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The European Union-Mercosur Association Agreement: Implications for the EU Livestock Sector

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ABSTRACT

Following 25 years of negotiations, the Mercosur countries and the European Commission reached a political agreement on a comprehensive association agreement in December 2024. However, its ratification is currently uncertain due to concerns of some European member states, among other issues, around possible negative impacts on their farm/livestock sectors. The main objective of this paper is to quantify these likely impacts. Our methodology elaborates on the general equilibrium framework used in previous sustainable impact assessments, where potential or illustrative agreements were analysed. We simulate both a full liberalisation scenario as well as a scenario simulating the more limited market-opening offers in sensitive sectors, notably tariff rate quotas in agriculture. This allows us to identify the protective impact of these more limited offers. We also provide results for the main European member states and conduct several robustness analyses. We find that, because the beef offer is limited to additional import quotas, the negative impacts on livestock income are heavily muted. We also find that the European livestock sector, and more generally the farm and food industries, benefit from the income growth induced by the other components of the agreement. Finally, we do not find stronger negative effects in countries currently opposed to ratification, in particular France, because their consumers prefer domestic foods.

JEL Classification: Q11, Q18

1 | Introduction

Negotiations on an EU–Mercosur association agreement began on the basis of a Council mandate in 1999. The negotiation has been a long and complex journey, spanning over 25 years from 1999 to 2024. The process included a trade pillar, negotiated by the Commission on behalf of the Union, as well as political dialogue and cooperation pillars negotiated by the European External Action Service. The initial text of the trade provisions was published in 2019 but met with a lukewarm reception, in particular due to perceived weaknesses around its environmental and sustainability provisions. Additional negotiations began in March 2023. In December 2024, political agreement was reached on amendments to the trade chapters to address expressed concerns and priorities.[1] Now the Commission will submit it to the Council and Parliament for approval. For 'mixed' agreements which cover areas of both EU and Member State competences, national parliaments must also ratify the agreement. The precise legal basis for ratification remains to be decided (EPRS 2024).

The political context surrounding the agreement has shifted considerably over the years. For the European Union, the motivations include fostering closer ties with the increasingly important emerging economies of Mercosur, enhancing market access, and securing critical raw materials. On the Mercosur side, the agreement represents an opportunity to advance their incomplete common market, despite hesitations from member countries like Argentina, and to attract additional investment from the EU (Baur et al. 2023). Both blocs see an advantage in

strengthening their economic relations to limit their dependence on other trading partners, notably the US and China.

The ratification process has faced numerous challenges. In October 2020, the European Parliament symbolically opposed the ratification of the agreement due to environmental concerns (European Parliament 2020). However, in 2023, the Parliament voted in favour of ratification, contingent on satisfactory pre-ratification commitments regarding climate change, deforestation, and other issues (European Parliament 2023). Opposition has been particularly strong from farm and environmental groups (Dupré and Kpenou 2025), as well as from countries where the agricultural sector, especially livestock farming, plays a significant role (France, Poland, Austria, Ireland) (Council of the EU 2023). The main grounds for opposition among these groups include fears of increased competition and loss of income, concerns about unfair competition due to lower health and safety standards in Mercosur countries, and worries about increased deforestation, particularly in Brazil.

Previous empirical estimates of the agreement's impact have several limitations. The official sustainability impact assessments (Kirkpatrick and Geoge 2009; LSE Consulting 2020) model several hypothetical liberalisation scenarios but do not model the specific elements of the final trade provisions that are particularly important for agriculture. Several national-level studies have been undertaken (Spain: Latorre et al. 2021; Ireland: Implement Consulting 2021; Austria: Sinabell et al. 2020; Sweden: Swedish Board of Trade 2020; France: Ambec Commission 2020; Netherlands: Carrico et al. 2020) but they do not necessarily provide an overview of the effects for the EU as a whole and the principal Member States. Agricultural sector studies (Idele 2023) provide useful descriptive insights but do not provide rigorous model-based impact estimates. The JRC study on the cumulative impact of EU FTAs on agriculture (Ferrari et al. 2024) does not specifically isolate the impact of the Mercosur agreement.

This study aims to fill these gaps by assessing the economic consequences of the final EU-Mercosur Agreement on different EU member states and their agri-food sectors. Our strategy is to follow closely the methodological approach used in the official impact assessments but using the most up-to-date GTAP database and the proposed tariff offers in the trade provisions finally agreed. The analysis focuses particularly on the cattle–beef industries which have been most vocal in opposing the agreement.

The paper proceeds as follows. Section 2 briefly describes the methodological approach. Section 3 describes the scenarios simulated. We simulate both a full liberalisation scenario as well as a scenario simulating the more limited market-opening offers in sensitive sectors, notably the tariff rate quotas in agriculture. This allows us to identify the protective impact of these more limited offers. For each scenario, we quantify the results of the agreement under three settings: a standard CGE setting assuming full mobility of factors and a fixed amount of total labour in each country; a partial equilibrium setting considering only the farm/food sectors and markets to analyse only the farm provisions of the agreement; and a setting with unemployment where nominal wages are fixed in EU and Mercosur countries. Section 4 presents the results of the simulations both for the EU and Mercosur countries, as well as for some principal EU Member States. Section 5 discusses the robustness of our results. Section 6 summarises our conclusions and also makes reference to the debates on standards and deforestation.

