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Abstract

In this paper we analyze the EU-Mercosur agreement and predict its effects on trade and welfare using a general equilibrium structural gravity model. First, we exploit the detailed provision-level information available for the EU-Mercosur agreement to identify partial equilibrium trade effects of existing treaties with similar set of provisions. In a second step, the estimated increase in trade is mapped into reductions in bilateral trade costs and imputed to EU-Mercosur country pairs to compute the general equilibrium effects of the agreement in terms of trade creation, trade diversion, and welfare effects. Our results indicate that the positive effects on trade and welfare stemming from the EU-Mercosur agreement are likely to be economically important, especially for Mercosur countries, and substantially heterogeneous both between and within the two blocs.

Keywords: EU, Mercosur, trade agreement, structural gravity, general equilibrium.

JEL classification: F13, F14, F15, F17.

Resumen

En este estudio analizamos el acuerdo comercial entre la Unión Europea (UE) y el Mercado Común del Sur (Mercosur), y predecimos sus efectos sobre el comercio y el bienestar utilizando un modelo de gravedad estructural de equilibrio general. En primer lugar, aprovechamos la información detallada a nivel de disposición, disponible para el acuerdo UE-Mercosur, a fin de identificar los efectos comerciales de equilibrio parcial de los tratados existentes con un conjunto similar de disposiciones. En un segundo paso, el aumento estimado en el comercio se transforma en reducciones de los costes comerciales bilaterales y se imputa a las parejas de países pertenecientes a la UE y al Mercosur para calcular los efectos de equilibrio general del acuerdo en términos de creación y desviación de comercio, y de bienestar. Nuestros resultados indican que es probable que los efectos positivos sobre el comercio y el bienestar derivados del acuerdo UE-Mercosur sean económicamente importantes, —especialmente, para los países del Mercosur—, y sustancialmente heterogéneos, tanto entre los dos bloques como dentro de ellos.

Palabras clave: EU, Mercosur, acuerdo comercial, gravedad estructural, equilibrio general.

Códigos JEL: F13, F14, F15, F17.

1. Introduction

The European Union (EU) and the Southern Common Market (Mercosur) recently reached an agreement in principle on a bilateral trade treaty, with the aim of boosting economic integration between the two areas. The agreement, which will only enter into force after its ratification by all parties involved, is particularly ambitious, as it would imply the elimination of tariffs on a large share of trade in goods as well as a number of significant provisions on a variety of trade-related and non-trade related aspects, such as non-tariff barriers, public procurement, labor markets and environmental protection. In this sense, the treaty is expected to substantially reduce bilateral trade costs between two of the world's biggest regional blocs. However, there are still some questions pending: by how much will the EU-Mercosur agreement affect trade flows and welfare in member countries? Will its impact be heterogeneous across countries? Will the treaty generate substantial trade diversion?

We provide an answer to these questions by exploiting the latest advances in structural gravity models. These types of models allow to assess and quantify trade and welfare impacts of a certain agreement *ex-ante*, that is, before its entering into force, through the use of *ex-post* estimations. Namely, gravity estimations of the partial effects of similar, existing trade agreements on bilateral trade flows can be inserted in a theoretically-consistent general equilibrium model to ascertain the general equilibrium trade and welfare effects of the agreement.

One of the advantages of this approach is that gravity models allow to consider the heterogeneity of the impact of trade agreements on trade flows. Indeed, while the most recent wave of empirical studies (Baier et al., 2019b; El-Dahrawi Sánchez-Albornoz and Timini, 2021) leaves little doubt on their average positive effect on trade flows,[1] it also raises important questions on the dispersion of the size and sign of these effects across agreements. Recent studies associate this empirical fact to the diversity of their features and characteristics: trade agreements are increasingly "deep". In other words, they include policy provisions that go well beyond tariff reductions, such as clauses on investment, services provision, public procurement, labor market, environment, etc. (see, e.g. Kohl, 2014; Kohl et al., 2016; Brandi et al., 2020; Timini et al., 2020). This is of particular importance to this study, as these provisions are also an integral part of the EU-Mercosur treaty. Thanks to a detailed database, we are able to build a group of agreements similar, in terms of provisions included, to the "EU-Mercosur treaty" and estimate its average effects on trade. Another related advantage of structural gravity models is that we are able to incorporate the whole spectrum of trade policy-related reductions in bilateral trade costs (i.e., not only tariff reductions), without having to rely on extremely data-intensive procedures (e.g. see Kee et al., 2009). This is also key when assessing the implications of the EU-Mercosur agreement, since, as mentioned above, in modern

[1] This is in line with the increasing use of bilateral/regional trade agreements witnessed in recent years, as opposed to the diminishing importance of WTO-wide agreements.

trade agreements tariff reductions are only a part of the story, as non-tariff measures tend to be preponderant.

Motivated by these considerations, in this paper we analyze the EU-Mercosur agreement and predict its effects on trade and welfare using a general equilibrium structural gravity model. First, we exploit the detailed provision-level information available for the EU-Mercosur agreement to identify partial equilibrium trade effects of existing treaties with similar set of provisions. In a second step, the estimated increase in trade is mapped into reductions in bilateral trade costs and imputed to EU-Mercosur country pairs to compute the general equilibrium effects of the agreement in terms of trade creation, trade diversion, and welfare effects.

Our results show the potential trade and welfare enhancing effects of the EU-Mercosur agreement, and their heterogeneous distribution. Mercosur countries are expected to experience the largest gains from trade. In our main scenario (to be interpreted as an upper bound estimate within our analytical framework), exports increase by 15%, imports by 16%, and welfare by 0.4%, on average. The gains for EU countries are expected to be much smaller (+0.7% in exports and imports; <+0.1% in welfare). These substantial differences arise from the very different relevance of bilateral trade between Mercosur and the EU for the total trade of each one of the two blocs –quite pronounced in the case of Mercosur countries, much more limited for EU economies. Among those, countries that either had stronger previous trade linkages with Mercosur (like Spain and Portugal) or small open economies (like Belgium and the Netherlands) will experiment the highest benefits from the agreement. Indeed, the model shows larger trade-to-welfare transmissions for small (open) economies, since the relevance of the external demand is relatively higher that for those economies that rely on a larger internal market. These findings imply that the impact of the treaty will be strongly heterogeneous, both between and within blocs. Trade diversion effects (i.e., on third-countries trade) are practically inexistent. We test the robustness of our main scenario results by taking a conservative approach: in our battery of sensitivity tests, we mainly focus on challenging our main results by accounting for potential factors that may reduce the size of the "trade shock" induced by the EU-Mercosur agreement. Despite significant reduction in their size (in some cases, trade effects are roughly halved), our results indicate that the effects will still be economically important, particularly for Mercosur.

Our contribution to the literature is fourfold. First, to the best of our knowledge, no study estimated the potential trade and welfare benefits stemming from the EU-Mercosur trade agreement within a structural gravity general equilibrium framework. Second, we assess the effects of the EU-Mercosur treaty by applying the latest advances in gravity models. In particular, in line with what suggested in Yotov (2012), Yotov et al. (2016) and Borchert and Yotov (2017), we include in our estimation procedures international *and* intra-national trade (i.e., domestic) flows, to take into account the potential impact of the agreement on domestic trade. Third, acknowledging the heterogeneous trade effects of trade treaties (Baier et al., 2019b; El Dahrawi Sánchez-Albornoz and Timini, 2021)

—a fact that has been associated with the "depth" of a trade agreement, that is, the presence of different chapters, clauses and provisions (Mattoo et al., 2017)[2]— we explicitly take into account the features contained in the EU-Mercosur agreement in principle[3] to "tailor-made" a "EU-Mercosur like" partial effect. We do this by estimating the average effect among those treaties including provisions similar to those foreseen in the EU-Mercosur case. All other studies on this treaty instead, having been performed before an actual agreement was reached, could only simulate the effect of a "potential" agreement. Fourth, to the best of our knowledge, our paper is the first one that studies the impact of the EU-Mercosur agreement on individual EU economies, thus presenting evidence of its heterogeneous impact on EU members. As a minor point, but also differently from the rest of the literature, it should also be noted that we do not consider the United Kingdom as part of the EU-Mercosur agreement due to the consequences of Brexit on the geography of the EU "Common Commercial Policy".

The remainder of the paper is organized as follows: Section 2 describes the main features of the EU-Mercosur agreement and examines other studies on the issue; Section 3 focuses on the theory and methodology (partial and general equilibrium structural gravity models); Section 4 describes the data used; Section 5 discusses our main (partial and general equilibrium) results, and those of a battery of robustness tests/alternative scenarios; Section 6 concludes.

2. The EU-Mercosur agreement: features and previous studies

2.1. Main features of the EU-Mercosur agreement

It took almost twenty years of negotiations to reach the June 2019 "agreement in principle"[4] between the EU and Mercosur concerning a new trade treaty between the two areas.

The EU-Mercosur agreement contains a wide range of reductions in trade policy related costs, including both tariffs and non-tariff measures (NTMs). On one side, it prescribes the phasing out[5] of tariffs on almost all goods trade flows between the two areas. In particular, the EU will liberalize the imports of 95% of products from the Latin American bloc. Mercosur countries, in turn, will fully liberalize 91% of the goods imported from the EU.[6]

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[2] On investment, services provision, public procurement, labor market, environment, etc., see Kohl (2014), Kohl et al. (2016), and Timini et al. (2020).

[3] The agreement in principle contains information on the text of the agreement and the chapters/provisions included. The agreement in principle has been published by the European Commission (Directorate General for Trade) in its webpage: https://trade.ec.europa.eu/doclib/press/index.cfm?id=2048. As stated by the European Commission, "The texts will be final upon signature. The agreement will become binding on the Parties under international law only after completion by each Party of its internal legal procedures necessary for the entry into force of the Agreement (or its provisional application)". This is the last (and close-to-final) version agreed by the two negotiating parties.

[4] The "agreement in principle" contains information on the text of the agreement and the chapters/provisions it includes. Although it constitutes the close-to-final version of the treaty, it will become legally binding only after each Party will have completed the internal legal procedures necessary for its entry into force or its provisional application.

[5] Similar to what stipulated in other trade agreements (e.g. EEC, NAFTA), the phase out of tariffs (that is, the phase in of the trade agreement) corresponds to a 10-year period.

[6] For certain "sensitive" products (e.g. meat, rice, sugar), the EU will apply a partial liberalization through a system of tariff quotas (consisting in applying different tariffs depending on the amount of imports reached). To another small set of goods (mainly dairy products) a reciprocal system of tariff quotas will apply.

On the other side, the treaty contains a comprehensive set of clauses and provisions, reducing non-tariff measures (NTMs) and dealing with a variety of other (sometimes non-trade) issues[7]. Among other things, it simplifies customs processes, removes technical barriers to trade, and includes a commitment of the signatory parties to create the conditions for greater convergence in technical regulations in the future.

The agreement also includes clauses of non-discrimination of foreign suppliers, targeting in particular postal and courier services, telecommunications, financial services and maritime transport services. It also prescribes the liberalization of public procurement processes by both parties. This represents an unprecedented opening for Mercosur economies, which, not being part of the WTO plurilateral agreement on public procurement processes (WTO Government Procurement Agreement), had not allowed until now foreign companies to access this type of procedures.[8]

The treaty also includes labor and environment related provisions, binding the parties not to lower labor and environmental standards with the purpose of promoting trade or attracting investment.

