Economic Impact of Free Trade Agreements on the EU Agri-Food Sector

by Emanuele Ferrari, Thomas Chatzopoulos, Ignacio Pérez Domínguez, Pierre Boulanger, Kirsten Boysen-Urban, Mihaly Himics, Robert M'barek, and Marina Pinilla Redondo

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Abstract

The paper investigates the potential effects of 12 free trade agreements (FTAs) under the current EU trade agenda. For this, it quantifies the cumulated sectoral impacts in terms of bilateral trade, production, demand, and price developments. Moreover, it provides insights on the evolution of supply, demand, and farm-gate prices for the most relevant EU agricultural commodity markets. This analysis compares two variants of a trade liberalisation scenario (conservative and ambitious) to a business-as-usual (baseline) situation in 2030. The study shows that the analysed free trade agreements have the potential to benefit the EU agri-food sector when considered simultaneously. It also highlights the vulnerability of the beef, sheep meat, poultry, sugar, and rice sectors.

Keywords:

CGE; PE; modelling; trade; agriculture; EU;

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1. Introduction

The EU is one of the crucial driving forces for global openness and integration. The EU's agricultural trade is a strong component of the overall trade with a positive balance and strategic importance. Between January-October 2020, EU27 exports reached €151.8 billion, while imports totalled €102 billion. As a result, the agri-food trade surplus rose to €49.8 billion. Trade agreements are the legal framework to establish, among others, preferential tariff treatment between individual countries or regions.

This paper provides an assessment of the economic impacts on the EU agriculture of 12 free trade agreements (FTAs), both concluded and under negotiation. The paper builds on a previous study published by the European Commission's Joint Research Centre (JRC) in 2016 (Boulanger et al., 2016) and analyses the cumulative economic impacts on the EU's agricultural sector of a series of concluded and negotiated FTAs between the EU and 12 trading partners. The 12 agreements with Australia, Canada, Chile, Indonesia, Japan, Malaysia, Mercosur (Argentina, Brazil, Paraguay, and Uruguay), Mexico, Malaysia, New Zealand, the Philippines, Thailand, and Vietnam represent a significant part - although not exhaustive - of the initiatives under the current EU trade agenda. They cover agreements where the EU has strong agricultural export interests and agreements with trading partners that have the capacity to significantly increase their agricultural exports to the EU. By 2030, those 12 countries are expected to be the destination of 13% of the EU agri-food exports and the origin of 34% of the EU agri-food imports (before the implementation of the bilateral trade agreements).

As the study was launched after the departure of the United Kingdom from the EU and before the outcome of the negotiations on the future relationship between the EU and the United Kingdom had been reached (Box 1), a purely technical assumption was made regarding the future bilateral relationship between EU and United Kingdom. Furthermore, as too many uncertainties surrounded the impact of the COVID-19 crisis at the time of launching this exercise, the consequences of the COVID-19 crisis were not considered in this exercise.

The rest of the paper is organised as follows: section 2 presents the adopted methodology and the model employed to analyse the trade agreements. Sections 3 present the scenarios adopted and section 4 gives a brief overview of the baseline in 2030. Section 5 show the main results of the paper while section 6 concludes and presents the main limitation of the study.

2. Methodology

Multiregional neoclassical computable general equilibrium (CGE) models are the main tool for *ex ante* assessments of multilateral trade agreements (e.g., potential Doha Round conclusion (Bouët and Laborde (2010)), bilateral trade agreements (Bureau et al., (2014)) or explicitly comparing several agreements (Disdier et al., (2016). On many occasions, CGE assessed EU trade agreements with third countries focusing on specific trade agreements. Only rarely these studies covered the cumulative analysis of FTAs.

A strength of CGE models is their ability to represent all sectors of the economy in all the countries and regions modelled. Therefore, they consider all the interactions among these sectors through domestic and international linkages. They provide relevant information about trade-offs between different (agri-food) sectors in the event of multiple bilateral trade liberalisation agreements. They enable a panoramic view across all those economies that are distinguished separately within the model and quantify which sectors might be affected and in which way. Being global, the relatively aggregated commodity structure of CGE models and their standardised treatment of behavioural functions across commodities and countries can omit (or treat in a more stylised way) certain sectoral particularities or policy constraints, which are specific of a single industry or product. That is where PE models provide complementary features, through a more disaggregated commodity structure within agriculture, and the introduction of commodity specific interrelationships

To explore the potential impact of multiple trade agreements on EU agricultural markets, this paper combines two equilibrium models to capture the complexity of analysing multiple trade agreements simultaneously and the details needed to explore the impacts on the EU agricultural sector.

An analysis of the impacts of the 12 FTAs on the EU agri-food trade flows, performed by means of simulations with the Modular Applied GeNeral Equilibrium Tool (MAGNET) model (Woltjer and Kuiper, 2014), a global CGE model. MAGNET has been widely employed to simulate the impacts of agricultural policies (M'barek et al., 2017), land issues (Sartori et al., 2019) and sustainable development goals (SDGs) (Philippidis et al., 2020). MAGNET is based on the Global Trade Analysis Project (GTAP) model, which accounts for the behaviour of households, firms, and the government in the global economy and how they interact in markets (Corong et al., 2017). The model includes the food supply chain from farm, as represented by agricultural sectors - via food processing industries and food service sectors - to fork considering bilateral trade flows for major countries and regions in the world. For this study, the model has been enhanced with an improved representation of bilateral tariff rate quotas (TRQs), the implementation relies on mixed complementarity programming. The model defines a TRQ by three parameters: the in- and out-of-quota tariffs and the in-quota level. For each TRQ, three regimes, depending on demand conditions, are accounted. If import demand is lower than quota level, the in-quota tariff applies. If the demand reaches the quota level, the applied tariff is still the in-quota one, but rents start to be generated. The rents can be allocated either to the importing or exporting country (in this study they are allocated to importers). If demand exceeds the quota, the out-of-quota tariff applies and the rent generated will be fixed and equal to the difference between the out-of- and in-quota rates (van der Mensbrugghe, 2019). When demand exceeds quota, out-of-quota trade appears. A shock that expands the quota level, given the model construction, will result in the transformation of the existing out-of-quota trade into in-quota trade, as the exporters with the competitiveness to export at out-of-quota tariff will now fill the quota level. The quota will be filled until exports (whose marginal productivity is decreasing) are competitive enough to export at the in-quota tariff. Out-of-quota trade will appear if the marginal productivity of the exporters is still competitive enough to export at the out-of-quota tariff. The mechanism that rules the model might differ from the market mechanisms.

MAGNET is calibrated on a fully consistent global database, based on contributions from members of the GTAP network and constructed by the GTAP team at Purdue University, United States (Aguiar et al., 2019). The GTAP database, in its Version 10, contains a complete record of all economic activity (i.e., production, trade, primary factor usage, final and input demands, taxes and trade tariffs and transport margins) for 65 activities and 141 regions for 2014. The MAGNET model includes an additional provision of disaggregated sectors compared to the original GTAP database. These newly aggregated sectors include a disaggregation between beef (cattle) and other red meat (sheep, goat, horses), between pork (pig) and poultry (chicken and other animal products), and the inclusion of other sectors such as animal feed, biofuels, and fertilisers, among others. The analysis can provide, although not detailed, impacts for many processed agricultural products that fall under the other food category. This is an exceptionally large category containing, for example, a variety of food preparations, prepared and preserved fruits and vegetables, fruit juices, starches, bakery products, cocoa, chocolate, and sugar confectionery.

