lead to gains in welfare and real wage, it is important to highlight that further work should be done to quantify non-tariff policies (such as quotas, technology transfers, and foreign direct investment) that are likely to have effects in these total welfare and real wages. While this study does not attempt to model these effects, it acknowledges the importance that they may have in driving policy-making decisions. For now, however, it seems that Brazil should actively push for a Free Trade Agreement with the United States, China, or the European Union. Argentina and Uruguay should agree to such policy proposals, because they lead to total welfare and real wage gains for all countries. By rekindling its focus on promoting development for all member nations through data-driven policy decisions, perhaps MERCOSUR can move past controversy and become the pride of the Southern Cone.

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9. Appendix

Countries in Sample

ARG	Argentina
AUS	Australia
AUT	Austria
BEL	Belgium
BGR	Bulgaria
BRA	Brazil
CAN	Canada
CHN	China
CZE	Czech Republic
DEU	Germany
DNK	Denmark
ESP	Spain
EST	Estonia
FIN	Finland
FRA	France
GBR	UK
GRC	Greece
HUN	Hungary
IDN	India
IND	Indonesia
IRL	Ireland
ITA	Italy
JPN	Japan
KOR	Korea
LTU	Lithuania
MEX	Mexico
MLT	Malta
NLD	Netherlands
POL	Poland
PRT	Portugal
ROU	Romania
RUS	Russia
SVK	Slovakia
SVN	Slovenia
SWE	Sweden
TUR	Turkey
USA	USA
Row	Row
URY	Uruguay

Table A.1: Sectors in Sample, and Correspondence with ISIC Rev 3			
ISIC	**WIOD**	**Sector**	**Tradable?**
AtB	c1	Agriculture, Hunting, Forestry and Fishing	T
C	c2	Mining and Quarrying	T
15t16	c3	Food, Beverages and Tobacco	T
17t19	c4, c5	Textiles, textile products, leather and footwear	T
20	c6	Wood and Products of Wood and Cork	T
21t22	c7	Pulp, Paper, Paper , Printing and Publishing	T
23	c8	Coke, Refined Petroleum and Nuclear Fuel	T
24	c9	Chemicals and Chemical Products	T
25	c10	Rubber and Plastics	T
26	c11	Other Non-Metallic Mineral	T
27t33	c12, c13, c14	Basic Metals and Fabricated Metal; machinery nec; electrical and optical equipment	T
34t35	c15	Transport Equipment	T
36t37	c16	Manufacturing, Nec; Recycling	T
E	c17	Electricity, Gas and Water Supply	T
F	c18	Construction	NT
50t52	c19, c20, 21	Wholesale and retail trade reparis	NT
H	c22	Hotels and Restaurants	NT
60	c23	Inland Transport	NT
61t62	c24, c25	Water Transport, Air Transport	NT
63	c26	Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies	NT
64	c27	Post and Telecommunications	NT
J	c28	Financial Intermediation	NT
70	c29	Real Estate Activities	NT
71t74	c30	Renting of M&Eq and Other Business Activities	NT
L	c31	Public Admin and Defence; Compulsory Social Security	NT
M	c32	Education	NT
N	c33	Health and Social Work	NT
O, P	c34, c35	Other Community, Social and Personal Services; private households with employed persons	NT

Table A.2 - Scenario 1[42] Brazil exits MERCOSUR and maintains 0 tariff with Argentina and Uruguay Uruguay and Argentina retaliate against Brazil by applying median tariff							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Argentina	$\mathbf{Tariff_{retaliation}}$	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Uruguay	$\mathbf{Tariff_{retaliation}}$	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
United States	$Tariff_{US, Brazil}$	$Tariff_{US, Argentina}$	$Tariff_{US, Uruguay}$	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	$Tariff_{EU, Brazil}$	$Tariff_{EU, Argentina}$	$Tariff_{EU, Uruguay}$	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	$Tariff_{China, Brazil}$	$Tariff_{China, Argentina}$	$Tariff_{China,Uruguay}$	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

Table A.3 - Scenario 2 Brazil exits MERCOSUR and maintains 0 tariff with Argentina and Uruguay Brazil signs a Free Trade Agreement with the United States Uruguay and Argentina retaliate against Brazil by applying median tariff							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	0	0	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Argentina	$\mathbf{Tariff_{retaliation}}$	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Uruguay	$\mathbf{Tariff_{retaliation}}$	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
United States	**0**	$Tariff_{US, Argentina}$	$Tariff_{US, Uruguay}$	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	$Tariff_{EU, Brazil}$	$Tariff_{EU, Argentina}$	$Tariff_{EU, Uruguay}$	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	$Tariff_{China, Brazil}$	$Tariff_{China, Argentina}$	$Tariff_{China,Uruguay}$	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

[42] Bold represents there was a tariff change with regards to the status quo. Rows are importers, columns are exporters. I use $CET_{Adjusted}$ as nomenclature because while the Common External Tariff technically exists, member countries have not applied it consistently.

Table A.4 - Scenario 3 Brazil exits MERCOSUR and applies median tariff to Uruguay and Argentina Uruguay and Argentina **do not** retaliate against Brazil and maintain 0 tariff							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	**$Tariff_{median}$**	**$Tariff_{median}$**	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Argentina	0	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Uruguay	0	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
United States	$Tariff_{US, Brazil}$	$Tariff_{US, Argentina}$	$Tariff_{US, Uruguay}$	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	$Tariff_{EU, Brazil}$	$Tariff_{EU, Argentina}$	$Tariff_{EU, Uruguay}$	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	$Tariff_{China, Brazil}$	$Tariff_{China, Argentina}$	$Tariff_{China,Uruguay}$	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

Table A.5 - Scenario 4 Brazil exits MERCOSUR and applies median tariff to Uruguay and Argentina Brazil signs a Free Trade Agreement with the United States Uruguay and Argentina **do not** retaliate against Brazil and maintain 0 tariff							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	**$Tariff_{median}$**	**$Tariff_{median}$**	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Argentina	0	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Uruguay	0	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
United States	**0**	$Tariff_{US, Argentina}$	$Tariff_{US, Uruguay}$	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	$Tariff_{EU, Brazil}$	$Tariff_{EU, Argentina}$	$Tariff_{EU, Uruguay}$	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	$Tariff_{China, Brazil}$	$Tariff_{China, Argentina}$	$Tariff_{China,Uruguay}$	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