For example, on the labor side, the agreement guarantees workers' freedom of association, the right to collective bargaining and non-discrimination at work. On the environment side, it foresees, among other things, the commitment to implement the Paris agreement against climate change.

The relevance of the agreement at the global level is significant, since the areas involved are jointly responsible for 25% of global GDP - a percentage similar to that covered by other treaties recently signed by the EU. On the other hand, the agreement with the European Union is the most significant signed to date by Mercosur, whose previous trade treaties jointly cover only 7.4% of world GDP. [9] From Mercosur's perspective, the agreement is also the first one that regulates trade in services, which, as shown by the literature, can also have positive feedback effects on goods trade.[10]

2.2. Previous studies on the EU-Mercosur agreement

Since the negotiations for a EU-Mercosur trade treaty started, various studies have analyzed the trade and welfare impact of a potential agreement. Table 1 shows a comparison of the different studies and of their results.

From a methodological point of view, one of the difficulties that arise when quantifying the effects of a trade treaty is how to model the new agreement within a general or partial equilibrium setup. In

[7] The agreement includes chapters on Trade in Goods, Rules of Origin, Customs and Trade Facilitation, Trade Remedies, Sanitary and Phytosanitary Measures (SPS), Dialogues, Technical Barriers to Trade (TBT), Services and Establishment, Public Procurement, Competition, Subsidies, State-owned Enterprises, Intellectual Property Rights, Trade and Sustainable Development (labor and environmental provisions), Transparency, Small and Medium-sized Enterprises, Dispute Settlement.
[8] Until now, European companies have been able to participate in public procurement processes in Mercosur countries only acting through their subsidiaries.
[9] Currently Mercosur only notified to the WTO the following agreements: Mercosur-Egypt (Free Trade Agreement), Mercosur-Israel (Free Trade Agreement), India (Partial Scope Agreement) and with the Southern African Customs Union (Botswana, Lesotho, Namibia, South Africa and Eswatini) (Partial Scope Agreement).
[10] See Blyde and Sinyavskaya (2007).

this respect, all previous studies on the EU-Mercosur treaty modelled the new agreement by directly including in a specific partial or general equilibrium model the changes in tariffs that would result from the agreement itself. One of the drawbacks of this method is that it seems better fit to simulate the effects of tariff changes rather than other measures of a non-tariff nature, such as those concerning service trade, technical barriers to trade, investment, public procurement, the labor market, and environmental protection. While these measures are included in most modern trade treaties, calculating their tariff equivalent is not obvious. Indeed, as emphasized by the literature, tariff-equivalent estimates of non-tariff barriers tend to be highly sensitive to small variations in the methodology.[11] This is of particular importance in the case of the EU-Mercosur treaty, since, as underlined above, non-tariff provisions are an integral part of the agreement.

Consequently, most studies of the EU-Mercosur treaty have focused on simulating the agreement as the full liberalization of goods trade (that is, the elimination of all tariff barriers), with results that vary widely depending on the model, and range from rather high welfare gains for both areas to even negative welfare effects for the EU. The highest welfare gains from the agreement, for both the EU and Mercosur countries, were estimated by Diao et al. (2003), who employed a Computable General Equilibrium (CGE) model that allows taking into account both the static gains from a potential treaty (stemming from a more efficient resource allocation, lower import prices and higher employment) and the dynamic ones (in the form of a higher TFP). The model employed, coupled with the bold liberalization scenario assumed, leads the study to estimate an increase in GDP of 0.3% for the EU and of 2-4.4% for Mercosur countries, associated with a rise of 0.5-0.6% in EU trade flows and of 3-8% in Latin American flows. At the other extreme of the spectrum of results is the study of Boyer and Schuschny (2010), based on a CGE that takes into account only static gains, which finds that a potential agreement with full liberalization in goods trade could even generate negative welfare gains for European economies due to adverse terms-of-trade movements, implying a decrease in EU GDP of 0.2%, while raising activity in the Mercosur bloc.

To the best of our knowledge, our paper is the first one to study the impact of the EU-Mercosur agreement by using an alternative, econometric-based method that avoids the direct inclusion of tariff changes (or the tariff-equivalent of non-tariff measures) into a CGE model. The method we employ consists in estimating, as a first step, the initial partial equilibrium impact of the EU-Mercosur agreement on bilateral trade flows through a gravity model, following Baier, Yotov and Zylkin (2019). Namely, we quantify the impact of the agreement on bilateral trade flows by estimating gravity equations that relate bilateral exports to their fundamental determinants –including the presence of a "EU-Mercosur like" trade treaty in force between a pair of countries. In a second step, the partial equilibrium estimated impact of the treaty on bilateral exports is included in a general equilibrium model as a reduction in bilateral trade costs, which in turn affect multilateral trade resistances, expenditure and output.[12] One advantage of this approach is that its first, gravity-based step allows

[11] See Fugazza and Maur (2008).
[12] The next section explains more in detail the gravity-based approach.

estimating the impact on trade of a set of treaties already in force whose provisions are similar to those included in the EU-Mercosur one –including measures regarding goods and service trade, but also technical barriers to trade, investment, public procurement, labor and environment. This implies that, contrary to previous studies, we are able to introduce in the general equilibrium model the partial equilibrium trade impact of all provisions included in the EU-Mercosur treaty.

The study that is perhaps closest to ours is Philippidis et al. (2014) who also make use of gravity estimations. Differently from us, however, the main impact of the EU-Mercosur trade treaty on trade flows is derived through a more traditional approach that consists in directly embedding tariff changes into the general equilibrium model. Gravity estimations, on the other hand, are only used to apply a correction to the CES Armington aggregator of the tariff-fed CGE setup. In particular, the aim of the paper is to reduce the "small share" bias in a CGE model, that is, the bias that arises from the linearity of the CES Armington aggregator embedded in the model, and that may result in underestimating increases in trade flows that were of a reduced magnitude before the treaty. To this purpose, sectoral predictions on import shares from a battery of sectoral gravity models with post-treaty tariffs equal to zero are used to shock technological preference shifters in the Armington import demands of the CGE model. Results show an increase in EU per capita income of 0.05-0.1%, depending on the gravity correction being applied or not –figures that ascend to 0.7-4.1% for Mercosur economies.

To the best of our knowledge, our paper is also the first one to assess the effects of the EU-Mercosur agreement by explicitly taking into account the "agreement in principle" reached by the two blocs. All other studies, having been performed before an actual agreement was reached, could only simulate the effect of a "potential" agreement. Some, as explained above, assumed the treaty would imply the complete elimination of all tariffs on goods trade (Diao et al., 2003; Boyer and Schuschny, 2010; Philippidis et al. 2014) and on service trade (Kirkpatrick and George, 2009). Others consider more complex scenarios than a full liberalization. Burrell et al. (2011) simulate two alternative setups corresponding, respectively, to the agreement proposal made in 2004 by the European Commission, which envisions the full liberalization of EU imports of non-sensitive agricultural products coupled with partial liberalization of Mercosur imports, and to the Mercosur offer of 2006, involving a greater degree of liberalization for both EU and Mercosur imports. The partial liberalization assumption leads the study to estimate low welfare gains from the agreement, with an increase in GDP of only 0.02% for the EU and of 0.12-0.16% for the Mercosur bloc, depending on the specific scenario. Similarly, the CGE analysis carried out by Estrades (2012) shows that excluding sensitive products from a potential agreement can result in a significantly lower boost to trade flows, especially for Mercosur countries. As an example, a setup with sensitive product exemption is found to reduce Brazil's export growth from 15% of the full liberalization scenario to 6%, driving to zero the welfare gains of the largest Latin American economies. At the sectoral level, the analysis of Weissleder et al. (2008), carried out through a partial equilibrium model

of the agricultural sector, unveils that a partial liberalization of agricultural products imports would imply an increase in Mercosur exports to the EU, which would result in a contraction in EU agricultural income of up to 7%.

It is also important to notice that all previous papers only present results on the impact of the EU-Mercosur treaty on the EU aggregate, rather than on individual European countries. Our paper is the first one that studies the effect of this agreement on individual EU economies, thus presenting evidence on the heterogeneity in the effect of a potential treaty at the EU country level. Finally, as a minor point but still different from the previous literature, our paper excludes the UK from the EU-Mercosur agreement, due to the consequences of Brexit on the EU "Common Commercial policy".

Table 1: Studies on the EU-Mercosur agreement

Paper	Year	Methodology	Liberalization assumptions	Type of gains	Impact on trade (a)	Impact on welfare
Diao, Díaz-Bonilla and Robinson (b)	2003	General equilibrium model (CGE)	Full trade liberalization (elimination of all tariff barriers)	Static (resource reallocation, employment) and dynamic (TFP)	EU15: X: +0.5%; M: +0.6% ARG: X: +8.1%; M: +7.8% BRA: X: +7.5%; M: +4.2% URU: X: +3.7%; M: +3.4%	EU15 GDP: +0.3% ARG: +4.4%; BRA: +2.9%; URU: +2%
Weissleder, Adenäuer and Heckelei	2008	Partial equilibrium sectorial model (CAPRI)	(1) Partial liberalization on some agricultural goods; (2) Full liberalization on all agricultural products	Static	Increase in Mercosur X of agri. goods to EU25. Detailed results on wheat, maize, rice, soybeans, beef, poultry and pork.	EU25 agri. income: -0.4% / -7%; ARG: +0.4% / +11% BRA: +0.3% / +9%
Kirkpatrick and George (c)	2009	General equilibrium model (CGE)	Full trade liberalization (elimination of all tariff and non-tariff barriers to goods and service trade)	Static (resource reallocation, import prices, wages)	EU25: X: +0.4%; M: +1.4% Mercosur: X: +26%; M: +34%	EU25 GDP: +0.1% ARG: +0.5%; BRA: +1.5%; PAR: +10%; URU: +2.1%
Boyer and Schuschny	2010	General equilibrium model (CGE)	(1) Full trade liberalization (elimination of all tariff barriers); (2) Exclusion of sensitive products	Static (resource reallocation, import prices, wages)	EU27: X: +0.06% / +0.5%; M: +0.05% / +0.4% Mercosur: X: +1.9% / +7,4%; M: +2.7% / +13,7%	EU27 GDP: -0,08% / -0,2%; Mercosur: +1,4% / +4,6%;
Burrell, Ferrari, González Mellado, Himics, Michalek, Shrestha and Van Doorslaer	2011	General eq. model (CGE) and partial eq. sectorial model (CAPRI)	(1) Full EU liberalization of non-sensitive goods, partial Mercosur lib.; (2) Higher EU lib. for agriculture, higher Mercosur lib. for manuf.	Static	EU27: X to Mercosur: +9-10%; M from Mercosur: +3-4%	EU15 GDP: +0.02%; Mercosur: +0.12% / +0.16%
Estrades	2012	General equilibrium model (CGE)	Full liberalization of goods trade and 3 alternative scenarios with exclusion of sensitive products	Static (resource reallocation, import prices, wages)	EU27: X and M: +0.4% / 0.7%; ARG: X: +2.4/3.8%; M: +5.6/3.6% BRA: X: +6.8/15%; M: +9.4/21% PAR: X: +8.9/14%; M: +11/17% URU: X: +2.4/13%; M: +2.5/11%	EU27 cons.: +0.1 / 0.2% ARG: +0 / 0.4% BRA: +0 / 1.1% PAR: +3.9 / 6.5% URU: +0.2 / 4.5%
Philippidis, Resano and Sanjuan (c)	2014	Hybrid (CGE corrected with gravity model estimations)	Full liberalization of goods trade (with and without correction from gravity model)	Static (resource reallocation, import prices, wages)	Detailed results on agro-food, textiles, light and heavy manufacturing, meat, dairy, rice and sugar.	EU27 pc.inc: +0.05/0.1% ARG: +0.7 / 1.2% BRA: +0.8 / 2.9% PAR: +2.9 / 4.1% URU: +1.6 / 3.1%

(a) X: exports; M: imports. (b) Mercosur is assumed to include also Chile and Bolivia; the EU is composed of 15 countries. (c) Mercosur also includes Venezuela.