The following sectorial disaggregation has been performed:

Primary agriculture (14 commodities): wheat; paddy rice; other grains; oilseeds; sugar beet and cane; vegetables, fruits and nuts; other crops; cattle; live animals (sheep, goat); live pigs; chicken and other animal products; raw milk; plant fibres; wool.

- **Food and beverages (10 commodities):** beef; sheep meat (sheep, goat, horses); pork; poultry; dairy; sugar; oils and meals; rice; beverages and tobacco; and other food;
- **Other sectors (16 commodities not shown):** fish; forestry; crude oil; gas; coal; light manufacture; heavy manufacture; fertilisers; biodiesel; biogasoline; biogasoline by-products; petrol products; electricity; gas distribution; food services; services.

For the sake of consistency between the two models, the CGE results will be presented aggregating some of the sectors: plant fibres, wool, and other crops (other crops), paddy and processed rice (rice), sugar beet and cane and raw sugar (sugar), vegetable oils and fats, oilcake feed and crude vegetable oil (oils and meals).

The regional disaggregation comprises the following regions:

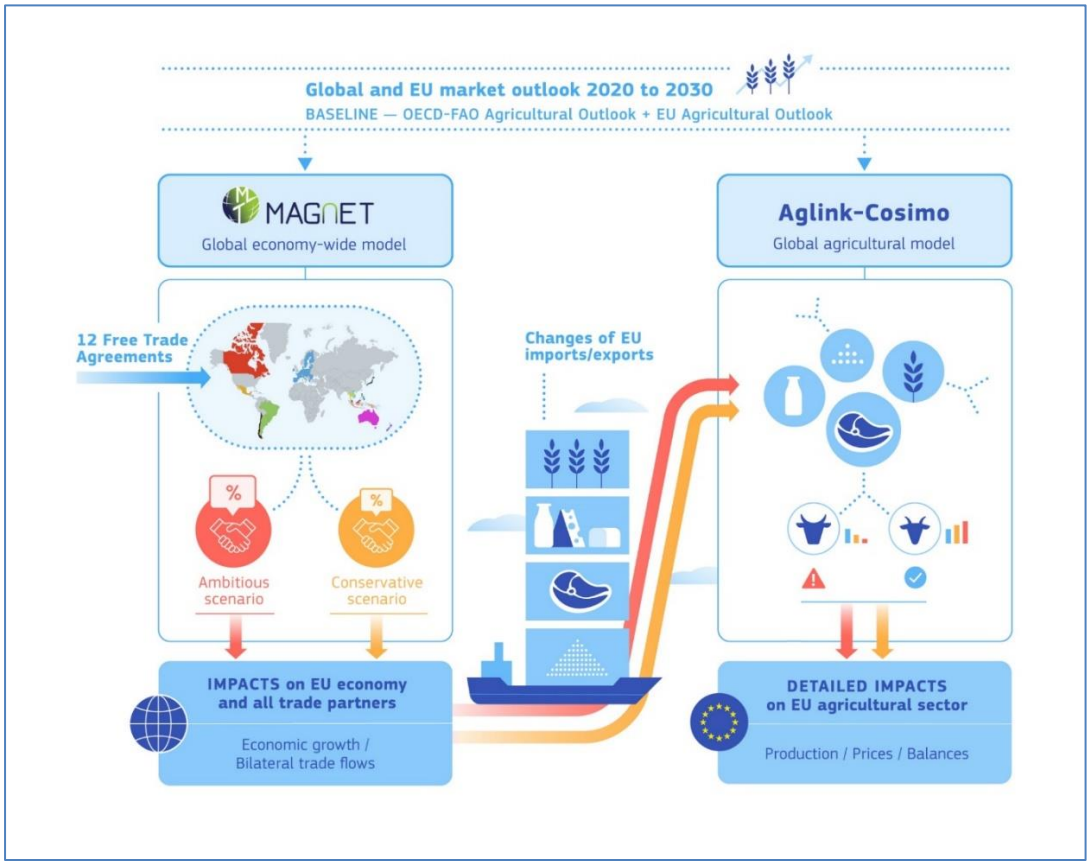
- The EU (aggregation of all 27 Member States)
- The **12 trading partners involved in bilateral trade agreements covered by this study:**
  - Australia (AUS)
  - Canada (CAN)
  - Chile (CHL)
  - Indonesia (IDN)
  - Japan (JPN)
  - Argentina, Brazil, Paraguay, and Uruguay as members of Mercosur (Mercosur)
  - Mexico (MEX)
  - Malaysia (MAL)
  - New Zealand (NZ)
  - Philippines (PHN)
  - Thailand (THA)
  - Vietnam (VNM)
- The **other regions**, which in the rest of the paper will be aggregate into a Rest of the World aggregated regions are the following:
  - United States
  - Rest of Europe
  - Rest of America
  - Rest of Asia
  - Middle East and North Africa
  - Sub-Saharan Africa
  - Rest of the World

A detailed analysis of the impacts on EU agriculture at product-specific level was carried out with the partial equilibrium (PE) model Aglink-Cosimo. Aglink-Cosimo is a global recursive-dynamic PE model of agricultural commodity markets. The model is developed and managed jointly by the OECD and the Food and Agriculture Organization of the United Nations (FAO) secretariats. It is primarily known for its use in generating 10-year agricultural market projections that are updated on a yearly basis and published in the OECD–FAO Medium-Term Agricultural Outlook in June (e.g., OECD/FAO 2020). Within a defined group of users and contributors from national agencies and research institutes, the JRC of the European Commission inherits annually the default model version by the OECD. With in-house extensions and technical updates, the Commission's version of the model is then used for the purpose of producing the EU Medium-Term Agricultural Outlook, published annually in December (e.g., European Commission, 2019), as well as for implementing scenario analyses on several topics, such as the one presented here.

Aglink-Cosimo is driven by trends, elasticities, and the translation of economic logic, agricultural-market expertise, and expectations into equations and projections. It covers 90+ agricultural commodities and 40 world market-clearing prices. The current version simulates detailed supply

and demand elements until 2030. It consists of over 35 000 behavioural equations, linear or linearised, 'calibratable' and identities that solve as a problem of nonlinear programming with discontinuous derivatives (DNLP). Details on the European Commission's version of the model can be found in Araujo-Enciso et al., (2015).

