

A CGE analysis of the EU-Mercosur agreement including Melitz, multinationals and unemployment effects

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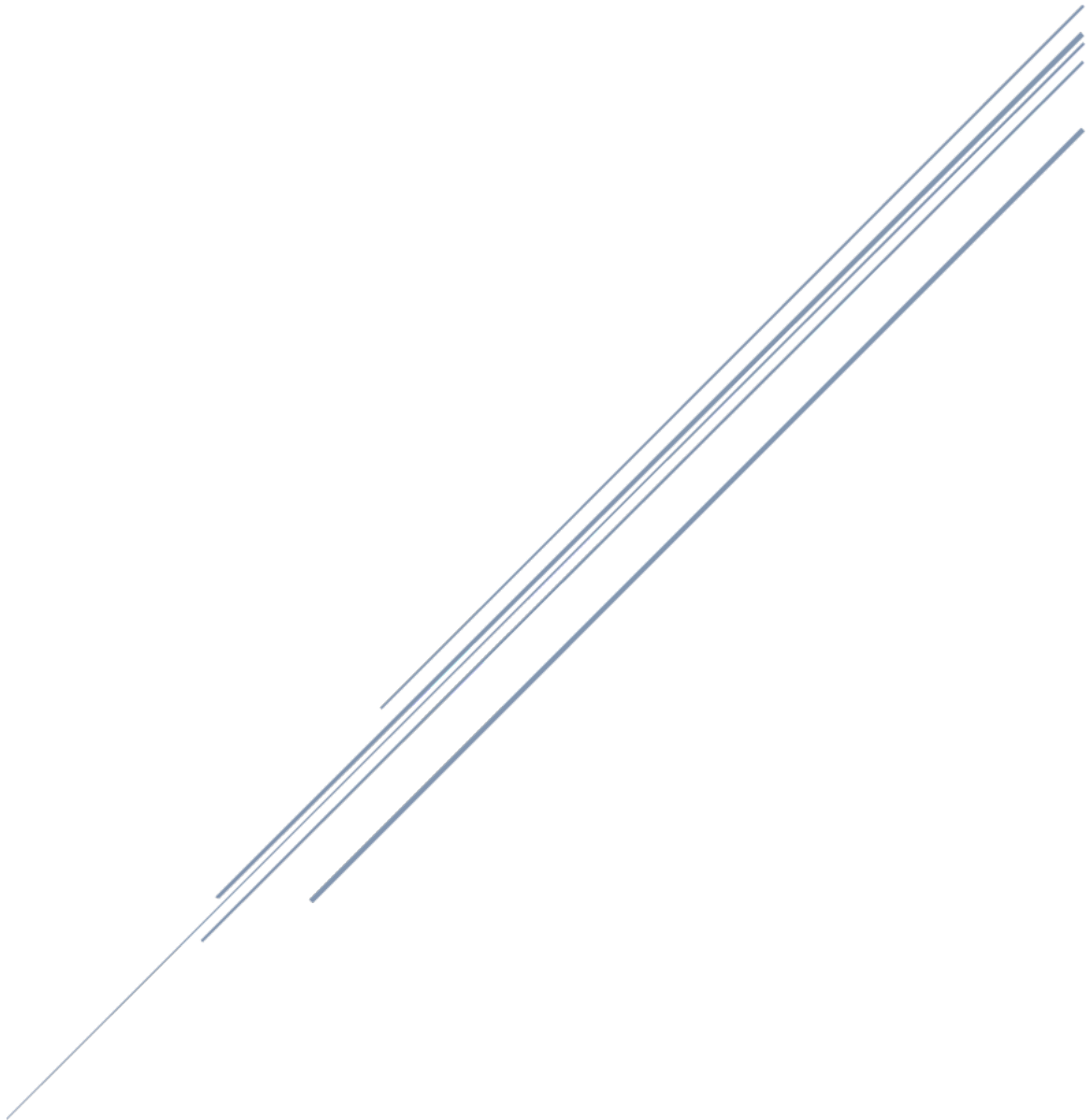
Abstract

The EU-Mercosur Trade Agreement is the largest that the European Union has ever reached. We estimate its impact using a CGE with 41 sectors-4 factors-7 region (Spain, EU26, Brazil, Argentina, Paraguay, Uruguay and ROW), which includes two advanced features: 1) Climate of competition à la Melitz (2003) in various manufacturing sectors; and 2) Foreign multinationals in advanced service sectors, operating à la Krugman (1980).

We calculate the initial and agreement-related CO₂ emissions across regions. For year 16, the agreement generates a small increase (0.14%) in CO₂ emissions by the EU-Mercosur region which, however, translates into an improvement in the emissions/GDP ratio of the EU-Mercosur region (0,17% GDP increase) and for the world, as a whole.

Our results point out that this agreement is a “win-win” for its signatories. Everyone wins, but the impact will be more visible in the Latin American side. Our analysis of the total imports of the EU27 (i.e., jointly for the EU26 and Spain) shows that this agreement allows the Mercosur countries to export products in which they have a comparative advantage, while moving their export basket towards more complex products. It also allows the European side to improve its specialization in more complex sectors. Our results are generally higher than the ones in the literature. This is firstly because our modeling includes components of the final agreement reached (Agreement in Principle of June 28, 2019) that, to our knowledge, have not yet been included in most previous studies, such as Foreign Direct Investment (FDI) in services and government procurement. Additionally, some of the previous studies focus on the effects for goods sectors, without including the impact on services. Moreover, our results would be much smaller in a framework of perfect competition, as opposed to monopolistic competition à la Melitz (2003) in manufactures and to the imperfect competition à la Krugman (1980), adopted for the services sectors with multinationals.