3. Structural gravity model: theory and empirical strategy

3.1. Theory

The literature on general equilibrium trade policy analysis has been expanding rapidly during the past few years. Most of these contributions share structural gravity as their foundations, and allow to calculate the impact of trade policy on trade *and* welfare.

Our theoretical framework lies on the well-known "structural gravity" system of equations, as delineated by Anderson and van Wincoop (2003), Head and Mayer (2014) or Yotov et al. (2016):

$$X_{ijt} = \frac{Y_{it}E_{jt}}{Y_t}\left(\frac{\tau_{ijt}}{\mathrm{P}_{it}\Omega_{jt}}\right)^{1-\sigma} \qquad (1)$$

$$\mathrm{P}_{it}^{1-\sigma} = \sum_j \left(\frac{\tau_{ijt}}{\Omega_{jt}}\right)^{1-\sigma}\frac{E_{jt}}{Y_t} \qquad (2)$$

$$\Omega_{jt}^{1-\sigma} = \sum_i \left(\frac{\tau_{ijt}}{\mathrm{P}_{jt}}\right)^{1-\sigma}\frac{Y_{it}}{Y_t} \qquad (3)$$

where X_{ijt} corresponds to bilateral trade flows between the exporter *i* and the importer *j* at time t, including domestic trade flows (*i=j*), a theory-consistent feature improving model estimates, and particularly of trade policy variables (Dai et al., 2014; Heid et al., 2021). Then, as suggested by Yotov et al (2016), equation (1) associates bilateral trade flows (X_{ijt}) to exporter's and importer's (relative) economic mass $\left(\frac{Y_{it}E_{jt}}{Y_t}\right)$and trade costs $\left(\frac{\tau_{ijt}}{\mathrm{P}_{it}\Omega_{jt}}\right)^{1-\sigma}$. The latter term is in turn composed by bilateral trade costs (τ_{ijt}), and the so-called "multilateral trade resistances" (MTRs: P_{it}, Ω_{jt}, as per equation (2) and (3)), capturing exporter's international market access and importer's domestic competition (Fally, 2015).

This set of equations corresponds to a partial equilibrium structural gravity model, and allows to estimate partial equilibrium effects of trade policy changes, e.g. the effect of the entry into force of a bilateral trade agreement.

The system of equations (1)-(3) can be complemented to allow general equilibrium responses to a change in bilateral trade frictions to take place. From a policy-maker perspective, this is important given the differences between partial and general equilibrium estimates. First, general equilibrium forces may lead to significant changes in the estimated impact of a certain trade agreement on trade between its members.[13] Second, general equilibrium analysis allows to estimate the impact of a trade agreement on non-members, therefore exploring the potential trade diversion effects (a consideration of particular importance for neighboring countries not involved in the agreement). Third, general equilibrium provides the possibility of assessing the impact of a certain trade policy decision on welfare. Yotov et al. (2016), Head and Mayer (2014) and Costinot and Rodriguez-Clare (2014) offer state-of-the-art reviews of the last developments and modelling choices.

Given that Arkolakis et al. (2012) showed that the exact features of the model are not relevant for its final outcomes, here below we focus on describing the most relevant features of the model and refer to Head and Mayer (2014) (equations (32) to (36)), Yotov et al. (2016) (chapter 2), and Campos and Timini (2021) (Appendix), for those interested in further details.

In this paper, we implement a one sector constant elasticity of substitution (CES) version of general equilibrium structural gravity model, and assume labor as the only factor of production, as proposed by Baier et al. (2019). This is a standard approach in the literature and, despite not accounting for

[13] Yotov et al. (2016) show that, in the case of NAFTA, general equilibrium forces can reduce the trade agreement effects on bilateral trade of its members by more than 30%.

a series of important factors (e.g. input-output linkages, asset accumulation, etc.), it is generally regarded as a model providing "benchmark trade and welfare estimates" of trade policy changes (Yotov et al., 2016; Baier et al., 2019; Felbermayr et al., 2020).[14] In this context, by imposing a market clearing condition, it is possible to formulate the change in welfare derived from trade as follows:

$$\widehat{W} = \hat{\lambda}_{ii}^{1/(1-\sigma)} \qquad (4)$$

Equation (4) corresponds to the Arkolakis et al. (2012) formula, and indicates that we only need two "sufficient statistics" to calculate welfare gains from trade: $\hat{\lambda}_{ii}$, the change in the share of exporter's *i* domestic trade (relative to total trade) stemming from the "trade shock" inserted in the model (estimated in the partial equilibrium), and a trade elasticity measure (σ).

Therefore, given the trade structure present in the data, the final general equilibrium results are driven by two key parameters: first, the magnitude of the "trade shock", i.e., the change in bilateral trade frictions deriving from the trade policy change (in our case, the entry into force of a bilateral trade agreement); second, the trade elasticity. In the robustness section, we are then going to devote particular attention to these two issues, both in describing and explaining the details of our methodological choices, and in testing the robustness of our results to reasonable alternatives.

Similar approaches have been recently used to estimate or simulate the effect of other trade integration and disintegration episodes. For example, Baier et al. (2019b) simulated the implementation of the Transatlantic Trade and Investment Partnership (TTIP), an agreement negotiated (but not approved) between the US and the EU. El-Dahrawi Sánchez-Albornoz and Timini (2021) studied the potential trade and welfare effects of deeper trade integration and of episodes of trade disintegration in Latin America. Campos and Timini (2019) evaluated the effects of Brexit (that is, the UK exit from the European Union). Mayer et al. (2019) translated into gravity language the "Cecchini report" (Cecchini et al., 1988), and assessed the benefits deriving from the EU Single Market. Baier et al. (2019a) simulated the disintegration of the North American Free Trade Agreement (NAFTA), while Campos and Timini (2021) provided an in-depth study of Mercosur.

3.2. Empirical strategy

Partial equilibrium

Our approach relies on using *ex-post* estimations of trade agreements (that is, the impact of *existing* agreement) to infer the trade impacts of the EU-Mercosur agreement *ex-ante*. The main objective of partial equilibrium estimates is to identify a reduction in bilateral trade costs similar to the one that will be generated by the EU-Mercosur agreement. To this purpose, we consider two recent results in the literature. First, trade agreements have heterogeneous effects on bilateral trade flows (Baier

[14] On a related note, as brilliantly summarized by Baier et al. (2019b), this approach allows to consider all kinds of trade policy related reductions in bilateral trade costs without having to rely on extremely data-intensive procedures (see Kee et al., 2009; Niu et al., 2018) to calculate the *ad-valorem* equivalent of non-tariff measures, i.e., the correspondent tariff level that would have the same impact on trade.

et al., 2019a; Baier et al., 2019b). This empirical fact has been confirmed also for those agreements that involve Latin American countries (El Dahrawi Sánchez-Albornoz and Timini, 2021). Second, this heterogeneity in trade effects has been associated with the "depth" of the trade agreement, i.e., with the variety of provisions included in the agreement (Mattoo et al., 2017; Kohl, 2014; Kohl et al., 2016; El Dahrawi Sánchez-Albornoz and Timini, 2021), and with the direction of trade between advanced and emerging/developing countries (Melitz, 2003; World Bank, 2019; Timini et al, 2020).[15] We exploit these findings to create a group of agreements "similar" to the agreement between the EU and the Mercosur. The "similarity" is assessed based on the chapters/provisions contained in the treaties in our sample and those contained in the EU-Mercosur agreement, and on the direction of trade. By doing so we can go beyond the "average trade agreement effect" (that is, the average effect of all trade agreements in our sample).

Therefore, to estimate the partial equilibrium effects of an average "EU-Mercosur like" trade treaty, we follow Anderson and van Wincoop (2003), Baier and Bergstrand (2007), Head and Mayer (2014), and Yotov et al. (2016) in implementing a structural gravity model, which explains bilateral trade flows by transaction costs and economic size, and controls for multilateral trade resistances (MTRs) and endogeneity issues. To properly address the "zeros of trade" and heteroscedasticity, two distinctive features of trade data, we use the methodology proposed by Santos Silva and Tenreyro (2006), i.e., a Poisson pseudo-maximum likelihood (PPML) estimating procedure. In line with what argued above, we allow for the existence of some heterogeneity (type of agreements and direction of trade), while keeping the number of dummies to a minimum in order to minimize the confidence intervals surrounding the estimates. The main specification can be written as follows:

$$X_{ijt} = \exp\left(\beta_0 + \beta_1 TA_{ijt}^{X\_NS} + \beta_2 TA_{ijt}^{X\_SN} + \beta_3 TA_{ijt}^{X\_rest} + \beta_4 TA_{ijt}^{ALL-X} + \delta_{it} + \gamma_{jt} + \omega_{ij}\right) + \varepsilon_{ijt} \qquad (5)$$

where X_{ijt} represents exports from the country of origin *i* to the country of destination *j* at time t. In line with Yotov (2012), Dai et al. (2014), Yotov et al. (2016) and Larch et al. (2018), and consistently with gravity theory, the left hand side variable (X_{ijt}) not only includes international trade flows, but also intra-national trade flows (X_{ijt}, $\forall$ *i=j*). In this way, we aim to capture trade effects deriving from the producers' choice (in country of origin) of selling internationally (to destination *j*) rather than domestically (a sort of "trade diversion" effect from intra-national to international trade). This is an important step, as trade agreements do not only change the relative trade costs between choosing destination markets that are part of the agreement or those that are not, but also the relative costs of exporting a product to a member of a trade agreement rather than selling it in the domestic market.