Figure 1: Overview of model linkage



Source: Authors' elaboration

The two models were operated in an integrated manner exploiting their respective strengths. The models were 'soft-linked' and simulations were run in a sequential chain to ensure meaningful exchange of results (Figure 1). The Aglink-Cosimo model was used to filter out the potential impact of the not-yet-into-force FTA between Canada and the EU (CETA) from the EU Medium-Term Agricultural Outlook published in 2019 (European Commission, 2019). This led to a set of recalibrated baseline projections (2020-2030) that served as the starting point for the implementation of scenarios. Next, MAGNET was calibrated to the adjusted EU baseline. This step ensured that EU trade values and export/import prices in MAGNET were aligned and co-moving with their Aglink-Cosimo counterparts (i.e., trade volumes and different export/import prices). The MAGNET model's capability to represent all bilateral trade flows in a comprehensive manner was employed to simulate all selected bilateral trade agreements and calculate a new set of bilateral trade flows by reducing bilateral tariffs and TRQs exogenously. MAGNET calculated the cumulative changes on EU real exports and imports (in volumes and values). The latter were then implemented as relative shocks on EU export and import volumes for commodities in Aglink-Cosimo, which being a net trade model would not be able to account for bilateral trade shocks directly. Finally, results from the two models were jointly analysed. In a nutshell, the analysis of bilateral trade flows and the extensive product coverage in MAGNET were combined with the detailed analysis of the impact

on the EU agricultural sector in Aglink-Cosimo. Both models have full global coverage but the focus in this analysis is on the EU.

3. Trade policy scenarios

The paper considers two trade liberalisation scenarios (a conservative and an ambitious one) and compares them with the situation in 2030 without the implementation of the selected FTAs (baseline). In both scenarios, concluded negotiations (with Canada, Japan, Mercosur, Mexico, and Vietnam) were modelled based on their actual outcome, in terms of tariff concessions and bilateral TRQs. This allowed the models to reflect closely the expected impact of those agreements.

For the other FTAs covered (with Australia, Chile, Indonesia, Malaysia, New Zealand, the Philippines, and Thailand), the following theoretical concessions were implemented:

1. in the conservative scenario, full tariff liberalisation of 97% of HS 6-digit lines and a partial (25%) tariff cut for the other lines (sensitive products);
2. in the ambitious scenario, full tariff liberalisation for 98.5% of HS 6-digit lines, and a partial (50%) tariff cut for the other lines (sensitive products).

These assumptions have been applied identically for all those trade agreements and symmetrically for both the EU and the relevant trading partners. The selection of sensitive lines subject to partial tariff cuts, rather than full liberalisation, was primarily based on expert judgement, and complemented by using statistical indicators, notably the tariff revenues associated to each tariff line. The selection procedure for sensitive products is based on the political economy model of (Grossman and Helpman, 1994) where the selection of sensitive products is assumed to be optimal in terms of maximising a government objective function. Under specific assumptions, the government's optimisation problem can be well approximated with a tariff revenue loss criterion. This simplified approach reduces the computational burden (Jean et al., 2005). Tariff lines are ordered based on the expected tariff revenue losses due to trade liberalisation, without factoring in the potential adjustments in traded quantities after the trade deals (i.e., calculating tariff revenue losses for current trade patterns). Unlike the multilateral approach of Jean et al., (2005), here the tariff revenue loss criterion was computed in a bilateral context. The algorithm calculated expected tariff revenue losses for all bilateral trade flows between, for all FTA partners, and for all FTAs considered.

Expected tariff revenue loss is calculated based on Ad Valorem Equivalent (AVE) tariffs for 2014, as reported in the International Trade Centre (ITC) ITC-MacMap database (Guimbard et al., 2012). Traded values and quantities were taken from BACI-COMTRADE (Gaulier and Zignano, 2010; average of years 2016–2018). Tariffs, trade statistics and tariff cuts were all taken into consideration at the 6-digit level of the HS classification. In our ex-ante scenarios, sensitive tariff lines are subject to partial tariff cuts only (25% cut in the conservative scenario and 50% cut in the ambitious, compared to current levels). Tariff cuts are effective always on the applied rates. The number of sensitive tariff lines is smaller in the ambitious scenario (1.5% of all lines) than in the conservative one (3% of the lines).

The scenarios were implemented in MAGNET following a time step approach. The model ran over two-time steps from the base year (2014) to 2020 then from 2020 to 2030. All the tariff cuts and TRQs associated with the negotiations that are already concluded and the tariff cuts associated with the remaining seven FTAs are assumed to enter into force in 2020 and show their impacts on the global economy by 2030. Following the implementation of tariff shocks in MAGNET, simulated bilateral flows involving the EU were inspected and aggregated into total EU imports and exports (in value). Representing cumulative trade effects in 2030, those changes were then exogenously introduced into Aglink-Cosimo as relative shocks on imports and exports (in volume). The model was then run twice – once for each set of trade patterns – to explore the potential impact on EU commodity balances and prices. Introducing expected trade changes regarding relevant EU agricultural commodities from MAGNET into Aglink-Cosimo causes trade imbalances that displace

markets to temporary disequilibria. In our setting, those artificial imbalances stimulate an endogenous (one-round) price reaction that restores market equilibria by adjusting the other supply and demand elements of Eq. (1).

The two models solve recursively-dynamically on different periods (MAGNET: 5–10 years, Aglink-Cosimo: annually, for 10 years). To reconcile the two solution steps, the 2030 impacts of the various FTAs from MAGNET were distributed over the 10-year projection horizon of Aglink-Cosimo with an annual factor increment of 0.1. That is, if MAGNET prescribed an increase of total EU imports by 10% in 2030 for a given commodity, the shock would be implemented progressively on the relevant time series of Aglink-Cosimo (1% in 2021, 2% in 2022, 3% in 2023, etc.) culminating into the full expected change of 10% by 2030. In line with the 2016 version of the simulation experiment, this approach implies a gradual implementation of the modelled FTAs, allows temporal market adjustments to be brought about, and leads to stable medium-term balances.

4. Baseline assumptions and key values

The MAGNET baseline was calibrated to the EU Medium-Term Agricultural Outlook 2019-2030, published by the Directorate-General for Agriculture and Rural Development in December 2019 (European Commission, 2019). The macroeconomic developments (GDP, population growth rate, world crude oil price) were exogenously imposed to the model following the forecasts adopted in the EU Medium-Term Agricultural Outlook.