Table A.6 - Scenario 5 Brazil exits MERCOSUR and applies median tariff to Uruguay and Argentina Uruguay and Argentina retaliate against Brazil by applying median tariff							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	**$Tariff_{median}$**	**$Tariff_{median}$**	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Argentina	**$Tariff_{retaliation}$**	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Uruguay	**$Tariff_{retaliation}$**	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
United States	$Tariff_{US, Brazil}$	$Tariff_{US, Argentina}$	$Tariff_{US, Uruguay}$	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	$Tariff_{EU, Brazil}$	$Tariff_{EU, Argentina}$	$Tariff_{EU, Uruguay}$	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	$Tariff_{China, Brazil}$	$Tariff_{China, Argentina}$	$Tariff_{China,Uruguay}$	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

Table A.7 - Scenario 6 Brazil exits MERCOSUR and applies median tariff to Uruguay and Argentina Brazil signs a Free Trade Agreement with the United States Uruguay and Argentina retaliate against Brazil by applying median tariff							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	**$Tariff_{median}$**	**$Tariff_{median}$**	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Argentina	**$Tariff_{retaliation}$**	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Uruguay	**$Tariff_{retaliation}$**	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
United States	**0**	$Tariff_{US, Argentina}$	$Tariff_{US, Uruguay}$	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	$Tariff_{EU, Brazil}$	$Tariff_{EU, Argentina}$	$Tariff_{EU, Uruguay}$	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	$Tariff_{China, Brazil}$	$Tariff_{China, Argentina}$	$Tariff_{China,Uruguay}$	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

Table A.8 - Scenario 7 Brazil does not exit MERCOSUR MERCOSUR signs a Free Trade Agreement with the United States							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	0	0	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Argentina	0	0	0	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
Uruguay	0	0	0	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$	$CET_{Adjusted}$
United States	**0**	**0**	**0**	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	$Tariff_{EU, Brazil}$	$Tariff_{EU, Argentina}$	$Tariff_{EU, Uruguay}$	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	$Tariff_{China, Brazil}$	$Tariff_{China, Argentina}$	$Tariff_{China,Uruguay}$	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

Table A.9 - Scenario 8 Brazil does not exit MERCOSUR MERCOSUR signs a Free Trade Agreement with China							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	**0**	$CET_{Adjusted}$
Argentina	0	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	**0**	$CET_{Adjusted}$
Uruguay	0	0	0	$CET_{Adjusted}$	$CET_{Adjusted}$	**0**	$CET_{Adjusted}$
United States	$Tariff_{US, Brazil}$	$Tariff_{US, Argentina}$	$Tariff_{US, Uruguay}$	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	$Tariff_{EU, Brazil}$	$Tariff_{EU, Argentina}$	$Tariff_{EU, Uruguay}$	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	**0**	**0**	**0**	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

Table A.10 - Scenario 9 Scenario 8: Brazil does not exit MERCOSUR MERCOSUR signs a Free Trade Agreement with the European Union							
	Brazil	Argentina	Uruguay	United States	European Union	China	Rest of World
Brazil	0	0	0	$CET_{Adjusted}$	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$
Argentina	0	0	0	$CET_{Adjusted}$	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$
Uruguay	0	0	0	$CET_{Adjusted}$	**0**	$CET_{Adjusted}$	$CET_{Adjusted}$
United States	$Tariff_{US, Brazil}$	$Tariff_{US, Argentina}$	$Tariff_{US, Uruguay}$	0	$Tariff_{US,EU}$	$Tariff_{US,China}$	$Tariff_{US,RoW}$
European Union	**0**	**0**	**0**	$Tariff_{EU,US}$	0	$Tariff_{EU,China}$	$Tariff_{EU, RoW}$
China	$Tariff_{China, Brazil}$	$Tariff_{China, Argentina}$	$Tariff_{China,Uruguay}$	$Tariff_{China, US}$	$Tariff_{China,EU}$	0	$Tariff_{China, RoW}$
Rest of World (RoW)	$Tariff_{RoW, Brazil}$	$Tariff_{RoW Argentina}$	$Tariff_{Row, Uruguay}$	$Tariff_{RoW, United States}$	$Tariff_{RoW,EU}$	$Tariff_{RoW,China}$	0

Table A.11: Sectoral Contributions to Welfare Effects - Scenario 1

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	19.40%	0.25%	13.30%	1.10%	26.20%	0.19%
Mining	5.20%	0.05%	11.70%	0.11%	-2.27%	0.03%
Food	33.10%	0.47%	20.00%	3.15%	48.40%	2.30%
Textiles	2.08%	7.28%	2.75%	7.72%	10.50%	16.10%
Wood	0.30%	0.55%	1.02%	0.11%	4.20%	0.08%
Paper	0.94%	1.66%	3.00%	1.66%	0.78%	0.69%
Petroleum	3.33%	0.10%	5.40%	0.20%	2.95%	0.08%
Chemicals	9.18%	8.29%	7.17%	9.72%	-3.30%	9.52%
Plastics	1.07%	9.66%	2.07%	7.09%	7.71%	9.28%
Non-metallic	0.48%	1.86%	0.89%	1.59%	-0.19%	0.82%
Metals	9.32%	28.90%	14.20%	37.00%	-1.20%	23.00%
Transport	15.20%	30.80%	17.20%	24.30%	5.33%	27.10%
Manufacturing	0.14%	10.20%	0.59%	6.26%	2.42%	10.80%
Electricity	0.27%	0.00%	0.75%	0.00%	-1.62%	0.00%

