Impacts of EU trade agreements on the agri-cultural sector

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Preface

This report, entitled *Impacts of EU trade agreements on the agricultural sector*, has been prepared for the European Commission, Directorate-General for Agriculture and Rural Development, by Copenhagen Economics A/S.

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Glossary

AWU	Annual work unit
BSE	Bovine Spongiform Encephalopathy
CAP	Common Agricultural Policy
CDFTA	Deep and Comprehensive Free Trade Agreement
CSE	Consumers Support Estimate
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GATT	General Agreement on Tariffs and Trade
GI	Geographical indication
LSU	Livestock unit
M&A	Mergers and Acquisition
MFN	Most-favoured nation
NPC	Nominal Protection Coefficient
NTB	Non-tariff barrier
OIE	World Organisation for Animal Health
PDO	Protected destination of origin
PGI	Protected geographical indication
PSE	Producer Support Estimate
ROA	Return on assets
SMP	Skimmed milk powder
SO	Standard output
SPS	Sanitary and phytosanitary
TSE	Total Support Estimate
TSG	Traditional speciality guaranteed
UAA	Utilised agricultural area
WMP	Whole milk powder
WTO	World Trade Organisation

Executive summary

The EU is the single largest exporter of agri-food products with exports reaching 129 bn. EUR in 2015. This export performance has been driven mainly by EU agricultural policies, structural change and technological progress in the agri-food sector, as well as EU trade policies.

Following successive reforms, the focus of EU agricultural policies has shifted towards enabling economic viability of the agricultural sector and rural areas more generally and to cater to the needs of a growing global population. Not only has the level of support been lowered but the character of the EU's agricultural policy support has also moved from market distortion towards increased market orientation.

Due to structural change and technological progress in the agricultural sector, agricultural production in the EU takes place in fewer, larger and more capital-intensive farms. The total number of farms in the EU has thus dropped by 26 per cent from 2005 to 2013, and the consolidation process is expected to continue. Declining farm numbers have also led to larger farms and an increase in output per farm as well as to a drop in employment in the agricultural sector.

The EU market is relatively saturated and the European Commission expects 90 per cent of the additional world demand for agri-food products over the next 10-15 years to be generated outside Europe (European Commission, 2015). At the same time, the Russian ban had a large negative impact on EU exports, and EU exporters are looking for new market opportunities. Income and employment in the EU agri-food sector are thus dependent on access to export markets.

The ambitious bilateral trade agenda pursued by the EU over the last 10-15 years is therefore set to continue. Trade agreements create opportunities for EU producers on global markets and benefit the EU economy and consumers. However, gains from trade agreements on the EU agri-food sector should not be taken for granted, and it is important to continuously monitor and improve existing agreements as well as to learn from agreements already in place to improve new trade agreements that are being negotiated.

In this study, we have analysed the EU's trade agreements on the basis of trade agreements with different characteristics: The trade agreements of the EU with Mexico ("first generation" trade agreement), South Korea (new generation Deep and Comprehensive Trade Agreement DCFTA) and Switzerland (specific sectorial agreements). The purpose was to assess the economic, social and environmental impacts of the agreements and to identify the main factors that have fostered and impeded the development of EU agri-food trade.

To this end, we have collected data on global bilateral trade before and after the trade agreements entered into force on a detailed product level. We have also collected data on the preferential access granted by the trade agreements.

We use a triple-difference model that controls for a range of factors that influence bilateral trade between the trading partners, and the model thus estimates the isolated impact of the agreements. We supplement the quantitative analysis with five case studies (Danish pigmeat exports to South Korea, Polish sugar confectionary exports to South Korea, French wine exports to Mexico, EU citrus fruits imports from Mexico and German cheese exports to Switzerland) to get insights into the broader impacts of the agreements on actors of the agri-food supply chain.

Overall, the analysis finds that the trade agreements with Mexico, South Korea and Switzerland have increased EU agri-food exports by more than 1 bn. EUR and raised value added in the agri-food sector by 600 mn. EUR. The increased exports have supported almost 20,000 jobs in the agri-food sector, of which 13,700 jobs are in primary agriculture. There have also been benefits to other actors in the agri-food supply chain. Value added in other sectors has increased by more than 400 mn. EUR and an additional 7,700 jobs in the EU have been supported by the agreements. Most of these jobs are in wholesale and retail trade and in other business activities related to agri-food production and export. The trade agreements have also increased EU imports and given EU consumers access to agri-food products at lower prices.

When production in the EU increases, CO_2 emissions in the EU also increase. For a given level of consumption, this production replaces production in the trading partner or a third country, and the total environmental impact will depend on the environmental efficiency in the EU relative to this country as well as the environmental costs of transportation.

The analysis shows that the trade agreements have ensured that EU exporters compete on more equal terms against exporters from third countries. An important lesson from this is that, looking ahead, continuously benchmarking of third countries' trade negotiations with main EU trading partners and an efficient trade negotiation process with limited delays can lower the risk of foregone trade with other trading partners.

Rising protectionism both in the EU and in main trading partners may limit trade in the future and hinder negotiations of new trade agreements. It is therefore important to continuously evaluate the impacts of existing trade agreements and use the results to engage in public debate about the pros and cons of trade liberalisation. It is also important to keep in mind that impacts differ across member states and sectors, and aggregate EU impacts may hide large disparities across individual actors in the EU agri-food supply chain.

The EU-Mexico FTA

The EU-Mexico FTA entered into force in 2000. EU agri-food exports to Mexico have increased throughout the period 1995-2014 although at a lower rate than the general increase in Mexican agri-food imports, and the EU has lost market share throughout most of the period. This study finds that the EU-Mexico FTA has increased EU exports to Mexico by around EUR 105 mn. This increase is mainly due to an increased export volume of processed agri-food products that EU producers already exported to Mexico before the FTA entered into force.

Increased agri-food exports to Mexico did not seem to have taken place at the expense of exports to Brazil, the export market most comparable to Mexico, which leads us to conclude that the increase in EU exports to Mexico reflects an increase in total EU exports.

EU agri-food imports from Mexico showed no immediate change after the FTA entered into force but imports started to increase after 2004. Growth in EU imports from Mexico has been larger than the general increase in EU agri-food imports, and Mexico has increased its market share throughout most of the period. This study finds that the EU-Mexico FTA has increased EU imports from Mexico by around 315 mn. EUR. This increase is mainly due to an increased import volume of primary agricultural products that were already imported from Mexico before the FTA entered into force. Increased imports from Mexico did not take place at the expense of intra-EU trade, and we therefore expect that the increased EU imports have had little impact on production in the EU.

For a given level of consumption, the increase in the volume of EU exports has increased EU agri-food production, and the EU-Mexico FTA has supported around 2,000 jobs in the EU agri-food supply chain. These jobs are mainly in processed food and beverages.

The EU-Mexico FTA has also facilitated increased imports of primary agricultural products at lower or no tariffs, and has given EU consumers access to these products at lower prices. The lower prices have also benefitted EU companies that use the imported primary agricultural products in their production of processed food and beverages.

The increase in EU imports is larger than the increase in exports measured both in absolute and relative terms. This is likely to be due to large tariff peaks on the Mexican side with faster and more in-depth elimination of tariffs on the EU side. In addition, the case studies suggest that SPS requirements on the Mexican side have effectively shut out EU agri-food products from the Mexican market. On the EU side, specific rates and quotas continue to pose a barrier to increased imports from Mexico.

The study thus concludes that there is a trade potential in eliminating specific rates and quotas and increasing the scope of the EU-Mexico FTA on the EU side while at the same time reducing tariff peaks and solving SPS issues on the Mexican side.

The EU-South Korea FTA

The EU-South Korea FTA entered into force in 2011. EU agri-food exports to South Korea have increased after 2011, and the FTA appears to have reversed the negative trend in the EU's market share in South Korea since 2005. This study finds that the FTA has increased EU exports to South Korea by around 440 mn. EUR. This increase is mainly due to an increased export volume of primary agricultural products that EU producers already exported to South Korea before the FTA entered into force. Increased exports to South Korea did not seem to have taken place at the expense of exports to Japan the export market most comparable to South Korea, so we expect that that the increase in EU exports to South Korea reflects an increase in total EU exports.

EU agri-food imports from South Korea have increased substantially since the FTA entered into force, albeit from a very low level. Growth in EU imports from South Korea has been larger than the general increase in EU agri-food imports, and South Korea is thus gaining market share, although the share is still less than 0.15 per cent of total EU agri-food imports. This study finds that the FTA has increased EU imports from South Korea by around 20 mn. EUR. This increase in mainly due to an increased import volume of processed agri-food products that were already imported from South Korea before the FTA entered into force. Increased EU imports from South Korea did not take place at the expense of intra-EU trade, and we therefore expect that the increased EU imports have had little impact on production in the EU – also taking the absolute value into account.

The increase in the volume of EU exports has increased EU production of agri-food products, and the EU-South Korea FTA has supported around 15,000 jobs in the EU agri-food supply chain during 2011-2015, mainly in primary agriculture. As tariffs are not yet fully phased out, the impact of the FTA is likely to become even larger during the next 10 years. The agreement is the most ambitious ever implemented by the EU and there is little room for increasing the depth or scope of the agreement (once it is fully implemented). However, the study concludes that real market access in the EU-South Korea FTA should not be taken for granted, and the implementation of the agreement is important for realising the expected trade potential.

The EU-Switzerland trade agreements on agri-food products

The EU and Switzerland have in place two sectoral trade agreements that regulate trade in agri-food products. The agreement covering primary agricultural products under Bilaterals I entered into force in 2002 whereas the most recent agreement covering processed agri-food products under Bilaterals II entered into force in 2005.

EU agri-food exports to Switzerland were largely unchanged up until 2005, after which exports gradually increased. The EU accounts for around 75 per cent of Swiss agri-food imports, and this share has remained relatively stable throughout the last decade. This study finds that the trade agreements on agri-food products have increased EU exports to Switzerland by around 530 mn. EUR. This increase is mainly due to an increased export volume of processed agri-food products that EU producers already exported to Switzerland before the agreements entered into force. Increased exports to Switzerland did not seem to have taken place at the expense of intra-EU trade, and the increase in EU exports to Switzerland is likely to reflect an increase in total EU exports and, for a given level of consumption, an increase in production.

EU agri-food imports from Switzerland have increased substantially since the agreements entered into force. Growth in EU imports from Switzerland has been larger than the general increase in EU agri-food imports, and Switzerland is thus gaining market share (although the share remains relatively low). This study finds that the EU-Switzerland trade agreements have increased EU imports from Switzerland by around 1,170 mn. EUR. This increase is mainly due to an increased import volume of processed agri-food products that were already imported from Switzerland before the agreements entered into force.

Increased imports from Switzerland did not take place at the expense of intra-EU trade, and we therefore expect that that the increased EU imports from Switzerland have had little impact on agri-food production in the EU.

The increase in the volume of EU exports has increased EU production of agri-food products, and the trade agreements have supported around 10,000 jobs in the EU agri-food supply chain. These jobs are mainly in processed food and beverages as the increase in exports consisted mainly of processed agri-food products.

The EU and Switzerland trade mainly in processed food and beverages, and the trade agreements have thus given EU consumers access to a more agri-food products at lower prices. The increase in EU imports is larger than the increase in exports measured both in absolute and relative terms. This is likely to be due to a large number of non-zero preferential rates on the Swiss side, which make EU agri-food products more expensive in the Swiss market. On the EU side, only a limited number of agri-food products are covered by the agreements.

The rationale for the scope and depth of the existing EU-Switzerland trade agreements may have changed over the last 10-15 years, and there could be a trade potential in eliminating preferential rates on the Swiss side and increasing the number of products covered on the EU side.

The EU agri-food sector can benefit more from completed trade agreements
A general finding of the analysis is that there is a potential for increasing EU trade further even within the existing scope and depth of the trade agreements. The EU trade agreements are in many cases a precondition for entering new markets or launching new products in existing export markets, but EU exporters also need to build a reputation and establish distribution networks before they are able to penetrate new markets. In most cases, there are significant fixed costs of entering a new market (e.g. related to networking, promotion, advertising, etc.) that warrant a targeted export strategy and call for collaboration between EU exporters and for common EU promotion campaigns. This will particularly benefit SME exporters.

EU exporters (mainly SMEs) are not always fully aware of the trade potentials in new EU trade agreements and the threat of losing market share when their trading partners sign trade agreements with third countries. Companies and organisations thus need to be better informed about new trade agreements, and there could be a scope for carrying out common information campaigns when new EU trade agreements enter into force. Likewise, information about new trade initiatives in main EU partner countries will allow EU exporters to anticipate changing business conditions and implement the right commercial strategies.

The study points to the particular potential of exports to the Asian export markets, where demand for agri-food products of high quality and limited domestic production capacity offer new business opportunities for innovative EU companies that are willing and able to adjust their production to local preferences.

Chapter 1

The EU agri-food sector

In this chapter, we describe key developments in production, income and employment in the EU agri-food sector and the role of the agri-food sector in the EU economy.[1] The agri-food sector in this report is defined as agricultural production and the processing of food, beverages and tobacco products.[2] In this chapter, we also provide a short overview of the main issues addressed by EU agricultural policies and the shift in EU agricultural policies from market distortion to market orientation that has taken place over the last two decades.

1.1 EU agricultural policies and support

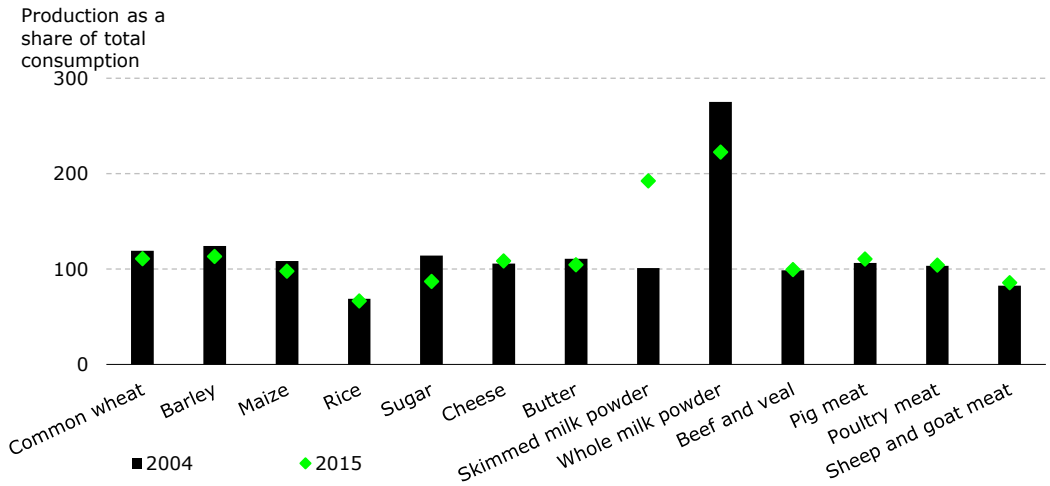
EU agricultural policies are measures related to the domestic EU agricultural sector and EU trade in agricultural products.[3] Agricultural policies address a wide range of issues, including providing sufficient food at reasonable prices for consumers, supporting farm incomes, ensuring food safety and improving environmental quality.