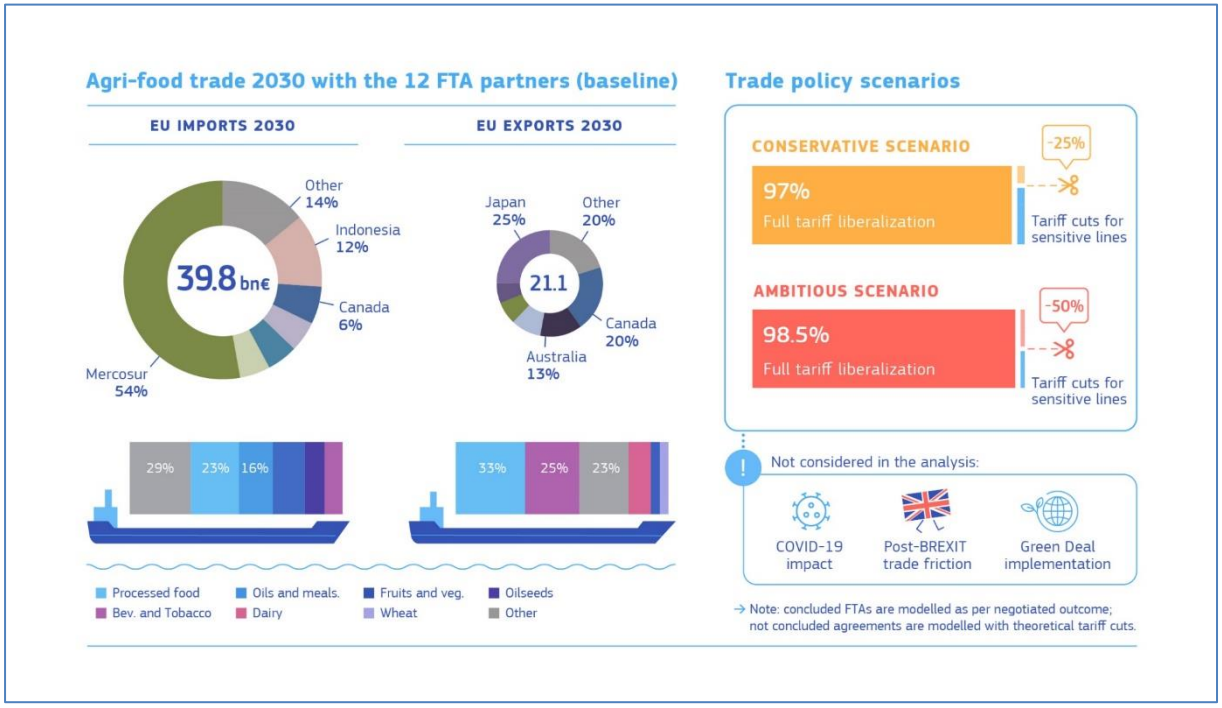
In addition, the model was calibrated around trade statistics to replicate EU bilateral imports and exports for crucial agricultural sectors and trading partners (Figure 2). The baseline also includes the development of existing EU TRQs for beef and poultry. To make sure that the full implementation of the Canada and Japan agreements (which entered into force in 2017 and 2019 respectively) will be part of the scenarios, the impact of these agreements was excluded from current statistics and baseline, based on expert judgment. Other already implemented trade agreements (e.g., with Korea, Switzerland, or Ukraine) are part of the baseline.

In addition, the baseline was modified to include the implementation of the revised memorandum of understanding (MoU) with the United States on the TRQ for imports of high-quality beef, whereby 35 000 tonnes of the quota out of 45 000 tonnes (in product weight) are allocated to the United States after a 7-year phasing-in period. The MoU was revised with the agreement of the other substantial supplying countries (Argentina, Australia, and Uruguay). The revised MoU entered into force in 2020. In effect, it is expected that by 2030 the United States will have increased its exports to the EU by fully benefiting from the increased market access granted by the revised MoU. The other suppliers are expected to partially compensate the market access loss, either by competing with other suppliers in the existing World Trade Organization (WTO) TRQ for frozen beef, or by increasing their out-of-quota exports for the most competitive suppliers.

Regarding the future trade relation between the EU and the United Kingdom, this paper assumes duty-free, quota-free trade between the EU and the United Kingdom, both in the baseline and in the tested scenarios.

The EU Medium-Term Agricultural Outlook reflects agricultural and trade policies currently implemented or already agreed upon (e.g., expiry of sugar production quotas). To replicate the EU Medium-Term Agricultural Outlook trends (production, imports, exports, and trade balance) for the different commodities in MAGNET, three parameters need to be adjusted. To calibrate agricultural production changes, a sectorial productivity parameter was endogenized. To replicate the net balance position of the EU by calibrating imports and exports, two preference parameters were modified: a taste change in favour of the consumption of a given commodity in a given region and a technical change parameter augmenting the import of given commodities from given regions in selected regions. Given that the EU Medium-Term Agricultural Outlook only provides EU net-trade positions, the bilateral trade flows of the main commodities in the baseline were adjusted following statistics for 2014 and 2020 and expert knowledge for 2030.

Figure 2: Agri-food trade 2030 (baseline) and trade policy scenarios



Source: Authors' elaboration

Pork, dairy, beverages and tobacco, and other food contribute to more than two thirds of the considered agri-food production in value terms. They also represent a large share of the EU exports. Other sectors contributing significantly to the EU agri-food production are fruits and vegetables (3.5%), beef (4.6%) and poultry (4.2%). The dairy, pork, poultry, and wheat sectors show a significant export orientation, whereas oilseeds, oils and meals, and fruits and vegetables depict high shares of imports (mostly due to the level of imports of tropical fruits in the case of fruits and vegetables).

Compared to 2020, production shares in 2030 remain stable with slight decreases in the meat production and increases in dairy and beverages.