Executive Summary



Impact across the different regions

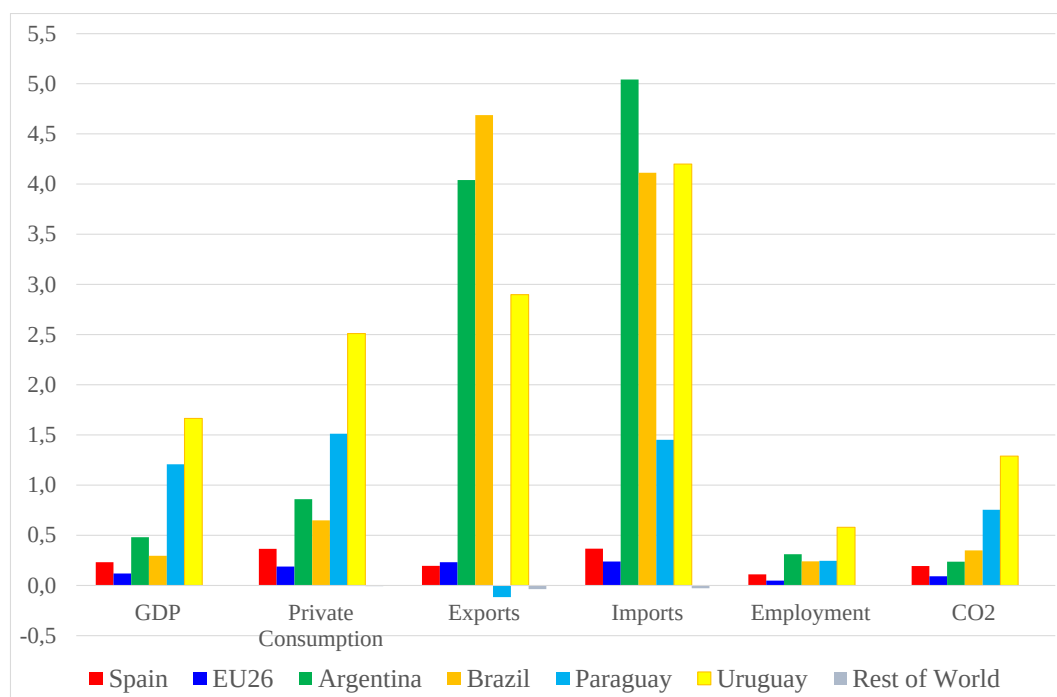
On 28 June 2019, a political agreement was reached on the new trade framework that will form part of the Association Agreement between the European Union (EU) and the four founding members of Mercosur (Argentina, Brazil, Paraguay and Uruguay). Although the EU already has numerous trade agreements in Latin America, this agreement is, in terms of population and savings on tariff payments, the largest the EU has ever reached at the global level. Together, the four Mercosur countries constitute the world's fifth largest economy and a population of more than 266 million. In the context of China's recent advance, the EU will be the first major trading partner to formalize an agreement with Mercosur, which neither the U.S. nor China has, granting preferential access to EU countries in an area that is currently highly protected.

Figure 1 presents the impact of the EU-Mercosur agreement on the main macroeconomic variables of Spain, the rest of the EU countries (EU26, i.e., EU27 without Spain), Argentina, Brazil, Paraguay, Uruguay and the rest of the world, once all the components of the agreement that we quantify in this study are implemented. Specifically, the variables we present are GDP, private consumption (change in equivalent variation), aggregate exports and imports, employment and CO₂ emissions. The effects we show are those when all the negotiated tariff and quota reductions, cuts in non-tariff measures applied to trade in goods and services, as well as in Foreign Direct Investment (FDI) in services and the opening of public procurement in Mercosur are implemented. The estimated impact would be the one we identify for the year 16, i.e., fifteen years after the agreement comes into force, at which point the agreed tariff liberalization process comes to an end and the tariff regime for the future is thus fixed.

Figure 1 shows that the gains for Spain are significant and greater than for the rest of the EU. However, it is the Mercosur countries that derive the greatest gains. The recorded increases are produced by the sole forces that the EU-Mercosur agreement would set in motion, all else being equal. In the real world, the agreement will interact with many other factors, such as the impact of Covid-19, fiscal, monetary, trade policies, etc., which will push GDP and all other variables in the regions towards growth or contraction.

The agreement leads to a strengthening of global value chains through an improvement in the complexity of traded products. Indeed, an important conclusion of this work is that the agreement provides benefits from a double perspective. On the one hand, it allows Mercosur countries to export products in which they have a comparative advantage, while moving their export basket towards more complex products. On the other hand, it also allows the European side to improve its specialization in more complex sectors. We thus achieve a complementarity that allows us to promote our value chains on both sides of the Atlantic. We have corroborated these assertions, not only based on our estimates of the computable general equilibrium model, but also by descending to a more granular analysis at the product level, both at 4 and 2 digits of the harmonized system, to which we also pay attention in this study.

Figure 1. Impact on the main macroeconomic variables of the different regions in year 16 (% variation from the initial level)



Source: Authors' estimation using a computable general equilibrium model.

In the long term, the agreement will have a positive impact on the economic welfare of both the EU (and, in particular, of Spain) and of the various Mercosur countries. This impact is reflected in increases in GDP, private consumption and employment, as well as trade. All the macroeconomic variables in Figure 1 show an expansionary trend for the signatories of the agreement. In terms of trade flows, the largest increases are recorded in Brazil and Argentina, followed not far behind by Uruguay, with somewhat smaller increases in Paraguay. At some distance from Mercosur, there is an increase in trade flows from the EU26, which, nevertheless exceeds those of Spain. Since our modelling considers components other than trade, such as multinationals' operations in services and public procurement, the effects on GDP, private consumption and employment do not strictly follow the evolution of trade. Thus, Uruguay is the economy that benefits the most in these last three variables, followed by Paraguay in most of them, which, in turn, is followed by Argentina and then Brazil. Spain shows a more favorable evolution in all of them than the rest of the EU.