Agricultural production has historically received intense political attention due to self-sufficiency considerations and a relatively protectionist approach to foreign trade was put in place. One of the original principles of the EU Common Agricultural Policy (CAP) was 'Community preference', meaning that the domestic EU market should be supplied in the first instance by EU farmers with imports playing a residual role (European Commission, 2015b). This principle led to the adoption of high border protection (originally in the form of variable import levies which were converted to tariffs following the Uruguay Round Agreement on Agriculture).

Today, the EU is broadly self-sufficient in most agricultural primary commodities, though with important exceptions such as soya beans and meal, maize, rice, sugar as well as sheep and goat meat, cf. Figure 1. Except from sheep and goat meat, EU self-sufficiency in these products has dropped from 2004. Instead, EU has specialised more in common wheat, milk powder and pigmeat.

1 If nothing else is noted, the EU refers to EU27. Croatia has been excluded due to the late accession into the EU in 2013, which means that the impacts of EU FTAs should be expected to be small.
2 The list of products to be included in the study was provided by DG Agri according to the Terms of Reference to this study.
3 This study only touches very briefly upon EU agricultural policies and only from the perspective of 1) comparing support to the EU farm sector relative to its competitors in global markets and 2) describing the shift in the structure of EU agricultural policies.

Figure 1 EU self-sufficiency in agricultural products, 2004 and 2015



Note: Self-sufficiency is measured as EU production in a given product as a share of total consumption, where total consumption is defined as EU production minus net trade (difference between exports and imports). A self-sufficiency rate above 100 thus indicates that the EU is able to meet its consumption needs from own production and generate net exports.

Source: Copenhagen Economics based on Matthews (2014)

Up until April 2015, milk production in the EU was limited by a quota. When the quota was lifted in 2015 after the milk reform, total production increased but the increase was relatively small because the quota was not met in many countries. However, there has been a large shift in the dairies' *use* of the milk they processed has shifted from being mainly whole milk powder (WMP) in 2004 to skimmed milk powder (SMP) in 2015. One explanation could be the Russian import ban on cheese, which led to additional milk being channelled into SMP. An additional explanation is the greater EU competitiveness and growing demand for SMP from emerging and developing countries.

In general, the issue of self-sufficiency plays only a minor role in most OECD countries. Agricultural policy today is generally more focused on farm income support and improving the environmental management of farmland, and the goal of agricultural policies as defined by the OECD is: Enabling the economic viability of the agricultural sector and rural areas more generally, producing enough and nutritious food to cater to the needs of growing and more affluent global populations, and improving the long-term environmental sustainability of food production (OECD, 2015).

Like in most other OECD countries, support to the EU agricultural sector has decreased over time (see Box 1 for a description of the various support indicators available).[4]

[4] According to OECD (2015), average levels of support to agricultural producers in OECD countries and in emerging economies are converging. Emerging economies, on average, have passed from taxing their agriculture in the 1990s to providing significant levels of support, while the historically very high level of support across the OECD area, on average, has declined.

Box 1 OECD definition of support to the agricultural sector

OECD has developed agriculture support indicators that, despite the diversity in support measures, express policy measures with numbers in a comparable way across time and between countries.

Agricultural support
Agricultural support is defined as the annual monetary value of gross transfers to agriculture from consumers and taxpayers, arising from governments' policies that support agriculture, regardless of their objectives and their economic impacts. The Percentage Total Support Estimate indicator (%TSE) represents the total of policy transfers to agricultural sector expressed as a share of GDP. The Percentage Producer Support Estimate (%PSE) represents policy transfers to agricultural producers, measured at the farm gate and expressed as a share of gross farm receipts. TSE transfers consist of transfers to agricultural producers (measured by the PSE), consumers (measured by the CSE) and support to general services to agricultural sector (measured by the GSSE). Transfers included in the PSE are composed of market price support, budgetary payments and the cost of revenue foregone by the government and other economic agents.

Producer protection
Producer protection, measured by the Producer Nominal Protection Coefficient (NPC) is defined as the ratio between the average price received by producers (measured at the farm gate), including net payments per unit of current output, and the border price (measured at the farm gate). For instance, an NPC of 1.10 suggests that farmers, overall, received prices that were 10% above international market levels.

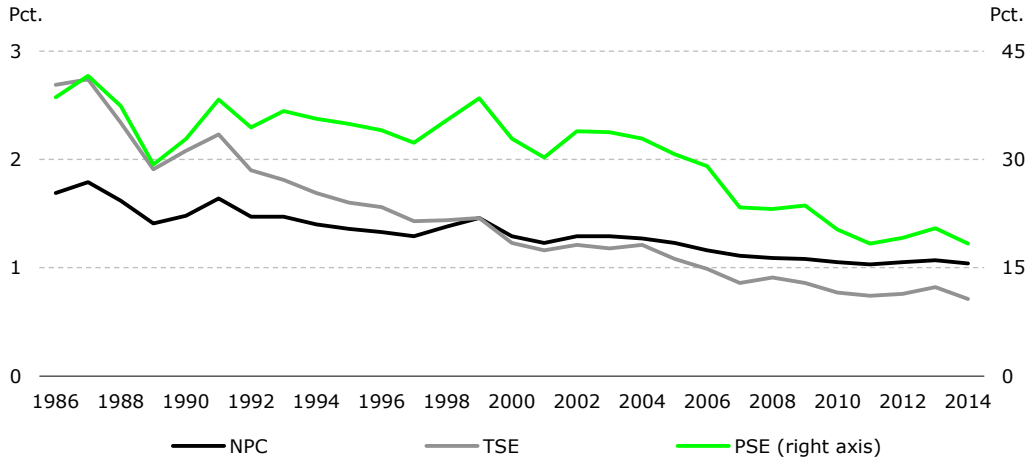
Source: OECD Producer and Consumer Support Estimates database

CAP expenditure in the EU budget has fallen from over 0.6 per cent of EU GDP in the early 1990s to 0.4 per cent of GDP today.[5] Total transfers to producers (as measured by the OECD in the PSE indicator) have fallen from 89 bn. EUR in 1990-1992 to 85 bn. EUR in 2012-2014 despite the increase in the number of member states during this period.[6] Producer transfers expressed as a per cent of gross receipts (the PSE%) have fallen from 35.2 per cent to 19.3 per cent over this period, cf. Figure 2. The total of policy transfers to agricultural sector expressed as a share of GDP (%TSE) has fallen from 2.8 per cent in 1986 to 0.8 per cent in 2014.

Producer protection (NPC) has also fallen throughout most of the period but has remained more stable at around 1.1 during recent years. In 2014, EU farmers thus on average received prices that were four per cent above international market levels. This should be compared to a price mark-up of 69 per cent in 1986.

5 Based on Eurostat figures from Europe Commission (2016a).
6 Based on the OECD Producer and Consumer Support Estimates database.

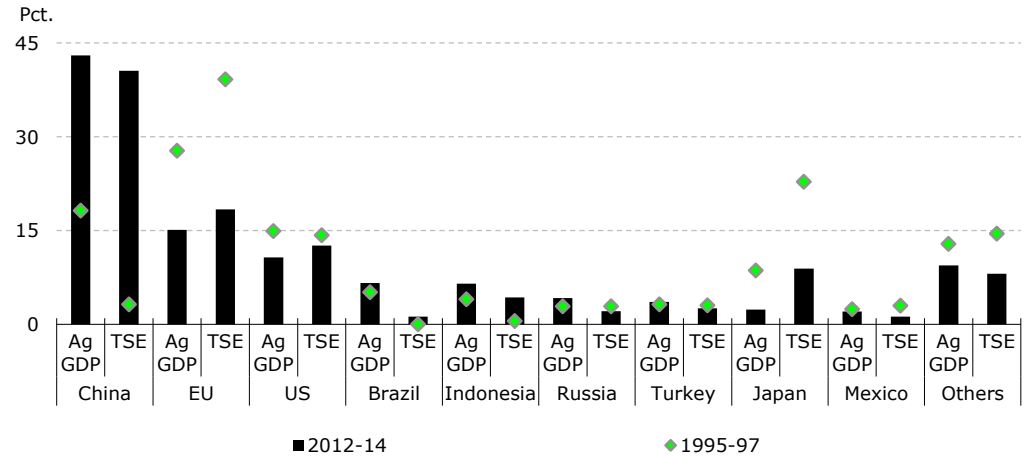
Figure 2 EU percentage PSE, TSE and NPC, 1986-2014



Source: Copenhagen Economics based on the OECD Monitoring and Evaluation Database

The phasing out of policy support to the EU agricultural sector should be seen in the context of a relatively high support level compared to other OECD countries in the past. In 1995-1997, policy support to the EU agricultural sector (total TSE) amounted to almost 40 per cent of GDP compared to 15 per cent in the US and 23 per cent in Japan, cf. Figure 3. In 2012-14, policy support in the EU had fallen to around 18 per cent of GDP, which is still above the policy support in the US (13 per cent of GDP) and Japan (9 per cent of GDP).

Figure 3 Country shares in total agricultural GDP and in total TSE, 1995-97 and 2012-14



Source: Copenhagen Economics based on OECD (2015)

During the last 10-15 years, China has significantly increased its policy support to the domestic agricultural sector, and changes in policy support to the agricultural sector has changed the relative position of the major agricultural producers over time. The EU (28 per cent), China (18 per cent), the US (15 per cent) and Japan (9 per cent) were the key agricultural producers in the mid-1990s, accounting together for more than three-quarters of agricultural GDP among the 49 countries covered by the OECD statistics. In recent years, China alone accounted for 43 per cent of the total agricultural GDP of the countries covered.

Both the lower level of support and the change in the character of the EU's agricultural policy support are important in understanding the competitiveness of the EU agri-food sector in an international context. As described in Box 2 below, EU agricultural policy support has moved from market distortion towards support that is not (or minimally) influencing production choices. The successive reforms have thus made the EU agriculture more competitive and better equipped to participate in world trade.

Switzerland, for example, has a higher level of support than the EU. The cheese case study, for example, shows that Swiss cheese production continued to be supported by subsidies granted to Swiss milk delivered to the Swiss cheese industry, whereas EU export subsidies for EU cheese exports have been abolished since 2007. EU milk prices now follow world market prices very closely (the OECD single commodity transfer for milk which measures support to milk shows a % support of 1.3 per cent in 2013, 1.6 per cent in 2014 and 3.4 per cent in 2015[7]) and EU support is thus close to nothing. The same figures for Switzerland are 14.2 per cent in 2013, 30.7 per cent in 2014 and 46.0 per cent.

The pigmeat case study also confirms that reforms of the CAP have contributed to making EU agriculture more competitive and being able to increase exports and become more market-oriented. EU support for pigmeat has been limited and is now zero, while South Korea has a high level of support on agricultural products and also on pigmeat production. South Korean support increased until 2009 and only partly declined afterwards. The South Korean protection is primarily market protection, which will be gradually reduced during the implementation of the EU-South Korea. In this period, South Korean producers will need to become more productive to stay competitive in their home market – a process that has already taken place in the Danish pigmeat production.

[7] See http://www.oecd.org/tad/agricultural-policies/producerandconsumersupportestimatesdatabase.htm#country.

Box 2 CAP policy: From market distortion to market orientation

The EU Common Agricultural Policy (CAP) is one of the oldest policies of the EU and has been reformed on many occasions, in particular during the past two decades. The three dimensions supported through the CAP are: Producer prices, producers' income, and rural development. These dimensions have been given different weights over time as the desire to increase market orientation grew stronger.

The main instruments of the CAP in the 1980s were intervention buying and export subsidies. Since production was strongly driven by government incentives rather than market signals, the production surplus that occurred came at a high budgetary cost. The budgetary pressure, in particularly related to the enlargement in the 1990s, stimulated calls for a reform from within the EU. The core element of the reform process of the CAP has been the shift from product support to producer support. Rather than ensuring a fixed price for agricultural products (and hence supporting farmers' income indirectly), the CAP today focuses on supporting farmers' income directly.

This change is important because product support led to overproduction. EU farmers were largely isolated from market signals because the CAP, together with variable border protection under the Common External Tariff, used to guarantee fixed prices for certain products, thus incentivising this overproduction. In order to counter this, the CAP also had to introduce quantitative limitations, essentially for the dairy, sugar and arable crops sectors.

Today, market instruments are to a larger extent used to provide market safety nets. Intervention prices are set at low levels, which ensure that they are only used in times of real crisis. Intervention measures are maintained for a few commodities because agricultural production differs from other sectors of the economy. Agriculture is more weather and climate dependent than many other sectors. Furthermore, it is argued that the time gap between demand signals and the possibility for supply responses is larger for this sector. Since food consumption is largely constant compared to other products, this means that small changes in the amounts produced can have big effects on prices. These business uncertainties are found to justify the important role that the public sector plays in ensuring stability for farmers.

Future challenges to the CAP identified by the European Commission (2011b) relate to the following policy questions: How can EU agricultural policies contribute to stability for the agricultural sector and rural communities when there is volatility in the markets? How can such policies ensure efficiency and equal distribution of support? How are challenges such as preserving the environment and the countryside best dealt with?

Source: Copenhagen Economics based on European Commission (2011b)

The CAP reforms also influenced sugar production in the EU, and the sugar confectionary case study illustrates how this has implications in the downstream industries. With the intention to restrict overproduction in response to high support prices, quotas were a part of the CAP sugar regime from the beginning in 1968. However, in 2006 a sugar reform was adopted including a voluntary buy-out scheme to lower production quota for limitation of overproduction and a reduction in the sugar support price. Furthermore, it contained a fixed producer payment, an intervention system and compensation for farmers this was the fixed producer payment, so combine in order to protect producer income.

The existence of sugar quotas continued to inflate purchase prices of raw materials in sugar confectionary production, shrink the profitability of these companies' core business and reduce the competitiveness of EU producers in their export markets, even despite the payment of export refunds designed to compensate them for the higher cost of domestically produced EU sugar. The most recent sugar reform is expected to address this problem because sugar quotas will be completely abolished in 2017, and the reform should thus be expected to have a positive impact on EU sugar confectionary exports. Note high tariffs of €339/tonne (almost the same as the world market price for sugar) still provide a margin of protection for the EU sugar sector.

1.2 Farms and agricultural production in the EU

Agricultural production in the EU today takes place at 10.8 mn. farms and involves 175 mn. hectares of agricultural land, which means that a farm had on average 16.1 ha of agricultural land (UAA), cf. Figure 4. Production involved 22.2 mn. people, corresponding to 8.7 mn. full time jobs[8] and generated almost 31,000 EUR in standard output (SO) per farm. The average farm in 2013 employed less than 1 full-time worker (AWU) and had slightly less than 11 livestock units (LSU). It was a family farm held by a single holder (who normally would also be the farm manager). The farm manager would in most cases be male and older than 55 years.