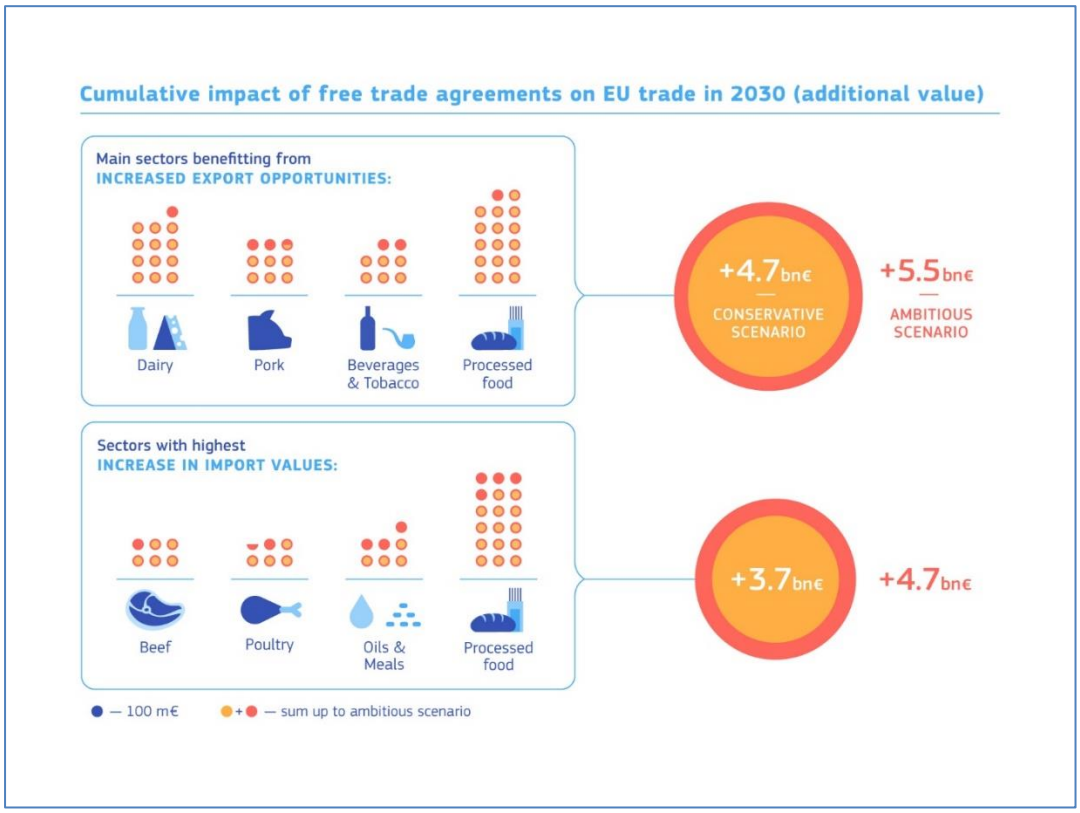
5. Results

FTAs increase the access of the signing parties to each other's markets by decreasing the cost of traded goods via tariff reductions. This implies a change in the relative prices of these goods in the import and export markets, eventually lowering domestic prices of traded goods. Lower prices drive up demand for those commodities (consumption expansion effect), hence the trade of these goods within the FTAs increases, implying that FTA partners import more from partner countries and export more to partners within the FTAs. This effect is known as the 'trade creation' effect. While trade among FTA partners increases, trade with third countries is likely to decrease, since their commodities are now relatively more expensive. This second effect is referred to as the 'trade diversion' effect, as goods formerly imported from or exported to other countries from FTA partners are now sourced within the FTAs.

The results show a positive cumulated impact on the overall EU agri-food trade balance, thanks to the capacity of the EU to strongly increase its exports to the 12 FTA partners (+29% exports in the ambitious scenario, compared to +13% imports). Overall increases in exports and imports are indeed quite balanced and comparable, with a slightly higher impact on exports, and moderate impacts on production and producer prices.

The paper highlights the positive impact of the trade agreements for the EU's trading partners. They increase their share of the EU market at the expense of other trading partners.

Figure 3: Overall change in EU trade value



Source: Authors' elaboration

The EU's agri-food exports to the 12 FTA partners increase by EUR 5.2 billion (25%) in the conservative scenario and by EUR 6 billion (29%) in the ambitious scenario (compared to the baseline in 2030). Additional exports are mainly directed to Japan, Mercosur, Thailand, and Vietnam. With agri-food exports to other EU trading partners slightly decreasing due to the increased access to the 12 FTA countries, the overall increase of EU agri-food exports is EUR 4.7 billion (2.8%) in the conservative scenario and EUR 5.5 billion (3.3%) in the ambitious one (Figure 3).

The conservative and the ambitious scenarios present limited differences in terms of impacts. This is because most of the market access increase in both scenarios is attributable to the concluded FTAs, which cover the biggest trading partners of the selection of 12 FTAs (Canada, Mercosur, Mexico, Japan, and Vietnam). This increase is almost identical in both scenarios as the concessions modelled are unchanged. The additional market access enjoyed by the other FTA partners (Australia, New Zealand, Thailand etc.) in the ambitious scenario compared to the conservative one is relatively small. The situation varies however between agricultural sectors. For example, the difference between the two scenarios is significant for the sheep sector, as the main trading

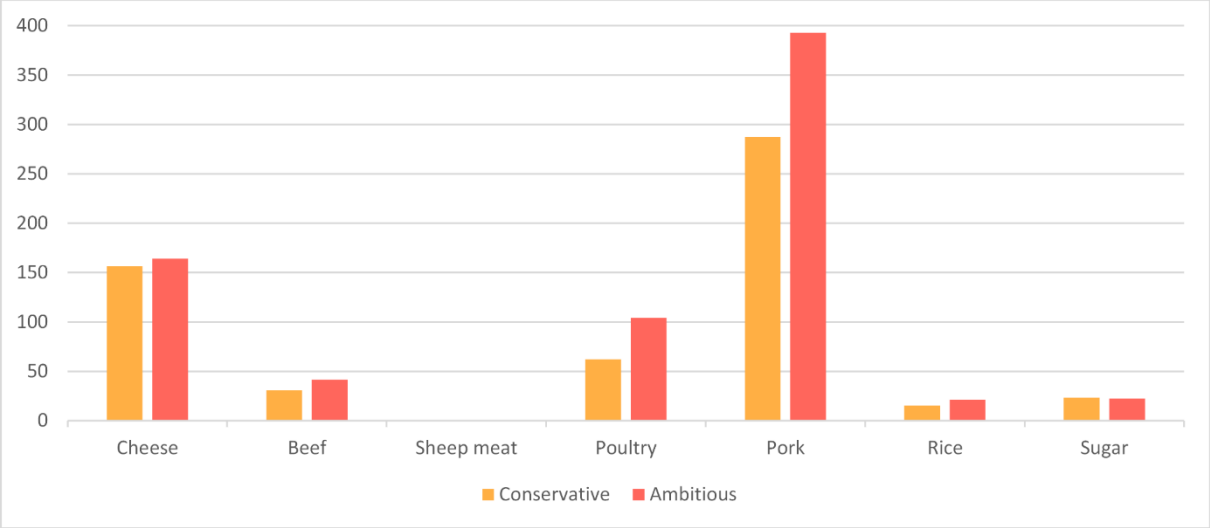
partners concerned are Australia and New Zealand, and for the rice sector, where Thailand plays a prominent role.

Figure 4: Changes in EU trade value of agri-food products by commodities and scenarios (2030)

Source: Authors' calculation from MAGNET results

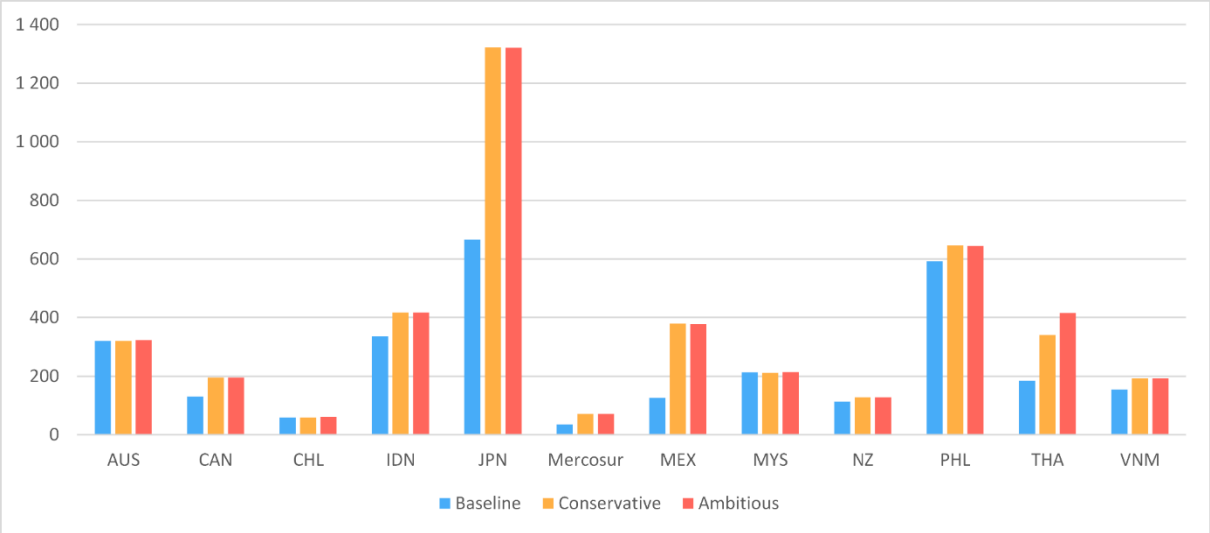
Consistent with Boulanger et al. (2016), the results show substantial trade opportunities for certain agricultural sectors (dairy, pork meat, wheat, and wine and beverages) (Figures 4 and 5). Exports of processed agricultural products increase by 3.1% in the ambitious scenario (EUR 1.7 billion), wine and beverages (and tobacco) see their exports increasing by 2% under the same scenario (EUR 834 million). EU dairy products and pork show particularly significant increases in exports, production, and producer prices. Dairy exports (cheese, butter, skimmed milk powder, whey) increase by 7.3% in the ambitious scenario (EUR 1.3 billion), with Japan as the main destination of these additional exports (Figure 6). The effect of higher trade on the dairy complex is an increase in domestic milk production of about 0.2% and in milk prices (1.3%), altogether adding EUR 890 million to the market receipts of milk producers in 2030. Pork exports increase by 8.9% (EUR 914 million) in the same scenario, corresponding to about 400 000 tonnes in carcass weight equivalent. Domestic pork consumption decreases by 0.8% (141 000 tonnes) in the ambitious scenario. In the conservative (ambitious) scenario, the 3.3% (4.6%) price increase combined with a 0.7% (1%) production expansion raises the value of expected EU pork production in 2030 by EUR 1.4 (2) billion.