It is noteworthy the contribution of the agreement to the economic development of the countries that make up Mercosur, whose levels of production and employment are particularly benefited by the agreement. This impact on employment reflects a positive contribution of the agreement to the social development of the economies. In addition, it should be noted that, in the Mercosur region, Spain and the EU26, and also for the world as a whole, it generates efficiency in terms of CO2 emissions. The economic growth generated by the agreement is less intensive in CO2 emissions than before the agreement.

The EU-Mercosur agreement has generated debate about its potential environmental impact. Climate policies, at least in the EU, are imposing serious obligations affecting production and consumption patterns. In this report we do not analyze the effects of these climate policies. What we have calculated is the initial distribution of CO₂ emissions across regions and sectors, as well as the regional and sectoral contribution to emissions generated by the agreement. Two clarifications are important, however. On the one hand, our CO₂ emissions calculations only include emissions from fossil fuel combustion. Some manufacturing sectors (e.g. the cement sector) generate CO₂ emissions due to chemical reactions rather than fossil fuel combustion, which are not included in these calculations. However, it is important to note that emissions not related to the combustion process constitute only a small part of total CO₂ emissions. On the other hand, the present model does not capture emissions of other greenhouse gases (GHGs), such as methane and nitrous oxide linked to agricultural and livestock sectors¹. In the EU 80% of GHGs stem from CO₂ emissions, methane and nitrous oxide have a slightly lower contribution to GHGs emissions than CO₂ in Argentina, they contribute slightly more to GHGs than CO₂ emissions in Brazil, and methane and nitrous oxide dominate GHGs emissions in Paraguay and Uruguay (LSE, 2020, pp. 72-75). As for methane, 6.8% of global emissions are contributed equally in the EU and Mercosur in 2015 (LSE, 2020, p. 74). Regarding nitrous oxide, the EU contributed 11% of global emissions in 2015 and Mercosur, as a whole, 9.6% in the same year (LSE, 2020, p. 75). A more thorough analysis of GHGs emissions could be conducted along the lines of Beck, Rivers, Wigle and Yonezawa (2015).

For year 16, the agreement generates a small increase (0.14%) in CO₂ emissions by the EU-Mercosur region which, however, translates into an improvement in the emissions/GDP ratio of Spain and the EU26, for the Mercosur region and of the world as a whole. Indeed, the GDP of the EU-Mercosur region increases by 0.17%, which means an improvement in the emissions/GDP ratio of 16,22% (0.14%/0.17%). The same is true for the world economy, whose GDP increases by 0.03% with the agreement, while emissions increase by 0.01%, so the emissions/GDP ratio would decrease by 57,82%. This is largely because, as Figure 1 shows, activity shifts from the Rest of the World region to the EU-Mercosur region. As the rest of the world is significantly more emissions-intensive than the EU-Mercosur region, there is a slight improvement in the overall emissions/GDP ratio for the world.

As would be expected given its higher GDP, the European part of the agreement is the largest contributor to emissions in the EU-Mercosur region. Taking the contributions of Spain and the EU together, 59.92% of the increase in total emissions within the EU-Mercosur region is represented, while Brazil accounts for 29.41% and the rest of the Mercosur countries for 11.52%. Most of the emissions (50.09%) come from the European service sectors, especially electricity and transport. Agriculture contributes only 3.97%

¹ According to Shields and Orme-Evans (2015, p. 363): “About 44% of the emissions generated by livestock are CH₄ (methane), which is released during enteric fermentation (eructation in ruminants) and emitted from manure decomposition; 27% are in the form of CO₂ emitted during the production and transport of animal products and feed, and 29% are N₂O (nitron oxide) attributable to manure and fertilizer”.

and manufacturing 14.12% of the emissions generated by the agreement. The remaining proportion, to reach 100% of emissions, is due to the role of private consumption (31.81%), which is the second most important source of emissions in Spain and the rest of the EU. Thus, of the increase in emissions of the agreement in year 16, 31.81% is explained by private consumption, mainly due to the demand for fuel for the cars of the citizens of the EU-Mercosur region and household natural gas consumption (used for heating and cooking). Private electricity consumption also influences emissions, since fossil fuels are used for its production of electricity. However, these emissions are accounted for within the electricity sector, whose companies are the ones that generate the emissions as a consequence of the production process.

These results should not be ignored because the alarm about sustainability focuses on agriculture and beef. Certainly, we do not include in our analysis other greenhouse gases, which are particularly significant in the agricultural sector. In the EU 80% of greenhouse gases come from CO₂ but in Mercosur countries the contribution is much smaller (LSE, 2020, p. 72-75). Our analysis reveals that, as far as CO₂ is concerned, sectors to focus on are mainly transport and electricity, and the fuels that we citizens use in our cars and gas consumption. As Sinabell et al. (2020) state in their analysis of this treaty, transport is not the same as trade, the problem lies in the transport sectors and not necessarily in trade. Now we can add that the problem is also in the electricity sectors and not in trade and that the problem is also in certain consumption patterns and not in trade.