Table A.12: Export Shares by Sector - Scenario 1

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	20.20%	12.10%	12.70%	23.30%	23.20%
Mining	4.87%	4.81%	14.70%	15.30%	0.28%	0.28%
Food	34.90%	35.70%	20.50%	21.30%	41.30%	41.50%
Textiles	1.96%	1.96%	2.98%	2.88%	7.65%	7.61%
Wood	0.25%	0.26%	1.07%	1.05%	3.62%	3.66%
Paper	0.87%	0.84%	3.09%	3.10%	1.66%	1.74%
Petroleum	3.20%	3.26%	4.22%	4.40%	0.65%	0.65%
Chemicals	8.64%	8.47%	6.10%	5.90%	5.70%	5.69%
Plastics	0.91%	0.77%	1.70%	1.46%	6.56%	6.14%
Non-metallic	0.29%	0.25%	0.88%	0.88%	0.59%	0.59%
Metals	8.52%	8.18%	17.60%	17.20%	3.57%	3.59%
Transport	14.90%	15.20%	13.70%	12.30%	3.33%	3.61%
Manufacturing	0.09%	0.08%	0.62%	0.57%	1.76%	1.75%
Electricity	0.09%	0.09%	0.85%	0.92%	0.00%	0.00%

Table A.13: Bilateral Welfare Effects - Scenario 1

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	0.05%	0.13%	0%	0.12%
Brazil	-0.01%	-0.03%	0%	-0.03%
Uruguay	0.00%	0.07%	0%	0.12%

Table A.14: Change in Welfare under Scenario 1			
Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	0.30%	0.18%	0.12%
Australia	0.00%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	0.00%	0.00%	0.00%
Bulgaria	0.00%	0.00%	0.00%
Brazil	-0.06%	-0.04%	-0.03%
Canada	0.00%	0.00%	0.00%
China	0.00%	0.00%	0.00%
Czech Republic	0.00%	0.00%	0.00%
Germany	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Estonia	0.00%	0.00%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%
Greece	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	0.00%
India	0.00%	0.00%	0.00%
Indonesia	0.00%	0.00%	0.00%
Ireland	0.00%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	0.00%	0.00%	0.00%
Lithuania	0.00%	0.00%	0.00%
Mexico	0.00%	0.00%	0.00%
Malta	0.00%	0.00%	0.00%
Netherlands	0.00%	0.00%	0.00%
Poland	0.00%	0.00%	0.00%
Portugal	0.00%	0.00%	0.00%
Romania	0.02%	0.02%	0.00%
Russia	0.00%	0.00%	0.00%
Slovakia	0.00%	0.00%	0.00%
Slovenia	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Turkey	0.00%	0.00%	0.00%
USA	0.00%	0.00%	0.00%
Row	0.00%	0.00%	0.00%
Uruguay	0.19%	0.07%	0.12%

Table A.15: Sectoral Contributions to Welfare Effects - Scenario 2

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	13.50%	0.20%	12.10%	0.08%	2.34%	0.01%
Mining	6.22%	0.03%	13.40%	-0.06%	3.94%	0.00%
Food	23.50%	0.31%	20.60%	14.20%	9.36%	1.28%
Textiles	2.58%	7.15%	2.96%	1.45%	10.10%	19.20%
Wood	0.95%	0.39%	1.37%	-0.05%	1.11%	0.06%
Paper	1.49%	1.50%	3.04%	0.23%	0.76%	0.28%
Petroleum	2.95%	-0.03%	4.42%	-0.10%	23.40%	-0.04%
Chemicals	9.49%	6.16%	6.82%	2.74%	2.34%	2.45%
Plastics	2.12%	9.87%	1.77%	15.60%	6.62%	8.52%
Non-metallic	0.64%	1.96%	0.84%	0.41%	0.28%	0.55%
Metals	13.50%	27.10%	18.60%	24.10%	19.90%	23.80%
Transport	21.70%	36.10%	12.50%	-5.22%	19.10%	36.60%
Manufacturing	0.35%	9.26%	0.71%	46.60%	1.11%	7.26%
Electricity	1.05%	0.00%	0.78%	0.00%	-0.40%	0.00%

Table A.16: Export Shares by Sector - Scenario 2

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	20.40%	12.10%	13.40%	23.30%	24.10%
Mining	4.87%	4.92%	14.70%	15.00%	0.28%	0.29%
Food	34.90%	36.10%	20.50%	20.20%	41.30%	42.00%
Textiles	1.96%	1.98%	2.98%	2.99%	7.65%	7.78%
Wood	0.25%	0.25%	1.07%	1.06%	3.62%	3.79%
Paper	0.87%	0.82%	3.09%	3.15%	1.66%	1.76%
Petroleum	3.20%	3.21%	4.22%	4.34%	0.65%	0.67%
Chemicals	8.64%	8.36%	6.10%	6.01%	5.70%	5.59%
Plastics	0.91%	0.63%	1.70%	1.77%	6.56%	4.40%
Non-metallic	0.29%	0.25%	0.88%	0.97%	0.59%	0.59%
Metals	8.52%	8.12%	17.60%	18.10%	3.57%	3.59%
Transport	14.90%	14.80%	13.70%	11.40%	3.33%	3.57%
Manufacturing	0.09%	0.07%	0.62%	0.72%	1.76%	1.85%
Electricity	0.09%	0.09%	0.85%	0.92%	0.00%	0.00%

Table A.17: Bilateral Welfare Effects - Scenario 2

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	0.11%	0.10%	0%	0.09%
Brazil	-0.03%	-0.19%	0%	0.29%
Uruguay	0.05%	0.00%	0%	0.08%

Table A.18: Change in Welfare under Scenario 2

Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	0.30%	0.21%	0.09%
Australia	0.00%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	0.00%	0.00%	0.00%
Bulgaria	0.00%	0.00%	0.00%
Brazil	0.08%	-0.21%	0.29%
Canada	-0.01%	-0.01%	0.00%
China	0.00%	0.00%	0.00%
Czech Republic	0.00%	0.00%	0.00%
Germany	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Estonia	0.00%	0.00%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%
Greece	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	0.00%
India	0.00%	0.00%	0.00%
Indonesia	-0.01%	0.00%	0.00%
Ireland	-0.01%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	-0.02%	0.00%	-0.02%
Lithuania	0.00%	0.00%	0.00%
Mexico	-0.01%	0.00%	0.00%
Malta	0.00%	0.00%	0.00%
Netherlands	0.00%	0.00%	0.00%
Poland	0.00%	0.00%	0.00%
Portugal	0.00%	0.00%	0.00%
Romania	0.02%	0.02%	0.00%
Russia	0.00%	0.00%	0.00%
Slovakia	0.00%	0.00%	0.00%
Slovenia	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Turkey	0.00%	0.00%	0.00%
USA	0.03%	0.03%	0.00%
Row	0.00%	0.00%	0.00%
Uruguay	0.13%	0.05%	0.08%