Figure 4 The average farm in the EU, 2013

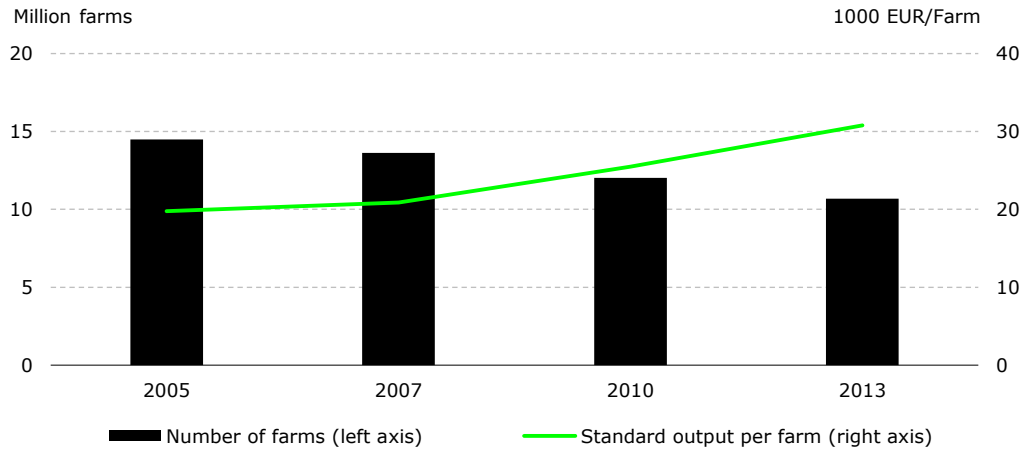
Note: Standard output is the average monetary value of the agricultural output at the farm-gate price of each agricultural product (crop or livestock) in a given region. The livestock unit (LSU) is a reference unit, which facilitates the aggregation of livestock from various species and age as per convention, via the use of specific coefficients established initially on the basis of the nutritional or feed requirement of each type of animal (see table below for an overview of the most commonly used coefficients).

Source: Copenhagen Economics based on European Commission (2016b)

[8] As a majority of the farmers in the EU work less than full time there is a large difference between the number of people involved in agricultural production and the number of full time jobs, see European Commission (2015), CAP context indicators 2014-2020.

There has been a significant consolidation of EU agricultural production in a smaller number of farms. The total number of farms in the EU has dropped from 14.5 mn. in 2005 to 10.7 mn. in 2013, equal to a decline of 26 per cent, cf. Figure 5. This consolidation process is expected to continue, and the number of units is expected to drop to 7 mn. in 2020 (European Commission, 2009). The new member states will account for the largest drop.

Figure 5 Farm size and productivity in the EU, 2005-2013



Note: Output per farm is measures by the standard output (SO) per AWU. The SO of an agricultural product (crop or livestock) is the average monetary value of the agricultural output at farm-gate price, in euro per hectare or per head of livestock.

Source: Copenhagen Economics based on Eurostat

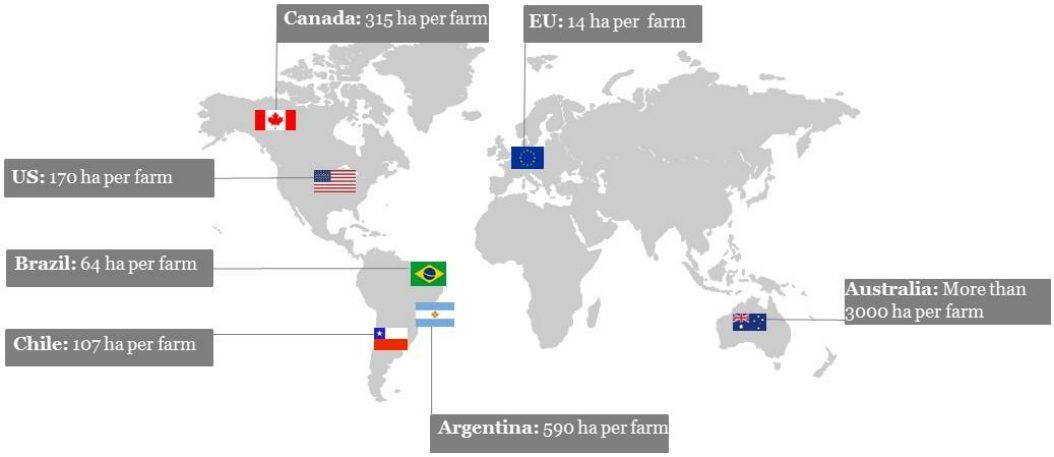
With an agricultural area that has changed very little over the last decades (172.4 mn. ha UAA in 2005 compared to 174.6 mn. ha in 2013, amounting to a 1.3 per cent increase), declining farm numbers have also led to larger farms and a higher value of output per holding. Output per farm increased from 20,000 EUR to around 31,000 EUR in 2013.

The increasing farm size allows to a larger extent farmers to benefit from scale effects, which has had a positive impact on farm productivity (measured by the standard output per farm). Economies of scale, in turn, have grown in importance because of technological developments, which have made possible the increased capitalisation of agricultural production, as well as because of rising living standards in the rest of society, which have increased the opportunity cost of farm labour. This has led to the exit from the sector of smaller farms and/or their growth to a larger size class.

The gradual liberalisation of agricultural policy as described in the previous section has accentuated the impact of these economic forces, although it has also helped to maintain farm numbers in more marginal farming areas.

Nevertheless, the average farm size remains low in an international comparison, cf. Figure 6. An average farm in the US has an utilised agricultural area of 170 ha and a farm in Australia has on average more than 3,000 ha. However, many small farms show substantial growth and their contribution to total sector growth is larger than that of large farms (European Parliament, 2016).

Figure 6 Average farm size across countries



Note: Farm size has been measured by hectare (ha) of utilised agricultural area (UAA). No exact year has been reported in the original source.

Source: Copenhagen Economics based on EU Agricultural Economics Briefs – October 2013

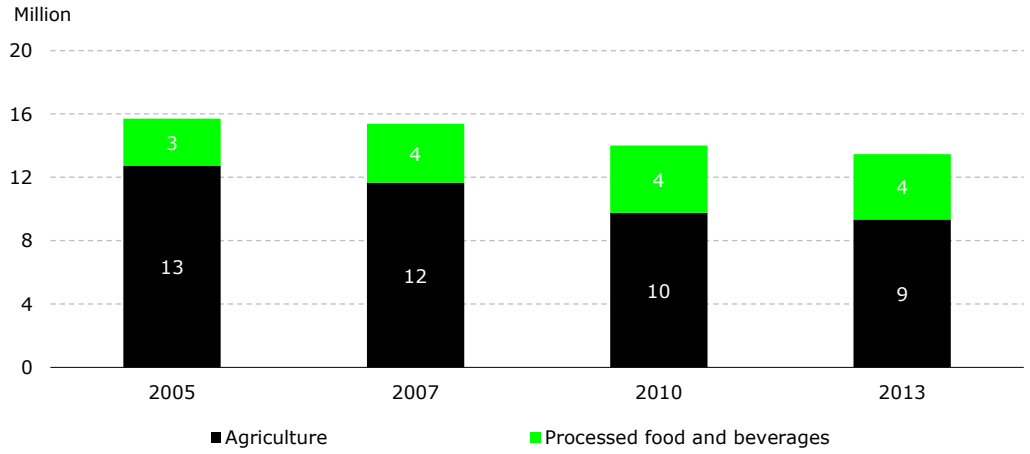
This consolidation process has also taken place in the German dairy sector as illustrated by the cheese case study. In Germany, the stock of dairy cows has steadily increased while the number of dairy farmers has decreased in recent years. In addition, the German dairy industry produces a relatively high turnover with relatively few employees, which illustrates the high level of technology in the dairy industry.

1.3 Employment in the EU agricultural sector

In 2013, the EU agri-food sector employed 13.9 mn. people with 9.3 mn. full-time employed in agriculture and 4.6 mn. employed in the manufacturing of food products, beverages and tobacco products, cf. Figure 7.

In 2005, a total of 15.9 mn. people were employed in the agri-food sector and employment has thus dropped by 14 per cent from 2005 to 2013. The lower employment in the agri-food sector was mainly driven by lower employment in agriculture whereas employment in the manufacturing part of agri-food production has remained more or less constant over the period for data is available.

Figure 7 Employment in the EU agri-food sector, 2005-2013



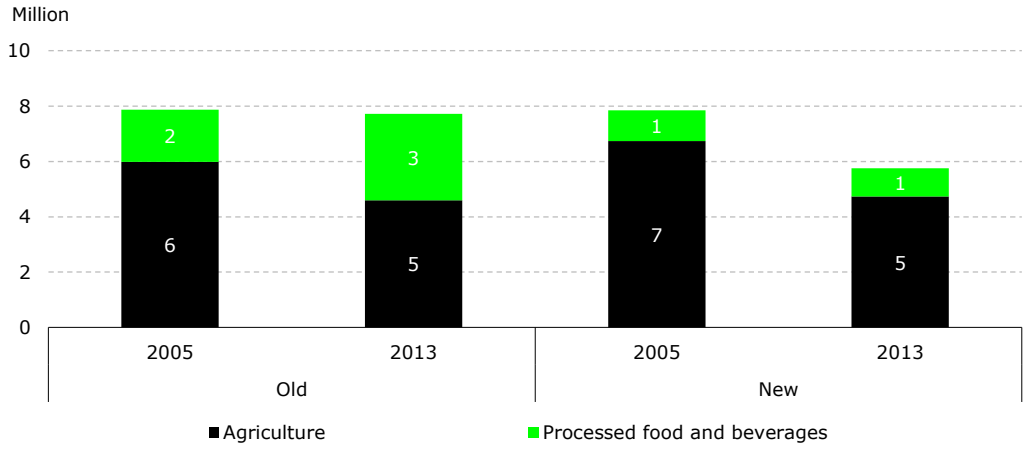
Note: Manufacturing consists of manufacturing of food products, beverages and tobacco products. For agriculture, employment is measured in annual work units.

Source: Copenhagen Economics based on European Commission (2016b)

Employment in the agri-food sector follows different patterns in the new and old member states. While employment in the new and old member states was of a comparable size in 2005 (around eight mn. full-time employees), employment in the new member states had dropped by two mn. in 2013 whereas employment in the old member states remained at the same level.

The drop in employment in the new member states is mainly due to a drop in agriculture while employment in the food manufacturing industries remained constant. One explanation is the presence of a relatively larger number of smaller and inefficient agricultural production units in the new member states, which made it difficult to benefit from economies of scale and remain competitive relative to the larger units in the old member states (Nowicki et al., 2009). Family farms in the new member states are often highly fragmented, and the problems of an ageing farm labour force are even more acute than in the old member states (see also Section 1.4). In the old member states, employment has shifted towards the food manufacturing industries and away from agriculture.

Figure 8 Employment in the agri-food sector in the old and new members states, 2005-2013



Note: Manufacturing consists of manufacturing of food products, beverages and tobacco products. For agriculture, employment is measured by the annual work unit. The new member states refer to the 12 countries that have joined the EU since 2004 (excluding Croatia).

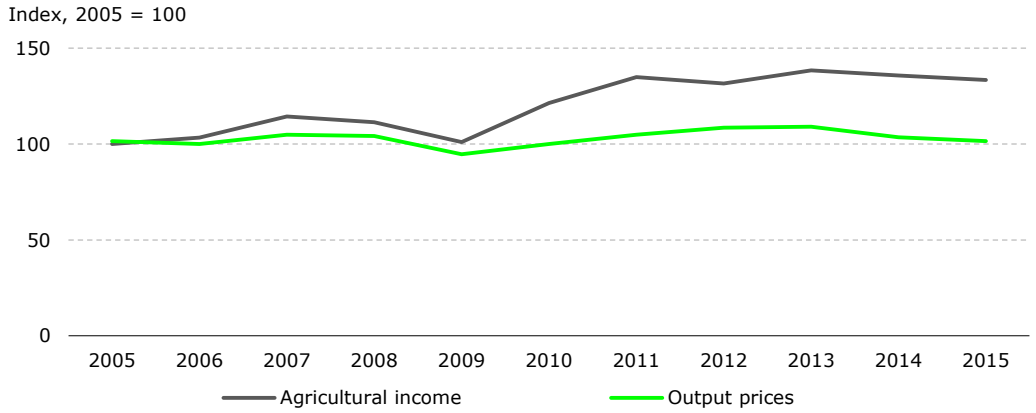
Source: Copenhagen Economics based on Eurostat

1.4 EU farmers' income and social situation

EU farm income has increased in recent years in line with higher world market prices for agri-food products, but has also experienced marked volatility. The index of real income in agriculture per AWU (the so-called Indicator A) increased by 33 per cent 2005 to 2015, cf. Figure 9. There was a sharp drop in income in 2009, which was driven mainly by a large drop in output prices due to the economic crisis.[9] EU farmers' income in 2013 was at a historically high level (index of real income of 138) but income has decreased in both 2014 and 2015.

[9] Based on data from Eurostat, European Commission (2016) finds that output prices dropped by more than 10 per from 2007 to 2008.

Figure 9 EU farm income trends, 2005-2015

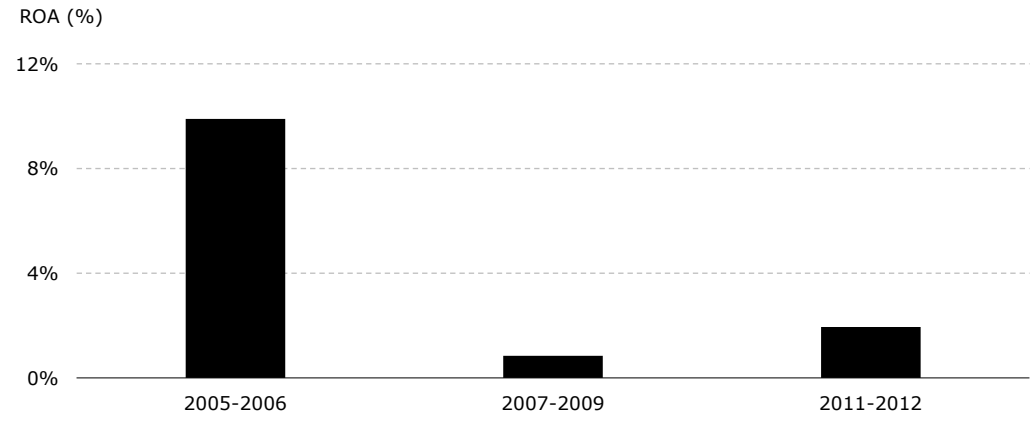


Note: Indicator A is an index of the real income of factors in agriculture per annual work unit (AWU), which corresponds to the real value added at factor cost of agriculture per total AWU.

Source: Copenhagen Economics based on European Commission (2016b)

In spite of the relatively low income levels in 2005-2006, the return on assets was very high, cf. Figure 10. The opposite was the case in 2011-2012 where income was at a much higher level but the return on assets was relatively low. The low return on assets may reflect barriers to off-farm mobility (due to lack of off-farm employment opportunities in some rural areas as well as the demographic composition of the farm labour force) as well as non-pecuniary attractions of farming which keep people in farming even though they could earn a higher return in other occupations.

Figure 10 Return on assets in the EU, 2005-2012



Note: ROA is defined as return on assets. ROA=(FNVA + Balance of Subsidies and Taxes on Investments – Wages paid – Paid Rent – Opportunity Cost for Family Labour) / Total Assets.