Figure 5: EU exports for selected markets – 2030, change vs. baseline, thousand tonnes



Source: Authors' estimates based on Aglink-Cosimo simulations (EC 2019 model version)

Figure 6: EU dairy exports to the 12 FTA countries, 2030, EUR million



Source: Authors' calculation from MAGNET results

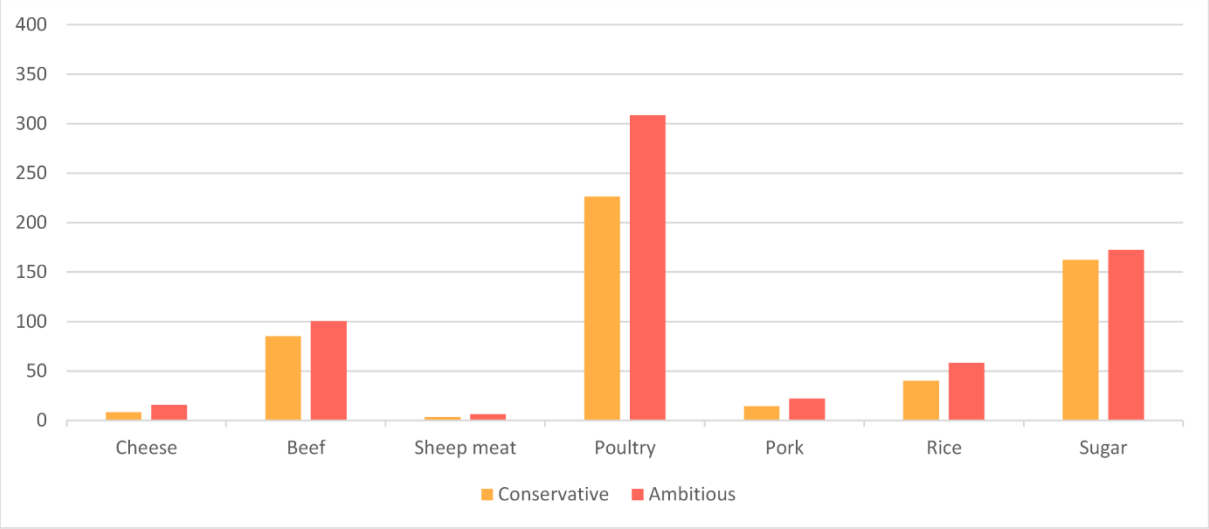
The paper confirms the sensitivities highlighted in the 2016 study, notably for beef, sheep meat, poultry, sugar, and rice. However, it shows significantly smaller negative impacts on beef, sheep meat, poultry, and sugar than in the 2016 study. This is mainly because this paper incorporates the concrete negotiated outcome of concluded agreements, in which trade concessions for the most sensitive products are provided in the form of TRQs, while in 2016 theoretical scenarios had been constructed in the form of tariff cuts with no volume limit.

The implementation of the 12 FTAs would increase the value of EU beef imports under both the conservative and the ambitious scenarios, by 21% and 26% respectively (EUR 512 million and EUR 614 million respectively). Most of the increase in imports derives from Mercosur (EUR 422 million under both scenarios, i.e., 82% and 69% of the increase in imports depending on the scenario), with Australia also gaining market access (with EUR 45 million and EUR 121 million additional exports respectively). In volume, this increase amounts to additional 85 000 tonnes in carcass weight equivalent of beef imported (conservative scenario) and 100 000 tonnes (ambitious

scenario) compared to the baseline in 2030 (Figure 7). For Canada and Mercosur, the TRQs granted under the concluded respective FTAs are explicitly included in the scenarios (as per the concluded agreement) and the concessions to Australia are modelled using a theoretical tariff cut. The consideration of the revised MoU with the United States on high-quality beef in the baseline also influenced the results, Australia and Mercosur countries are expected to initially lose market access to the benefit of the United States, before partially compensating it by out-of-quota trade. This limits the potential of trade creation under the granted TRQ in the case of Mercosur and may limit the reaction of the model in the case of Australia.

On the export side, the EU is increasing exports, mainly to Japan and the Philippines. The significant increase in exports towards these two countries (EUR 90 million to Japan and between EUR 15 million and EUR 60 million to the Philippines), partially cancels out the impact of imports coming from the MERCOSUR area due to the TRQ expansion. Producer prices would fall by about 2.4% in both scenarios with marginal effects on consumption (0.6%) and production (–0.3%), due to an increase in exports to Japan and the Philippines and a production strongly linked to the development of the dairy herd.

Figure 7: EU imports for selected markets – 2030, change vs. baseline, thousand tonnes



Source: Authors' estimates based on Aglink-Cosimo simulations (EC 2019 model version)

Sheep meat imports increase by 2.1% (3.7%) under the conservative (ambitious) scenario. This translates into a price decline of 1.9% (3.1%), higher consumption (0.2% and 0.4%), and lower production (-0.2% and -0.4%).