2 | Methodology

Over the last 20 years, many economic studies have been devoted to the analysis of the EU-Mercosur trade flows and policies. A significant share of these studies relies on a Computable General Equilibrium (CGE) framework fed with the GTAP international databases. In particular, the two sustainability impact assessments (SIAs) performed for the EC services adopted such a framework. We also adopt a multi-country CGE framework to include the indirect/induced effects on the European farm/food industries of the non-farm provisions of the association agreement.

Many types of multi-country CGE models have been developed on these GTAP databases, many of them being included in the CGEBox (Britz 2022). We start with the simplest GTAPinGAMS model assuming static behaviours, perfect competition in all markets, prices ensuring market equilibrium, investment driven by exogenous saving rates, full employment of all primary factors and fixed trade balances. Firms maximise their profits and consumers maximise their utility. Production technologies are specified with nested CES functions and household preferences are captured with the Constant Difference in Elasticities (CDE) system. We use the latest available GTAP database reporting the economic flows for the year 2017. Our sectoral and regional aggregations start from the ones retained by LSE Consulting (2020), to which we distinguish the main EU MS and also more farm and food sectors.

We clarify below three important features of this methodology to facilitate the understanding of our simulated results: the modelling of trade flows, of trade policies, and both factor mobilities and macro-economic closure rules.

2.1 | The Modelling of Trade Flows

Whatever the framework, the modelling of international trade flows is constrained by the available data. In many trade databases, we observe that a good is both exported and imported by a given country. This is not surprising when the good considered is an aggregate comprising several goods (such as exported cereals and imported fruits by the EU when considering the aggregate of farm products). Even at a finer level (such as wheat), we can again observe both imports and exports for several consecutive years. There are many possible reasons for this cross-trade, such as spatial aspects (proximity of borders), temporal aspects (seasonality of production/consumption), quality aspects (where consumer preferences differ for different parts of, say, an animal carcass), or political aspects (tariff and non-tariff barriers). Measuring all these potential reasons is generally not straightforward.

To cope with this reality of cross trade, the standard trade specification in multi-country CGE models is to assume

product differentiation by origin. This specification, attributed to Armington (1969), considers that the relative prices of goods are the reasons among others explaining trade between countries, the other reasons being grouped in parameters capturing the consumer preferences for different origins. This specification implies that even if the prices of agricultural goods from Mercosur countries become more competitive relative to European prices (for instance, following a trade agreement or following differential productivity growth between the two regions), some European consumers will continue to consume domestic goods. With this specification, the domestic and foreign prices can therefore diverge in equilibrium to some extent. This divergence is controlled by the Armington elasticities of substitution. In the GTAP framework, some strong separability assumptions are made: the consumers in each country arbitrate first between the domestic goods and all foreign goods, then between different foreign goods. At both stages, the substitution possibilities are captured with standard CES functions, and the elasticities of substitution at the second level are twice those at the first level.

The levels of these Armington elasticities of substitution are obviously key when assessing the economic impacts of a trade agreement. The underlying CES specification also gives rise to the so-called small share problem. To illustrate, let us assume for one hypothetical food product that, due to initial effective tariffs of 50%, initial European imports from Mercosur countries amount to 0.5% of European total consumption (and thus European production represents 99.5% of this total consumption). Let's assume that, for this good, the Armington substitution elasticity equals 10 (based on Fontagné et al. 2022), there is no expansion of European total consumption, and no reduction of the European price following a full tariff liberalisation. In this case, removing the effective tariff increases European imports by $10 \times (1-0.005) \times 50\% = 497.5\%$ and decreases the consumption of domestic goods by 2.5%. The value share of imports in total consumption amounts to 2.74% after the shock. This is clearly much higher than the initial share (0.5%) as expected, but it is not the disappearance of consumption for European production. This reflects that some European consumers maintain their consumption of domestic goods despite the new prices as determined by the chosen elasticity of substitution.

When simulating the impacts of a full trade liberalisation between the EU and Mercosur countries, Philippidis et al. (2014) highlight the small share problem induced by the CES specification and suggest modifying its parameters. In parallel, other efforts are conducted to improve the econometric identification of these Armington elasticities (Fontagné et al. 2022). Motivated by the analysis of global value chains, recent works refine these elasticities by distinguishing trade flows by consumer type (e.g., Fusacchia et al. 2024). One of the aims is to identify whether households express stronger preferences for domestic products than industries for intermediate consumption. The GTAP framework makes this distinction between trade flows according to domestic users, assuming however the same substitution elasticities for all these users.

In this paper, we use the latest Armington elasticities provided with the GTAP database, and we conduct sensitivity analysis for different values, which also helps to address the small share problem.

2.2 | The Modelling of Trade Policy Instruments

Trade policy around the world is taking increasingly complex forms that we gather in three groups: ad valorem/specific tariffs, tariff quotas, and other Non-Tariff Measures (NTM).

Whatever the framework, there is a well-accepted theoretical modelling of both tariffs and quotas (for instance, Anderson and Neary 1992). Compared to tariffs, the modelling of the system of import quotas with in-quota tariffs and out-of-quota tariffs is more involved, but still workable, addressing three main issues. First, trade flows must be compared to quotas to determine the effective tariff. Second, eventual quota rents need to be allocated to the exporter or importer. Third, quotas may be defined over many goods or importing/exporting countries. The implementation of this approach with real data is often challenging, again due to data constraints. Statistics on domestic production, demand and price are generally available with much less detail than statistics on trade variables (tariffs, quotas, import volumes and import prices). For instance, international trade databases provide information for different beef cuts but statistics on domestic variables are only available for the complete beef carcass.