Table A.19: Sectoral Contributions to Welfare Effects - Scenario 3

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	19.10%	0.58%	9.75%	0.91%	25.20%	0.84%
Mining	4.86%	0.11%	6.38%	0.04%	0.01%	0.05%
Food	30.20%	1.58%	18.50%	5.18%	44.60%	5.51%
Textiles	1.65%	13.20%	1.59%	3.51%	6.50%	15.30%
Wood	0.06%	1.89%	0.49%	0.05%	4.06%	0.12%
Paper	0.49%	2.29%	1.60%	0.78%	1.66%	1.73%
Petroleum	2.41%	0.59%	3.07%	0.09%	0.81%	0.15%
Chemicals	7.86%	14.50%	5.32%	8.87%	3.99%	22.80%
Plastics	0.90%	6.28%	2.70%	9.65%	5.55%	10.90%
Non-metallic	0.22%	1.33%	0.44%	0.56%	0.59%	1.60%
Metals	9.08%	36.60%	14.80%	27.90%	3.00%	16.10%
Transport	22.90%	11.80%	34.70%	40.70%	2.54%	7.94%
Manufacturing	-0.03%	9.32%	0.25%	1.78%	1.68%	17.00%
Electricity	0.23%	0.00%	0.37%	0.00%	-0.19%	0.00%

Table A.20: Export Shares by Sector - Scenario 3

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	21.90%	12.10%	12.20%	23.30%	27.20%
Mining	4.87%	5.48%	14.70%	14.80%	0.28%	0.33%
Food	34.90%	37.60%	20.50%	20.70%	41.30%	41.20%
Textiles	1.96%	2.04%	2.98%	3.00%	7.65%	8.06%
Wood	0.25%	0.24%	1.07%	1.08%	3.62%	4.19%
Paper	0.87%	0.77%	3.09%	3.10%	1.66%	1.66%
Petroleum	3.20%	3.46%	4.22%	4.25%	0.65%	0.73%
Chemicals	8.64%	8.44%	6.10%	6.08%	5.70%	5.38%
Plastics	0.91%	0.54%	1.70%	1.63%	6.56%	2.11%
Non-metallic	0.29%	0.28%	0.88%	0.88%	0.59%	0.57%
Metals	8.52%	8.41%	17.60%	17.40%	3.57%	3.61%
Transport	14.90%	10.80%	13.70%	13.50%	3.33%	2.71%
Manufacturing	0.09%	0.09%	0.62%	0.61%	1.76%	2.25%
Electricity	0.09%	0.09%	0.85%	0.83%	0.00%	0.00%

Table A.21: Bilateral Welfare Effects - Scenario 3

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	-0.02%	-0.05%	0%	-0.07%
Brazil	0.01%	0.02%	0%	0.02%
Uruguay	-0.06%	-0.18%	0%	-0.09%

Table A.22: Change in Welfare under Scenario 3			
Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	-0.14%	-0.07%	-0.07%
Australia	0.00%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	0.00%	0.00%	0.00%
Bulgaria	0.00%	0.00%	0.00%
Brazil	0.04%	0.02%	0.02%
Canada	0.00%	0.00%	0.00%
China	0.00%	0.00%	0.00%
Czech Republic	0.00%	0.00%	0.00%
Germany	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Estonia	0.00%	0.00%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%
Greece	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	0.00%
India	0.00%	0.00%	0.00%
Indonesia	0.00%	0.00%	0.00%
Ireland	0.00%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	0.00%	0.00%	0.00%
Lithuania	0.00%	0.00%	0.00%
Mexico	0.00%	0.00%	0.00%
Malta	0.00%	0.00%	0.00%
Netherlands	0.00%	0.00%	0.00%
Poland	0.00%	0.00%	0.00%
Portugal	0.00%	0.00%	0.00%
Romania	0.02%	0.02%	0.00%
Russia	0.00%	0.00%	0.00%
Slovakia	0.00%	0.00%	0.00%
Slovenia	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Turkey	0.00%	0.00%	0.00%
USA	0.00%	0.00%	0.00%
Row	0.00%	0.00%	0.00%
Uruguay	-0.33%	-0.24%	-0.09%

Table A.23: Sectoral Contributions to Welfare Effects - Scenario 4

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	42.70%	0.50%	12.20%	0.20%	30.60%	0.69%
Mining	0.62%	0.10%	14.80%	-0.04%	-1.60%	0.06%
Food	68.00%	1.34%	21.10%	12.90%	53.60%	4.87%
Textiles	-0.46%	11.40%	3.20%	2.00%	7.01%	13.90%
Wood	-2.64%	1.57%	1.58%	-0.03%	4.75%	0.12%
Paper	-1.82%	2.17%	3.26%	0.36%	1.58%	1.55%
Petroleum	3.88%	0.55%	4.35%	-0.06%	-3.56%	0.19%
Chemicals	6.13%	14.20%	6.96%	3.53%	2.06%	20.00%
Plastics	-3.30%	7.30%	1.57%	15.00%	6.06%	10.60%
Non-metallic	-0.51%	1.33%	0.89%	0.51%	0.41%	1.42%
Metals	-7.59%	36.90%	20.20%	25.00%	-2.08%	19.40%
Transport	-1.15%	12.40%	8.26%	-0.37%	-0.27%	9.27%
Manufacturing	-0.95%	10.20%	0.81%	41.00%	2.05%	18.00%
Electricity	-2.95%	0.00%	0.84%	0.00%	-0.60%	0.00%