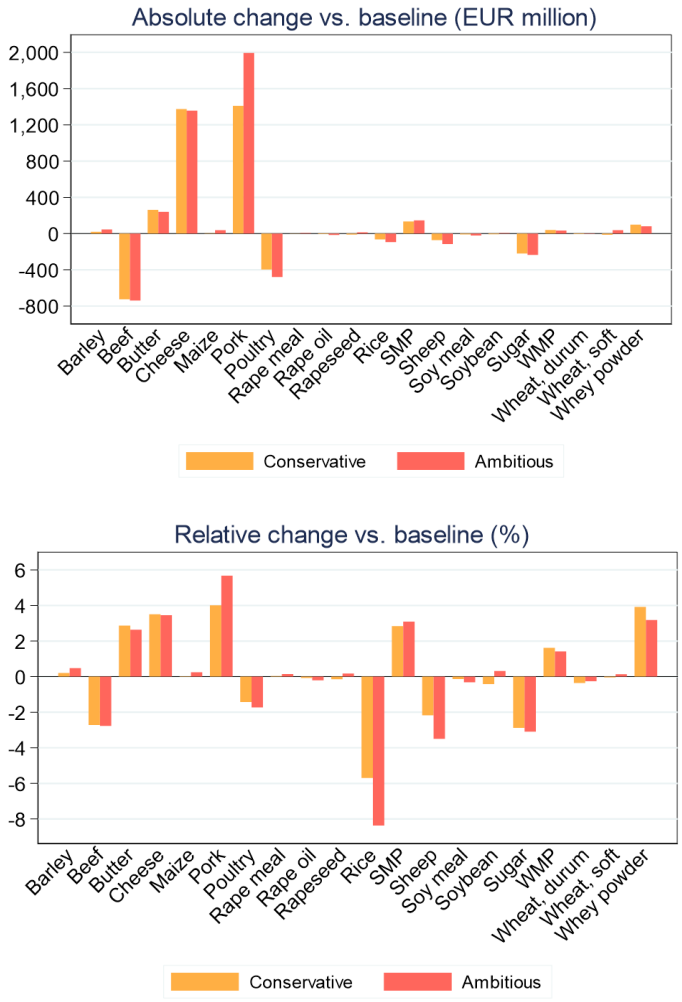
Overall, rice imports increase between 2.7% and 3.9% under the conservative and ambitious scenarios. The additional imports are dominated by Thailand (which under the theoretical simulated scenarios benefits from improved market access through a tariff cut with no volume limit), with an increase of between EUR 51 million and EUR 108 million. At the same time, Mercosur, and Vietnam imports, which are constrained by the TRQ agreed in the concluded FTAs, remain stable under both scenarios. Under the ambitious (conservative) scenario, EU rice production and prices drop by 1.5% (1%) and 7% (4.8%) respectively.

Sugar trade flows under both scenarios are affected by the agreement with Mercosur, a major world player. Mercosur countries increase their exports to the EU by EUR 116 million under both the conservative and ambitious scenarios. Consequently, compared to the baseline total sugar imports increase by 12% to 13% respectively.

The impact on trade resulting from the implementation of the 12 FTAs is expected to lead to gains for most agricultural products. The resulting net increase in the total value of EU agricultural production ranges from EUR 1.8 billion to EUR 2.3 billion under the conservative and ambitious scenarios, respectively. Most of the added value is attributed to the opening of pork, butter, cheese, skimmed milk powder, and whey markets (Figure 8).

Prices and production of beef, poultry and sheep meats, rice, and sugar are on the contrary projected to contract. In the case of rice, the impact on production is expected to be significant (see Section 1.1.7 for more details).

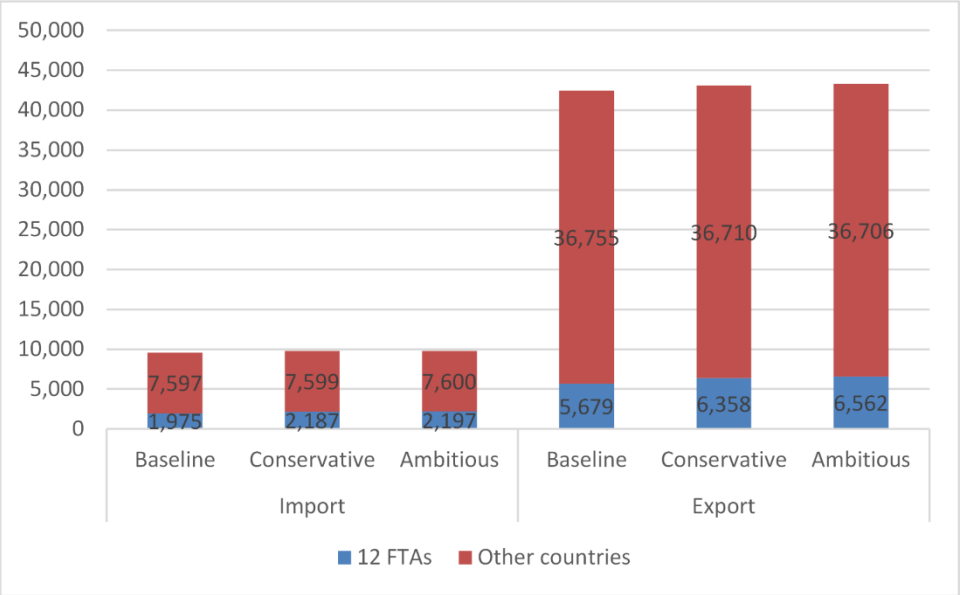
Figure 8: Value of EU production by commodities and scenarios (2030)



NB: SMP – skimmed milk powder, WMP – whole milk powder, value of production = quantity produced × producer price.
Source: Authors' estimates based on Aglink-Cosimo simulations (EC 2019 model version)

The trade balance of the EU in the wine and beverages sector improves by 1.3% under the conservative scenario and 1.8% under the ambitious scenario (Figure 9). The trade balance towards the 12 FTA partners improves more sharply by around 13% and 18%, which means an improvement of between EUR 467 million and EUR 660 million**Error! Reference source not found.**. Japan, Malaysia, Mercosur, and Vietnam show the largest export opportunities for the EU exports.

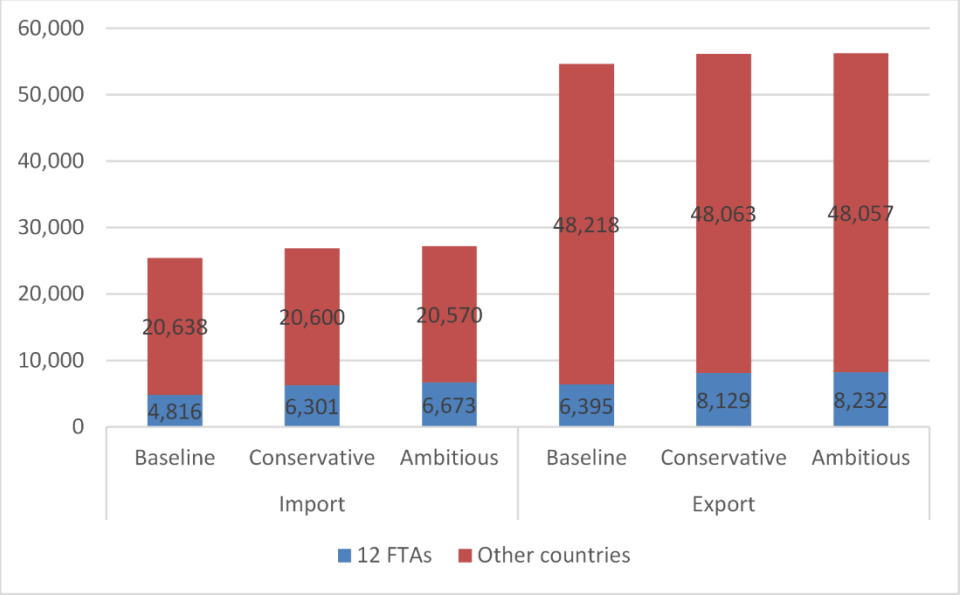
Figure 9: EU beverages and tobacco imports and exports (2030, EUR million)