Three main solutions have been pursued in the empirical literature to cope with this data issue. A first one (e.g., Ferrari et al. 2024) defines trade policy shocks on detailed trade statistics, then aggregates them at the CGE product level and conducts the CGE analysis. A second solution (e.g., Junker and Heckelei 2009; Grant et al. 2009) disaggregates the domestic variables to the equivalent trade nomenclature using expert knowledge or ad hoc assumptions. A third solution (e.g., Gouel et al. 2011; Jafari et al. 2021) maintains aggregate domestic variables with detailed trade data. Both types of data are reconciled with endogenous building of trade aggregates using a modified version of the previously discussed Armington specification. In this paper, we implement the traditional TRQ modelling, which does not distinguish the different products at the tariff line level in our CGE framework (the first solution). Rather, we aggregate the shocks at the tariff line levels and introduce the resulting shock in our CGE model.

Other NTMs are numerous, especially for food products, divided between technical measures (such as sanitary, quality, or environmental requirements for goods) and non-technical ones (such as licensing requirements, distribution restrictions, or trade-related investment measures). Given their more qualitative nature compared to tariffs and quotas, quantifying the market effects of current NTMs and simulating the likely effects of modifying them is more challenging.[2] A large and lively literature tackles these challenges mostly with "gravity-based" estimation for the first type of NTM and with the so-called "iceberg" approach for the second one (Sanjuan Lopez et al. 2019). The latter approach is based on the idea that the volume of traded products may melt away during the trade exchange with greater stringency of the NTMs just as an iceberg melts away. Hence, a reduction of an NTM is simulated as a reduction of this lost volume, or equivalently by a technological change that reduces the

shipped levels of products to obtain a given level of imports at the border of the importing country. This reduction implies that the imported product becomes more productive/competitive for given price levels and thus leads to more trade flows to the detriment of domestic goods.

In this paper, we adopt this standard iceberg approach for both goods and services as in many assessments of the EU–Mercosur association agreement.

2.3 | Factor Mobility and Macroeconomic Closure Rules

By definition, CGE models offer the possibility to assess the economic impacts of sectoral provisions on the affected sector but also to assess the economic impacts on the sector of other sectoral/macroeconomic provisions. The latter impacts may overturn the first ones. This possibility depends, among other assumptions, on factor mobility and macroeconomic closure rules (Kilkenny and Robinson 1990). Available CGE impact assessments of the EU-Mercosur agreement generally assume full mobility of labour between productive sectors as well as a fixed total labour force in each economy. These assumptions imply that workers in a negatively impacted sector can move to other productive sectors, eventually at lower wages. These assumptions also imply that firms in positively impacted sectors cannot hire additional workers without increasing their wages due to the absence of involuntary unemployment. Many theoretical papers already underline the crucial impacts of these assumptions (e.g., Kreickemeier 2005; Falvey and Kreickemeier 2009). Testing these assumptions is also crucial because one objective of the EU-Mercosur association agreement is to create jobs.[3]

In this paper, we quantify the EU-Mercosur association agreement under three alternative settings. The first setting, hereafter labelled the standard CGE, assumes full mobility of factors between productive sectors and a fixed amount of total labour in each country. The second setting, hereafter labelled the Partial Equilibrium setting, considers only the farm/food sectors and markets to analyse only the farm provisions of the agreement. This second setting is obtained by removing the equations of the standard CGE model which define the household income and labour/capital market equilibrium in each country. The third setting, hereafter labelled the CGE with unemployment, considers that nominal wages are fixed in each EU MS and Mercosur country.[4]

3 | Scenarios

The usual practice when assessing the likely effects of a forthcoming trade agreement is to first build a business as usual (BAU) scenario where past/dynamic decisions are implemented but not the policy scenario. Then this policy scenario is implemented, and the results are compared with those of the BAU.

Building a BAU scenario with a CGE model is tricky as it involves the updating of many exogenous parameters: policy instruments, technological parameters in all productive sectors, eventual shifts in preferences toward goods consumption or saving decisions, government expenditures, and factor endowments to name the main ones. If all assumptions needed to define the BAU scenario are not often transparent, the standard practice is to update first policy instruments according to known policy decisions (such as trade agreements) and second productivity parameters and factor endowments to target exogenously given GDP growth. As an example, the LSE SIA starts from the GTAP database for 2011, updating it to 2032 while assuming that effective tariffs between the EU and Mercosur remain the same. However, these effective tariffs have considerably evolved over the last years as reported in Table 1 (these figures will be discussed simultaneously with the results in the next section). One question then is to know the relevant levels of effective tariffs in the BAU, with potentially different levels in the future if world price conditions change. In this paper, we abstract from

TABLE 1 | Initial effective protections according to GTAP databases (in %).

	2011		2017	
	By Mercosur on EU goods	By EU on Mercosur goods	By Mercosur on EU goods	By EU on Mercosur goods
Cereals	15.2	5.2	8.5	0.1
Sugar	1.4	3.1	15.4	54.0
Beef	3.4	12.1	7.0	32.0
Other meats	6.2	7.1	10.8	20.0
Dairy	6.5	2.0	20.3	17.0
Other foods	6.5	6.1	12.6	16.5
Beverage	1.2	3.9	21.5	6.6
Motor	6.6	8.9	14.5	3.1
Machinery	2.5	4.0	11.8	1.3
Chemicals	4.1	3.6	7.4	3.4
Average	4.6	5.4	11.3	3.8

TABLE 2 | Assumptions on the evolution of tariffs and quotas in our agreement scenario.