Table A.24: Export Shares by Sector - Scenario 4

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	22.00%	12.10%	12.80%	23.30%	27.50%
Mining	4.87%	5.55%	14.70%	14.50%	0.28%	0.33%
Food	34.90%	37.60%	20.50%	19.70%	41.30%	41.10%
Textiles	1.96%	2.06%	2.98%	3.10%	7.65%	8.12%
Wood	0.25%	0.24%	1.07%	1.09%	3.62%	4.22%
Paper	0.87%	0.77%	3.09%	3.15%	1.66%	1.64%
Petroleum	3.20%	3.36%	4.22%	4.20%	0.65%	0.73%
Chemicals	8.64%	8.40%	6.10%	6.19%	5.70%	5.26%
Plastics	0.91%	0.55%	1.70%	1.96%	6.56%	1.99%
Non-metallic	0.29%	0.29%	0.88%	0.97%	0.59%	0.57%
Metals	8.52%	8.56%	17.60%	18.30%	3.57%	3.62%
Transport	14.90%	10.50%	13.70%	12.40%	3.33%	2.61%
Manufacturing	0.09%	0.10%	0.62%	0.76%	1.76%	2.34%
Electricity	0.09%	0.09%	0.85%	0.83%	0.00%	0.00%

Table A.25: Bilateral Welfare Effects - Scenario 4

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	0.04%	-0.09%	0%	-0.11%
Brazil	-0.01%	-0.15%	0%	0.34%
Uruguay	-0.01%	-0.24%	0%	-0.13%

Table A.26:Change in Welfare under Scenario 4			
Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	-0.16%	-0.05%	-0.11%
Australia	0.00%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	0.00%	0.00%	0.00%
Bulgaria	0.00%	0.00%	0.00%
Brazil	0.18%	-0.16%	0.34%
Canada	0.00%	-0.01%	0.00%
China	0.00%	0.00%	0.00%
Czech Republic	0.00%	0.00%	0.00%
Germany	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Estonia	0.00%	0.00%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%
Greece	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	0.00%
India	0.00%	0.00%	0.00%
Indonesia	0.00%	0.00%	0.00%
Ireland	-0.01%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	-0.02%	0.00%	-0.02%
Lithuania	0.01%	0.00%	0.00%
Mexico	-0.01%	0.00%	0.00%
Malta	0.00%	0.00%	0.00%
Netherlands	0.01%	0.00%	0.00%
Poland	0.00%	0.00%	0.00%
Portugal	0.00%	0.00%	0.00%
Romania	0.02%	0.02%	0.00%
Russia	0.00%	0.00%	0.00%
Slovakia	0.00%	0.00%	0.00%
Slovenia	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Turkey	0.00%	0.00%	0.00%
USA	0.03%	0.03%	0.00%
Row	0.00%	0.00%	0.00%
Uruguay	-0.37%	-0.24%	-0.13%

Table A.27: Sectoral Contributions to Welfare Effects - Scenario 5

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	17.50%	-0.17%	20.40%	2.29%	25.60%	-2.74%
Mining	5.66%	-0.02%	24.90%	0.58%	0.54%	-0.06%
Food	35.70%	-0.46%	24.40%	-10.70%	44.70%	-12.70%
Textiles	2.77%	2.43%	5.53%	35.00%	5.04%	22.30%
Wood	0.65%	-0.60%	2.22%	0.50%	4.16%	-0.13%
Paper	1.64%	0.82%	6.25%	7.48%	1.94%	-4.27%
Petroleum	5.15%	-0.19%	10.20%	0.94%	-0.01%	-0.24%
Chemicals	11.50%	4.34%	10.90%	15.40%	5.88%	-44.90%
Plastics	1.56%	9.11%	0.70%	-7.52%	4.86%	-5.88%
Non-metallic	1.01%	1.96%	1.96%	8.33%	0.85%	-3.30%
Metals	10.40%	23.30%	14.50%	94.60%	3.96%	54.80%
Transport	5.58%	53.30%	-25.10%	-82.50%	0.87%	117.00%
Manufacturing	0.38%	6.23%	1.41%	35.60%	1.46%	-19.70%
Electricity	0.43%	0.00%	1.71%	0.00%	0.16%	0.00%

Table A.28: Export Shares by Sector - Scenario 5

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	21.70%	12.10%	12.80%	23.30%	26.90%
Mining	4.87%	5.43%	14.70%	15.40%	0.28%	0.32%
Food	34.90%	38.10%	20.50%	21.40%	41.30%	41.00%
Textiles	1.96%	2.04%	2.98%	2.90%	7.65%	7.99%
Wood	0.25%	0.24%	1.07%	1.06%	3.62%	4.21%
Paper	0.87%	0.75%	3.09%	3.11%	1.66%	1.76%
Petroleum	3.20%	3.48%	4.22%	4.42%	0.65%	0.73%
Chemicals	8.64%	8.31%	6.10%	5.90%	5.70%	5.38%
Plastics	0.91%	0.48%	1.70%	1.42%	6.56%	2.18%
Non-metallic	0.29%	0.25%	0.88%	0.88%	0.59%	0.57%
Metals	8.52%	8.17%	17.60%	17.10%	3.57%	3.65%
Transport	14.90%	10.90%	13.70%	12.20%	3.33%	3.08%
Manufacturing	0.09%	0.08%	0.62%	0.57%	1.76%	2.21%
Electricity	0.09%	0.10%	0.85%	0.89%	0.00%	0.00%

Table A.29: Bilateral Welfare Effects - Scenario 5

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	0.01%	0.04%	0%	0.06%
Brazil	0.00%	-0.01%	0%	0.00%
Uruguay	-0.05%	-0.12%	0%	0.02%