Source: Copenhagen Economics based on DG AGRI EU-FADN – EU Farm Economics Overview Reports

Research for the AGRI Committee in the European Parliament also points to demographic problems in EU agriculture. Agricultural incomes lag behind income in other sectors, which encourages the outflow of young and skilled labour from farming (European Parliament, 2016). Besides low wages, the limited amount of agricultural land offered for sale or rent and the poor access to capital in many EU countries make it difficult for the younger generation to enter farming, while the high proportion of older farm operators moderates long-term return investments. The wine case study illustrates the demographic challenge in the French wine sector but also the value of ensuring employment in rural areas, cf. Box 3.

Box 3 French wine production and social impacts

The average size of a French wine estate rose from 8.1 ha in 2000 to 10.4 ha in 2010. This is symptomatic of the consolidation in the sector due to wine producers retiring and not being replaced. The farms are bought and then merged with others. Despite this, the average farm size still remains small compared to New World standards.

French production also continues to be highly dispersed and is spread over the entire national territory. Producers attach importance to the notion of *terroir*, which are specific areas where producers have defined "specific wine quality" linked to "specific local conditions", both natural (soil, climate) and human (local knowledge)". These *terroirs* are recognised by the PDO system and form part of local cultural identity. The majority of wine in France is thus produced according to a geographical indication: PDO labels (AOP/AOC, referring to *terroirs*) represent 50 per cent of purchases, PGIs have gained 28 per cent of the market, referring to varieties and regions. Geographical indications concern 90 per cent of French wine producers.

In 2010, French wine growing provided 250,000 direct jobs and more than 250,000 indirect jobs (business, tourism, etc.). The sector is therefore labour intensive and creates employment at all levels of qualification throughout the country, including in the most rural and isolated zones, far from any economic centre. Wine production therefore performs a social role in terms of territorial structuring and job preservation in economically underprivileged areas.

Note: Three EU schemes known as PDO (protected designation of origin), PGI (protected geographical indication) and TSG (traditional speciality guaranteed) promote and protect names of quality agricultural products and foodstuffs.

Source: Copenhagen Economics based on the wine case study

1.5 EU agriculture and the environment

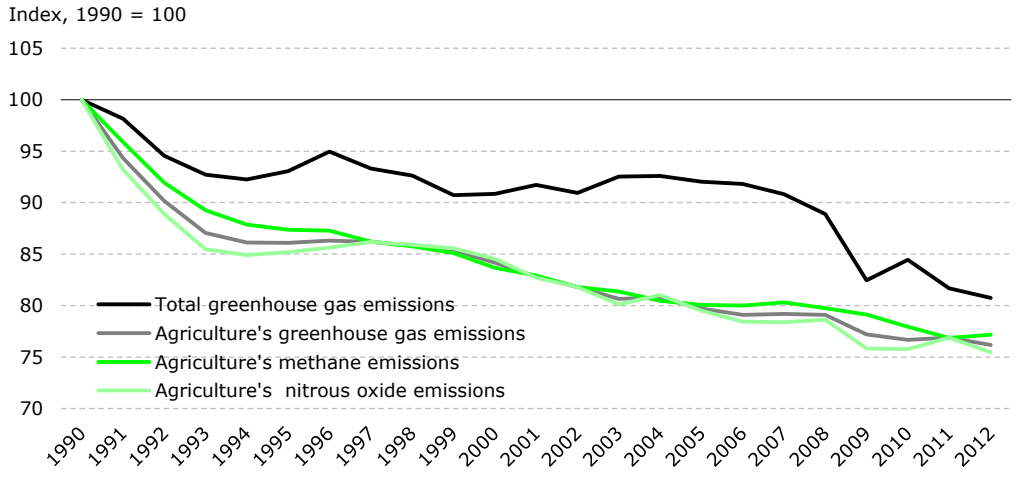
Through its resource use, agriculture changes rural landscapes and can contribute to resource depletion and degradation. In response to these environmental concerns, EU policy makers have introduced a range of constraints and limits (e.g. on resource use, emission and concentration) and taken initiatives to share best available techniques, methods and practices. Nature conservation policies have also been implemented that set various agricultural constraints (Eurostat, 2015a).

There are also a number of farm management practices that can potentially reduce agricultural greenhouse gas emissions. These vary in cost-effectiveness and practicality, but include practices such as the optimisation of fertiliser application rates; the continuation of non-fertilised set-aside areas; improved feed conversion efficiency by optimising livestock diets; improved animal productivity and rumen (stomach) efficiency through the use of feed additives and breeding; better control of manure management systems to reduce the extent of anaerobic decomposition as well as the covering of manure and slurry lagoons. Measures to reduce carbon dioxide emissions from soils or to enhance carbon sequestration include the maintenance of permanent pasture, conservation tillage, appropriate crop rotation and cover crops (Eurostat, 2015a).

Agricultural activities in the EU generated 470.6 mn. tonnes of CO2 equivalent in 2012, corresponding to about 10 per cent of total EU greenhouse gas emissions.[10] EU greenhouse gas emissions from agriculture declined by 23.8 per cent over the period between 1990 and 2012, a decline of almost one quarter (reduction is equal to 147.3 mn. tonnes of CO2 equivalents), cf. Figure 11.

This was a slightly faster pace than the reduction recorded for all greenhouse gas emissions in the EU (down 19.2 per cent), although the difference narrowed rapidly from 2008 onwards, which reflects the impact of the financial and economic crisis on industrial emissions and emissions linked to levels of consumption.[11]

Figure 11 EU greenhouse gas emissions, 1990–2012



Source: Copenhagen Economics based on Eurostat (2015b)

[10] Eurostat based on data from the European Environment Agency. Note that information on land use, land use change and forestry is excluded (as this heading is omitted from the measurement of greenhouse gases under the Kyoto Protocol).

[11] According to Eurostat, Agriculture - Greenhouse gas emission statistics.

The use of pesticides in agriculture help improve yields and to prevent crop losses. Pesticides include active ingredients that in spite of the beneficial actions on agricultural production could have other less positive impacts on the environment and habitats where they are used. Sales of pesticides is therefore another indicator of the environmental footprint of the EU agricultural sector. In 2013, the total quantity of pesticide sales amounted to close to 360,000 tonnes and has declined during recent years. One explanation may be the increased focus on organic production. The total organic area in the EU (i.e. the area fully converted to organic production and area under conversion) was 10.3 mn. ha in 2014 and continues to show an upward trend.[12]

1.6 Summary and concluding remarks

EU agricultural policies have historically focused on ensuring a high level of self-sufficiency and a relatively protectionist approach with high border protection was put in place. Today, following successive reforms, the focus of agricultural policies has shifted more towards enabling economic viability of the agricultural sector and rural areas more generally and to cater to the needs of a growing global population. Not only has the level of support been lowered but the character of the EU's agricultural policy support has also moved from market distortion towards increased market orientation.

The shift in focus is reflected in slightly lower self-sufficiency rates in some primary products (e.g. maize, sugar, butter and whole milk powder) and increased specialisation in the production of other products (e.g. wheat, skimmed milk powder and pigmeat). The shift is also reflected in a phasing out of support to the EU agricultural sector and the lowering of market distortions. CAP expenditure in the EU budget, for example, has fallen from over 0.6 per cent of EU GDP in the early 1990s to 0.4 per cent of GDP today. The reforms also mean that EU farmers on average only received prices that were four per cent above world market levels in 2014 compared to a 70 per cent price mark-up back in 1986.

The reforms of policy support to the EU agricultural sector should be seen in the context of the relatively high support level compared to other OECD countries prior to the start of the reform process. Support to the EU agricultural sector is now only slightly above the support level in other OECD countries such as the US and Japan. During the last 10-15 years, China's share of total agricultural GDP in the countries included in the OECD database has increased from 18 per cent in 1995-1997 to 43 per cent in 2012-2014 in parallel with a significant increase in its policy support to the domestic agricultural sector. Overall, the successive reforms have thus made the EU agriculture more competitive and better equipped to participate in world trade.

[12] Eurostat organic farming statistics downloadable at http://ec.europa.eu/eurostat/statistics-explained/index.php/Organic_farming_statistics.

Due to structural change and technological progress in the agricultural sector, agricultural production in the EU takes place in fewer, larger and more capital-intensive farms. The total number of farms in the EU has thus dropped by 26 per cent from 2005 to 2013, and the consolidation process is expected to continue. With an agricultural area that has changed very little over the last decades, declining farm numbers have also led to larger farms and an increase in output per farm from 20,000 EUR in 2005 to around 31,000 EUR in 2013. Nevertheless, the average farm size remains low in an international comparison.

The consolidation of agricultural production in a smaller number of farms is also reflected in a drop in employment in the agricultural sector. This is mainly due to a drop in the number of full-time employees in agriculture from 12.7 mn. in 2005 to 9.3 mn. in 2013, whereas employment in food manufacturing has increased from 3.5 mn. to 4.6 mn. At the same time, agricultural production is carried out by a declining farming population of an increasing average age.

EU farm income has increased in recent years in line with higher world market prices, but has also experienced marked volatility. There was a sharp drop in income in 2009, which was driven mainly by a large drop in output prices due to the economic crisis. EU farmers' income in 2013 was at a historically high level but income has decreased in both 2014 and 2015.

One of the main drivers of prices, income and employment in the sector is the development in EU agri-food trade. In the next chapter, we examine how EU agri-food trade has developed during the last few decades, and we identify some of the main drivers of the current EU trade patterns.

Chapter 2

EU trade policies and agri-food trade

In this chapter, we describe the key elements in EU trade policies and developments in EU agri-food trade.[13] We look both at EU exports and imports. EU exports have important implications for employment and income in the agri-food sector, particularly considering the saturated food demand domestically and the growing global demand for agri-food products. EU imports are associated with important consumer gains, and access to imported primary agricultural products that are being used as inputs in both the domestic livestock sector and in the processed food industry is also an important prerequisite for competitiveness in these sectors.

We also summarise some insights gained from the case studies in terms of the main factors that drive EU trade in agri-food products. These factors are taken into account to the largest extent possible when we assess the impacts of EU trade agreements in Chapter 4.

2.1 The general evolution of EU trade policies

EU agricultural trade policy has been shaped by both multilateral agreements negotiated within the GATT/WTO framework as well as bilateral/regional agreements, negotiated between the EU and individual countries/regions outside the EU.

Multilateral agreements

The present WTO Agricultural Agreement from 1995 was the first multilateral agreement dedicated to the agricultural sector. The agreement was a result of the 1986–94 Uruguay Round negotiations, which also led to the establishment of the WTO as a replacement for the GATT. With the implementation of the Agricultural Agreement, many of the 'loopholes' that the GATT had allowed the sector were targeted (WTO, 2016). With respect to market access, the agreement allowed for 'tariffs only' and thus required that import quotas and variable import levies (important for EU) should be replaced by tariffs. Export subsidies were prohibited, subject to some exceptions as not all domestic production subsidies are deemed to distort trade[14], and it was agreed to also cut back trade-distorting domestic production subsidies (WTO, 2016).

[13] Trade flows are measured by the UN Comtrade data as this database has the most comprehensive and consistent data on world trade. We are therefore able to use the same data source for the descriptive analysis in this chapter and the quantitative analysis in Chapter 4.

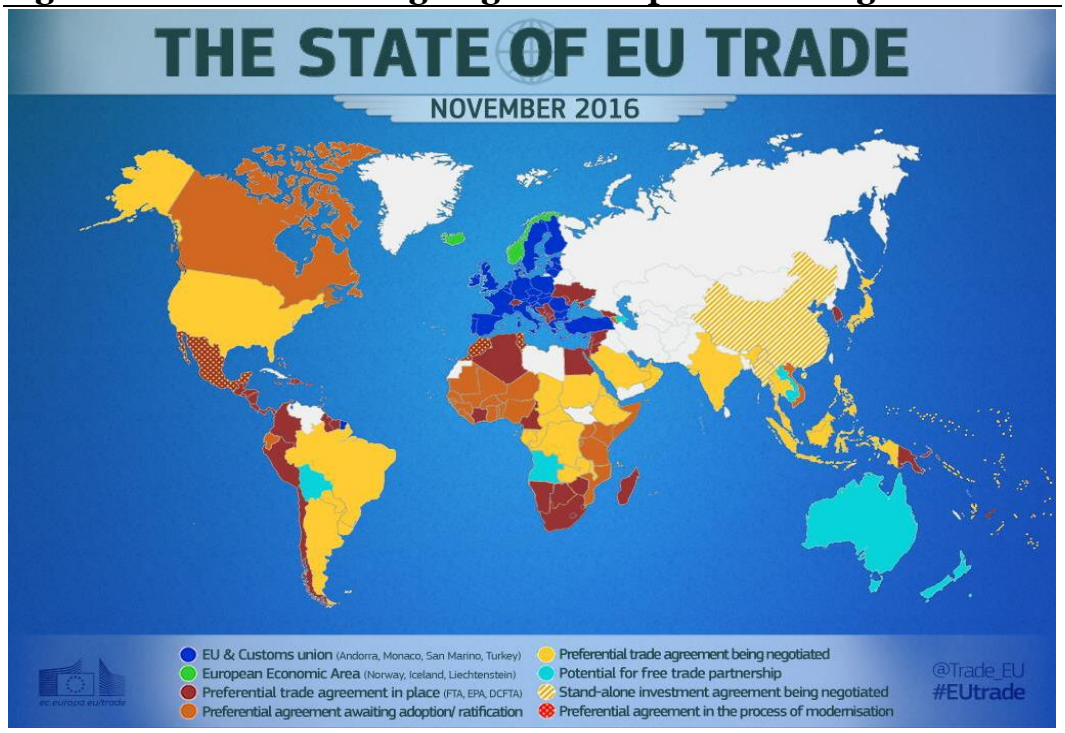
[14] The right to use export subsidies is now limited to four situations: (i) export subsidies subject to product-specific reduction commitments within the limits specified in the schedule of the WTO Member concerned; (ii) any excess of budgetary outlays for export subsidies or subsidised export volume over the limits specified in the schedule which is covered by the "downstream flexibility" provision of Article 9.2(b) of the Agreement on Agriculture; (iii) export subsidies consistent with the special and differential treatment provision for developing country Members (Article 9.4 of the Agreement); and (iv) export subsidies other than those subject to reduction commitments provided that they are in conformity with the anti-circumvention disciplines of Article 10 of the Agreement on Agriculture. In all other cases, the use of export subsidies for agricultural products is prohibited (Articles 3.3, 8 and 10 of the Agreement).

The Agricultural Agreement thus brought the sector closer in line with the multilateral provisions governing trade in goods, but subsidies and high trade barriers continue to distort trade in the sector (WTO, 2011). Efforts to further reform agricultural trade and reduce distortions caused by high tariffs and other barriers, export and domestic subsidies continue as part of the Doha negotiations (WTO, 2016). Significant progress was made at the Tenth Ministerial Conference in Nairobi on 19 December 2015, when it was agreed, among other things, to abolish export subsidies for farm exports (WTO, 2015).