$TA_{ijt}^{X\_NS}$ is a dummy equal to 1 if country *i* and *j* have a trade agreement at time t, if this trade agreement includes all the main provisions included in the EU-Mercosur agreement (see Table A.1

[15] In line with the literature (Melitz, 2003; Aleksynska and Havrylchyk, 2013; Disdier et al., 2015), we will use interchangeably the terms "emerging and developing economies" and "the South", as well as "advanced economies" and "the North". Again in line with the literature, we include in the "North" those economies that are classified as high-income OECD countries, while we classify in the "South" category all other countries.

in the Appendix for more details), and if the trade flow identified is North-to-South, that is, exports from advanced to emerging/developing economies. The dummy is zero otherwise. $TA_{ijt}^{X\_SN}$ is a dummy equal to 1 if country *i* and *j* have a trade agreement at time *t*, if this trade agreement includes the same conditions listed above, and if the trade flow identified is South-to-North, i.e. exports from emerging/developing to advanced economies. The dummy is zero otherwise. $TA_{ijt}^{X\_rest}$ is equal to 1 if country *i* and *j* have a trade agreement at time *t*, if this trade agreement includes the same conditions listed above, and if the trade flow has not been identified in the previous two categories, i.e. the trade flow should be North-to-North or South-to-South. The sum of these three dummies identify all trade agreements including the main provisions foreseen in the EU-Mercosur agreement.

In the spirit of Dhingra et al. (2018), but further exploiting the detailed information available on the specific provisions included in the agreement,[16] we focus on those measures that are included in the agreement and, following the recent literature, are more likely to have an effect on bilateral trade flows. These are summarized in Mattoo et al. (2020,)[17] and include: tariffs and non-tariff measures (Fontagné et al., 2015; Murina and Nicita, 2017; Timini and Conesa, 2019), trade in services (Blyde and Sinyavskaya, 2007); state-owned enterprises (Kowalski et al., 2013); public procurement (Kim, 2010); intellectual property rights (Maskus and Ridley, 2016); competition policy (Motta and Onida, 1997; Liu and Ye, 2019); investment, including movement of capital (Busse, 2010); environment (Brandi et al., 2020); and labour markets (Timini et al., 2020). Table A.1 in the Appendix reports the complete list of provisions on which we impose a restriction, and those where we remain agnostic.[18] In this group are included a number of previous EU treaties with other Latin American countries (Colombia, Peru; El Salvador, Guatemala, Honduras, Nicaragua, and Panama).[19]

Furthermore, TA_{ijt}^{ALL-X} is also a dummy and identifies all other trade agreements in the sample. Additionally, δ_{it} and γ_{jt} are exporter-time and importer-time fixed effects. They are the theory-consistent way to account for the so-called multilateral trade resistances (MTRs). The MTRs reflect the fact that trade between two countries (*i* and *j*) does not depend only on their bilateral trade costs, but also on the trade costs these countries face with the rest of the world.[20] ω_{ij} are directional pair fixed effects which, following Baier and Bergstrand (2007), represent the standard way of dealing with endogeneity.[21] The use of directional (rather than symmetrical) pair fixed effects, i.e., of allowing $\omega_{ij} \neq \omega_{ji}$ (rather than $\omega_{ij}=\omega_{ji}$), lets us capture time-invariant asymmetric trade costs

[16] Differently from us, Dinghra et al. (2018) group the provisions in four big groups. "services&investment&competition", "public procurement", "intellectual property protection" and "standards" and do not consider the rest. Here we adopt a much more disaggregated approach, to precisely identify the "EU-Mercosur like" provisions.

[17] For more details, see Figure O.12 in Mattoo et al. (2020).

[18] Most provisions on which we remain agnostic are "soft" provisions concerning exchange of information, collaboration, or promotion of joint projects.

[19] See Table A.2 in the Appendix for a complete list of the agreements included.

[20] For more details on the MTRs and their role in obtaining an unbiased estimation, see Anderson and van Wincoop (2003).

[21] Endogeneity concerns derive from the fact that countries may be more likely to sign a trade treaty with their main trading partners.

(Waugh, 2010). This is particularly important as $TA_{ijt}^{X\_NS}$ and $TA_{ijt}^{X\_SN}$ (our two variables of interest) are directional. These effects (δ_{it}, γ_{jt} , and ω_{ij}) also absorb all the variables that have exporter-time, importer-time or (directional) pair variation, and that, traditionally, have been used as proxy for the "economic mass" (GDP, population, etc.) and bilateral trade costs (e.g. distance, contiguity, common language, colonial relationship, etc.) in standard gravity models. Following Egger and Tarlea (2015) advice, we use three-way clustering techniques.

General equilibrium

Using the structural gravity general equilibrium model specified in Section 3.1, it is possible to obtain general equilibrium effects for a certain variable of interest (e.g., exports, imports, welfare), by calculating the difference between its value in a "baseline" scenario and its value in a "counterfactual" scenario.

In our specification, the baseline scenario corresponds to the state of trade costs in 2015, the last year in our database. The counterfactual scenario includes changes in the bilateral trade costs for the EU-Mercosur country pairs, inserted as a "shock" to these bilateral trade relations. The size of the shock, i.e., the reduction in bilateral trade costs of the "EU-Mercosur like" agreements, is dictated by the estimates of the coefficients β_1 and β_2 in Equation 5. We set the trade elasticity to 4, in line with Simonovska and Waugh (2014) estimations, and close to the median value identified in a recent meta-analysis (Bajzik et al., 2020).

In the model, the consequence of the imputed reduction in bilateral trade costs is an increase in bilateral trade. This, in turn, has direct effects on total trade and welfare. It also has indirect effects: the increase in bilateral trade affects the MTRs, the value of domestic production and expenditure, whose changes will feed again in the model, generating additional changes in trade and welfare. In Head and Mayer (2014) language, this model is therefore a general equilibrium model. Due to the structure of the model, and the properties of the MTRs, we can calculate general equilibrium effects on exports, imports, and welfare. In this case, welfare is interpretable as real wages (or as shown in Campos and Timini, 2021, the consumption of a representative agent). Therefore, the overall results of the model should be interpreted as differences with respect to the scenario with no trade agreement.

4. Data

Export data are from the World Trade Flows (WTF) database (Feenstra and Romalis, 2014).[22] The WTF database includes information on total bilateral trade (exports) between dyads (country-pairs). Total trade comprises trade in goods for agriculture, mining and manufacturing. This feature is

[22] Feenstra and Romalis (2014) constructed the WTF database using UN COMTRADE data. By employing mirroring techniques (i.e., comparing statistics of import of country *i* from country *j* and export of country *j* to country *i*), they excluded those observations where importer and exporter declarations where outside the thresholds of "plausibility" (i.e. the ratio between the two either <0.1 or >10).

especially important for Latin American countries, as a non-negligible share of their exports (in certain cases as large as 70%) is composed by the two former categories. There is no information on intra-national trade flows directly available. As in Yotov (2012), we calculate intra-national trade flows as the difference between GDP (available from the World Bank World Development Indicators database) and total national exports (from IMF DOTS). While Head and Mayer (2014) thoroughly describe the theoretical reasons why it would be preferable to use gross production rather than GDP data, Campos et al. (2021) show that empirical estimations of trade policy effects on trade and welfare are very robust to how domestic trade is calculated. Our choice of using GDP-based estimates of domestic trade allows us to maximize the number of Latin American countries in the sample and to expand the sample until very recent years. In this way we are able to include a variety of "deep" agreements between advanced and emerging/developing economies (therefore increasing the number of "EU-Mercosur like" type of agreements). Data on trade agreements and their characteristics are from the World Bank Horizontal Depth Database (Hofmann et al., 2017; Hofmann et al., 2019), which contains detailed information on the trade agreements in force. For our robustness checks, we use bilateral distance and WTO membership information from CEPII, and tariff data from the World Bank World Development Indicators database. Our sample includes 53 countries, corresponding to almost 90% of global GDP (see Table A.3 in the Appendix for a complete list of the countries included). The period covered by the sample is 1984-2015.

5. Results

In this section we present the general equilibrium structural gravity model results for the EU-Mercosur impact on exports, imports and welfare for all the 54 countries that are included in our sample. Additionally, we also discuss the sensitivity of our main results to changes in the key parameters of the model. As thoroughly described in Section 3, these correspond to the size of the trade shock[23] inserted in the model, that is, the reduction in bilateral trade costs dictated by the "EU-Mercosur" agreement, and the trade elasticity parameter.

5.1. Main results

Table 2 summarizes the results of the main scenario, in terms of changes in total exports, imports, and welfare. Results are displayed at the country-level, but we also report aggregate results for the EU and the Mercosur.[24] For practical purposes, we listed the countries in the following order:

[23] To ensure that the effect is truly exogenous, in our main regression we follow the Baier and Bergstrand (2007) approach to control for endogeneity (pair fixed effects). Additionally, we also implement a "strict exogeneity test" (as in, e.g., Baier and Bergstrand, 2007; Kohl, 2014; and Yotov et al., 2016) by including the lead of the dummies indicating the presence of a (certain type of) trade agreement. In the absence of reverse causality, the lead should not be statistically different from zero. As in Yotov et al. (2016), we use four-year intervals to avoid capturing anticipation effects. The coefficients of the leads of our variable of interests (TA^{X_NS} and TA^{X_SN}) pass the strict exogeneity test. Additionally, we also perform the same exogeneity test using two-year and one-year intervals. Most results hold. The coefficients however are slightly larger in size and for the TA^{X_SN} lead marginally significant when using two-year intervals. These results may be driven by anticipation effects (trade increases before the agreement becomes active as exporters and importers are internalizing its future effects). Results are not reported for space-saving purposes and are available upon request.

[24] Aggregate results are GDP-weighted averages. We use PPP GDP data for the year 2015 as weights.

Mercosur members, EU members, Rest of Latin America, EU Neighbours, and Rest of the World, to help visualizing the trade effects on the members of the two blocs', and whether their closest neighbours suffer from any sizeable trade diversion effect.

We recall that in our main specification, the bilateral "trade shock" imputed in the model is dictated by the estimates of the coefficients β_1 and β_2 in Equation 5, that is, those of the dummy variables $TA_{ijt}^{X\_NS}$ and $TA_{ijt}^{X\_SN}$ (reported in Column 1, Table A.4, in the Appendix).[25] In this case, "EU-Mercosur like" agreements lead to approximately a 60% (i.e. 100*[$e^{\beta^{TA^{X\_NS}}} - 1$]) increase in North-to-South exports, and to approximately a 90% (i.e. 100*[$e^{\beta^{TA^{X\_SN}}} - 1$]) increase in South-to-North exports. Again, these correspond to the increase in bilateral trade (i.e., the reduction in bilateral costs) we will impute to EU exports to Mercosur and to Mercosur exports to the EU, respectively. These results are well within the range of estimations offered in the literature (e.g. Baier et al., 2019b; El-Dahrawi Sánchez-Albornoz and Timini, 2021). The above-average point estimates[26] are also in line with previous findings that positively associate the "depth" (the number of chapters/clauses/provisions included) of a trade agreement with the magnitude of its trade impact (see, e.g. Kohl et al., 2016; Baier et al., 2019a).