Table A.30: Change in Welfare under Scenario 5			
Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	0.11%	0.05%	0.06%
Australia	0.00%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	0.00%	0.00%	0.00%
Bulgaria	0.00%	0.00%	0.00%
Brazil	-0.01%	-0.01%	0.00%
Canada	0.00%	0.00%	0.00%
China	0.00%	0.00%	0.00%
Czech Republic	0.00%	0.00%	0.00%
Germany	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Estonia	0.00%	0.00%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%
Greece	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	0.00%
India	0.00%	0.00%	0.00%
Indonesia	0.00%	0.00%	0.00%
Ireland	0.00%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	0.00%	0.00%	0.00%
Lithuania	0.00%	0.00%	0.00%
Mexico	0.00%	0.00%	0.00%
Malta	0.00%	0.00%	0.00%
Netherlands	0.00%	0.00%	0.00%
Poland	0.00%	0.00%	0.00%
Portugal	0.00%	0.00%	0.00%
Romania	0.02%	0.02%	0.00%
Russia	0.00%	0.00%	0.00%
Slovakia	0.00%	0.00%	0.00%
Slovenia	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Turkey	0.00%	0.00%	0.00%
USA	0.00%	0.00%	0.00%
Row	0.00%	0.00%	0.00%
Uruguay	-0.15%	-0.17%	0.02%

Table A.31: Sectoral Contributions to Welfare Effects - Scenario 6

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	5.34%	-0.47%	12.30%	0.13%	34.50%	24.30%
Mining	7.73%	-0.09%	14.30%	-0.05%	-1.91%	1.52%
Food	13.20%	-1.25%	20.90%	13.80%	59.30%	129.00%
Textiles	3.54%	-0.09%	3.12%	1.56%	5.41%	-102.00%
Wood	1.91%	-1.48%	1.47%	-0.04%	5.31%	1.90%
Paper	2.50%	0.09%	3.21%	0.26%	1.88%	43.40%
Petroleum	3.42%	-0.65%	4.52%	-0.09%	-7.37%	5.48%
Chemicals	11.10%	-2.54%	6.97%	3.06%	3.31%	474.00%
Plastics	3.63%	9.57%	1.68%	15.40%	5.41%	114.00%
Non-metallic	1.10%	2.27%	0.89%	0.42%	0.63%	33.90%
Metals	19.20%	16.70%	19.20%	24.20%	-4.00%	-180.00%
Transport	24.50%	75.50%	9.85%	-2.44%	-3.98%	-765.00%
Manufacturing	0.73%	2.43%	0.77%	43.80%	1.99%	319.00%
Electricity	2.10%	0.00%	0.83%	0.00%	-0.40%	0.00%

Table A.32: Export Shares by Sector - Scenario 6

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	21.70%	12.10%	13.40%	23.30%	27.10%
Mining	4.87%	5.49%	14.70%	15.10%	0.28%	0.32%
Food	34.90%	38.30%	20.50%	20.30%	41.30%	41.00%
Textiles	1.96%	2.06%	2.98%	3.01%	7.65%	8.04%
Wood	0.25%	0.24%	1.07%	1.06%	3.62%	4.24%
Paper	0.87%	0.75%	3.09%	3.16%	1.66%	1.75%
Petroleum	3.20%	3.39%	4.22%	4.36%	0.65%	0.73%
Chemicals	8.64%	8.25%	6.10%	6.01%	5.70%	5.26%
Plastics	0.91%	0.49%	1.70%	1.74%	6.56%	2.09%
Non-metallic	0.29%	0.25%	0.88%	0.97%	0.59%	0.57%
Metals	8.52%	8.26%	17.60%	18.00%	3.57%	3.65%
Transport	14.90%	10.60%	13.70%	11.30%	3.33%	3.01%
Manufacturing	0.09%	0.08%	0.62%	0.72%	1.76%	2.28%
Electricity	0.09%	0.10%	0.85%	0.90%	0.00%	0.00%

Table A.33: Bilateral Welfare Effects - Scenario 6

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	0.08%	0.02%	0%	0.04%
Brazil	-0.02%	-0.18%	0%	0.31%
Uruguay	0.01%	-0.16%	0%	0.00%

Table A.34: Change in Welfare under Scenario 6			
Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	0.13%	0.10%	0.04%
Australia	0.00%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	0.00%	0.00%	0.00%
Bulgaria	0.00%	0.00%	0.00%
Brazil	0.12%	-0.19%	0.31%
Canada	0.00%	-0.01%	0.00%
China	0.00%	0.00%	0.00%
Czech Republic	0.00%	0.00%	0.00%
Germany	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Estonia	0.00%	0.00%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%
Greece	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	0.00%
India	0.00%	0.00%	0.00%
Indonesia	-0.01%	0.00%	0.00%
Ireland	-0.01%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	-0.02%	0.00%	-0.02%
Lithuania	0.01%	0.00%	0.00%
Mexico	-0.01%	0.00%	0.00%
Malta	0.00%	0.00%	0.00%
Netherlands	0.01%	0.00%	0.00%
Poland	0.00%	0.00%	0.00%
Portugal	0.00%	0.00%	0.00%
Romania	0.02%	0.02%	0.00%
Russia	0.00%	0.00%	0.00%
Slovakia	0.00%	0.00%	0.00%
Slovenia	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Turkey	0.00%	0.00%	0.00%
USA	0.03%	0.03%	0.00%
Row	0.00%	0.00%	0.00%
Uruguay	-0.15%	-0.15%	0.00%

Table A.35: Sectoral Contributions to Welfare Effects - Scenario 7

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	20.50%	21.40%	12.10%	12.90%	23.30%	24.50%
Mining	4.87%	4.98%	14.70%	14.60%	0.28%	0.29%
Food	34.90%	34.40%	20.50%	19.70%	41.30%	42.10%
Textiles	1.96%	2.03%	2.98%	3.09%	7.65%	7.93%
Wood	0.25%	0.24%	1.07%	1.08%	3.62%	3.66%
Paper	0.87%	0.87%	3.09%	3.15%	1.66%	1.55%
Petroleum	3.20%	3.20%	4.22%	4.19%	0.65%	0.64%
Chemicals	8.64%	8.53%	6.10%	6.12%	5.70%	5.61%
Plastics	0.91%	0.85%	1.70%	1.88%	6.56%	4.95%
Non-metallic	0.29%	0.35%	0.88%	0.97%	0.59%	0.60%
Metals	8.52%	9.03%	17.60%	18.30%	3.57%	3.51%
Transport	14.90%	14.00%	13.70%	12.50%	3.33%	3.10%
Manufacturing	0.09%	0.09%	0.62%	0.69%	1.76%	1.59%
Electricity	0.09%	0.09%	0.85%	0.83%	0.00%	0.00%