To further elaborate on this point, we have also analyzed the total imports of the EU27, this is, joint for EU26 and Spain, in year 16 of the agreement. The bulk of the contribution to the EU27 imports coming from Mercosur in year 16 is concentrated in manufacturing (59.62% of total EU27 imports coming from Mercosur). This is followed in importance by the services aggregate (25.42%), which considerably exceeds agricultural imports (14.96%). The bovine sector of our model is broader than beef as it includes cattle, sheep, goats, and horses, as well as their corresponding manufactures. This sector would account for around 3.75% of the overall imports of the EU27 in year 16 coming from Mercosur. Food products nec leads the contributions to the total (11.80%), but is closely followed by another sector, namely, business services, which accounts for 11.43% of total imports of the EU27 coming from Mercosur in year 16. In fact, business services sector mobilizes a significant bulk of exports from Mercosur not only in Brazil (11.80%) and Argentina (11.33%), but also in Paraguay (6.83%) and Uruguay (8.72%), the latter percentages all referring to the total exports of each Mercosur member to the EU27.

Impact on Spain

Table 1 shows that the EU-Mercosur Agreement is beneficial for the Spanish economy and will become even more so as its full potential is implemented. The rows on the top of Table 1 show the effects of the agreement in the year of entry into force (Year 1), in year 5 (four years after entry into force), in year 11 (ten years after its implementation) and in year 16 (fifteen years after its entry into force), in its first four rows. These include the combined impact of all the components of the agreement that we analyzed interacting

simultaneously. From an initial impact on GDP of 0.14% in year 1, there is a growing momentum until it reaches 0.23% in year 16. To put this result in perspective, it would represent an important force to mitigate the negative effects of Brexit on our economy which, according to our previous estimates for an agreement in line with the one reached on December 24, 2020 between the EU and the United Kingdom, would imply a contraction of our GDP of -0.47% of GDP (Latorre and Yonezawa, 2020a; Latorre and Yonezawa, 2020b).

Table 1. Macroeconomic impact on Spain of the different scenarios and components of the EU-Mercosur Agreement (% variation with respect to the initial level)

	GDP	Private Consumption	Aggregated Exports	Aggregated Imports	Employment	Wages	Capital remuneration	CO₂ Emissions	CPI
Total Year 1	0.14	0.22	0.01	0.16	0.05	0.07	0.19	0.09	0.05
Total Year 5	0.17	0.27	0.11	0.26	0.08	0.08	0.22	0.13	0.05
Total Year 11	0.22	0.35	0.18	0.35	0.11	0.13	0.27	0.19	0.09
Total Year 16	0.23	0.36	0.20	0.37	0.11	0.14	0.28	0.19	0.10
Tariffs Year 1	0.02	0.03	0.06	0.06	0.02	0.00	0.02	0.02	0.00
Tariffs Year 5	0.06	0.08	0.16	0.17	0.04	0.01	0.05	0.06	0.00
Tariffs Year 11	0.08	0.12	0.23	0.23	0.06	0.05	0.08	0.10	0.03
Tariffs Year 16	0.09	0.13	0.24	0.24	0.06	0.06	0.08	0.10	0.04
NTMs Years 1-16	0.02	0.03	0.04	0.04	0.01	0.01	0.02	0.02	0.00
FDI Years 1-16	0.08	0.13	-0.11	0.03	0.02	0.04	0.13	0.03	0.04
PP Years 1 and 5	0.01	0.02	0.00	0.01	0.01	0.01	0.02	0.01	0.01
PPdouble Years 11 and 16	0.03	0.05	0.01	0.03	0.01	0.02	0.04	0.02	0.02

Source: Authors' estimation using a computable general equilibrium model.

Notes: NTMs, FDI and PP stand for Non-Tariff Measures, Foreign Direct Investment and Public Procurement, respectively.

The ambitious negotiation of tariff and quota reductions, since both are included in this scenario that for simplicity we call ("Tariffs"), is key in explaining the total impact of the agreement. The reduction of non-tariff measures on trade in goods and services ("NTMs year 1-year16"), has a positive effect, albeit small (+0.02% of GDP). Although they increase trade, they do so to a lesser extent than tariff liberalization. In many sectors, tariffs are currently higher than non-tariff measures and, above all, we estimate that the decrease in tariffs is much more intense than that of non-tariff measures. This means that the impact of the elimination of barriers to trade arising from this agreement is greater when tariffs are reduced or, in most cases, eliminated, than when non-tariff trade measures are reduced.

Where Spain stands to gain benefits that, to our knowledge, have received virtually no attention in most of the existing analyses of the agreement, is in the reductions to non-tariff measures applied to FDI ("FDI year 1-year16"). The presence of Spanish subsidiaries in Mercosur is relevant and an increase in their operations would have a positive impact on Spanish GDP of approximately 0.08%. It thus becomes a key component of the EU-Mercosur agreement, which even exceeds the positive contribution of tariffs during the initial years to end up almost equaling them in year 16. In this study we model FDI in advanced services sectors, that is, in all services sectors except personal and other services.

The last two rows of Table 1 present the results of the opening to public procurement. Mercosur will open its public contracts for the first time to foreign European companies that will compete on equal terms with local companies, thanks to this agreement and, for the time being, it will not be open to any other foreign company. The simulations concerning public procurement vary according to the years of the agreement considered. As the agreement contemplates that, although it is initially open at the level of central government agencies, within a maximum period of 2 years after its implementation it may also be opened to regional ones. Thus, in years 1 and 5 we consider a procurement scenario at the central level only (“PP years 1 and 5”). By contrast, for the following two periods we introduce this regional procurement scenario, in which the reductions in non-tariff measures to trade in goods and services and FDI in services resulting from the opening to government procurement are multiplied by a factor of two (“PP years 11 and 16”). Certainly, there is no assurance that procurement will apply to regional governments. However, this scenario of double reductions in non-tariff measures, can also be considered as a deepening of the potential of the agreement that always implies a certain period of time, as can be deduced from the European Commission’s reports of the development of its trade treaties (European Commission, 2020a, 2020b) and from other works in the literature (Baier, et al., 2019). Thus, using this scenario (“PP years 11 and 16”), we simulate a deepening of the agreement's achievements in terms of further reductions in non-tariff measures to trade and investment as the years progress.