	By Mercosur countries	By European countries
Agri-food products	Vegetables: −96.2% Other products: −100%	Beef: increase of the TRQ by 50 kt (hence 25% of 2017 flows); in quota tariffs = 7.5% Other meat: 180 kt (hence 100% of 2017 trade flows), in quota tariffs = 0% Sugar: no changes in tariffs Other products: −100%
Manufactured goods	Textile: −76% Wood: −85.6% Chemicals: −80.6% Machinery: −74.9% Other products: −100%	All products: −100%

TABLE 3 | Assumptions on the NTM reductions in our agreement scenario (technical change in %).

	By Brazil	By Argentina	By European countries
Manufactured	1.0	3.3	0.2
Services			
Communication	4.0	13.9	7.8
Transport		21.5	
Financial		1.4	
Other services	2.2	12.0	6.0

these difficulties and instead compute the counterfactual economy: "what would have been the 2017 economy with the EU-Mercosur Agreement in place?"

As stated earlier, the main objective of this paper is to provide a quantitative assessment of the main provisions of the EU-Mercosur Agreement impacting the EU farm/food sectors. In order to understand the results of this main scenario and to quantify the extent to which the Commission succeeded during the negotiations in its defensive interest to protect the beef industry, we also perform an illustrative scenario where we assume full liberalisation of trade of goods between the EU and Mercosur countries and a reduction of NTMs as assumed by LSE Consulting (2020). We split this illustrative scenario into three groups of shocks: liberalisation of the trade of farm/food products, liberalisation of trade of manufactured goods, and finally the reduction of NTMs.

To determine the main provisions of the agreement including the NTM impacts, we rely on Latorre et al. (2021) modified to reflect our agricultural trade assumptions. We assume the full liberalisation of EU imports of manufacturing goods. Mercosur imports of manufacturing goods are also fully liberalised, the exceptions being for textiles (28% reduction of tariffs), wood products (85%), chemicals (80%) and machinery (75%). Latorre et al. (2021) base their NTM impacts on the publicly available World Bank database of ad valorem equivalents of NTMs (World Bank 2019) which was also used in the official LSE Consulting (2020) impact assessment, supplemented by additional sources for NTMs in services sectors. Based on a rigorous literature review, they propose specific reduction rates for both technical NTMs (sanitary and phytosanitary standards and technical barriers to trade) and non-technical NTMs (such as quotas and licensing systems) as the outcome of the agreement. Based on their estimates, for NTMs on manufactured goods, we assume that the iceberg costs to reach the EU border by Brazilian and Argentine goods are reduced such that this represents a 0.2% technical change. In the other direction (from the EU), the technological change amounts to 1% when exported to Brazil and to 3.3% when exported to Argentina (due to higher initial NTMs assumed for these countries). As regards the NTMs on services, the technological changes vary between 2% (when the EU exports other services to Brazil) and 21% (when the EU exports transport services to Argentina). We do not apply NTM reductions to trade in agrifood products.

Finally, the farm/food provisions are the full liberalisation of Mercosur imports, with exceptions for fruits and vegetables (96% reduction of effective tariffs). We also implement the full liberalisation of EU imports, with three exceptions on beef/livestock, sugar/sugarcrops, and pig/poultry meats.[5] Here, we justify the degree of trade opening likely to arise from the EU's TRQ offers. The tariff and NTM reductions in our Mercosur agreement scenario are summarised in Table 2 (tariff reductions) and Table 3 (NTM reductions), respectively.

The impact of opening or increasing a TRQ depends on the initial level of imports relative to the TRQ quantity and on which element of the TRQ—the in-quota tariff, the maximum volume of imports charged the in-quota tariff, or the out-of-quota (MFN) tariff—constrains the level of imports (Skully 2001). Where the level of imports is controlled by the out-of-quota tariff, then increasing the TRQ quantity up to the level of current imports has no impact on import volumes. In this situation, only if the new TRQ permits imports to increase beyond the existing level of out-of-quota imports is additional trade created. Thus, the impact of the EU's TRQ offers for poultry, sugar, and beef depends on the TRQ offered relative to the existing level of MFN imports in these sectors. However, increasing a TRQ within the existing level of imports creates new quota rents, the distribution of which between importer and exporter will be determined by the method of TRQ administration.

In the case of beef, the EU has offered a TRQ of 54.5K tonnes carcase weight equivalent (CWE) for fresh beef and 44.5 kt CWE for frozen beef at an in-quota tariff rate of 7.5% phased in over 5 years. In addition, the in-quota tariff rate on imports under the so-called Hilton beef quota will be reduced from 20% to 0%. Imports of prepared beef products (e.g., corned beef) and live cattle will be fully liberalised in four and 10 years, respectively, after ratification of the Agreement. Argentina is the dominant exporter of fresh beef, and Brazil is the dominant exporter of frozen beef to the EU. There are virtually no MFN imports of frozen beef to the EU, so the new TRQ for frozen beef will likely lead to a similar increase in imports. Mercosur exports of fresh/chilled beef paying MFN tariffs have steadily increased from 30 K tonnes in 2020 to 45 kt in 2024. With the announced elimination of export taxes on beef exports from Argentina, we expect this increase to continue up to 2030 when the TRQ is fully phased in. At the same time, exports under the Hilton beef quota (only open to Argentina and Uruguay among Mercosur countries) will be further curtailed as the US share of this quota is increased, so some current exports under this TRQ will be reallocated to the new TRQ. We assess that the new TRQs will lead to additional fresh and frozen beef imports from Mercosur amounting to 50 kt when the TRQs are fully phased in.