Table A.36: Export Shares by Sector - Scenario 7

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	21.40%	12.10%	12.90%	23.30%	24.50%
Mining	4.87%	4.98%	14.70%	14.60%	0.28%	0.29%
Food	34.90%	34.40%	20.50%	19.70%	41.30%	42.10%
Textiles	1.96%	2.03%	2.98%	3.09%	7.65%	7.93%
Wood	0.25%	0.24%	1.07%	1.08%	3.62%	3.66%
Paper	0.87%	0.87%	3.09%	3.15%	1.66%	1.55%
Petroleum	3.20%	3.20%	4.22%	4.19%	0.65%	0.64%
Chemicals	8.64%	8.53%	6.10%	6.12%	5.70%	5.61%
Plastics	0.91%	0.85%	1.70%	1.88%	6.56%	4.95%
Non-metallic	0.29%	0.35%	0.88%	0.97%	0.59%	0.60%
Metals	8.52%	9.03%	17.60%	18.30%	3.57%	3.51%
Transport	14.90%	14.00%	13.70%	12.50%	3.33%	3.10%
Manufacturing	0.09%	0.09%	0.62%	0.69%	1.76%	1.59%
Electricity	0.09%	0.09%	0.85%	0.83%	0.00%	0.00%

Table A.37: Bilateral Welfare Effects - Scenario 7

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	0.03%	-0.15%	0%	0.29%
Brazil	-0.01%	-0.17%	0%	0.31%
Uruguay	0.03%	-0.20%	0%	0.23%

Table A.38: Change in Welfare under Scenario 7			
Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	0.17%	-0.12%	0.29%
Australia	0.00%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	-0.01%	-0.01%	0.00%
Bulgaria	0.00%	0.00%	0.00%
Brazil	0.12%	-0.18%	0.31%
Canada	0.00%	-0.01%	0.00%
China	0.00%	0.00%	0.00%
Czech Republic	0.00%	0.00%	0.00%
Germany	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Estonia	0.00%	0.00%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%
Greece	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	0.00%
India	0.00%	0.00%	0.00%
Indonesia	-0.01%	0.00%	-0.01%
Ireland	-0.01%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	-0.03%	0.00%	-0.02%
Lithuania	0.01%	0.01%	0.00%
Mexico	-0.01%	-0.01%	0.00%
Malta	0.00%	0.00%	0.00%
Netherlands	0.01%	0.01%	0.00%
Poland	0.00%	0.00%	0.00%
Portugal	0.00%	0.00%	0.00%
Romania	0.02%	0.02%	0.00%
Russia	0.00%	0.00%	0.00%
Slovakia	0.00%	0.00%	0.00%
Slovenia	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Turkey	0.00%	0.00%	0.00%
USA	0.04%	0.03%	0.01%
Row	0.00%	0.00%	0.00%
Uruguay	0.06%	-0.17%	0.23%

Table A.39: Sectoral Contributions to Welfare Effects - Scenario 8

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	24.90%	-0.08%	8.52%	0.37%	47.50%	0.05%
Mining	7.31%	-0.02%	12.60%	-0.02%	19.20%	0.00%
Food	45.90%	-0.09%	16.10%	0.77%	65.90%	0.34%
Textiles	-0.24%	51.50%	9.02%	36.90%	-142.00%	49.20%
Wood	-0.11%	1.01%	1.13%	0.07%	9.95%	0.05%
Paper	0.35%	-0.20%	2.61%	-0.01%	5.29%	0.41%
Petroleum	3.74%	-0.11%	3.08%	-0.03%	24.70%	0.00%
Chemicals	8.06%	-1.27%	6.39%	-0.63%	34.80%	0.03%
Plastics	0.07%	11.10%	1.62%	15.90%	-12.00%	13.90%
Non-metallic	0.26%	1.27%	0.73%	1.88%	3.23%	2.36%
Metals	7.22%	10.60%	23.50%	23.50%	44.30%	11.90%
Transport	3.25%	2.78%	13.30%	6.66%	0.90%	6.56%
Manufacturing	-0.10%	23.40%	0.62%	14.70%	-6.72%	15.30%
Electricity	-0.69%	0.00%	0.73%	0.00%	5.09%	0.00%

Table A.40: Export Shares by Sector - Scenario 8

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	22.40%	12.10%	11.90%	23.30%	20.80%
Mining	4.87%	5.22%	14.70%	12.90%	0.28%	0.29%
Food	34.90%	34.40%	20.50%	26.80%	41.30%	34.90%
Textiles	1.96%	2.01%	2.98%	3.35%	7.65%	24.60%
Wood	0.25%	0.24%	1.07%	0.93%	3.62%	2.85%
Paper	0.87%	0.85%	3.09%	2.75%	1.66%	1.14%
Petroleum	3.20%	3.03%	4.22%	3.59%	0.65%	0.53%
Chemicals	8.64%	8.64%	6.10%	5.66%	5.70%	4.54%
Plastics	0.91%	0.83%	1.70%	1.73%	6.56%	3.27%
Non-metallic	0.29%	0.32%	0.88%	0.81%	0.59%	0.44%
Metals	8.52%	8.91%	17.60%	16.60%	3.57%	2.79%
Transport	14.90%	13.00%	13.70%	11.60%	3.33%	2.63%
Manufacturing	0.09%	0.10%	0.62%	0.68%	1.76%	1.24%
Electricity	0.09%	0.10%	0.85%	0.73%	0.00%	0.00%

Table A.41: Bilateral Welfare Effects - Scenario 8

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	0.02%	-0.17%	0%	0.71%
Brazil	0.00%	-0.13%	0%	0.60%
Uruguay	0.08%	-0.04%	0%	1.00%