There are several features of the general equilibrium results that we would like to emphasize. First, both Mercosur and EU countries show increases in both total exports and imports. Nevertheless, they differ substantially in size. As these are *total* trade flows, the difference is likely due to the relevance of bilateral trade between Mercosur and the EU on total trade of the two blocs. In 2015, our baseline year, the EU accounted for more than one-sixth of Mercosur's total trade in goods. Oppositely, the Mercosur accounted for approximately 1% of EU's total trade in goods. For Mercosur, we estimate an increase in exports that ranges between 11 and 15% (depending on the country). The range corresponds to 8 and 18% for imports. For the EU, as noted above, these effects are much smaller: between 0 and 1.3%. Second, welfare effects are particularly large for Mercosur countries (in line with the larger effect on trade), ranging between 0.3 and 0.7%. These numbers are significant in economic terms. For the EU the effects are relatively modest, albeit with significant heterogeneity across member states. They range between practically 0 and 0.2% highlighting that for some EU countries the agreement is indeed likely to have economically significant effects. In particular, those EU countries that will experiment the highest benefits from the agreement are those that either had stronger previous trade linkages with Mercosur (like Spain and Portugal, whose trade in goods with the Latin American bloc in 2015 accounted for about 1.7% of total goods trade) or small open economies for which the trade increase translates into a higher welfare effect (like Belgium and the Netherlands). Indeed, the model shows larger trade-to-welfare

[25] We estimate the partial effects on bilateral trade of "EU-Mercosur like" agreements that involve advanced ("North") and emerging/developing ("South") economies. Therefore, β_1 portrays the partial equilibrium effect of the average "EU-Mercosur like" trade agreement on "North" exports to the "South", whereas β_2 indicates the partial equilibrium effect of the average "EU-Mercosur like" trade agreement on "South" exports to the "North".

[26] In our sample, using a specification similar to Equation 5, a trade agreement increases trade by 50% on average (results of the regression are not reported for space-saving purpose, but are available upon request).

Table 2: Effects of the EU-Mercosur agreement, main results (general equilibrium).

		Δ%exports	Δ%imports	Δ%welfare
MERCOSUR	ARG	13.70	11.85	0.30
	BRA	15.02	17.60	0.40
	PRY	11.17	7.90	0.66
	URY	14.11	10.86	0.72
	MERCOSUR (avg.)	*14.61*	*15.91*	*0.38*
EU	AUT	0.26	0.23	0.04
	BEL	0.26	0.26	0.19
	CZE	0.01	0.01	0.04
	DEU	0.58	0.69	0.08
	DNK	0.62	0.62	0.06
	ESP	1.32	1.18	0.09
	FIN	0.65	0.63	0.06
	FRA	0.67	0.54	0.04
	GRC	0.46	0.20	0.02
	HUN	0.08	0.08	0.07
	IRL	0.24	0.45	0.05
	ITA	0.91	1.01	0.06
	NLD	0.89	0.87	0.16
	POL	0.25	0.21	0.06
	PRT	1.18	0.96	0.12
	SVK	-0.05	-0.05	0.02
	SWE	0.41	0.41	0.04
	EU (avg.)	*0.67*	*0.66*	*0.07*
REST OF LATIN AMERICA	BOL	0.15	0.14	0.00
	CHL	-0.10	-0.11	-0.01
	COL	-0.10	-0.08	0.00
	CRI	-0.12	-0.11	-0.01
	DOM	-0.12	-0.07	0.00
	ECU	-0.11	-0.10	-0.01
	GTM	-0.08	-0.05	0.00
	GUY	-0.08	-0.06	-0.01
	HND	-0.06	-0.05	-0.01
	HTI	-0.05	-0.02	0.00
	JAM	-0.22	-0.06	-0.01
	MEX	-0.02	-0.02	0.00
	NIC	-0.05	-0.04	-0.01
	PAN	0.02	0.01	0.00
	PER	-0.11	-0.11	-0.01
	SLV	-0.05	-0.03	0.00
	VEN	-0.18	-0.23	0.00
EU NEIGHBOURS	CHE	-0.08	-0.09	-0.01
	GBR	-0.15	-0.10	0.00
	ISL	-0.33	-0.31	-0.03
	NOR	-0.17	-0.23	-0.01
	RUS	-0.18	-0.31	-0.01
	TUR	-0.19	-0.11	0.00
REST OF THE WORLD	AUS	-0.02	-0.02	0.00
	CAN	-0.03	-0.03	0.00
	IND	-0.09	-0.06	0.00
	CHN	-0.09	-0.14	0.00
	JPN	-0.06	-0.07	0.00
	KOR	-0.03	-0.04	0.00
	NZL	-0.05	-0.05	0.00
	USA	-0.05	-0.04	0.00
	ZAF	-0.08	-0.10	0.00

Note: Δ%exports, Δ%imports, Δ%welfare refer to percentage change with respect to the baseline (for baseline definition see text). "avg." means average, and is calculated as a GDP PPP weighted average of country-level results.

transmissions for small (open) economies, since the relevance of the external demand is relatively higher that for those economies that rely on a larger internal market.

Fourth, trade diversion effects are practically inexistent. Indeed, for most countries, even the closest Mercosur and EU neighbours, trade effects are close to zero, and welfare effects are null. In the case of Bolivia, we see a small positive effect on trade. This is due to the first and second round feedback effects from changes in MTRs and changes in GDP, particularly for Mercosur countries. In other words, the positive effects on the GDP of Mercosur countries translate in a larger market for Bolivian exports, counteracting the negative effects deriving from more competition from Europe Additionally, those European neighbours that form part of the EFTA (European Free Trade Area) – Iceland, Liechtenstein, Switzerland and Norway – are also expected to implement a free trade agreement with Mercosur. The effects of that agreement, whose preliminary negotiations reached a "conclusion in substance" in August 2019, are very likely to substantially overweight the small negative trade diversion effects reported in Table 2.[27]

5.2. Robustness tests

Interpreting the trade structure present in the data as given, our main general equilibrium results are driven by two main parameters: first, the magnitude of the "trade shock" inserted in the model, which is a result of our partial equilibrium regressions; second, the trade elasticity parameter. In this section, we then concentrate on these two issues and provide alternative specifications to estimate the "trade shock", and a discussion of the implications of changing the trade elasticity parameter, to test the robustness of our results.

Given the structure of our main specification, that does not include controls for globalization trends, we consider our main results as a sort of "upper bound estimates" within our methodological framework. Therefore, we take a conservative approach, and in our battery of sensitivity tests we mainly focus on challenging our main results by accounting for potential factors that may reduce the size of the "trade shock" induced by the EU-Mercosur agreement.

In our first robustness test, we adopt a more conservative approach for estimating the "trade agreement effect" on trade. We follow Bergstrand et al. (2015) and disentangle broader economic integration effects by including two interaction terms: first, an interaction between an international border dummy (a dummy equal to 1 if country *i* ≠ country *j*, i.e. if the flow is international trade, and zero if the flow represents intra-national trade) and a time dummy; second, an interaction between the logarithm of distance and a time dummy. In this way, by allowing the coefficient of the international border and distance to vary over time, we can capture a "globalization effect". Indeed, in this specification, agreements similar to the "EU-Mercosur" are estimated to have increased North-to-South exports by approximately 30% (i.e. $100^{*}[e^{\beta^{TA^{X\_NS}}} - 1]$), and South-to-North exports by approximately 50% (i.e. $100^{*}[e^{\beta^{TA^{X\_SN}}} - 1]$) (see Column 2, Table A.4, in the Appendix). Given the reduced size of the trade shock imputed in the model, general equilibrium results are also

[27] The "conclusion in substance" summarizes the main characteristics of the future agreement and is available at https://www.efta.int/sites/default/files/documents/legal-texts/free-trade-relations/mercosur/2019-08-24-EFTA-Mercosur-Chapter-Description-of-FTA.pdf

substantially smaller than in our main specification (see Table 3, point "a", for a bloc-level summary, and Table A.5 in the Appendix for country-level results). Despite the general equilibrium effect is roughly halved, the effect is still large for Mercosur, and small but positive for the EU.

In our second and third robustness tests, we include additional time-varying bilateral controls. In the former, we include a dummy that captures countries' WTO membership. The dummy is equal to 1 if both the exporter and the importer are WTO members. However, due to the characteristics of our database, most of the variation is provided by the accession of China (2001) and Russia (2012) to the WTO. This explains that our results for the dummy coefficient size and significance are not fully aligned with the previous literature, being on the upper side of the distribution.[28] In the former, we include the most favored nation (MFN) tariff, using the logarithm of (1+) the simple mean across all products of the MFN tariff rate.[29] Indeed, as thoroughly described in Yotov et al. (2016), due to the inclusion of intra-national trade flows, it is possible to consider unilateral trade policy while applying a properly specified structural gravity model. As expected, the MFN coefficient is negative and significant (see Column 4, Table A.4, in the Appendix), although the coefficient size (that can be interpreted as a trade elasticity) is somewhat more conservative that what suggested in the literature (see Bajzik et al., 2020). In this case, the point estimates of the "trade agreements" coefficients are smaller (see Column 4, Table A.4, in the Appendix), in line with what expected: part of the "TA effect" is captured by changes in the average tariff.[30] Particularly in this latter case, i.e., when considering tariff separately, general equilibrium results (see Table 3, point "c", for a bloc-level summary, and Table A.6 in the Appendix for country-level results) are smaller for both blocs. However, the MFN variable may capture part of the "true" TA effect.

In our fourth robustness test, we consider the EU separately from the rest of trade agreements. Indeed, the EU is a profoundly integrated bloc, whose agreement goes well beyond trade issues in many different aspects.[31] In line with what expected, the point estimate of the EU coefficient is very large (see Column 5, Table A.4, in the Appendix). In our fifth robustness test, we use four-year intervals, following Cheng and Wall (2005) argument that "full adjustment" between trade and trade agreements require some time. In both cases, the "EU-Mercosur" general equilibrium effect does not substantially depart from our main results (see Table 3, point "d" and "e", for a bloc-level summary, and Table A.8 and Table A.9 in the Appendix for country-level results).

Finally, in our sixth robustness test, we relax our main assumption to identify the EU-Mercosur "trade shock", i.e., that treaties with similar provisions have similar trade effects, and adopt a strictly geographical approach instead, based on Baier et al. (2018) and Freeman and Pienknagura (2019), that trade agreement effects are heterogeneous and distance may be one of the main mediating

[28] For an in-depth discussion of the "GATT/WTO effect", see Gil-Pareja et al. (2016), Larch et al. (2019), Esteve-Pérez et al. (2020), and Felbermayr et al. (2020).
[29] Results are robust to the use of the weighted average of MFN tariff, or the use of the applied rate.
[30] Tariff data are usually scattered and difficult to obtain. Our sample is not an exception. When we insert the tariff variable in the regression, we lose approximately one fourth of total observations.
[31] See, e.g., Pelkmans (2011).

factors. In this case, we group the trade agreements already existing between the EU and other Latin American countries and separately estimate their effects on EU exports and Latin American exports (see Column 7, Table A.4, in the Appendix). We then use these partial equilibrium effects as trade shocks to be imputed in the general equilibrium model. While in abstract terms we do not have strict preferences in identifying trade agreements "similar" to the EU-Mercosur in terms of provisions or geography, as the literature argues in favour of both, we should note that in this particular case most of the agreements between the EU and other Latin American countries have been signed close to the end of our sample. This can introduce a substantial downward bias in the estimations given that trade agreements do not achieve their "full potential" before nearly a decade (Bergstrand et al., 2015), due to phase-in periods, structural transformation processes or other economic adjustments, among other reasons. We therefore prefer to keep this possibility as a robustness test. Indeed, Table 3 and Table A.10 in the Appendix show smaller trade and welfare effects.