Bilateral agreements

The European Commission expects 90 per cent of the additional world food demand over the next 10-15 years to be generated outside Europe (European Commission, 2015), and the ambitious bilateral trade agenda pursued by the EU over the last years is set to continue. The EU now has trade agreements in place, under negotiation or consideration with most countries and regions in the world, cf. Figure 12.

Figure 12 Overview of ongoing and completed EU negotiations



Source: Downloaded from DG Trade homepage at http://ec.europa.eu/trade/policy/countries-and-regions/agreements/, accessed 2nd December 2016

Trade agreements create opportunities for EU producers on global markets and benefit the EU economy. The European Commission thus notes that if all its current free trade talks were concluded tomorrow, they would be expected to add 2.2 per cent to the EU's GDP or 275 bn. EUR (European Commission, 2013b). To fulfil this potential, it is important that the agreements are designed in a way that optimises the potential gains for EU businesses and that there are no other factors that impede their capacities to fully benefit from the agreements.

Since 2007, the European Commission has been negotiating a new generation of trade agreements, which go beyond targeting tariffs. The new generation trade agreements are much broader in scope and include a focus on reducing non-tariff barriers to trade. The agreements furthermore seek to improve market access for both goods and services by looking at the overall trade environment, including investment, competition law, etc.[15] Newer trade agreements thus have the potential to create opportunities for EU producers abroad via many other ways than via the removal of tariffs, cf. Box 4.

Box 4 Business opportunities in the EU's new generation trade agreements

Free trade agreements are designed to create opportunities by:

- Opening new markets for goods and services
- Increasing investment opportunities
- Making trade cheaper - by eliminating substantially all customs duties
- Making trade faster - by facilitating goods' transit through customs and setting common rules on technical and sanitary standards
- Making the policy environment more predictable - by taking joint commitments on areas that affect trade such as intellectual property rights, competition rules and the framework for public purchasing decisions

Source: Direct quote from the homepage of the European Commission, Directorate-General for Trade http://ec.europa.eu/trade/policy/countries-and-regions/agreements/#_other-countries, accessed May 2016

The EU-South Korea FTA is the first of the new generation trade agreements to be implemented and is thereby the most ambitious trade agreement ever implemented by the EU (European Commission, 2015), cf. Box 5.

The ambitious trade agenda pursued by the EU should not be seen in isolation from the multilateral system. In the new trade strategy launched by the European Commission in 2015 focusing on strengthening EU trade policy (the three main pillars include more effectiveness, more inclusiveness and more transparency) and boosting investments, it is thus stated that 'the multilateral system should remain the cornerstone of EU trade policy' and that the EU will actively work to reinvigorate the WTO by e.g. pushing for the conclusion of the current Doha round.

[15] Federal Ministry of Economic Affairs and Energy (2016).

Box 5 The ambitious EU-South Korea FTA

The EU-South Korea FTA is unprecedented both in its scope and in the speed at which trade barriers are to be removed. By the end of the transitional periods, virtually all import duties between the two economies will have been removed. Exporters and importers of all industrial products and almost all agricultural products will be able to trade without having to pay duties. Additionally, the FTA breaks new ground in tackling significant non-tariff barriers to trade, with a specific focus on the automotive, pharmaceuticals, medical devices and electronics sectors. The FTA will also create new opportunities for market access in services and investments, and lead to major advances in areas such as intellectual property, government procurement and competition policy.

Source: Direct quote from European Commission (2011)

2.2 Drivers of EU agri-food trade

Many different factors drive the development in EU agricultural trade, cf. Figure 13. All of these factors will to the largest extent possible be accounted for in the quantitative analysis of the impacts of EU trade agreements on agri-food trade.

EU policy makers can influence some of these factors by negotiating and signing trade agreements. Such factors include tariff concessions (e.g. tariff elimination, tariff reduction, tariff rate quota opening) that pose a barrier to trade between the EU and its trading partner but also horizontal non-tariff barriers (NTBs) that can be addressed in trade agreements. Such NTBs could for example be regulatory harmonisation (e.g. standards harmonisation and administrative alignment), and simplification of import procedures and controls (so-called behind the border measures). Trade agreements can also improve cooperation mechanisms and dispute settlement mechanisms, which make the trading system more secure and predictable.

The five case studies carried out as a part of this report show that a range of factors that *cannot be* addressed in trade agreements have an equal and sometimes larger impact on trade than the factors that *can be* addressed in the agreements, including bilateral factors, supply side conditions, demand side conditions, differences in costs and input prices, exchange rates and other trade regimes. More details and examples of these drivers from the case studies can be found below.

Figure 13 Factors that have an impact on trade

Factors in the trade agreements that have an impact on trade	Other factors that have an impact on trade
•Tariff concessions •Rules of origin •Regulatory harmonisation •Simplification of import procedures and controls •Cooperation mechanisms •Dispute settlement mechanisms	•Bilateral factors •Supply side conditions •Demand side conditions

Source: Copenhagen Economics

Bilateral factors

Bilateral factors include all factors that give a group of countries a natural preference for trading with each other. The French wine case, for example, demonstrates that the cultural proximity between trade partners is a traditional and crucial determinant of trade flows. The common language between Spain, Chile and Argentina gives these countries an advantage in trading with Mexico over other wine-producing countries such as France (e.g. by easing the understanding of wine-quality signalling on the label: from Joven to Reserva and Gran Reserva). The historical and cultural links are also a great advantage for Spanish exporters in terms of branding, marketing and establishing distribution networks, especially in the wine sector where finding the right distributor is a key factor for success. French wines have a more complex AOC system is less easy to decrypt and sends an opaque signal to the Mexican consumers.

The sugar confectionary case also shows that EU exporters have a comparative disadvantage in the South Korean market because Chinese exporters have knowledge and familiarity with the South Korean culture, customs and habits. Finally, the common border is found to be a significant driver of German cheese exports to Switzerland.

Many of these bilateral factors cannot be influenced by policy makers and change only slowly. Bilateral trade agreements are a way to build bilateral ties that may eventually strengthen existing natural ties or perhaps compensate for the lack of them. Bilateral double taxation treaties have a similar potential to redirect investment flows, particularly in agri-food sectors where local presence is an advantage for penetrating new markets.

The rationale behind EU trade agreements is to ensure preferential access to foreign markets. Other trade regimes (e.g. multilateral trade negotiations, bilateral FTAs with third countries and product-specific trade deals) that reduce tariffs on other countries' exports to the EU's trading partners will erode the preferential margin granted by the trade agreement and reduce the potential of the agreement to increase trade.

The US-South Korea and China-South Korea FTAs, for example, have eroded the preferential access to the South Korean market ensured by the EU-South Korea FTA. In the pigmeat case, the EU-South Korea has even given US exporters a temporary advantage relative to EU exporters because the South Korean liberalisation schedule for pigmeat is more favourable to the US than the EU.

Supply side conditions

The response to a new trade agreement will depend on the extent to which the agreement gives suppliers a comparative advantage relative to suppliers in third countries (e.g. the coverage and depth of the trade agreement relative to agreements with third countries) and the extent to which suppliers are able to actually utilise the preferential market access offered by the trade agreement.

The extent to which EU producers are able to utilise the preferential access offered by a new EU trade agreement depends *firstly* on their knowledge about the new agreement and the attractiveness of using the agreement (e.g. that applying for a preference reduction is not administratively burdensome or ruled out by restrictive rules of origin). One major experience and lesson to learn from the pigmeat case study is that Danish exporters in general are not always fully aware of the tariff reductions as a result of a new trade agreement and that they have not been sufficiently able to take advantage of trade preference. Especially small companies find it too complicated to use them.

Secondly, it depends on their ability to increase their export capacity (e.g. capacity constraints, regulations and technological progress). *Thirdly*, it will depend on EU producers' ability to increase their market share and/or launch new products in the new partner country. This will among others depend on the competitive strength of EU producers relative to producers in the partner country and third countries (e.g. differences in costs of land, labour and capital, input prices and exchange rate fluctuations). Policy makers can influence the competitive strength of domestic producers by offering a range of export promotion measures, such as export credits and promotion campaigns.

The case studies identify three main factors that have had an important impact on the supply side: The support to agricultural products in the EU relative to the partner country, access to efficient distribution channels and negative supply shocks in the partner country and third countries.

The relative *support to agricultural products* will have an impact on the competitiveness of EU exporters in their partner countries. The lower support (see Chapter 1) has forced EU producers to become more competitive relative to their competitors in South Korea, Mexico and Switzerland where support to the agricultural sector is generally higher. Protection in South Korea is primarily market protection, which will be gradually reduced during implementation of the FTAs and this gives EU producers an advantage over producers from countries without a FTA with South Korea. This could indicate that there is a potential for increasing EU exports in the future. However, the US availability of export credit to domestic producers gives EU exporters a relative disadvantage.

Also, the cheese case study found that exchange rate movements and the deregulation of subsidies for butter and skimmed milk products in the EU changed the relative competitiveness of Germany and Switzerland.

As illustrated by the sugar confectionary case, changes in input prices (e.g. due to the 2006 sugar reform) and regulation of downstream markets (e.g. sugar quotas that inflate purchase prices of raw materials and shrink profitability) can also have an impact on the competitiveness of EU products in global export markets. This may be particularly the case for producers in the new member states who generally have a less efficient planning of production processes and lower productivity.

Access to efficient distribution channels can pose a serious barrier to making use of market access offered by the trade agreements. The wine case study shows that the penetration of the Mexican market requires reaching distribution channels (like supermarkets) and that these retail chains have considerable buying power. The organisation of the distribution sector thus reduces the likelihood of new entrants and limits the potential for increasing French wine exports to Mexico except for some of the well-known brands.

Also, the pigmeat case study finds that the organisation of the South Korean importers of pigmeat is not efficiently structured. Many small importers disrupt the market and make it difficult or even impossible to make and implement a sales strategy. Compared to Japan, where the export goes through bigger trading companies and wholesalers (or directly to the meat industry), the market is much more volatile in South Korea. This volatility also means inefficient organisation and loss of money among importers. It also reduces the prices for Danish exporters of pigmeat, as the volatility reduces the margins, and this has a negative effect on prices backward in the supply chain.

Negative supply shocks in the partner country can stimulate imports and increase the import share of the market. The outbreaks of foot-and-mouth disease, for example, had a considerable impact on the pigmeat market in South Korea: Domestic production fell as a result of both the culling of thousands of pigs and aggravated earnings in the domestic pig production. As the demand for pigmeat is relatively income and price inelastic, declining domestic production will automatically result in an increased import. It must also be viewed in the light of the fact, that foot-and-mouth disease also affected the livestock sector. This meant that demand substitution to beef was not a full solution to the decline in domestic pigmeat production. South Korean consumer demand for pigmeat has also increased considerably during the recent years, aided by outbreaks of Avian Influenza. The outbreaks have encouraged consumers to switch from poultry meat to pigmeat.

Demand side conditions

The response to a new trade agreement will depend on the attractiveness of the new market relative to other potential export markets (e.g. the size and growth of the local market as well as economic and political stability) and the extent to which consumers in the new markets are willing to substitute locally produced products for imported products (e.g. consumer preference and environmental concerns).

The case studies identify mainly three factors that have had an important impact on the demand side: The Russian import ban, consumer preference and the attractiveness of the market in the partner country compared to markets in third countries.

On 7 August 2014, Russia introduced an *import ban* for certain agricultural products originating from the US, the EU, Canada, Australia and Norway. Beef, pigmeat and poultry meat, dairy products, fruits and vegetables were the targeted categories. On 25 July 2015, Russia announced the extension of the import embargo by one year (until August 2016), and on 31 May the embargo was extended for an additional six months (until late 2017).

The pigmeat case study found that the Russian import ban hurt the Danish pigmeat exporters, who were forced to find new export markets - as it was the case for a number of other pigmeat exporting countries. Based on this more or less defensive approach new markets became more attractive and led to an increased focus on South Korea. There was thus a substitution between the Russian and Korean market for pigmeat.

Across all cases, *consumer preference* appears to be an extremely important factor, which also implies that marketing is important.

Korean consumers, for example, prefer pigmeat bellies with a high content of fat. However, this demand does not quite match what Denmark exports and helps explain the weak development of Danish pigmeat export to South Korea. In general, there is a strong consumer preference for food products produced in South Korea. The importance of consumer preference is also confirmed by the French wine case, which finds that Mexican consumers have a preference for full-bodied wines and orient their imports towards Spanish, Chilean and Argentinian wines.

The willingness to substitute local products with imported products can to some extent be influenced by export promotion initiatives and branding campaigns. Such activities will, however, become less efficient if the partner country runs so-called “buy local” campaigns. The Mexican Wine Council (Consejo Mexicano Vitivinícola), for example, promotes Mexican wines, especially within the on-trade channel and oenotourism, towards Mexican consumers in an attempt to support Mexican products. Also, the pigmeat case study shows that there is a very visible “buy Korean meat” campaign – financed by farmers (meat producers) but with public support – which gives consumers a preference for South Korean pigmeat. It is estimated that consumer prices for South Korean pigmeat can obtain a double price.

The *attractiveness of the market* relative to other markets is important for two main reasons. First, supply is in many cases limited upwards (at least in the short and medium term) so that EU producers cannot just scale up their production. This means that EU producers must choose the most attractive market for their products and target their export promotion initiatives to countries with the highest prices.
Second, there are certain fixed costs to entering a new market (e.g. costs of establishing a distribution network and running promotion campaigns), which means that EU producers will tend to go for markets with the largest potential.

China has in recent years been an increasingly important market for Danish pigmeat exports and has to some extent been considered a priority market, with relatively good sales opportunities in both the short and longer term. Factors like market size and growth, purchasing power, market access and the presence of other competitors were relatively attractive to Danish exporters of pigmeat to China. Since there probably were "low hanging fruits" on the Chinese market, South Korea did not get the same attention. Other countries did not have the same market access to the Chinese market as Denmark due to import regulations. Therefore, it was natural for these countries - unlike Denmark – to focus more on penetrating the South Korean market.

The importance of market attractiveness was also confirmed by the French wine case, cf. Box 6.

Box 6 Market attractiveness and French wine exports

The French wine case study showed that the Mexican market is considered to be a niche market compared for example to the Brazilian market (targeted as an interesting potential market), and the Chinese market (targeted as a strategic market) where continuous commercial efforts are undertaken to increase exports. French wine exporters have to target markets because of fixed costs of entry (advertising, promotional campaigns, etc.) and a limited supply. With the AOC system, wine producers face constrained areas and yields, which limit supply upwards. Countries targeted are not chosen based on the duty rate but rather on the market potential. The higher the sales potential, the lower the potential unit entry cost is.

Furthermore, the French wine case study finds that the reputation of the brand and the size of the company are crucial for the penetration of new markets. While the reputation of high-end French wines from Bordeaux, Burgundy or Champagne can explain the penetration of exports in the Asian market, where the upper classes have been interested in wine since the 1990s, penetrating low-middle-class markets, like Mexico, requires an important investment in marketing and communication. The size of the company is therefore a key factor to ensure enough scale, and most French wine firms do not have a sufficient size to support such investments.