Table 1 shows that in the first period (“PP years 1 and 5”), its effects for our economy are positive, but extremely small (0.01%). It would be necessary to deepen it to the regional level or to advance in the implementation of other measures that would produce additional reductions in non-tariff measures, which would cause an additional increase of 0.03% in our country’s GDP (“PP years 11 and 16”). The effects are also small and proportional for the rest of the macroeconomic variables, which experience a slight positive impulse that practically doubles when we move from the first period (years 1 and 5) to the second period (years 11 and 16). If no progress is made in public procurement at the regional level, or if it is estimated that there will be no additional reductions in non-tariff measures, such as those captured by the “PP years 11 and 16” scenario, the reader can easily obtain an approximate idea of the necessary discount by subtracting from the total impact of years 11 and 16, the impact derived in the “PP years 1 and 5” scenario, which is the additional boost attributed to public procurement or other dynamizing effects of the potential of the agreement in years 11 and 16.

It is clear, therefore, that the EU-Mercosur Agreement is a source of growth for our economy. In terms of employment, if we apply 0.11% growth to the volume of employment in Spain in 2019 (20.2 million of Spanish employees according to the National Institute of Statistics, 2021), the increase would be 22,088 jobs created thanks to the agreement in that year, a momentum that would be maintained for several years. This job creation is preceded by other, smaller job creation in the previous years of the agreement, as the percentage figure for job creation dictates. However, this is a very crude illustrative figure, which underestimates the employment generation impact, as our labor market will have grown in number of employees compared to 2019, within 16 years.

Table 2 shows two blocks of columns of results: on the left the one referring to Spanish bilateral exports and the one on the right with our bilateral imports. In bilateral exports and imports we concentrate on the two largest Mercosur partners (Brazil and Argentina), together with flows to all Mercosur countries and to the rest of the EU26. The results refer to year 16, including the joint impact of all the components of the agreement, that we analyze interacting simultaneously.

Total bilateral export flows grow heavily to Argentina (65.66%), to Brazil (27.71%) and to the four Mercosur countries (36.78%). These increases are very high, since nearly all Spanish sectors expand their exports to these countries. Although tariffs and other barriers to trade and FDI also fall for the rest of the European countries, Spain is firmly increasing its presence in Mercosur.

The increase in Spain's bilateral exports to Argentina is considerably higher than the increase in exports to Brazil. Brazil and Argentina (and Paraguay and Argentina) currently impose equal Most Favored Nation tariffs on Spain. In addition, the tariff and quota reductions that have been agreed in the agreement are also the same for the four Mercosur countries, so the reductions in percentage are the same in Argentina and Brazil in all sectors. The differences between Argentina and Brazil stem from the forces related to the reductions in non-tariff measures. The contractions in the latter are more sizeable in Argentina than in Brazil. In addition, there is another statistical effect, which leads to greater percentage variations in exports to Argentina with respect to Brazil, namely, that the initial share of Spanish bilateral exports to Argentina is much smaller than that of Brazil.

Table 2 also shows the impact on Spanish bilateral exports to the rest of the EU26, which fell by -0.36%. The bulk of the falls are concentrated in the goods sectors, while Spanish bilateral trade with the EU is practically unchanged in the services sectors.

Table 2. Spain's bilateral exports and imports in year 16 of the agreement (% change from initial level).

	Spanish bilateral exports to:				Spanish bilateral imports from:			
	Argentina	Brazil	Mercosur	EU26	Argentina	Brazil	Mercosur	EU26
Total Agriculture	49.45	31.84	35.09	-0.8	32.8	7.89	13.25	-1.14
Total Manufacturing	87.13	49.45	60.34	-0.39	24.82	10.86	14.65	0.00
Total Services	12.9	6.03	7.48	-0.11	10.19	19.20	15.55	0.20
Total	65.66	27.71	36.78	-0.36	23.46	11.30	14.46	-0.02

Source: Authors' estimation using a computable general equilibrium model.

Turning to the right-hand side of Table 2, imports from Mercosur increased by 14.46% in year 16. If we focus on its two main economies, those from Argentina grew by 23.46% and those from Brazil by 11.30%. Looking at total imports from the EU, there is a very small decrease of -0.02%. This effect comes mainly from bilateral agricultural trade, which contracts by -1.14%. In contrast, imports in manufacturing remain unchanged and in services increase slightly. The concept of trade diversion implies substituting imports of higher quality for others which, although of lower quality, displace the former due to

the fall in trade barriers when a new partner joins a trade agreement. The question arises as to whether the quality of products from Mercosur is lower than that of the EU. Undoubtedly, at least some varieties from Mercosur will be of high quality for EU consumers.