In the case of poultry meat, the EU will allow a quota of 180 kt CWE of poultry to be imported duty-free, phased in over 5 years, made up of 90 kt bone-in poultry meat and 90 kt boneless poultry meat. Brazil already exports substantial amounts of poultry meat to the EU, but virtually all of this is imported under existing TRQs. Only a small amount of boneless chicken cuts enter at MFN tariffs. We therefore assume that the new TRQs will lead to a similar increase in total imports.

In the case of sugar, the EU offer is for a duty-free quota of 180 kt substituting the same volume of sugar currently paying a €98/t in-quota tariff. In addition, Paraguay will obtain a 10 kt quota for organic sugar. In the context of the overall EU sugar market, we assume no increase in trade flows as a result of this EU offer. As the EU plans to allocate import licences within these TRQs to Mercosur exporters, we assume that the TRQ quota rents accrue to Mercosur countries (following the methodology of van der Mensbrugghe 2005).[6]

4 | Results

We concentrate our analysis on sectoral income impacts.[7] We first analyse our results at the EU/Mercosur level, then impacts on the main EU MS. Table 4 reports the impacts of our first illustrative scenario assuming full liberalisation. In this paper, these previous results can be considered as our benchmark computed with a standard methodology with recent data. This benchmark serves to highlight (i) the effects of the agrifood provisions of the association agreement offering less than full liberalisation, (ii) the effects of the non-agrifood provisions of the agreement on the agrifood sector, and (iii) the robustness of these results to some methodological assumptions.

Consistent with the higher initial effective tariffs imposed by the EU on agri-food products, we find that the complete removal of these tariffs alone would penalise some EU sectors and benefit those of Mercosur. For instance, the income of the European cattle sector would decrease by 4.8% while the cattle sector would enjoy a 9.8% increase in Mercosur countries (first line of Table 4). The effect on other livestock (not shown) would be an income fall of 1.4% in the EU and a 6.1% gain in Mercosur. The effects are more limited when considering all agricultural and food sectors, with a 0.7% decrease in agrifood income in Europe. Indeed, the European oilseed and dairy sectors benefit from this hypothetical scenario, thanks to the removal of effective tariffs by Mercosur countries for the dairy sector. The European oilseed sector benefits from a slight reduction in this sector in Mercosur countries, where land competition with sugar, cereals, and pasture becomes more intense. When considering all sectors, we find a modest income decrease from agrifood liberalisation alone of 0.04% for the EU.[8]

The second line of Tables 2 and 3 reports the effects of fully liberalising only trade of manufactured goods. The effects are slightly negative for European agrifood sectors and slightly positive for those of Mercosur countries. Again, this

TABLE 4 | Sectoral income impacts of the full liberalisation scenario (in %).

	Total EU			Total Mercosur		
Modelling setting	**Cattle**	**Agrifood**	**All**	**Cattle**	**Agrifood**	**All**
Standard CGE						
Agri-food lib.	−4.76	−0.69	−0.04	9.80	2.89	0.73
Manufactured lib.	−0.07	0.00	0.20	0.09	0.17	−0.91
NTM reduction	−0.01	−0.03	0.17	0.41	0.40	−0.42
All	−5.16	−0.74	0.39	10.99	3.75	−1.00
PE						
Agri-food lib	−4.93	−0.74	—	10.06	2.98	—
CGE with unemp						
All	−4.54	−0.32	0.74	9.93	3.07	−1.78

Note: The percentage changes refer to simulated changes in 2017 relative to the economies in 2017.

TABLE 5 | Sectoral income impacts of the association agreement scenario (in %).

	Total EU			Total Mercosur		
Modelling setting	**Cattle**	**Agrifood**	**All**	**Cattle**	**Agrifood**	**All**
Standard CGE						
Agri-food lib.	−0.35	−0.14	−0.01	0.66	0.65	0.21
Manufactured lib.	0.00	0.02	0.18	0.00	0.11	−0.81
NTM reduction	0.02	0.02	0.04	0.12	0.10	0.02
All	−0.34	−0.13	0.22	0.78	0.90	−0.65
PE						
Agri-food lib	−0.36	−0.15	—	0.64	0.66	—
CGE with unemp						
All	0.02	0.11	0.42	0.11	0.48	−1.13

Note: The percentage changes refer to simulated changes in 2017 relative to the economies in 2017.

is consistent with the initial effective tariffs on these goods, higher in the Mercosur countries compared to the European ones. This implies that the manufacturing sectors expand in the EU (close to 0.2%), partly to the detriment of the agrifood sectors due to the competition for the fixed labour endowment. The opposite is the case in Mercosur countries. The effects of the reduction of NTMs are of the same nature. When we combine all policy shocks, we find slightly larger negative effects on the EU agrifood sectors. For instance, the income of the European cattle sector would decrease by 5.2% (compared to 4.8% due to full agrifood trade liberalisation alone) and for the other livestock sector by 1.6% (compared to 1.4%). The bulk of the effects is due to the farm provisions in the agreement, which is also revealed by the results with the PE setting (third line of Table 4). With this setting, the income of the European cattle sector decreases by 4.9%. The last line of Table 4 reports the results of the full liberalisation scenario while allowing for unemployment. With this setting, the income decrease in the EU cattle sector would be less severe (by 4.5%, compared to 5.2% obtained with the standard CGE approach) and in the other livestock sectors (by 0.9% compared to 1.6%) for two related reasons. The first one is the lack of increased competition for labour (think for instance of food processing industries). The second one is the additional income effects enjoyed by the European economy, thanks to total net job creation (by 0.8% in the EU). These results of our illustrative/extreme scenario reveal that fears for the impact on the European agrifood sectors are justified if the association agreement did not include safeguards for those European agrifood sectors most exposed to competition. But these results also reveal that these fears can be partly attenuated by other dimensions of the agreement, particularly if these can support job creation.