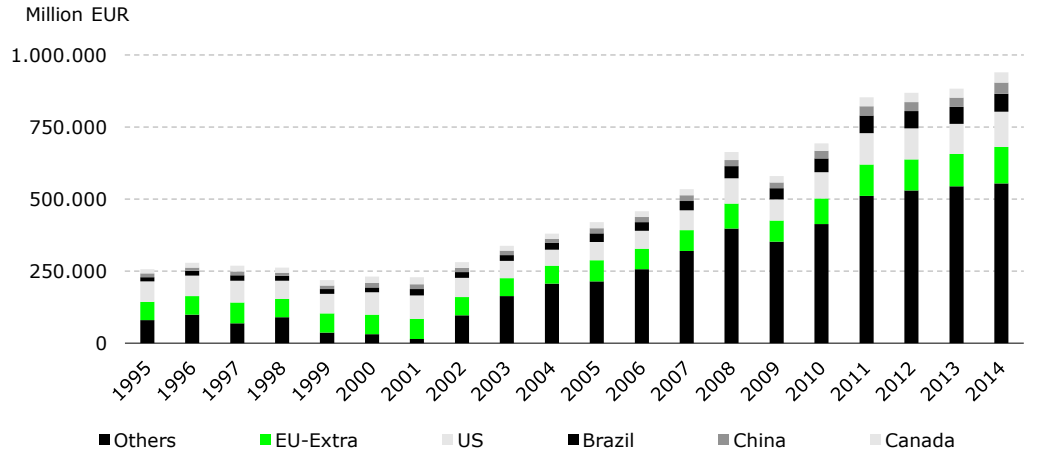
Source: Copenhagen Economics based on the wine case study

2.3 Developments in EU agri-food trade

In 2015, EU exports of agri-food products reached 129 bn. EUR confirming the EU's position as the single largest exporter of agri-food products obtained in 2013. The EU is followed closely by the US, while Brazil, China and Canada also enter the top-five of world agri-food exporters but at a much lower level than both the EU and the US.

EU exports of agri-food products have more than doubled since 1995, and EU export growth has exceeded the growth rate in US agricultural exports over this period, cf. Figure 14.[16] EU agricultural exports have exhibited a compound annual growth rate of 3.6 per cent compared to 2.7 per cent for the US. In contrast, growth in agricultural exports from Brazil, China and Canada has outpaced the EU.[17] However, the value of agri-food exports from these three countries is still relatively limited compared to exports from the EU and the US.

Figure 14 Top world agri-food exporters, 1995-2014



Note: The figure shows the largest exporters in 2014. Data are in constant 2010 EUR.

Source: Copenhagen Economics based on UN Comtrade

The EU is also a major importer of agri-food products. Over the period 1995–2011, imports of agri-food products thus exceeded exports of agri-food products resulting in a negative trade balance in agri-food products. This changed in 2012 when exports for the first time since at least 1995 exceeded imports and the trade balance turned positive. However, this development lasted only a few years as the trade balance turned negative again in 2015, cf. Figure 15. The positive trade balance in 2012-2014 compared to 2011 appears to be mainly due to a decrease in imports rather than an increase in exports. One of the contributing factors to the observed decrease in imports is price declines in a number of import commodities such as coffee and cotton (European Commission, 2013a).

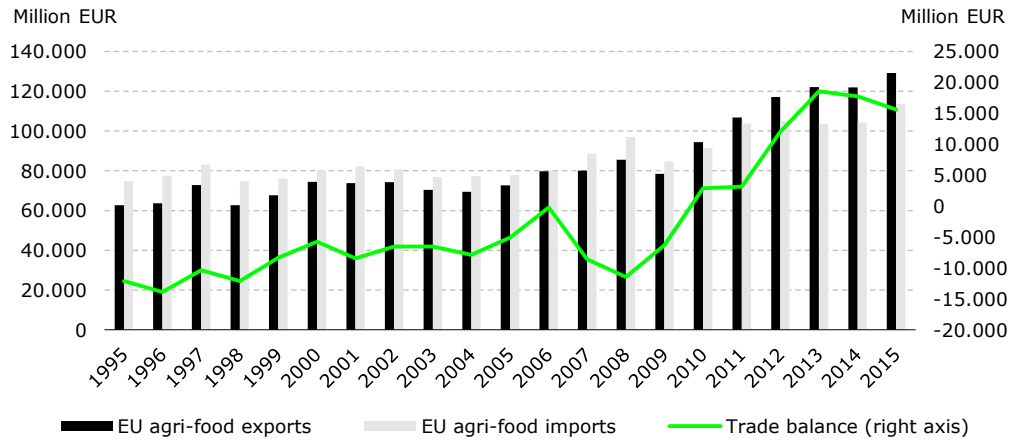
16 Figures that illustrate the developments in trade over time have been deflated by the consumer price index to take into account general inflationary trends. To the extent that agri-food products do not follow this trend, the figures also reflect developments in prices.

17 Over the period 1995–2014, agricultural exports from Brazil have shown a compound annual growth rate of 7.3 per cent, while the equivalent growth rates for China and Canada are 5.7 per cent and 4.7 per cent, respectively.

While imports stagnated in 2013, exports increased slightly and gained momentum in 2014. This was despite the Russian import ban introduced in the second half of 2014, which caused EU agri-food exports to Russia to drop by 23 per cent from 2013 to 2014, with an even greater effect in 2015, where exports fell substantially. This was partly due to a complete drop in products directly impacted by the ban but also due to a reduction in EU exports of other products as the value of Rouble dropped by 40 per cent causing Russian import prices to increase (European Commission, 2015d).

Russia was the second most important destination for EU exports of agri-food products in 2014 but only the 4th most important market in 2015 due to the Russian ban. The increase in overall exports, despite the developments on the Russian market, implies that EU exporters successfully managed to divert exports to other markets (European Commission, 2015d).

Figure 15 EU import, export and trade balance, 1995-2015

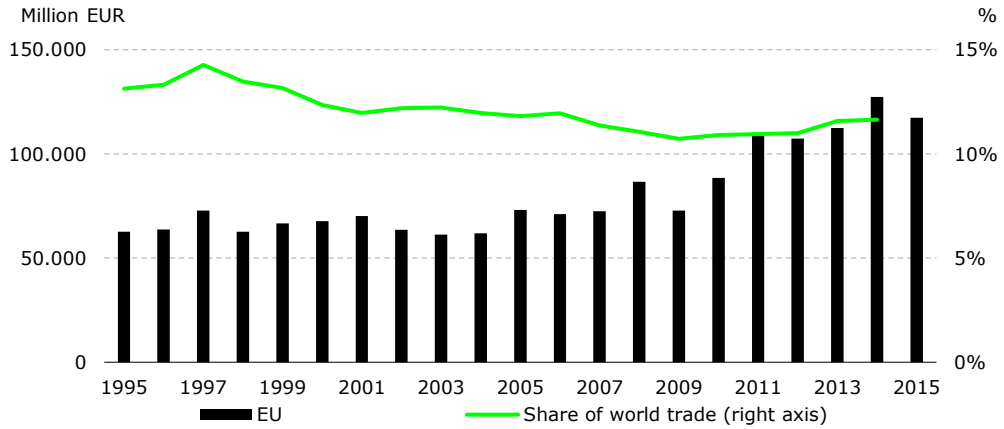


Note: EU refers to EU27. Data are in constant 2010 EUR. The data is based on UN Comtrade from 1995-1998 and Eurostat Comext from 1999-2015.

Source: Copenhagen Economics based on UN Comtrade and Eurostat Comext

Despite significant gains in EU exports of agri-food products since 1995, growth in EU exports has not kept pace with the increase in world exports, and the EU share of world agri-food exports has fallen as a result. The EU accounted for 12 per cent of world exports in 2014, down from more than 14 per cent in 1997, cf. Figure 16. This is mainly due to the emergence of new and competitive players in the global market, including for example Brazil that has increased its share of global agri-food exports from three per cent in 1995 to six per cent in 2014.

Figure 16 EU agri-food exports, 1995-2015

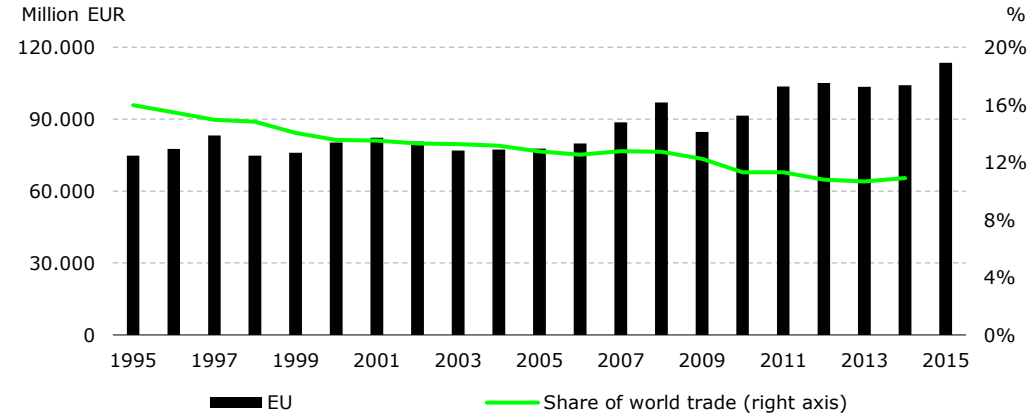


Note: EU refers to EU27. EU exports exclude intra-EU trade. Intra-EU trade are included in the total world trade. Data are in constant 2010 EUR. The share of world trade cannot be computed in 2015, as not all countries have reported data for 2015 yet.

Source: Copenhagen Economics based on UN Comtrade

EU imports have also been on an upwards trend since 1995 and reached their highest level in 2015 amounting to almost 120,000 mn. EUR, cf. Figure 17. Similar to the development in exports, the growth in EU imports have not kept up with the growth in global imports and the EU's share of world imports was at its all-time low at 12 per cent in 2014 down from almost 17 per cent in 1995.

Figure 17 EU agri-food imports, 1995-2015



Note: EU refers to EU27. EU imports exclude intra-EU trade. Intra-EU trade are included in the total world trade. Data are in constant 2010 EUR. Data are in constant 2010 EUR. The share of world trade cannot be computed in 2015, as not all countries have reported data for 2015 yet.

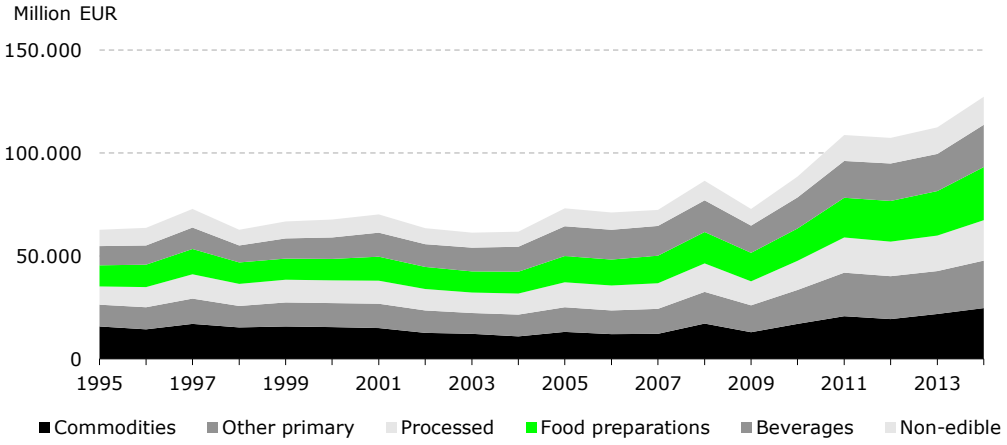
Source: Copenhagen Economics based on UN Comtrade

2.4 Structure of EU agri-food exports

Just over half of the EUs agri-food exports is composed of processed food, food preparations and beverages, while commodities and other primary agricultural products make up most of the other half and with non-edible products accounting for a minor part, cf. Figure 18. As noted by the European Commission (2015), the distribution of agri-food exports in terms of product groups reflects the fact that EU agri-food exports is relatively diverse, but also that EU producers are mainly competitive in basic agricultural food and feed products as well as in food preparations.

Over time, the largest increase has been in the food preparations. Exports of these products have grown by 274 per cent in the period 1995- 2014, compared to 130 per cent for commodities. Over time, EU exports of agri-food products have thereby become relatively more focused on processed and prepared products, although it is still a very 'mixed bag' of products that is being exported.

Figure 18 Structure of EU agri-food exports by major product groups, 1995-2014

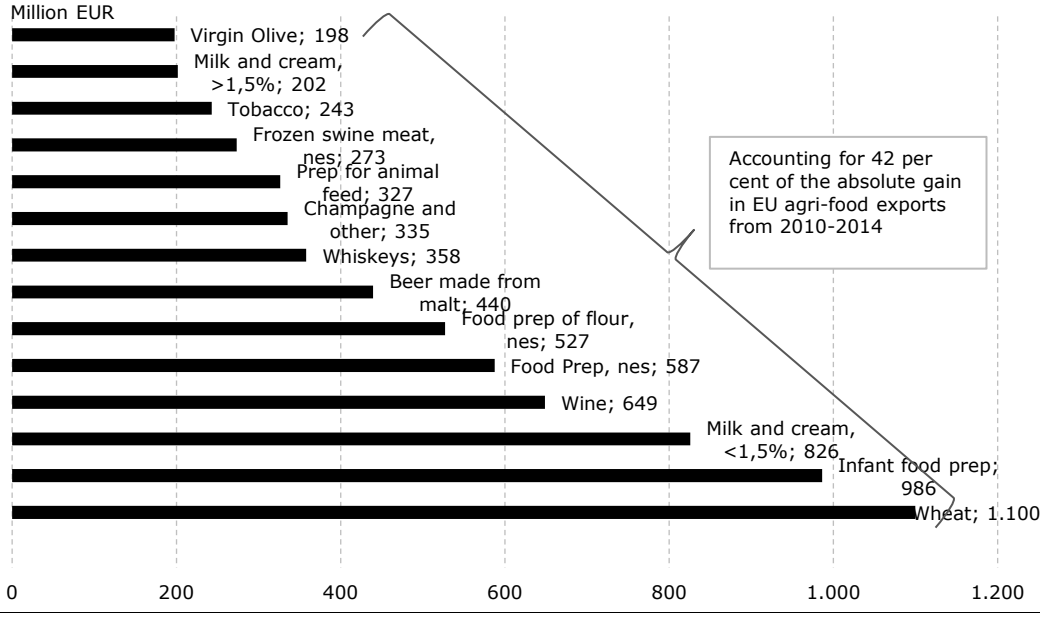


Note: EU refers to EU27. EU exports exclude intra-EU trade. Data are in constant 2010 EUR. *Commodities* include highly standardised products traded in bulk (e.g. cereals, vegetable oils, milk powders etc.). *Other primary agricultural products* include meat, fruit and vegetables. *Processed products* cover wine, cheese, olive oil and processed fruits and vegetables. *Food preparations* include multi-ingredient products, of which the agricultural component represents a small part of the final value (e.g. confectionaries, chocolate, pasta, biscuits etc.). *Beverages* cover spirits, water, soft drinks and beer. *Non-edible products* include non-food and non-feed products (e.g. tobacco, cigarettes, raw hides and skins, etc.).