Table 3. Output, employment, wages exports, imports and prices in Spain in the different years of the agreement (% change from initial level)

	Production	Employment	Wages	Exports	Imports	Prices
1.Cereals	-0.15	-0.08	0.05	-0.24	0.10	-0.03
2.Vegetables, fruits, nuts	-0.26	-0.17	0.00	-0.27	0.82	-0.04
3.Sugar	-0.21	-0.09	0.04	-0.19	0.01	-0.02
4.Plant & animal fiber, others	0.01	0.03	0.10	-0.31	0.25	0.00
5.Bovine and other ruminant meats	-1.04	-0.64	-0.24	-3.48	2.83	-0.21
6.Other animal products	-0.28	-0.13	0.02	-0.38	0.03	-0.11
7.Dairy products	0.08	0.10	0.14	-0.32	0.31	0.00
8.Forestry	0.19	0.15	0.16	-0.41	0.52	0.10
9.Minerals (other extraction)	0.05	0.05	0.11	-0.14	0.09	0.04
10.Live animals, meat and animal products	-0.26	-0.10	0.04	-1.20	1.11	-0.08
11.Vegetable oils and fats	-0.01	0.06	0.12	0.22	0.04	-0.06
12.Food products nec	-0.28	-0.08	0.05	0.25	2.24	-0.14
13.Beverages	0.14	0.15	0.17	0.06	0.20	0.00
14.Textiles	0.19	0.12	0.15	0.72	0.53	0.08
15.Wearing apparel	0.24	0.20	0.19	0.31	0.35	0.03
16.Leaner products	-0.14	-0.02	0.08	-0.20	0.27	-0.08
17.Wood products	0.33	0.25	0.21	1.13	0.37	0.05
18.Petroleum products	0.05	0.12	0.15	0.04	0.34	-0.09
19.Chemical products	0.40	0.27	0.23	1.00	0.46	0.08
20.Pharmaceutical products	0.05	0.05	0.11	0.15	0.20	0.01
21.Rubber and plastic products	0.07	0.06	0.12	0.34	0.30	0.02
22.Metals and metal products	0.20	0.17	0.17	0.50	0.28	0.02
23.Electronic products	0.12	0.11	0.14	0.46	0.17	0.02
24.Other machinery	0.20	0.12	0.15	0.60	0.33	0.08
25.Motor vehicles and parts	0.08	0.07	0.12	0.13	0.19	0.01
26.Other transport	-0.06	-0.02	0.08	0.07	0.21	-0.03
27.Other manufactures	0.19	0.16	0.17	0.52	0.26	0.03
28.Construction	0.06	0.05	0.11	-0.38	0.17	0.04
29.Hotels and restaurants	0.32	0.22	0.20	0.15	0.36	0.09
30.Maritime transport	0.17	0.17	0.17	0.04	0.21	-0.02
31.Air transport	0.13	0.13	0.15	-0.01	0.23	-0.04
32.Communication	0.18	0.10	0.14	0.26	0.33	0.07
33.Banking	0.17	0.11	0.14	-0.07	0.39	0.08
34.Insurance	0.26	0.14	0.16	0.05	0.43	0.10
35.Business Services	0.12	0.06	0.12	0.47	0.80	0.06
36.Personal services	0.17	0.13	0.15	-0.40	0.37	0.06
37.Other services	0.18	0.13	0.16	-0.44	0.34	0.06
38.Electricity	0.19	0.17	0.17	-0.53	0.36	0.05
39.Coal extraction	-0.09	-0.05	0.06	-0.13	0.10	0.00
40.Oil extraction	0.00	0.00	0.00	0.00	0.04	0.00
41.Gas extraction or distribution	0.00	0.00	0.00	0.00	0.10	0.00
Fossil fuels	-0.09	-0.05	0.06	-0.13	0.06	0.00
Total Agriculture	-0.24	-0.12	0.03	-0.46	0.51	-0.06
Total Manufactures	0.09	0.10	0.14	0.35	0.32	0.01
Total Services	0.18	0.13	0.15	-0.05	0.53	0.06
Total	0.14	0.11	0.14	0.20	0.37	0.04

Source: Authors' estimation using a computable general equilibrium model.

The rows of Table 3 present the 41 sectors of the model followed by three aggregates showing the effects on the agricultural aggregate (sectors 1 to 8 of the model), manufacturing (sectors 9 to 28, 39, 40 and 41) and services (sectors 29 to 38). The last row shows the aggregate impact for all 41 sectors and, thus, coincides with the aggregate

exports and imports we have seen in Table 1 and Figure 1. As in the harmonized system, as we move from the sectors at the top of the table to those at the bottom, the sophistication and processing of the goods or services produced generally increases.

Table 3 shows in its columns the sectoral impact of the agreement on Spain's output, employment, wages, exports, imports and prices in the year 16, following an expansion in trade and FDI. With the agreement, there is a generalized increase in output in most sectors, leading to job creation along with wage increases for most of them. The evolution of aggregate production, which shows a 0.14% increase in Year 16, leads to an even greater increase in value added of 0.23%, as we have seen in the macroeconomic results for the same year. This tells us that the increases in output experienced with the agreement are concentrated in sectors with higher value added, as is the case in many service sectors. Indeed, the last rows of Table 3 indicate that the largest increases in output, employment and wages are recorded in the services aggregate, with increases of 0.18%, 0.11% and 0.14%, respectively. This is an important effect of the agreement on the Spanish economy. Not only does the activity increase, but it also specializes in higher value-added tasks. In addition, in the aggregate there is a lower proportion of CO₂ emissions, measured in comparison with the economic activity generated, as noted above.

The 0.20% increase in aggregate exports shown in Table 1 for year 16, is the same as the one shown in Table 3 for the row of “Total sectors”. Total manufacturing exports, which account for the bulk of our exports, grew by 0.35%. The services exports aggregate contracts slightly (-0.05%) due to a substitution effect between FDI in services and exports. The agricultural aggregate goes down by -0.46% because although exports to Mercosur expanded strongly, there is a reduction in exports to the EU26 of -2.02% (Table 2), which ends up predominating. In terms of our exports overall, the agreement results in a clear creation of trade, production and employment for our companies.