We next turn to analyse the results of our second scenario simulating the actual provisions of the association agreement, again with our different settings. The first line of Table 5 shows that the agrifood provisions of the association agreement alone still have a negative impact on the European cattle sector and generally on the agrifood sectors by respectively 0.4% and 0.1%. This is roughly one-tenth and one-fifth of the potential negative impacts reported earlier. This is critically linked to the negotiated TRQs on beef cuts. With the agreement, the European imports of beef cuts from Mercosur increase by 25% as justified in our definition of scenarios, compared to 448% in our first scenario. We also find more limited impacts on the other animal sector which includes poultry (a decrease of 0.5% compared to 1.6% in the first scenario) with nearly no impacts on the sugarbeet sector (a decrease of 0.2% compared to 7% in the first scenario). On the other hand, the European oilseed and dairy sectors still benefit as in our illustrative scenario. As expected, the gains for Mercosur countries from the agrifood provisions of the agreement are also considerably reduced, particularly for their cattle sector (from 9.8% to 0.7%).

The second line of Table 5 shows that the negotiated liberalisation on manufacturing goods alone has no discernible impacts on the EU agrifood sectors, consistent with the fact that this liberalisation is almost complete, maintaining slight protection of Mercosur industries (income reduction of 0.8% compared to the potential of 0.9%). The third line of Table 5 also shows limited effects of the NTM reduction (where the main effects are obtained for Argentina). The very small positive effect on the European agrifood sector is mostly explained by an income growth effect. Combining all main provisions of the agreement, we find again limited negative effects for the EU agrifood sector, while positive ones for the other European sectors (by 0.2%). This last result is consistent with many previous assessments of the potential/negotiated EU-Mercosur association agreement (Gomez Plana 2021). The last line of Table 5 shows that, when allowing for unemployed people to be hired at constant wages in expanding sectors, the European total income effect is greater (by 0.4% compared to 0.2% assuming full employment). This additional income effect sustains the European consumption of agrifood products, particularly so for beef. We even find that the European agrifood sectors gain globally in this scenario (by 0.1%), with the oilseed industry being the main exception among them. Indeed, the Mercosur countries slightly expanded their oilseed production (by 1%) due to a reduction of their milk production (also by 1%).

As opposition to ratification of the agreement has been expressed by individual Member States, we now consider the

TABLE 6 | Regional income impacts of the association agreement scenario (in %). (a) Cattle sector. (b) Agrifood sectors.

	Standard CGE	PE	CGE with unempl.
(a)			
Germany	−0.57	−0.53	−0.03
France	−0.19	−0.26	0.25
Italy	−0.29	−0.35	0.08
Ireland	−0.24	−0.36	−0.08
Poland	−0.92	−0.94	−0.65
Rest of EU	−0.37	−0.33	−0.10
Total EU	−0.34	−0.36	0.02
(b)			
Germany	−0.18	−0.23	0.15
France	−0.05	−0.10	0.22
Italy	−0.02	−0.05	0.22
Ireland	−0.04	−0.11	0.07
Poland	−0.18	−0.24	−0.13
Rest of EU	−0.17	−0.16	0.04
Total EU	−0.13	−0.15	0.11

Note: The percentage changes refer to simulated changes in 2017 relative to the economies in 2017.

effects on selected EU Member States. Table 6a reports the results for their cattle sectors, and Table 6b the results for the aggregate of their agrifood sectors. We find that, irrespective of the modelling settings, the income impacts are heterogeneous across countries. The cattle sectors in Germany and Poland appear to be the main losers (with 0.6% and 0.9% income reduction with the standard CGE setting), while those in France, Italy, and Ireland are the less impacted (0.2%). These heterogeneous results reflect the initial trade and consumption patterns. According to the GTAP database, beef from Mercosur amounts to 3.4% of total German consumption, compared to 0.2% for France and even 0% for Ireland. This means that German consumers exhibit greater preferences for Mercosur beef compared to other European consumers. Accordingly, these German consumers are ready to buy more beef from Mercosur following the agreement, to the detriment of their domestic production. This is also partly to the detriment of Polish beef, which has a significant export market in Germany and thus suffers from the trade diversion effect. The Irish cattle sector is also indirectly affected, but these indirect effects are less important because it exports relatively more to French consumers, who do not significantly change their sourcing of imports. Finally, the modest impact on Italy results from another dimension: Italian consumers initially enjoy relatively more beef cuts from Brazil than Argentina. We find that the expansion of beef production following the agreement benefits slightly more Argentinean producers (0.8%) than Brazilian ones (0.4%), consistent with the fresh/frozen dimension discussed earlier.