Source: Copenhagen Economics based on UN Comtrade

A few products have accounted for a large share of the observed export growth. Since 2010, 14 products have thus accounted for 42 per cent of the growth of exports witnessed over this period, cf. Figure 19.[18] While wheat has accounted for the single largest share of total export growth, higher value added products, such as infant food and a range of alcoholic beverages, have been key products driving the growth in EU exports.

Figure 19 Main products' contribution to increase in EU agri-food exports, 2010-2014



Note: EU refers to EU27. The figure depicts the absolute change in EU exports from 2013-2014. Intra-EU trade is excluded. Data are in constant 2010 EUR.

Source: Copenhagen Economics based on UN Comtrade

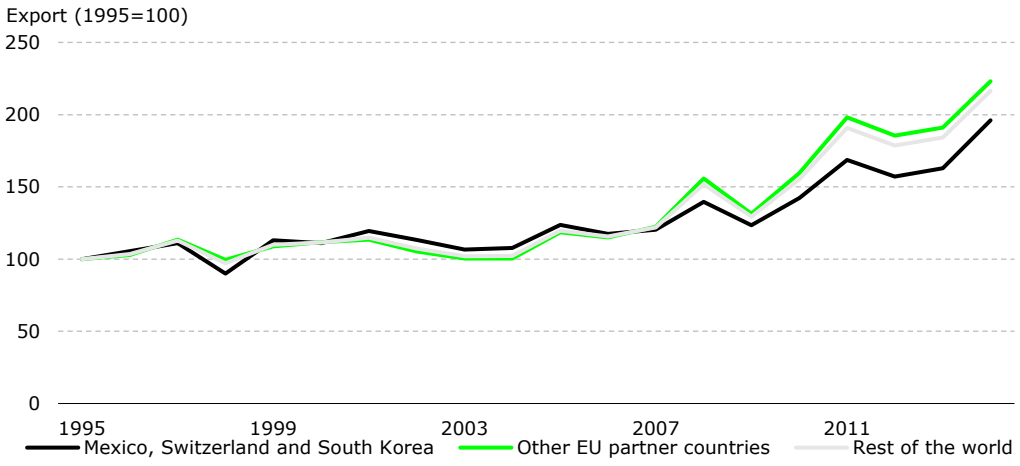
2.5 EU trade agreements and developments in agri-food trade

In terms of trading partners, we split theses into groups depending on whether or not the EU has a trade agreement in place with a given country. Among the group of countries with which the EU has a trade agreement, we furthermore look specifically at Mexico, Switzerland and South Korea, as these are the agreements we assess in this study (cf. Chapter 3 for a descriptive analysis).

EU exports of agri-food products to Mexico, Switzerland and South Korea have almost doubled in the period 1995-2014, cf. Figure 20. This is slightly less than the growth in exports to other countries with a trade agreement (123 per cent) and the rest of the world (116 per cent) over the same period. As the three, and indeed other, trade agreements have been implemented at different times for the different agri-food products, this comparison does not suggest any indicative evidence of the impact of the three agreements.

[18] As year-to-year changes in exports of specific products can be volatile, we look at the development over the last five years in the dataset.

Figure 20 EU agri-food exports by trading partner, 1995-2014

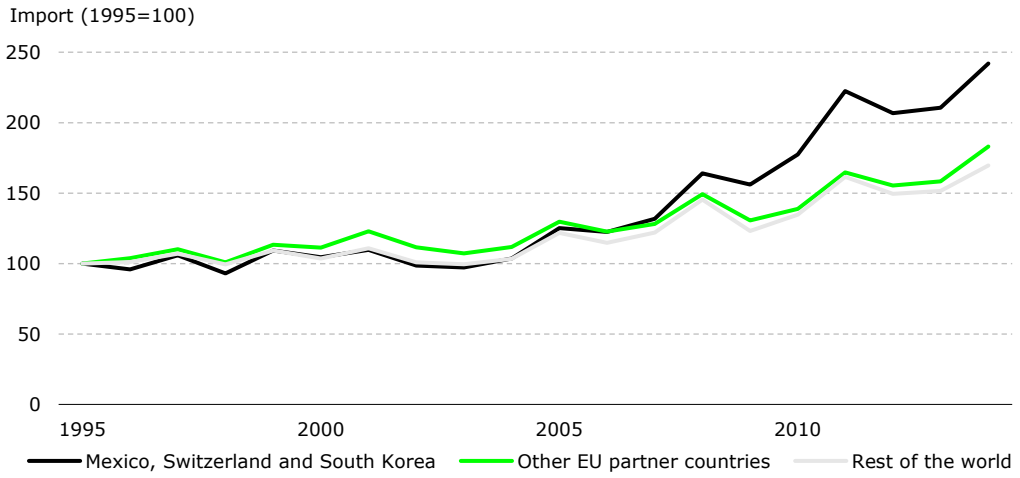


Note: EU refers to EU27. Other EU partner countries include countries that concluded a trade agreement with the EU before 2014. See also Figure 12 above. Exports are measured in values.

Source: Copenhagen Economics based on UN Comtrade

In terms of EU imports, the picture is slightly different. EU imports from Mexico, Switzerland and South Korea have increased at a higher rate (142 per cent) than imports from other partner countries (83 per cent) and from the rest of the world (70 per cent), cf. Figure 21. EU imports from Mexico, Switzerland and South Korea have also grown faster than EU exports to the three partner countries.

Figure 21 EU agri-food imports by trading partner, 1995-2014



Note: EU refers to EU27. Other EU partner countries include countries that concluded a trade agreement with the EU before 2014. See also Figure 12 above. Imports are measured in values.

Source: Copenhagen Economics based on UN Comtrade

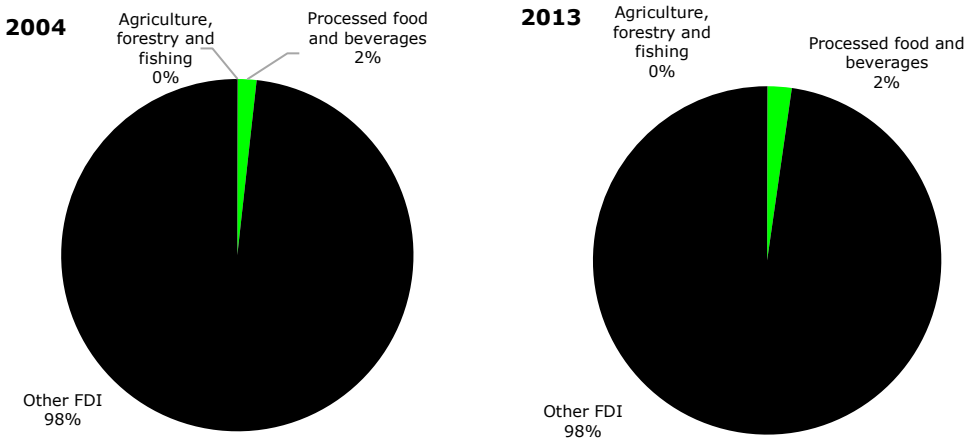
2.6 EU FDI flows in agriculture

Inward Foreign Direct Investments (FDI) benefit the EU economy as it may create jobs in the EU and increase European firms' productivity via knowledge transfers. As such, it is important to examine any potential impacts that trade reforms can have on FDI flows.

FDI flows are likely to respond to trade reforms that reduce the cost of exporting. Lower trade costs may on the one hand reduce FDI as producers in the partner country may decide to export their goods to the EU instead of engaging in FDI, as trade costs are reduced. On the other hand, a reduction in trade costs may also increase the incentive to undertake FDI as it becomes cheaper to import intermediary goods, facilitating corporations between the parent company in the home country and the affiliate in the EU. Increased exports as a result of reduced trade costs may also spur foreign companies to open e.g. a sales office in the EU.

In 2013, the stock of FDI from non-EU countries thus amounted to 4,159 bn. EUR, whereas the FDI stock in agriculture was only 94 bn. EUR. Out of the 94 bn. EUR worth of FDI into the EU, the processed foods industry (measured by the food, beverages and tobacco manufacturing industries) stood for 92 bn. EUR. This means that only 2 bn. EUR have been invested directly in the agriculture, forestry and fishing industries.[19]

Figure 22 EU inward FDI stock, 2004 and 2013



Note: Data are from 2013 and refer to total inward FDI stock from non-EU partner countries.

Source: Copenhagen Economics based on Eurostat's Balance of Payments Statistics

[19] In general, FDI data has a very low quality and is not available on a sufficiently detailed level to allow us to split the FDI stock both into sector and source countries. It is therefore not possible to compare FDI levels and developments for Mexico, Switzerland and South Korea with the figures for other FTA countries or the rest of the world. The sectoral split should be interpreted with caution, as investments often occur through financial holding companies. This means that some investments may be counted as occurring in financial services, although the real investment is indeed made in agriculture.

China is an interesting case as it is an emerging investor in the EU in general but also within the agri-food sector, where it is expected that we will see a higher share of Chinese investments in the future (EU SME Centre, 2014). This is partly due to the fast increase in demand for food products in China combined with a slow restructuring process of Chinese agriculture. Securing food supplies is thus emerging as a motive driving Chinese investments in EU agriculture.

Chinese food processing firms have also started to invest in the EU agri-food sector in order to combat increasing concerns regarding food safety in China (EU, SME Centre, 2014).

An example of a recent Chinese investment in the EU, spurred by access to primary agricultural products, is the Chinese group Synutra, which manufactures infant nutrition products. In 2012, the company entered into a partnership with the French cooperative group Sodiaal for the creation of a whey and milk drying plant in Brittany. One of Sodiaal group's units Eurosérum is a world leader in demineralised whey, an ingredient used for the manufacture of baby formula, and accounts for a large share of exports of demineralised whey to China. Securing supplies of this raw material, in order to meet the high demand for baby nutrition in the Chinese domestic market, seems to have been one of the motives behind the investment (Sodiaal and Eurosérum, 2012).

Given the growth of the middle-income class in China, which is increasingly turning to high-quality western food products, there is a potential for further Chinese investment in the EU agri-food sector.

The cheese case study also confirms that there is a potential for increased EU FDI abroad due to a market-seeking motive combined with the limited exportability of certain dairy products, cf. Box 7.

Box 7 FDI potential in the German dairy sector

German dairies have invested heavily in capacity expansion. Dairies with large quantities of milk often cooperate under licensed production with companies, which have premium brands and/or infrastructure in certain markets. In addition to this expansion of the export business and the initiation of cooperation, large dairy companies have increasingly invested directly abroad in recent years. The growing share of FDI is due a market-seeking motive and the limited exportability of certain dairy products. It also allows overcoming trade restrictions and usually creates access to cheaper raw materials and allows better adaptions of regional demands.

Source: Copenhagen Economics based on cheese case study

2.7 Summary and concluding remarks

The EU agri -food sector has considerable development prospects. Cereal production in the EU is forecasted to increase by 15 mn. tonnes by 2024, dairy production (including milk) is set to rise by 10 mn. tonnes, and experts predict that an additional one mn. tonnes of white meat will be produced (Copa Cogeca, 2015).

However, the EU market is relatively saturated and the European Commission expects 90 per cent of the additional world demand over the next 10-15 years to be generated outside Europe (European Commission, 2015). At the same time, the Russian ban had a large negative impact on EU exports, and EU exporters are looking for new market opportunities.

The ambitious bilateral trade agenda pursued by the EU over the last years is therefore set to continue. Trade agreements create opportunities for EU producers on global markets and benefit the EU economy and consumers. The European Commission thus notes that if all its current free trade talks were concluded tomorrow, they would be expected to add 2.2 per cent to the EU's GDP or 275 bn. EUR (European Commission, 2013b).

Gains from trade agreements on the EU agri-food sector should not be taken for granted. A whole range of factors outside the trade agreement determines real market access. *Bilateral factors* such as common language, geography and historical ties give certain countries a natural preference for trading with each other. A range of *demand side conditions* also need to be in place: EU producers need to know about the new agreements, have the possibility to increase their production, be able to get their products to the new market and successfully compete against local and third country producers. The case studies find that support schemes in other countries, access to efficient distribution networks and negative supply shocks in other countries have influenced the impacts of the three agreements on EU trade. The Danish case study also finds that companies do not always know about the trade opportunities offered by new trade agreement and also sometimes find them difficult to use. This is particularly the case for SMEs.

A range of demand side factors is also important. The market in new partner countries must be attractive relative to other markets, and local consumers must be willing to replace locally produced products with imported products. The case studies find that the Russian import ban, consumer preferences for local products and the attractiveness of other markets have influenced the impacts of the three trade agreements on EU trade.

To fulfil this potential, it is important that the agreements are designed in a way that optimises the potential gains for EU businesses and that there are no other factors that impede their capacities to fully benefit from the agreements. In the next chapter, we look more into details of three selected EU trade agreements: The EU-Mexico FTA, the EU-South Korea FTA and the EU-Switzerland sectoral trade agreements on agri-food products.

Chapter 3

EU trade agreements with Mexico, South Korea and Switzerland

This chapter provides a descriptive analysis of the EU trade agreement with Mexico, Switzerland and South Korea covering agri-food products.[20] The chapter provides an overall description of the three trade agreements and examines developments in and structures of trade flows before and after the entry into force of the three agreements. The chapter also provides an overview of the scope of the agreements in terms of the number of products covered, the value of trade covered and the size of the remaining barriers.

3.1 The EU-Mexico FTA

The EU-Mexico FTA, formerly entitled the Economic Partnership Political Coordination and Cooperation Agreement, was signed in March 2000 and came into force in July 2000 (Villarreal, 2012). The FTA was adopted within the framework of the Global Agreement, which entered into force in 1997 and already included trade provisions.

The agreement includes provisions on market access for goods (including agri-food products) and services, as well as provision for opening government procurement markets and provisions to extend cooperation in a number of areas including e.g. investment promotion, financial services, technical regulations and conformity assessments etc. (European Commission, 2000). Goods not covered by the agreement are found in the categories of meat, cereal and dairy products (Delegation of the EU to Mexico, 2016).[21]

With respect to SPS measures, the agreement confirms the WTO provisions set out in the Agreement on the Application of Sanitary and Phytosanitary measures[22], but does not go beyond these obligations (European Commission, Joint Council Decision, 2/2000 art. 20). In terms of rules of origin, the EU-Mexico agreement also just specifies that the countries should apply the rules used in the 'normal course of trade' (European Commission, Joint Council Decision, 2/2000 art. 27).

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20 The three FTAs are very different and have been selected to ensure the coverage of a at least one Deep and Comprehensive Free Trade Agreement (the EU-South Korea FTA), at least one trade agreement concluded with an EU neighbour country (the EU-Switzerland Agricultural Agreement) and at least one "first generation" trade agreement concluded before 2006 (the EU-Mexico FTA).

21 European agri-food exports to Mexico, which do not benefit from a preferential treatment include: Live animals (bovine, poultry, sheep), meats, dairy products (milk, cream, butter, cheese), eggs, potatoes, beans, bananas, apples, coffee, cereals (wheat, centeno, oats, corn, rice, sorghum), flour, malt, starch, animal fats, palm, sunflower, coconut oil, cold meats, preserved meat, sugar and its derivatives, conserved tuna, cocoa, preparations of cereal, biscuits, conserved tomatoes, potatoes, peaches, jam, grape juice, rum, food preparations for fish, cigarettes (Delegation of the EU to Mexico, 2016).