A pattern of greater complexity can also be observed on the side of goods exports, since the agreement tends to increase, in general, the complexity of our export basket. The agreement shifts production, exports towards more elaborated products, located more towards the end of our table of sectors. In addition, we measure complexity empirically using “product space” tools (Hidalgo and Hausmann, 2009). In fact, we have estimated the exports with the highest ex ante “export potential” to the four Mercosur countries at the two-digit and four-digit product level of the harmonized system. We do so on the basis of a gravity model that incorporates in a more stylized way than our computable general equilibrium model, the production side, demand side and bilateral frictions (observable and unobservable), for each pair of trading partners within the total set of international trade relations. To a large extent, the exports that enjoy the highest ex ante potential according to our calculations are, in general, those that enjoy the highest complexity. Moreover, we confirm, for several of them, their export expansion in our computable general equilibrium model. Additionally, as the export basket becomes more complex, we are able to specialize in products that, due to their “technological proximity” (Hidalgo, et al., 2007), further deepen complexity. We also know that more complex products have a greater potential for demand growth.

The export structure of countries (their export basket) has been identified as one way of measuring their level of “knowledge”, as opposed to a very limited set of other alternative indicators such as total factor productivity, patent citations or patent production (Bahar, Hausmann and Hidalgo, 2014). The reasoning behind this idea would be that the comparative advantage of countries varies as they absorb new technologies. Those new technologies, in turn, increase productivity leading to higher exports. In turn, exports eventually condition future growth. When countries specialize in the rich countries’ own exports, they grow more and when they specialize in poor countries’ own exports they grow less (Hausmann, Hwang and Rodrik, 2007).

In addition to these forces leading to specialization in more complex products, there is also a push for activity in the service sectors. The latter stems from forces to which we pay attention in this study, in a novel way in the EU-Mercosur Agreement literature. These are three avenues that are driving up services output: 1) the most important is the increased activity of Spanish subsidiaries in services sectors in Mercosur countries; 2) the opening up of government procurement for European multinationals to participate, especially in the 11-16 period, also means increased multinational activity and export activity in services sectors; 3) the final force is the fall in non-tariff measures in services sectors, which although operating only through lower barriers to services exports, means an additional boost in these sectors. This force is also coupled with additional reductions in non-tariff measures in services exports that occur with government procurement.

The sectors with the highest increase in production are chemicals (0.40%) and wood (0.33%), which are also leading the increase in sectoral exports. Note that our wood sector includes paper and publishing products which are related to the printing industry. Production in the chemical sector has a strong export orientation. This factor helps the export increase to translate into a significant production increase. Although the export orientation of the wood sector is lower than the one of chemicals (20.62% compared to 51.14%), by experiencing the highest export increase of all sectors there is a clear boost to its production. Among the manufacturing sectors, the increase in production in clothing (0.47%) is the next one in importance. Although there is a certain export pull, the remarkable increase in production in this sector, is reinforced by private consumption. Indeed, it is one of the manufacturing sectors that weighs most heavily on private consumption, which, by growing thanks to the increases in employment and income produced by this agreement, boosts national consumption. Machinery and Metals are the next sectors with the largest increases in output. The high export orientation of machinery is not present in metals, but the increase in exports has a considerable positive influence on the production of metals. Machinery and metals are followed by hotels and restaurants, which are spurred by higher private consumption.

These sectors (chemicals, wood, clothing, machinery, machinery, metals and hotels and restaurants) that we have been describing as the most prominent in terms of the increases in production are also the ones that are experiencing the largest increases in employment and wages.

Most sectors experience an increase in their total imports. The highest increases occur in bovine (2.83%), other food (2.24%), pork (1.11%) and fruit (0.82%). In all these sectors, the increase of current quotas or the elimination of high tariffs increases imports from Mercosur and displaces intra-European trade and trade from the rest of the world. However, in bovine and pork imports are very small in the context of total Spanish imports, which somehow raises the percentages of variation, given their quantity in absolute values. Next in importance are the increases in imports of business services (0.80%), textiles (0.53%), forestry (0.52%), chemicals (0.46%), insurance (0.43%) and banking (0.39%). The import increases in the services sectors (0.53%) are overlooked in previous literature, which estimates smaller and very small increases in services trade.

The last block of columns in Table 3 shows the evolution of prices.² The increase in imports of agricultural products results not only in a greater variety of products to choose from, but also in a slight reduction in their prices (-0.06%). Therefore, the result is that companies and consumers would have access to a series of products at lower prices and, overall, despite the expansive context that the agreement generates, prices remain low with a 0.04% growth in year 16.

Aspects that are difficult to quantify

Many aspects of this treaty offer improvements in relations whose benefits are difficult to quantify. This is the case, for example, of: 1) The reinforcement to security and transparency that will be given in exchanges; 2) The protection against imitation of 357 geographical indications of traditional European products, mainly food and beverages, such as Spanish “jabugo” (the highest coverage ever achieved), together with other intellectual property rights; 3) The promotion of the commitment to effectively implement numerous aspects related to sustainability, including the United Nations Framework Convention on Climate Change and the Paris Agreement on climate change, the defense of labor rights (ensuring that fundamental labor rights as defined by the International Labor Organization are respected) and a responsible corporate culture, along with a commitment to address deforestation and sustainable forest management and conservation (in all these aspects on Trade and Sustainable Development, civil society organizations are offered an active role in the implementation of the agreement and the stated commitments will be enforceable through a dispute settlement mechanism); 4) Facilitation of access for small and medium-sized enterprises to information on market entry requirements; 5) Rapid exchange of information between governments and technical consultations; 6) Bilateral cooperation in official controls and certification; 7) Strengthening a set of binding commitments to protect the environment based on other multilateral environmental agreements, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Biological

² Note that in this Table 3 the prices reflect those of goods and services *produced* in Spanish territory, which differs from the CPI shown in the aggregate results. The latter is the evolution of the prices of goods and services *consumed* in Spain (including, therefore, both domestic and imported goods and services).