These heterogeneous impacts reveal that consumer preferences play a role. The comparison of the results of the last column (with unemployment) with those of the first column (without unemployment) also reveals that income effects play a role. The greatest difference between these two columns is obtained for Germany (where the adverse income effect for cattle producers is reduced by 0.5 percentage points, compared to 0.4 percentage points or less for other EU MS), which benefits the most along with Italy from the trade liberalisation of manufacturing goods.

When considering all agrifood sectors, we still find heterogeneous impacts but around very small EU averages. We find that the agrifood sectors of both France and Italy are among the EU MS that are less penalised and most benefitting (depending on the modelling framework). This is consistent with the just-discussed cattle results and these countries slightly benefit from the increase of their milk/dairy production exported to the Mercosur countries.

5 | Discussion

The results reported above are obviously contingent on the different modelling assumptions. When assessing a trade agreement, it is usual practice to first test its robustness to the Armington substitution elasticities. We double all of them and find that our main message is robust. Specifically, when adopting the standard CGE setting, the negative impacts on the EU cattle sectors are more pronounced (up to 0.6% compared to 0.3% in the benchmark calibration) due to greater labour competition from industrial sectors which now can more easily access Mercosur markets. When allowing for unemployment, the impacts on the EU cattle sector remain limited (−0.1%). Overall losses when they exist are limited thanks to the negotiated TRQs.

Our assumptions on the TRQ offers are obviously important. These assumptions have been made using recent data on import flows, prices and consumption levels. These variables may be quite different in the future, for instance with expanding/contracting poultry/beef meat consumption. To partially capture these trends and uncertainties, we simulate 99 kt of additional beef cuts (rather than 50 kt). Then the income of the EU cattle sector decreases by 0.6% (compared to 0.3%). This again confirms the safeguard role of the beef TRQs.

Our paper highlights the additional income effects for the cattle and agrifood sectors from the non-agrifood provisions, where the size of these effects depends on the macroeconomic closure rules and assumptions on factor mobility. Our income effects significantly differ from the SIA conducted by LSE Consulting, despite a similar benchmark methodology. We find slightly higher income effects for the EU economy (0.2% compared to 0.1% in the SIA) while negative ones for the Mercosur countries (−0.7% compared to around 0.3% depending on the ambition levels of their scenarios). We argue that the major factor explaining these differences comes from the initial tariffs on manufactured goods. In the 2011 GTAP database used by the SIA, tariffs on these goods levied by our two blocs are at similar levels. On the other hand, they

significantly differ in the 2017 database, with greater effective tariffs applied by Mercosur countries. We test the full liberalisation of these tariffs using the 2011 database rather than the 2017 one. We find more similar gains in overall income: 0.1% for the EU, 0.2% for the Mercosur countries. Our results with the 2017 database are consistent with previous theoretical and empirical studies (e.g., Brown 1987) which demonstrate that full tariff reductions may not be beneficial for all countries if they are initially of different sizes with different levels of tariff protection. We note that our macroeconomic closure assumes that the trade balance remains constant. Removing tariffs in a region with high tariffs implies that imports will increase, and the necessary increase in exports to maintain the trade balance will require a drop in export prices and lower returns to factors employed in export industries. We do not account for the possibility that the agreement may lead to increased foreign investment inflows thus relaxing the Mercosur trade balance constraint. Consumers will also benefit from lower prices, and thus the change in welfare measured by equivalent variation will not be the same as the GDP changes reported here. It follows from this discussion that any further changes in tariff rates between 2017 and now would also likely affect our sectoral income results. For this reason, we underlined in the Scenarios section that our simulations answer the question "what would have been the 2017 economy with the EU-Mercosur agreement in place".

6 | Conclusions

In this paper, we focus on the economic implications for livestock producers and the wider EU economy of the Mercosur association agreement. We find that, as expected, producers of cattle and other livestock will suffer an income loss because of additional imports. But because the beef and poultry offer is limited to additional import quotas, the negative impacts on livestock income are heavily muted. We also find that the European livestock sector, and more generally the farm and food industries, benefit from the income growth induced by the other components of the agreement, which help to mitigate the direct losses. Finally, we do not find stronger negative effects in countries currently opposed to ratification, in particular France, because their consumers maintain their preference for domestic foods.

The livestock producers adversely affected have also argued that production standards in Mercosur countries with respect to health, safety, and animal welfare are lower than those required of EU producers and thus represent both unfair competition for EU producers and a threat to the health of EU consumers. Lower standards could provide a cost advantage to Mercosur exporters, but this is irrelevant where imports are constrained by TRQs rather than by lower preferential tariffs. The association agreement does not allow Mercosur exporters to gain additional market access as a result of lower standards. Nor is the argument that the association agreement exposes EU consumers to additional health risks convincing. The agreement in no way diminishes the ability of the EU to enforce its own sanitary and phytosanitary standards on imports at its borders. Mercosur imports remain subject to the EU's standard SPS requirements, including regular controls of the competent veterinary authorities responsible for inspection and certification of the relevant veterinary and general hygiene conditions in Mercosur countries. Where breaches of the requirements are found (as in the case of the Brazilian "weak flesh" scandal in 2017 involving fresh meat and another case of fraudulent health certificates concealing the presence of salmonella in poultry meat exports in 2018), the EU continues to have the power to delist individual establishments or to stop all imports until the required improvements have been made (as happened with Brazil in 2008).