Table A.42: Change in Welfare under Scenario 8			
Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	0.55%	-0.16%	0.71%
Australia	0.00%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	0.00%	0.00%	0.00%
Bulgaria	0.00%	0.00%	0.00%
Brazil	0.46%	-0.14%	0.60%
Canada	0.00%	0.00%	0.00%
China	0.23%	0.05%	0.18%
Czech Republic	-0.01%	-0.01%	0.00%
Germany	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Estonia	-0.01%	-0.01%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%
Greece	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	0.00%
India	0.00%	0.00%	0.00%
Indonesia	0.00%	0.00%	0.00%
Ireland	0.00%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	0.01%	0.01%	0.01%
Lithuania	0.00%	0.00%	0.00%
Mexico	-0.01%	-0.01%	0.00%
Malta	0.01%	0.01%	0.00%
Netherlands	0.00%	0.00%	0.00%
Poland	0.00%	0.00%	0.00%
Portugal	0.00%	0.00%	0.00%
Romania	0.02%	0.02%	0.00%
Russia	0.00%	0.00%	0.00%
Slovakia	-0.01%	-0.01%	0.00%
Slovenia	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Turkey	-0.01%	-0.01%	0.00%
USA	0.00%	0.00%	0.00%
Row	0.00%	0.00%	0.00%
Uruguay	1.06%	0.04%	1.02%

Table A.43: Sectoral Contributions to Welfare Effects - Scenario 9

Sectors	Argentina		Brazil		Uruguay	
	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade	Terms of Trade	Volume of Trade
Agriculture	47.00%	-0.03%	9.16%	0.41%	41.50%	0.57%
Mining	3.17%	-0.03%	12.50%	-0.01%	-6.52%	0.00%
Food	82.70%	1.72%	16.90%	6.48%	73.50%	9.05%
Textiles	-1.47%	8.88%	5.07%	21.60%	14.60%	13.30%
Wood	-1.43%	0.65%	1.15%	0.07%	5.52%	0.03%
Paper	-0.50%	3.02%	2.62%	1.26%	1.01%	1.91%
Petroleum	6.90%	-0.25%	3.38%	-0.03%	-13.40%	-0.06%
Chemicals	8.65%	4.72%	6.49%	3.62%	-1.47%	11.10%
Plastics	-2.97%	23.60%	1.64%	11.90%	14.40%	26.50%
Non-metallic	0.15%	1.40%	0.70%	1.61%	-0.35%	1.39%
Metals	-8.07%	4.87%	22.50%	27.80%	-21.70%	4.33%
Transport	-30.60%	27.00%	16.60%	10.30%	-8.11%	12.60%
Manufacturing	-0.90%	24.40%	0.59%	14.90%	3.12%	19.40%
Electricity	-2.59%	0.00%	0.76%	0.00%	-2.06%	0.00%

Table A.44: Export Shares by Sector - Scenario 9

Sector	Argentina		Brazil		Uruguay	
	Before	After	Before	After	Before	After
Agriculture	20.50%	21.50%	12.10%	11.90%	23.30%	24.60%
Mining	4.87%	5.10%	14.70%	12.30%	0.28%	0.28%
Food	34.90%	35.70%	20.50%	26.00%	41.30%	44.90%
Textiles	1.96%	2.04%	2.98%	3.59%	7.65%	8.15%
Wood	0.25%	0.24%	1.07%	0.93%	3.62%	3.62%
Paper	0.87%	0.86%	3.09%	2.69%	1.66%	1.40%
Petroleum	3.20%	3.11%	4.22%	3.43%	0.65%	0.62%
Chemicals	8.64%	8.45%	6.10%	5.78%	5.70%	5.33%
Plastics	0.91%	0.72%	1.70%	2.14%	6.56%	3.02%
Non-metallic	0.29%	0.34%	0.88%	0.84%	0.59%	0.55%
Metals	8.52%	8.76%	17.60%	18.10%	3.57%	3.18%
Transport	14.90%	13.00%	13.70%	10.80%	3.33%	2.54%
Manufacturing	0.09%	0.10%	0.62%	0.82%	1.76%	1.79%
Electricity	0.09%	0.09%	0.85%	0.71%	0.00%	0.00%

Table A.45: Bilateral Welfare Effects - Scenario 9

Country	Terms of Trade		Volume of Trade	
	MERCOSUR	RoW	MERCOSUR	RoW
Argentina	0.10%	-0.20%	0%	0.41%
Brazil	-0.02%	-0.31%	0%	1.10%
Uruguay	0.08%	-0.22%	0%	0.38%

Table A.46: Scenario 9

Country	Total Welfare	Terms of Trade	Volume of Trade
Argentina	0.31%	-0.10%	0.41%
Australia	-0.01%	-0.01%	0.00%
Austria	0.03%	0.03%	0.00%
Belgium	0.04%	0.03%	0.01%
Bulgaria	0.01%	0.00%	0.01%
Brazil	0.72%	-0.34%	1.05%
Canada	-0.01%	-0.01%	0.00%
China	0.18%	0.02%	0.16%
Czech Republic	0.03%	0.02%	0.01%
Germany	0.05%	0.04%	0.01%
Denmark	0.02%	0.02%	0.00%
Spain	0.04%	0.04%	0.01%
Estonia	0.02%	0.02%	0.00%
Finland	0.05%	0.04%	0.00%
France	0.02%	0.02%	0.00%
UK	0.02%	0.02%	0.00%
Greece	0.01%	0.00%	0.00%
Hungary	0.02%	0.01%	0.01%
India	-0.01%	0.00%	-0.01%
Indonesia	0.03%	0.03%	0.01%
Ireland	0.00%	-0.01%	0.00%
Italy	0.04%	0.04%	0.00%
Japan	0.00%	0.00%	0.00%
Korea	-0.02%	-0.01%	-0.02%
Lithuania	0.01%	0.00%	0.01%
Mexico	-0.02%	-0.01%	0.00%
Malta	0.05%	0.03%	0.01%
Netherlands	0.03%	0.01%	0.02%
Poland	0.02%	0.02%	0.00%
Portugal	0.04%	0.04%	0.01%
Romania	0.03%	0.02%	0.01%
Russia	0.00%	0.00%	0.00%
Slovakia	0.04%	0.03%	0.01%
Slovenia	0.10%	0.09%	0.01%
Sweden	0.03%	0.03%	0.00%
Turkey	0.01%	0.00%	0.01%
USA	0.02%	0.01%	0.00%
Row	-0.01%	0.00%	-0.01%
Uruguay	0.24%	-0.14%	0.38%