Table 3: Effects of the EU-Mercosur agreement, robustness tests (general equilibrium).

a. Disentangling globalization			
	Δ%exports	**Δ%imports**	**Δ%welfare**
MERCOSUR (avg.)	*7.22*	*7.87*	*0.19*
EU (avg.)	*0.31*	*0.31*	*0.04*
b. WTO			
	Δ%exports	**Δ%imports**	**Δ%welfare**
MERCOSUR (avg.)	*14.03*	*15.28*	*0.37*
EU (avg.)	*0.64*	*0.64*	*0.07*
c. MFN			
	Δ%exports	**Δ%imports**	**Δ%welfare**
MERCOSUR (avg.)	*9.08*	*9.89*	*0.25*
EU (avg.)	*0.45*	*0.45*	*0.05*
d. EU separate			
	Δ%exports	**Δ%imports**	**Δ%welfare**
MERCOSUR (avg.)	*16.04*	*17.47*	*0.43*
EU (avg.)	*0.76*	*0.76*	*0.08*
e. four-year intervals			
	Δ%exports	**Δ%imports**	**Δ%welfare**
MERCOSUR (avg.)	*13.11*	*14.29*	*0.35*
EU (avg.)	*0.60*	*0.60*	*0.07*
f. EU-LA			
	Δ%exports	**Δ%imports**	**Δ%welfare**
MERCOSUR (avg.)	*7.95*	*8.68*	*0.23*
EU (avg.)	*0.47*	*0.46*	*0.04*

Note: Δ%exports, Δ%imports, Δ%welfare refer to percentage change with respect to the baseline (for baseline definition see text). "avg." means average, and is calculated as a GDP PPP weighted average of country-level results.

Finally, a note on the trade elasticity parameter. As noted in Arkolakis et al. (2012), this parameter is inversely related to the transformation of trade-to-welfare effects. We use a trade elasticity of four.

This number has been estimated by Simonovska and Waugh (2014), and it is very close to the median value identified by Bajzik et al. (2020) in a recent meta-analysis. Bajzik et al. (2020) suggest that the elasticity is likely to range between 2.5 and 5.1: the higher the value of the parameter used, the lower the changes in welfare corresponding to the same change in trade.

To conclude, there are some caveats we would like to stress while interpreting all the preceding estimations: first, due to relevant gaps in the data, we do not include service flows, which are an important component of bilateral exchanges and are object, in the treaty, of several liberalizing provisions. Additionally, the model is not dynamic: it does not include features related to asset accumulation. In this sense, the results are therefore likely to represent lower bound estimates. Second, we carry out our empirical study using data on aggregate bilateral flows and a general equilibrium model with one sector and one factor of production. Therefore, in this model we are not able to take into account that tariff reductions could differ across sectors, and could have heterogeneous effects at the sector, firm and household level (Grossman and Helpman, 2018; Artuc et al., 2019). This also means that we are not able to identify the eventual "winners and losers" of the EU-Mercosur agreement. Finally, our empirical instruments do not take into account other broader considerations, such as the environmental consequences of the agreement –issues that remain outside the scope of our paper.

6. Conclusions

In this paper we use a general equilibrium structural gravity model to analyze the EU-Mercosur agreement and predict its effects on trade and welfare. More in detail, we apply a Poisson pseudo-maximum likelihood estimation strategy (Santos-Silva and Tenreyro, 2006), and in line with the latest development of the literature (e.g. Yotov et al., 2016), account for intra-national trade flows. As a first step, we exploit the detailed provision-level information available for the EU-Mercosur agreement to identify partial equilibrium trade effects of existing treaties with similar set of provisions. As a second step, we reduce the bilateral trade costs of the EU-Mercosur country pairs by the amount estimated in our partial equilibrium model to calculate the general equilibrium effects of the agreement.

Our results show that the potential trade and welfare enhancing effects of the EU-Mercosur agreement are substantial, and that their distribution is considerably heterogeneous. Mercosur countries are set to experience the largest gains from trade: in our main scenario (to be interpreted as an upper bound estimate within our analytical framework), exports increase by 15%, imports by 16%, and welfare by 0.4%, on average. The trade and welfare gains for EU countries are considerably smaller: exports and imports increase by 0.7%, and welfare gains are lower than 0.1%, on average. These substantial differences arise from the very different relevance of bilateral trade between Mercosur and the EU on total trade of each one of the two blocs. The model also shows larger trade-to-welfare transmissions for small (open) economies, since the relevance of the external

demand for their growth is relatively higher that for those economies that rely on a larger internal market. Trade diversion effects (i.e., on third-countries trade) are practically inexistent.

We test the robustness of our main scenario results by taking a conservative approach: in our battery of sensitivity tests, we mainly focus on challenging our main results by accounting for potential factors that may reduce the size of the "trade shock" induced by the EU-Mercosur agreement. Despite significant reduction in their size (in some cases, trade effects are roughly halved), our results indicate that the effects will still be economically important, particularly for Mercosur.

While our approach is able to take into account "within"-bloc heterogeneity, i.e., it provides detailed insights on trade and welfare effects at the country level, it does not investigate the existence of within-country heterogeneity. Indeed, the effects of the EU-Mercosur agreement may be unevenly distributed across sectors, firms and households, as argued by various authors (see Milanovic and Squire, 2007; Autor et al., 2013; Artuc and McLaren, 2015; Artuc et al., 2019), and may affect both economic growth and wage inequality (Manasse and Turrini, 2001; Grossman and Helpman, 2018). These issues, together with other broader considerations (including, for example, the environmental consequences of the agreement or the role of trade in services), deserve further research and attention.

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Appendix

Table A.1: Provisions considered

Provisions	Horizontal DB code	Short description	"EU-Mercosur like"
Tariffs (industrial)	wto_plus_ftaindustrial	"FTA Industrial" (tariff liberalization in industrial goods)	✓
Tariffs (agriculture)	wto_plus_ftaagriculture	"FTA Agriculture" (tariff liberalization in agricultural goods)	✓
Customs	wto_plus_customs	"Customs" (provisions on information and trade facilitation)	✓
Export Taxes	wto_plus_exporttaxes	"Export Taxes" (elimination or reduction of export duties and other taxes)	✓
SPS	wto_plus_sps	"SPS" (provisions referring to the World Trade Organization [WTO] Agreement on Sanitary and Phytosanitary Standards; measures for harmonization)	✓
TBT	wto_plus_tbt	"TBT" (provisions referring to the WTO Agreement on Technical Barriers to Trade; measures for harmonization or mutual recognition)	✓
Rules on SOEs	wto_plus_ste	"STE" (rules on state enterprises, GATT Art. XVII)	✓
Public Procurement	wto_plus_publicprocurement	Public Procurement" (progressive liberalization, national treatment/non-discrimination, etc.)	✓
Trade in Services	wto_plus_gats	"GATS" (liberalization of trade in services)	✓
IPRs	wto_plus_trips wto_x_ipr	"TRIPs" (WTO rules on intellectual property rights) "IPR" (reference to extra-WTO international treaties on intellectual property rights)	✓
Competition policy	wto_x_competitionpolicy	"Competition Policy" (chapter on competition policy)	✓
Investment	wto_x_investment	"Investment" (rules on foreign investment, including simplification, harmonization and national treatment, as well as mechanisms for the settlement of disputes)	✓
Labor	wto_x_labourmarketregulation	"Labor Market Regulation" (labor provisions, including ILO standards, other regulations concerning national labor markets, as well as enforcement mechanisms)	✓
Environment	wto_x_environmentallaws	"Environmental Laws" (environmental provisions including environmental standards and enforcement mechanisms)	✓
Movement of capital	wto_x_movementofcapital	"Movement of Capital" (liberalization of capital movements and/or prohibition of new restrictions)	✓
Antidumping, Countervailing measures, State Aid	wto_plus_ad wto_plus_cvm wto_plus_stateaid	"AD" (antidumping), "CVM" (countervailing measures) and "State Aid" (assessment of behaviours that are not in line with competition policy)	(✓)
Other provisions*			**not restricted**

Note: ✓implies that the corresponding dummy is set to be equal to one. (✓) implies that while we do not formally impose any restriction, more than 99.6% of observations used for recreating the EUMercosur agreement pertain to agreements that include all these provisions. "not restricted" implies that we do not set any restrictions to the corresponding dummies.

* We do not set any restrictions on a large number of categories, however most of these do not enter the list of "influential" categories in Mattoo et al. (2020). Indeed, most of these are "soft" provisions, have little relation with the economy and trade, cover narrow topics, and are mostly related to exchange of information, collaboration, promotion of joint projects, and other similar issues. A complete list of provisions is available in Hofmann et al. (2017).

Source: Authors' elaboration on Horizontal Depth DB.

Table A.2: Trade agreements

Agreement	Year (entry into force)	"EU-Mercosur like" agreements
Australia-New Zealand (ANZCERTA)	1983	
CAFTA-DR	2006	
CAN (Andean Community)	1988	
Canada – Chile	1997	
Canada – Colombia	2011	
Canada – Costa Rica	2002	
Canada – Honduras	2014	
Canada – Panama	2013	
Canada – Korea (Rep. of)	2015	X
Canada – EFTA	2009	
Canada – Peru	2009	
CARICOM	1973	
Central American Common Market (CACM)	1961	
Chile – Colombia	2009	
Chile – Costa Rica	2002	
Chile – El Salvador	2002	
Chile – Guatemala	2010	
Chile – Honduras	2008	
Chile – Mexico	1999	
Chile – Nicaragua	2012	
Chile – Australia	2009	
Chile – China	2006	
Chile – Japan	2007	
Chile – Korea	2004	
China – Costa Rica	2011	
China – New Zealand	2008	
China – Peru	2010	
Colombia – Mexico	1995	
Colombia – Northern Triangle (El Salvador, Guatemala, Honduras)	2009	
Costa Rica – Peru	2013	
Dominican Republic – Central America	2001	
EEC/EU	1958-2007*	X
EC – Chile	2003	
EC – Iceland	1973	
EC – Mexico	2000	
EC – Norway	1973	
EC – South Africa	2000	
EC – Switzerland and Liechtenstein	1973	
EC – Turkey	1996	
European Economic Area (EEA)	1994	X
European Free Trade Area (EFTA)	1960	
EFTA – Central America	2014	X
EFTA – Chile	2004	
EFTA – Colombia	2011	

EFTA – Korea (Rep. of)	**2006**	
EFTA – Mexico	**2001**	
EFTA – Peru	**2011**	
EFTA – Southern African Customs Union (SACU)	**2008**	
EU – Central America	**2013**	**X**
EU – Colombia and Peru	**2013**	**X**
EU – Korea (Rep. of)	**2011**	**X**
El Salvador – Honduras – Chinese Taipei	**2008**	
Iceland – China	**2014**	
India – Japan	**2011**	
Japan – Australia	**2015**	
Japan – Peru	**2012**	
Japan – Mexico	**2005**	
Japan – Switzerland	**2009**	
Korea (Rep. of) – Australia	**2014**	**X**
Korea (Rep. of) – Turkey	**2013**	
Korea (Rep. of) – US	**2012**	**X**
Korea (Rep. of) – India	**2010**	
Mercosur	**1991**	
Mexico – Central America	**2012**	
Mexico – Uruguay	**2004**	
NAFTA	**1994**	**X**
Panama – Chile	**2008**	
Panama – Costa Rica	**2008**	
Panama – El Salvador	**2003**	
Panama – Guatemala	**2009**	
Panama – Honduras	**2009**	
Panama – Nicaragua	**2009**	
Panama – Peru	**2012**	
Peru – Korea (Rep. of)	**2011**	
Peru – Mexico	**2012**	
Switzerland – China	**2014**	
Trans-Pacific Strategic Economic Partnership (TPSEP)	**2006**	
Turkey – Chile	**2011**	
Turkey – EFTA	**1992**	
US – Colombia	**2012**	**X**
US – Panama	**2012**	
US – Australia	**2005**	**X**
US – Chile	**2004**	**X**
US – Peru	**2009**	**X**

Note: "EU-Mercosur like" defined as in the text. See text and Table A.1 for further details. *The entry into force of the EEC/EU depends on the enlargement wave.
Source: Authors' elaboration on Horizontal Depth DB.