Producers and environmental NGOs have also raised concerns that the beef TRQs in particular could lead to increased deforestation, particularly in the Amazonian region in Brazil. To assess the risk of increased deforestation, the scale of the likely direct effect due to increased market access must first be ascertained, and then whether there are indirect elements in the association agreement that may be sufficiently strong to outweigh this direct effect. The scale of the direct effect is often assessed using national footprint data, but as zu Ermgassen et al. (2020) argue, this ignores the fact that exposure to deforestation risk is far from uniform, being dependent on where companies operate slaughter and processing facilities and from where they source their cattle.

EU beef imports from Brazil have historically been limited to nine states in the Central West, South, and South-East because of regulations to prevent the introduction of Foot-and-Mouth disease, although additional areas in the north have now been certified for export of processed beef. Only around 1200 holdings are certified to supply cattle for export to the EU, and deforestation is not a feature of these holdings. The potential for deforestation arises because the EU only requires cattle to be raised on these holdings for the last 90 days before slaughter. These holdings purchase feeder cattle from non-certified holdings, and because of the absence of a national cattle identification and traceability system in Brazil, this opens the risk that these feeder cattle originate from holdings where deforestation has taken place. The zu Ermgassen et al. (2020) study identified 73,000–74,700 ha/year deforestation risk linked to Brazilian cattle exports each year in the period 2015–2017, out of a total of 480,000–520,000 ha/year of cattle-associated deforestation risk. The EU's deforestation risk in this period amounted to 2900–3600 ha/year when exports from Brazil to the EU amounted to around 100,000 t annually, most of which occurred in the Cerrado rather than the Amazon.

If these ratios also applied to additional imports under the TRQ, there could be a risk of additional deforestation of 1500–1800 ha (15–18 km^2). This should be seen in the context of deforestation rates in the Legal Amazon of around 25,000 km^2 in the early 2000s, falling to 5–7000 km^2 following the first Lula Presidency, increasing to 10–13,000 km^2 under President Bolsonaro, and falling to 6000 km^2 in 2024 under the second Lula Presidency.[9] These figures underline that influencing domestic Brazilian policies to address deforestation will carry more weight and can be more effective in achieving the goal of zero deforestation than limiting exports to the EU per se.

It is thus important that the association agreement has elements that can offset this relatively minor deforestation risk. Formally, the amended agreement in December 2024 includes an annex to the chapter on Trade and Sustainable Development as well as

a new Article making adherence to the UNFCCC and the Paris Agreement an essential element of the agreement. This means that either party can suspend the agreement if it considers that there is a serious breach of the Paris Agreement or if a party leaves the Paris Agreement. Both parties pledge to move toward climate neutrality by 2050, and Brazil commits to include in its Nationally Determined Contribution a specific pledge to halt illegal deforestation. The due diligence provisions of the EU's Deforestation Regulation will also apply to imports of beef from Mercosur countries when it comes into force. But the most important indirect impacts are likely to come from the pressure from consumers and the EU supply chain to ensure that imports are not contributing to deforestation. We observe this spillover effect of higher EU standards in respect of the modernisation of Brazil's sanitary inspection system for animal products, which was initially driven by export market demands (zu Ermgassen et al. 2020). Overall, the prospects that the EU can influence Brazilian policies with respect to deforestation are much more positive in the context of a close partnership established by the association agreement than if the EU shuts the door and refuses ratification.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the GTAP consortium. Restrictions apply to the availability of these data, which were used under licence for this study. Data are available from the author(s) with the permission of the GTAP consortium.

Endnotes

[1] European Commission, 'EU-Mercosur: Text of the Agreement', available at https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/mercosur/eu-mercosur-agreement/text-agreement_en. The Commission's summary of the amendments between the 2019 and 2024 texts is available here https://circabc.europa.eu/ui/group/09242a36-a438-40fd-a7af-fe32e36cbd0e/library/86fb1930-16ed-4ac6-af25-5e0ad0d0c816/details?download=true.

[2] Again the lack of detailed data contributes to this challenge. As an example, let's consider mirror clauses promoted by some EU MS which are one type of NTM. Modelling their likely impacts require many data on the production costs of the different technologies (Gohin and Matthews 2024).

[3] "The agreement represents a win-win for both the EU and Mercosur, creating opportunities for growth, jobs and sustainable development on both sides" from https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/mercosur/eu-mercosur-agreement_en.

[4] The assessment of the EU-Mercosur agreement by Latorre et al. (2021) also departs from the assumption of zero unemployment.

[5] The GTAP database does not distinguish poultry meat from pork.

[6] The EU will control TRQ imports through the year via a licencing system, but the Mercosur countries will also divide the TRQ quota between themselves and control the quantities exported through a system of export licences. This system of TRQ administration should enable the Mercosur countries to capture the quota rents. We also simulated the reverse allocation but the size of quota rents is so small that the allocation assumption does not have a material impact on the results.

[7] Income is defined as the difference between market receipts, net of output taxes, and input expenditures, net of input taxes. In addition to factor payments (for instance CAP payments), this income serves to rewards labour, capital and land invested in each sector. Production impacts are often of the same magnitudes. Indeed price effects are limited in CGE models assuming full mobility of factors of production because this leads to high price supply elasticities. CGE models only compute relative price effects, the numeraire being the price of services in the ROW entity.

[8] We prefer to not comment on the welfare effects as traditionally computed with CGE models because they only consider market effects and ignore non market ones (such as on biodiversity effects following changes in farm practices or health effects due to diet changes). We just mention that this scenario leads as usual to positive welfare effects in both entities.

[9] Information from the INPE PRODES project, http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Data S1:** jage70010-sup-0001-DataS1.gms.