Diversity, the Food and Agriculture Organization of the United Nations (FAO) fisheries management measures, regional fisheries management agreements, the joint fight against antimicrobial resistance (incorporated for the first time in an EU trade agreement), as well as cooperation in the promotion of animal welfare; 8) The facilitation of the movement of professionals for business purposes; among other items (European Commission, 2019). This is coupled with geopolitical advantages whereby the EU and, especially Spain, can strengthen its political ties in the region.

Original features of this study

The results for the different regions are generally higher than those obtained in the literature, except for trade flows. This is firstly because our modeling includes components of the Agreement in Principle of June 28 (2019) that, to our knowledge, have not yet been included in most previous studies, such as FDI in services and government procurement. Additionally, some of the previous studies focus on the effects for goods sectors, without including the impact on services, which experience the largest increases in output in Spain. Moreover, these results would be much lower if the way of deriving the impact did not take into account several real-world characteristics. Among them, in this paper we have included the existence of multinationals in service sectors. Besides, the real world is not, in general, governed by what economists define as perfect competition. Therefore, in this paper we include firms of different sizes, costs and productivity levels within the same sector (in several manufacturing sectors). We also model that manufacturing firms may stop exporting to certain markets and start exporting to other markets and move from serving only the domestic market to exporting, or vice versa.

These characteristics in manufacturing sectors are technically called monopolistic competition à la Melitz (2003). If they were not part of our model, Spanish GDP would not have grown by 0.23% in year 16, but by 0.10%. In addition, if our model also did not include the existence of multinationals in services that have some market power, Spanish GDP would have grown by only 0.08% in year 16. It is clear that an important part of the positive economic effect of the agreement is explained by the fact that, in markets of imperfect competition, such as those that exist in reality, the greater openness to international trade enhanced by the agreement improves the competitive climate and intensifies positive outcomes.

Moreover, the use of an applied general equilibrium (CGE) or Computable general equilibrium (CGE) multi-sector, multi-factor and multi-region model of the world economy allows us to capture numerous interactions in the economy, between its different sectors and between these sectors and the labour market. The sectoral aggregation in the model gives us the results at the macroeconomic level, although the micro and macro levels interact in such a way that, for example, higher output linked to exports leads to increases in national income that also feed into higher private consumption, at the aggregate level. Our model is supported by several scientific publications (Latorre,

Olekseyuk and Yonezawa, 2019; Latorre, Olekseyuk and Yonezawa, 2020; Latorre, Olekseyuk, Yonezawa and Robinson, 2020). In addition, for the modelling of the Spanish economy we have introduced further extensions by incorporating the presence of unemployment (following previous work, Latorre, Yonezawa and Zhou, 2015), as well as frictions in labour mobility.

In our model, the original goods trade data from the GTAP database (Aguiar et al., 2019) have been replaced by the average trade between Spain and the EU26 and the four Mercosur countries in the period 2017-2019, according to the International Trade Center (2020a). The most favored nation tariffs for those flows have also been replaced by those for 2019 (International Trade Center, 2020b), which considers, among other aspects, Paraguay's exit from the Generalized System of Preferences. To calculate the percentage corresponding to tariffs for a sector, the 8-digit HS codes have been averaged using these average trade data for the period 2017-2019. For their part, multinational data come from Eurostat (2019), TISMOS (WTO, 2020) and "fDi Markets" database (Financial Times, 2020). Our simulations on the openness to the provision of services through exports and FDI, as well as that of government procurement, is based on the chapters and annexes of the negotiated agreement, which set out, for example, which sectors are liberalized and which are not, also containing indications of the degree of ambition in liberalization.

Furthermore, the agreement contains general rules on digital trade, aiming to eliminate unjustified obstacles to e-commerce, provide legal certainty for companies and guarantee consumers secure connections in which their data is protected. To analyze the potential for agreement on this front we have analyzed the impact of the simple announcement of the Agreement in Principle on e-commerce between the EU and Mercosur. Note that the literature on the impact of trade agreements on e-commerce is virtually non-existent. We use digital traffic data from nearly 10,000 e-commerce websites, located in 33 different countries, receiving traffic from 165 countries, as a proxy for the digital shopping variable. We have performed a comparison of the six months before and after the announcement of the Agreement in Principle reached. Our estimation is based on a difference-in-difference gravity model, using panel data techniques to control for all possible time-related trends. The simple announcement increased cross-border Internet visits to e-commerce websites among the signatories by 4.7% to 10%. Based on more micro data, with a larger number of observations, the treatment group being the set of cross-border visits to e-commerce websites located in Mercosur countries from visitors located in EU member states (or vice versa) and excluding purely domestic trade, the volume of cross-border visits to e-commerce websites per month increased by 4.7%. When aggregating the data at the country and month level, to observe possible nuances at the national level, the cross-border e-commerce flow increases by 10% after the signing of the Agreement.

In sum, the EU-Mercosur Agreement is a "win-win" for its signatories. All parties gain from this agreement, but the positive impact will be more visible on the Latin American side. Sensitive products have received justified attention in the negotiations of this agreement. The agreement not only brings economic benefits, but also has an important

geostrategic role in a region where Europe's influence has been weakening while China's has been growing. For Spain, it is a way to strengthen its important role in the Mercosur region. It is also an opportunity for growth and job creation, based on more technologically advanced and cleaner sectors. Moreover, the agreement brings about wage improvements and higher remuneration for companies, while keeping inflation low. Generating employment is a key to fight inequality and reduce poverty, something to which the agreement contributes for all signatories.

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