Table A.3: Countries included in the database

Argentina, Australia, Austria, Belgium/Luxembourg, Bolivia, Brazil, Canada, Switzerland, Chile, China, Colombia, Costa Rica, Czech Republic, Germany, Denmark, Dominican Republic, Ecuador, Spain, Finland, France, Great Britain, Greece, Guatemala, Guyana, Honduras, Haiti, Hungary, India, Ireland, Iceland, Italy, Jamaica, Japan, Rep. of Korea, Mexico, Nicaragua, Netherlands, Norway, New Zealand, Panama, Peru, Poland, Portugal, Paraguay, Russia, El Salvador, Slovakia, Sweden, Turkey, Uruguay, United States, Venezuela, and South Africa

Note: Countries are ordered by their ISO three-digit code

Table A.4: Partial equilibrium estimates ("trade shocks")

VARIABLES	(1) MAIN REG.	(2) Disentangling Globalization	(3) WTO	(4) MFN	(5) Separate EU effect	(6) Four-year intervals	(7) EU-LATAM agreements
$TA^{X\_NS}_{ijt}$	0.481***	0.249**	0.470***	0.371***		0.449***	
	(0.105)	(0.109)	(0.107)	(0.0983)		(0.0746)	
$TA^{X\_SN}_{ijt}$	0.656***	0.387***	0.633***	0.417***		0.599***	
	(0.152)	(0.136)	(0.147)	(0.139)		(0.114)	
$TA^{X\_REST}_{ijt}$	0.428***	0.0871	0.425***	0.293***		0.423***	
	(0.0888)	(0.0940)	(0.0895)	(0.0894)		(0.0695)	
TA^{ALL-X}_{ijt}	0.374***	0.207***	0.367***	0.288***		0.453***	
	(0.0680)	(0.0728)	(0.0691)	(0.0805)		(0.0624)	
WTO_{ijt}			1.114***				
			(0.295)				
$ln(1+MFN)_{ijt}$				-7.904***			
				(1.167)			
$TA\_noEU^{X\_NS}_{ijt}$					0.561***		
					(0.116)		
$TA\_noEU^{X\_SN}_{ijt}$					0.682***		
					(0.201)		
$TA\_noEU^{X\_REST}_{ijt}$					0.287***		
					(0.0602)		
$TA\_noEU^{ALL-X}_{ijt}$					0.313***		
					(0.0569)		
EU_{ijt}					0.617***		
					(0.0992)		
EU_LA_{ijt}							0.416***
							(0.103)
LA_EU_{ijt}							0.304***
							(0.0707)
$TA^{ALL-(EU\_LA+LA\_EU)}_{ijt}$							0.442***
							(0.0645)
Observations	88,122	88,122	88,122	65,435	88,122	22,160	88,122
Directional pair FEs	YES	YES	YES	YES	YES	YES	YES
Exp.-time & imp.time FEs	YES	YES	YES	YES	YES	YES	YES
INTL_BRDR*YEAR	NO	YES	NO	NO	NO	NO	NO
DIST*YEAR	NO	YES	YES	NO	NO	NO	NO

Note: Poisson regressions. Dependent variable: Bilateral exports. Fixed effects, constant, trends and other interactions not reported for the sake of simplicity. Standard errors (in parentheses) are clustered at the importer-time, exporter-time and country-pair level. ***p < 0.01, **p < 0.05, *p < 0.1.

Table A.5: Effects of the EU-Mercosur agreement, robustness test "disentangling globalization" (general equilibrium).

		Δ%exports	Δ%imports	Δ%welfare
MERCOSUR	ARG	6.79	5.88	0.15
	BRA	7.41	8.69	0.19
	PRY	5.74	4.06	0.33
	URY	7.04	5.41	0.35
	MERCOSUR (avg.)	*7.22*	*7.87*	*0.19*
EU	AUT	0.11	0.10	0.02
	BEL	0.11	0.11	0.09
	CZE	-0.01	-0.01	0.02
	DEU	0.28	0.33	0.04
	DNK	0.29	0.29	0.03
	ESP	0.63	0.56	0.05
	FIN	0.31	0.30	0.03
	FRA	0.31	0.25	0.02
	GRC	0.21	0.09	0.01
	HUN	0.02	0.02	0.03
	IRL	0.11	0.21	0.02
	ITA	0.43	0.48	0.03
	NLD	0.43	0.42	0.08
	POL	0.11	0.09	0.03
	PRT	0.56	0.46	0.06
	SVK	-0.04	-0.04	0.01
	SWE	0.18	0.18	0.02
	EU (avg.)	*0.31*	*0.31*	*0.04*
REST OF LATIN AMERICA	BOL	0.16	0.14	0.00
	CHL	-0.05	-0.06	-0.01
	COL	-0.05	-0.04	0.00
	CRI	-0.07	-0.06	0.00
	DOM	-0.07	-0.04	0.00
	ECU	-0.06	-0.06	0.00
	GTM	-0.04	-0.03	0.00
	GUY	-0.05	-0.04	0.00
	HND	-0.03	-0.03	0.00
	HTI	-0.03	-0.01	0.00
	JAM	-0.13	-0.04	0.00
	MEX	-0.01	-0.01	0.00
	NIC	-0.03	-0.03	0.00
	PAN	0.02	0.01	0.00
	PER	-0.06	-0.06	0.00
	SLV	-0.03	-0.02	0.00
	VEN	-0.12	-0.15	0.00
EU NEIGHBOURS	CHE	-0.04	-0.05	0.00
	GBR	-0.08	-0.05	0.00
	ISL	-0.19	-0.18	-0.01
	NOR	-0.10	-0.13	-0.01
	RUS	-0.10	-0.17	0.00
	TUR	-0.11	-0.06	0.00
REST OF THE WORLD	AUS	-0.01	-0.01	0.00
	CAN	-0.02	-0.01	0.00
	IND	-0.05	-0.03	0.00
	CHN	-0.05	-0.08	0.00
	JPN	-0.03	-0.04	0.00
	KOR	-0.01	-0.02	0.00
	NZL	-0.03	-0.02	0.00
	USA	-0.02	-0.02	0.00
	ZAF	-0.04	-0.05	0.00

Note: Δ%exports, Δ%imports, Δ%welfare refer to percentage change with respect to the baseline (for baseline definition see text). "avg." means average, and is calculated as a GDP PPP weighted average of country-level results.

Table A.6: Effects of the EU-Mercosur agreement, robustness test "WTO" (general equilibrium).

		Δ%exports	Δ%imports	Δ%welfare
MERCOSUR	ARG	13.15	11.38	0.29
	BRA	14.42	16.90	0.38
	PRY	10.69	7.57	0.64
	URY	13.55	10.43	0.70
	MERCOSUR (avg.)	*14.03*	*15.28*	*0.37*
EU	AUT	0.25	0.23	0.04
	BEL	0.25	0.26	0.18
	CZE	0.01	0.01	0.04
	DEU	0.56	0.67	0.08
	DNK	0.59	0.60	0.06
	ESP	1.27	1.14	0.09
	FIN	0.63	0.61	0.06
	FRA	0.64	0.52	0.04
	GRC	0.44	0.20	0.02
	HUN	0.08	0.08	0.07
	IRL	0.24	0.43	0.05
	ITA	0.87	0.97	0.06
	NLD	0.86	0.84	0.15
	POL	0.24	0.20	0.06
	PRT	1.14	0.93	0.12
	SVK	-0.04	-0.04	0.02
	SWE	0.39	0.39	0.04
	EU (avg.)	*0.64*	*0.64*	*0.07*
REST OF LATIN AMERICA	BOL	0.13	0.12	0.00
	CHL	-0.10	-0.10	-0.01
	COL	-0.09	-0.07	0.00
	CRI	-0.11	-0.10	-0.01
	DOM	-0.11	-0.07	0.00
	ECU	-0.10	-0.10	-0.01
	GTM	-0.07	-0.05	0.00
	GUY	-0.08	-0.06	-0.01
	HND	-0.05	-0.04	-0.01
	HTI	-0.05	-0.02	0.00
	JAM	-0.21	-0.06	-0.01
	MEX	-0.02	-0.02	0.00
	NIC	-0.05	-0.04	-0.01
	PAN	0.02	0.01	0.00
	PER	-0.11	-0.10	-0.01
	SLV	-0.05	-0.03	0.00
	VEN	-0.17	-0.22	0.00
EU NEIGHBOURS	CHE	-0.08	-0.09	-0.01
	GBR	-0.14	-0.09	0.00
	ISL	-0.31	-0.30	-0.02
	NOR	-0.16	-0.22	-0.01
	RUS	-0.17	-0.29	-0.01
	TUR	-0.18	-0.10	0.00
REST OF THE WORLD	AUS	-0.02	-0.02	0.00
	CAN	-0.03	-0.03	0.00
	IND	-0.09	-0.06	0.00
	CHN	-0.08	-0.14	0.00
	JPN	-0.06	-0.07	0.00
	KOR	-0.03	-0.04	0.00
	NZL	-0.05	-0.04	0.00
	USA	-0.05	-0.03	0.00
	ZAF	-0.07	-0.09	0.00

Note: Δ%exports, Δ%imports, Δ%welfare refer to percentage change with respect to the baseline (for baseline definition see text). "avg." means average, and is calculated as a GDP PPP weighted average of country-level results.

Table A.7: Effects of the EU-Mercosur agreement, robustness test "MFN" (general equilibrium).