Source: Authors' calculation from MAGNET results

The 'other foods' aggregate is a large category, containing a variety of food preparations, prepared and preserved fruits and vegetables, fruit juices, starches, bakery products, cocoa, chocolate and sugar confectionery, among others. The initial positive trade balance with the 12 FTA regions improves by EUR 248 million under the conservative scenario while it falls by EUR 20 million under the ambitious one (Figure 10). Under the conservative scenario, the improvement of the balance versus Japan, Australia and Canada are almost compensated by a significant increase of imports from Mercosur.

Figure 5: EU other food imports and exports (2030, EUR million)



Source: Authors' calculation from MAGNET results

Overall, both the conservative and the ambitious scenarios show an increase in EU imports from the 12 FTA partners in almost all agri-food products, in most cases accompanied by a (lower)

decrease in imports from other regions. Therefore, the market share of the 12 FTA partners in the EU increases significantly, particularly in the beef and poultry sectors. EU total agri-food imports increase by 3.3% (EUR 3.7 billion) and 4.2% (EUR 4.7 billion) respectively. Imports from the 12 FTA partners increase by EUR 3.9 billion (10.2%) in the conservative scenario and by EUR 5.1 billion (13.3%) in the ambitious scenario, which enables these countries to gain market share (by more than 3 percentage points). The highest increase in EU imports is reported from Mercosur countries. By contrast, the countries other than the 12 considered FTA partners face a decrease in their market share to the benefit of the regions negotiating or having concluded an agreement with the EU.

The paper therefore confirms that the EU trade agenda has the potential to be beneficial for the EU agri-food sectors. The paper also sheds some light on the vulnerability of specific agricultural sectors (i.e., beef, sheep meat, poultry, sugar, and rice) towards growing imports following increased market access. For trade agreements to remain acceptable, both economically and socially, and tenable for the most sensitive EU agricultural sectors, the paper indicates that improved market access in the form of TRQs would be considered a safer choice.

6. Conclusions

This paper presents the cumulative impacts on the EU agricultural markets of a series of FTAs concluded or under negotiation between the EU (this study covers the EU27) and a set of 12 third countries/regions. The assessment is performed employing the MAGNET and Aglink-Cosimo models. MAGNET is a CGE model and analyses the economy-wide impacts of the trade policy changes involving all sectors of the regional blocks. Aglink-Cosimo is a PE model and quantifies the detailed impacts on individual agricultural commodity markets. The changes in agricultural imports and exports produced by MAGNET are introduced in Aglink-Cosimo to assess the impacts of these FTAs on EU prices, supply, and demand.

Two counterfactual scenarios (conservative and ambitious) are compared to the reference (baseline) scenario in 2030. They explicitly include 12 FTAs recently concluded (Canada, Japan, Mercosur, Mexico, and Vietnam), under negotiation or envisaged (Australia, Chile, Indonesia, Malaysia, New Zealand, the Philippines, and Thailand).

This paper builds on a previous one performed by the JRC in 2016 (Boulanger et al., 2016). It fills a knowledge gap regarding the state of the EU agri-food sector in the light of further EU trade negotiations and agreements. It provides an accurate and realistic representation of all those agreements already concluded (through the explicit modelling of TRQs). Moreover, the paper provides insights for policy makers and negotiators, as a contribution to finding a good balance in further trade liberalisation. However, the presented model-based approach does not reflect all subtleties within agricultural trade (including environmental, sanitary, or social regulations).

Results are consistent with the 2016 paper (Boulanger et al. 2016), showing substantial opportunities for certain commodities: dairy, pork; wheat, wine and beverages while also underlying sensitivities for others such as beef, sheep, sugar, poultry, and rice. Even though the considered 12 FTAs have a higher share in EU imports compared to EU exports, the outcome in terms of overall trade balance is positive for the agri-food sector due to a higher increase in exports than imports.

The paper clearly illustrates the potential for EU agricultural products on world markets. The potential gains for the dairy and pork sectors remain particularly large. Other products benefit from trade opening, ranging from commodities to more high value/processed products of the agri-food industry, such as wine and beverages. The additional export demand enhanced by trade agreements could translate into an important source of growth, jobs creation and value added for the European agricultural and food sectors.

Furthermore, the paper confirms that growing imports of some products is to be expected following further market access opening. This is notably the case for beef, sheep meat, poultry, rice, and sugar. Regarding the beef market, this study shows a significant reduction in the magnitude of the

negative impacts compared to the 2016 study. This can be explained by the implementation of a more realistic negotiated outcome based on TRQs for the most important trading partners, especially Mercosur, in addition to model and database differences between the two studies. This confirms the EU's concerns regarding the sensitive character of these products in trade negotiations and how the introduction of TRQs, which are commonly included in trade agreements for these sectors, could reduce the negative impacts on the EU markets.

In any event, the successful conclusion of trade agreements will have to strike a balance between the protection of sensitive products and the achieved market access for EU agricultural products. The overall result of trade negotiations should remain economically, environmentally, and socially acceptable for the EU agriculture and beyond (European Commission, 2021).

One of the main limitations of this paper relates to the coverage of agricultural products in the economic models used. The CGE model MAGNET has a comprehensive coverage of the economy, and thus of the agri-food sector. However, the level of product disaggregation, in particular for the processed food sectors, is quite limited. The PE model Aglink-Cosimo provides more detailed results at the agricultural commodity level, although its product-coverage is not exhaustive, as it does not model some important agricultural products such as fruits and vegetables, wine, olive oil and processed agricultural products in general. As regards the geographical disaggregation, and given the complexity of the analysis, results are provided only for the EU. Furthermore, the considered scenarios investigate the effects of tariff liberalisation but do not factor in the analysis the possible reduction of non-tariff measures (NTMs).

The paper adopted a purely technical assumption of a duty-free, quota-free future trade relationship with the United Kingdom. The assumption of continuation of duty free, quota free (DFQF) trade relation between the EU and the United Kingdom as from 2021 is consistent with the outcome of the recent EU–United Kingdom Trade and Cooperation Agreement negotiation, although the other assumptions considered (e.g., the complete absence of non-tariff barriers between the EU and the United Kingdom, or the United Kingdom keeping the same FTA architecture of the EU over the medium term) are less realistic.

Finally, accounting for the impacts of the COVID-19 pandemic, the impact of the European Green Deal and other relevant factors related to trade policies such as environmental and social sustainability falls beyond the scope of the paper.

Disclaimer: The views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.

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