		Δ%exports	Δ%imports	Δ%welfare
MERCOSUR	ARG	8.46	7.32	0.19
	BRA	9.36	10.97	0.25
	PRY	6.54	4.63	0.41
	URY	8.71	6.70	0.46
	MERCOSUR (avg.)	*9.08*	*9.89*	*0.25*
EU	AUT	0.20	0.18	0.03
	BEL	0.20	0.20	0.12
	CZE	0.04	0.04	0.03
	DEU	0.39	0.47	0.05
	DNK	0.42	0.42	0.04
	ESP	0.87	0.78	0.06
	FIN	0.44	0.42	0.04
	FRA	0.46	0.38	0.03
	GRC	0.32	0.14	0.01
	HUN	0.08	0.09	0.04
	IRL	0.17	0.30	0.03
	ITA	0.60	0.66	0.04
	NLD	0.58	0.57	0.10
	POL	0.19	0.16	0.04
	PRT	0.78	0.64	0.07
	SVK	0.00	0.00	0.01
	SWE	0.29	0.29	0.02
	EU (avg.)	*0.45*	*0.45*	*0.05*
REST OF LATIN AMERICA	BOL	-0.09	-0.08	-0.01
	CHL	-0.06	-0.06	-0.01
	COL	-0.05	-0.04	0.00
	CRI	-0.05	-0.05	0.00
	DOM	-0.05	-0.03	0.00
	ECU	-0.05	-0.05	0.00
	GTM	-0.03	-0.02	0.00
	GUY	-0.03	-0.03	0.00
	HND	-0.02	-0.02	0.00
	HTI	-0.02	-0.01	0.00
	JAM	-0.09	-0.03	0.00
	MEX	-0.02	-0.02	0.00
	NIC	-0.02	-0.02	0.00
	PAN	-0.01	0.00	0.00
	PER	-0.05	-0.05	0.00
	SLV	-0.02	-0.01	0.00
	VEN	-0.06	-0.08	0.00
EU NEIGHBOURS	CHE	-0.04	-0.05	0.00
	GBR	-0.08	-0.05	0.00
	ISL	-0.14	-0.14	-0.01
	NOR	-0.08	-0.11	-0.01
	RUS	-0.09	-0.15	0.00
	TUR	-0.08	-0.05	0.00
REST OF THE WORLD	AUS	-0.02	-0.02	0.00
	CAN	-0.02	-0.02	0.00
	IND	-0.05	-0.04	0.00
	CHN	-0.04	-0.07	0.00
	JPN	-0.03	-0.04	0.00
	KOR	-0.02	-0.03	0.00
	NZL	-0.03	-0.03	0.00
	USA	-0.04	-0.03	0.00
	ZAF	-0.04	-0.05	0.00

Note: Δ%exports, Δ%imports, Δ%welfare refer to percentage change with respect to the baseline (for baseline definition see text). "avg." means average, and is calculated as a GDP PPP weighted average of country-level results.

Table A.8: Effects of the EU-Mercosur agreement, robustness test "separating the EU effect" (general equilibrium).

		Δ%exports	Δ%imports	Δ%welfare
MERCOSUR	ARG	15.00	12.98	0.34
	BRA	16.51	19.34	0.44
	PRY	11.89	8.41	0.72
	URY	15.41	11.86	0.81
	MERCOSUR (avg.)	*16.04*	*17.47*	*0.43*
EU	AUT	0.31	0.28	0.04
	BEL	0.32	0.32	0.21
	CZE	0.04	0.04	0.05
	DEU	0.67	0.79	0.09
	DNK	0.71	0.71	0.07
	ESP	1.49	1.34	0.10
	FIN	0.74	0.72	0.06
	FRA	0.77	0.63	0.05
	GRC	0.53	0.24	0.02
	HUN	0.11	0.12	0.08
	IRL	0.28	0.51	0.05
	ITA	1.02	1.14	0.07
	NLD	1.00	0.98	0.17
	POL	0.30	0.25	0.06
	PRT	1.34	1.09	0.13
	SVK	-0.03	-0.03	0.02
	SWE	0.48	0.48	0.04
	EU (avg.)	*0.76*	*0.76*	*0.08*
REST OF LATIN AMERICA	BOL	0.01	0.01	-0.01
	CHL	-0.11	-0.12	-0.01
	COL	-0.10	-0.08	0.00
	CRI	-0.11	-0.10	-0.01
	DOM	-0.11	-0.06	0.00
	ECU	-0.10	-0.10	-0.01
	GTM	-0.07	-0.05	0.00
	GUY	-0.08	-0.06	-0.01
	HND	-0.05	-0.04	-0.01
	HTI	-0.05	-0.02	0.00
	JAM	-0.20	-0.06	0.00
	MEX	-0.03	-0.03	0.00
	NIC	-0.05	-0.04	-0.01
	PAN	0.00	0.00	0.00
	PER	-0.11	-0.11	-0.01
	SLV	-0.05	-0.03	0.00
	VEN	-0.16	-0.20	0.00
EU NEIGHBOURS	CHE	-0.09	-0.09	-0.01
	GBR	-0.15	-0.10	0.00
	ISL	-0.31	-0.29	-0.02
	NOR	-0.17	-0.22	-0.01
	RUS	-0.17	-0.30	-0.01
	TUR	-0.17	-0.10	0.00
REST OF THE WORLD	AUS	-0.03	-0.03	0.00
	CAN	-0.03	-0.03	0.00
	IND	-0.10	-0.07	0.00
	CHN	-0.09	-0.14	0.00
	JPN	-0.06	-0.07	0.00
	KOR	-0.03	-0.04	0.00
	NZL	-0.05	-0.05	0.00
	USA	-0.07	-0.04	0.00
	ZAF	-0.08	-0.10	0.00

Note: Δ%exports, Δ%imports, Δ%welfare refer to percentage change with respect to the baseline (for baseline definition see text). "avg." means average, and is calculated as a GDP PPP weighted average of country-level results.

Table A.9: Effects of the EU-Mercosur agreement, robustness test "four-year intervals" (general equilibrium).

		Δ%exports	Δ%imports	Δ%welfare
MERCOSUR	ARG	12.29	10.63	0.27
	BRA	13.48	15.80	0.36
	PRY	9.97	7.05	0.59
	URY	12.66	9.74	0.65
	MERCOSUR (avg.)	*13.11*	*14.29*	*0.35*
EU	AUT	0.24	0.21	0.04
	BEL	0.24	0.24	0.17
	CZE	0.01	0.01	0.04
	DEU	0.53	0.63	0.07
	DNK	0.56	0.56	0.06
	ESP	1.19	1.07	0.08
	FIN	0.59	0.57	0.05
	FRA	0.61	0.49	0.04
	GRC	0.41	0.18	0.02
	HUN	0.07	0.08	0.06
	IRL	0.22	0.41	0.04
	ITA	0.82	0.91	0.06
	NLD	0.80	0.79	0.14
	POL	0.23	0.19	0.05
	PRT	1.07	0.87	0.11
	SVK	-0.04	-0.04	0.01
	SWE	0.37	0.37	0.03
	EU (avg.)	*0.60*	*0.60*	*0.07*
REST OF LATIN AMERICA	BOL	0.11	0.10	0.00
	CHL	-0.09	-0.10	-0.01
	COL	-0.08	-0.07	0.00
	CRI	-0.10	-0.09	-0.01
	DOM	-0.11	-0.06	0.00
	ECU	-0.09	-0.09	-0.01
	GTM	-0.07	-0.04	0.00
	GUY	-0.07	-0.05	-0.01
	HND	-0.05	-0.04	-0.01
	HTI	-0.04	-0.01	0.00
	JAM	-0.19	-0.05	0.00
	MEX	-0.02	-0.02	0.00
	NIC	-0.04	-0.04	-0.01
	PAN	0.02	0.01	0.00
	PER	-0.10	-0.09	-0.01
	SLV	-0.05	-0.03	0.00
	VEN	-0.16	-0.20	0.00
EU NEIGHBOURS	CHE	-0.07	-0.08	-0.01
	GBR	-0.13	-0.09	0.00
	ISL	-0.28	-0.27	-0.02
	NOR	-0.15	-0.20	-0.01
	RUS	-0.15	-0.27	-0.01
	TUR	-0.16	-0.09	0.00
REST OF THE WORLD	AUS	-0.02	-0.02	0.00
	CAN	-0.03	-0.02	0.00
	IND	-0.08	-0.06	0.00
	CHN	-0.08	-0.13	0.00
	JPN	-0.05	-0.06	0.00
	KOR	-0.03	-0.03	0.00
	NZL	-0.05	-0.04	0.00
	USA	-0.05	-0.03	0.00
	ZAF	-0.07	-0.09	0.00

Note: Δ%exports, Δ%imports, Δ%welfare refer to percentage change with respect to the baseline (for baseline definition see text). "avg." means average, and is calculated as a GDP PPP weighted average of country-level results.

Table A.10: Effects of the EU-Mercosur agreement, robustness test "EU-LA trade agreements" (general equilibrium).

		Δ%exports	Δ%imports	Δ%welfare
MERCOSUR	ARG	7.31	6.33	0.18
	BRA	8.26	9.68	0.24
	PRY	4.91	3.48	0.34
	URY	7.48	5.76	0.43
	MERCOSUR (avg.)	*7.95*	*8.68*	*0.23*
EU	AUT	0.24	0.22	0.02
	BEL	0.25	0.25	0.11
	CZE	0.10	0.11	0.03
	DEU	0.40	0.48	0.04
	DNK	0.43	0.43	0.03
	ESP	0.87	0.78	0.05
	FIN	0.45	0.43	0.03
	FRA	0.50	0.41	0.02
	GRC	0.34	0.15	0.01
	HUN	0.14	0.15	0.04
	IRL	0.17	0.31	0.02
	ITA	0.59	0.65	0.03
	NLD	0.55	0.54	0.08
	POL	0.23	0.19	0.03
	PRT	0.78	0.63	0.06
	SVK	0.07	0.07	0.02
	SWE	0.32	0.32	0.02
	EU (avg.)	*0.47*	*0.46*	*0.04*
REST OF LATIN AMERICA	BOL	-0.44	-0.39	-0.02
	CHL	-0.04	-0.04	0.00
	COL	-0.03	-0.03	0.00
	CRI	0.00	0.00	0.00
	DOM	0.01	0.01	0.00
	ECU	-0.01	-0.01	0.00
	GTM	0.00	0.00	0.00
	GUY	0.00	0.00	0.00
	HND	0.00	0.00	0.00
	HTI	0.00	0.00	0.00
	JAM	0.01	0.00	0.00
	MEX	-0.02	-0.02	0.00
	NIC	0.00	0.00	0.00
	PAN	-0.06	-0.02	0.00
	PER	-0.01	-0.01	0.00
	SLV	0.00	0.00	0.00
	VEN	0.05	0.06	0.00
EU NEIGHBOURS	CHE	-0.03	-0.03	-0.01
	GBR	-0.04	-0.03	0.00
	ISL	-0.01	-0.01	0.00
	NOR	-0.02	-0.02	0.00
	RUS	-0.03	-0.05	0.00
	TUR	0.01	0.01	0.00
REST OF THE WORLD	AUS	-0.03	-0.03	0.00
	CAN	-0.01	-0.01	0.00
	IND	-0.03	-0.02	0.00
	CHN	-0.01	-0.02	0.00
	JPN	-0.02	-0.02	0.00
	KOR	-0.02	-0.03	0.00
	NZL	-0.02	-0.01	0.00
	USA	-0.05	-0.03	0.00
	ZAF	-0.02	-0.03	0.00

Note: Δ%exports, Δ%imports, Δ%welfare refer to percentage change with respect to the baseline (for baseline definition see text). "avg." means average, and is calculated as a GDP PPP weighted average of country-level results.

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