22 As part of the Uruguay round, the Agreement on the Application of Sanitary and Phytosanitary Measures, was reached. This agreement allows countries to set their own standards in order to protect consumers, but also requires that regulations must be based on scientific findings, and should only be applied in order to protect human, animal or plant life (WTO, 2010).

Tariff concessions in the EU-Mexico FTA

Before the entry into force of the FTA in 2000, the EU could only export duty free to Mexico for a very limited number of agri-food products (measured in terms of product lines) that were covered by Mexican MFN rates. In 1999, around eight per cent of EU agri-food products could be exported duty free to Mexico, cf. Figure 23. The share of EU agri-food products that could be exported duty free to Mexico increased in the first year of the agreement to 38 per cent and increased further to 40 per cent in 2003 when the next round of tariffs were phased out.

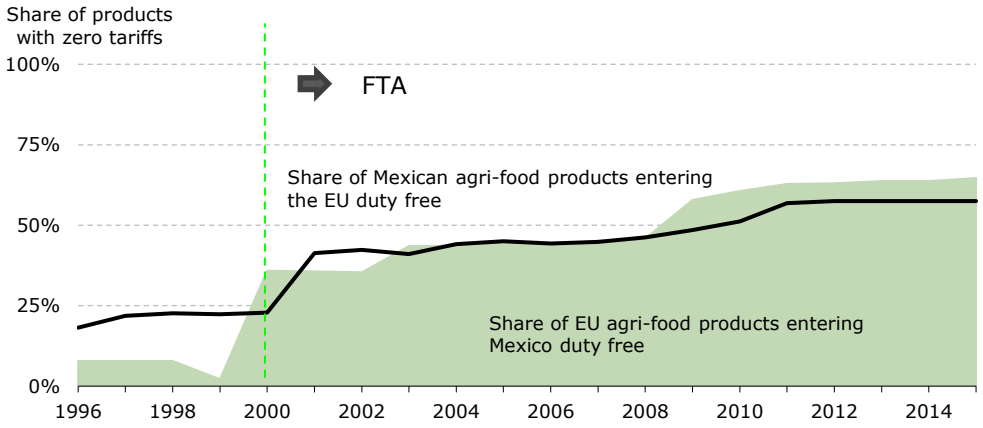
The share of products with zero tariffs increased gradually during the next five years approaching 46 per cent before taking a big jump in 2009 where 57 per cent of EU agri-food products entered duty free into Mexico. After 10 years, all tariff concessions in the FTA where fully implemented, and around 64 per cent of EU agri-food products can now be exported to Mexico duty free.[23] As mentioned above, not all agri-food products are covered by the FTA, and meat, cereal and dairy products still do not enter duty free into Mexico.

Prior to the entry into force of the EU-Mexico FTA, Mexico already had preferential access to the EU market for a wide range of products covered by the EU GSP scheme granted to Mexico, and around 20 per cent of the agri-food products could be exported duty free from Mexico into the EU already in 1999.[24] The first year after the FTA entered into force, the share of products that enter the EU duty free increased to almost 40 per cent, and the share continued to increase until 2011 where all tariffs covered by the FTA were fully phased out. Currently, 58 per cent of all Mexican agri-food products corresponding to 83 per cent of trade value enter duty free into the EU.

[23] The long phasing out of Mexican tariffs on EU agri-food exports is an important feature of this FTA and the econometric model should be adjusted accordingly. The gradual and slow phasing out of Mexican tariffs on EU exports means that the estimation period in the quantitative analysis should be at least 10 years to allow all impacts to materialise.

[24] See Copenhagen Economics (2010). In this study commissioned by DG Trade, we used a gravity model and a matching model to assess the impacts of six existing free trade agreements, including South Africa (1999), Mexico (2000), Morocco (2000), Tunisia (1998), Chile (2003) and Jordan (2002), on EU trade with these trading partners.

Figure 23 Number of agri-food products covered by the EU-Mexico FTA, 1996-2015

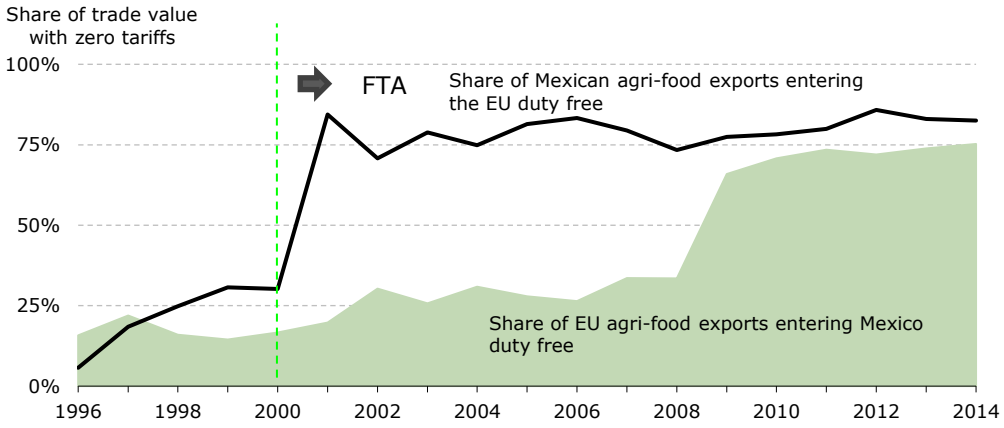


Note: The share of products with zero tariffs is calculated as the share of product lines where the applied tariff is zero. The figure covers agri-food products only. Products with quotas, seasonal tariffs and other non-ad valorem parts of the tariffs are excluded.

Source: Copenhagen Economics based on UN Comtrade

While a larger number of EU products entered Mexico duty free than vice versa in 2015, the opposite is the case once we look at the value of trade. In 2014, around 75 per cent of the value of EU exports entered Mexico duty free, whereas 83 per cent of the Mexican export value entered the EU duty free, cf. Figure 24. It is also clear that the benefit of the tariff eliminations came later to EU producers than Mexican producers. While the share of Mexican exports that entered duty free into the EU increased from 30 per cent to 83 per cent already in 2001, it was only in 2009 that the preferential access to the Mexican market took a big jump forward.

Figure 24 Value of agri-food trade covered by the EU-Mexico FTA, 1996-2014



Note: The share of trade value with zero tariffs is calculated as the share of total trade value where the applied tariff is zero. The figure covers agri-food products only. Products with quotas, seasonal tariffs and other non-ad valorem parts of the tariffs are excluded.

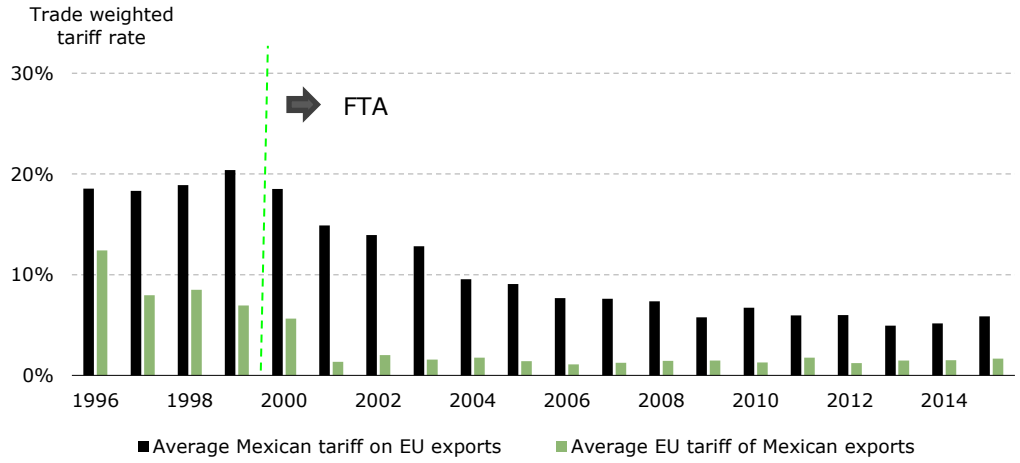
Source: Copenhagen Economics based on UN Comtrade

The trade-weighted tariffs in Figure 25 show the extent to which tariffs are reduced or eliminated on agri-food products that are actually important in EU trade with Mexico. The EU-Mexico FTA reduced average tariffs on EU agri-food exports to Mexico only slightly immediately after the FTA entered into force from 20 per cent in 1999 to 19 per cent in 2000. The average tariff was further reduced during 2001-2015 and has now stabilised at around five per cent.

Mexican tariffs on agri-food imports from the EU were relatively high before the entry into force of the FTA, which is a reflection of the 'tariffs only' requirement in the WTO Agricultural Agreement from 1995 (see Chapter 2).[25] The Mexican trade weighted tariff on agri-food products fell only slightly immediately after the FTA entered into force from more than 20 per cent in 1999 to 19 per cent in 2000, but fell to below 10 per cent in 2004 reflecting the fact that many of the tariff concessions were only gradually introduced. In parallel to this, EU trade weighted tariffs fell from 7 per cent in 1999 to around one per cent in 2001.

[25] As tariffs in 1995 were related to import quotas, tariffs in 1995 and 1996 are not comparable. This is why Figure 25 only starts in 1996.

Figure 25 Trade weighted tariff rates in the EU-Mexico FTA, 1996-2015



Note: The trade weighted tariff rate is calculated using the EU's export value of the particular product as a weight on the tariff applied to the product. The figure covers agri-food products only.

Source: Copenhagen Economics based on UN Comtrade

Comparing the two tariff concession schedules, we find that:

- Before the entry into force of the FTA, more Mexican products entered the EU duty free than vice versa. This imbalance was fully neutralised in 2003, and tariff eliminations in 2009 mainly benefited EU exporters. While 58 per cent of Mexican agri-food products can now be exported duty free to the EU, the same is the case for 64 per cent of EU agri-food products.
- Measured in terms of the value of trade, the FTA appears to have benefitted Mexican exports more than EU exporters.[26] A lower share of the value of exports is covered (75 per cent for the EU compared to 83 per cent for Mexico), and the benefit of the tariff eliminations came later to EU producers than Mexican producers.
- The average Mexican tariffs on EU agri-food exports were much higher than the average EU tariffs on Mexican agri-food exports. Although the gap has narrowed over time as Mexican tariffs have been reduced or eliminated, tariffs appear to continue to pose a larger barrier to EU agri-food exports to Mexico than vice versa.

EU agri-food exports to Mexico

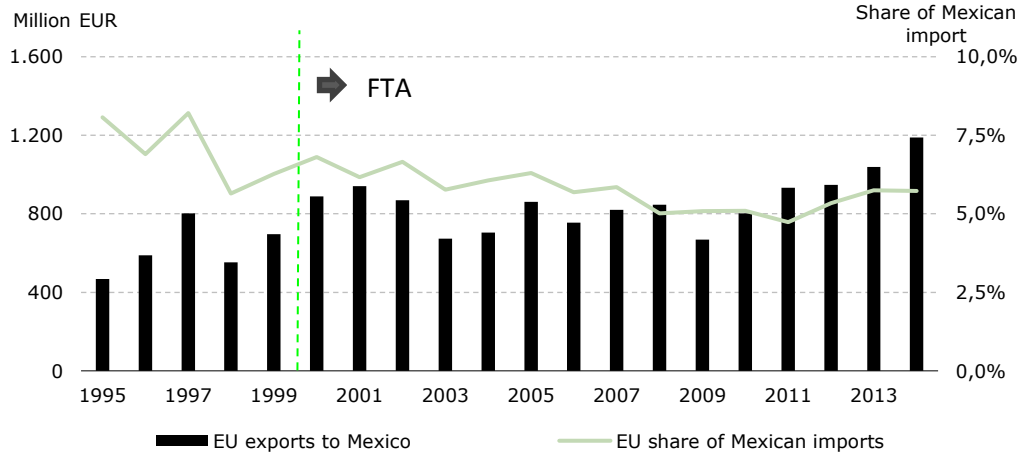
EU agri-food exports to Mexico has increased through most of the period 1995-2014 and amounted to almost 1.2 bn. EUR in 2014 up from less than 0.5 bn. EUR in 1999, cf. Figure 26. The positive trend in EU agri-food exports to Mexico thus seems to have started before the entry into force of the agreement. In fact, as we will see in Chapter 4, the increasing importance of the Mexican market may be one of the reason why the EU initiated FTA negotiations in the first place.

[26] This is consistent with EU development policies and support to countries with low income per capita.

Growth in EU exports has fallen behind the general increase in Mexican agri-food imports, and EU's share of Mexican agri-food imports fell from around 8 per cent in 1995 to 6 per cent in 2014. The FTA does not seem to have reversed the falling EU share of Mexican agri-food imports although the rate of decline appears to have fallen slightly. EU business have regained market share during the most recent years and reached a 6 per cent share of Mexican agri-food imports in 2014.

On the Mexican side, all 600 agri-food products included in this study are covered by the FTA and all tariffs on products subject to elimination have now been fully phased out. Figure 26 therefore gives an overview of the change in EU exports to Mexico after the FTA entered into force. Our prior expectation is that there has been a positive but relatively small impact of the FTA on EU exports to Mexico.

Figure 26 EU agri-food exports to Mexico, 1995-2014

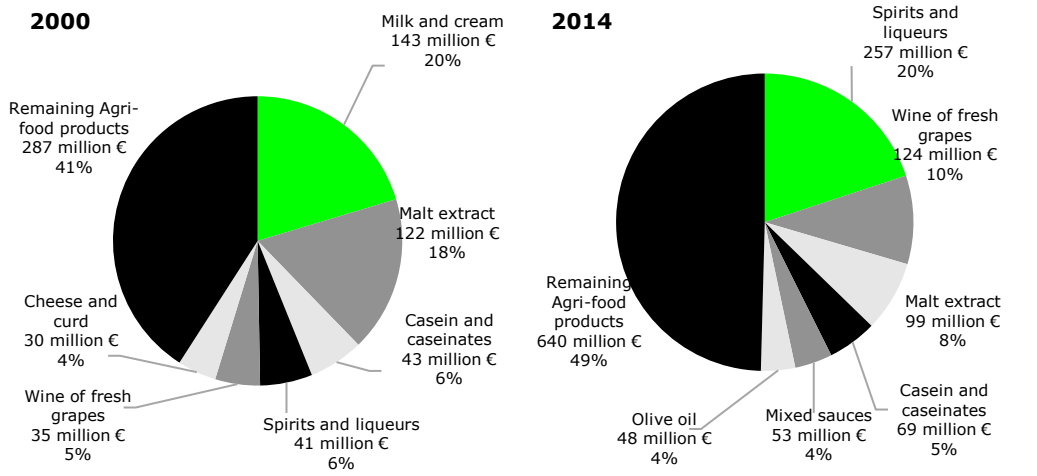


Note: Data are in constant 2010 EUR.

Source: Copenhagen Economics based on UN Comtrade

In 2014, spirits and liqueurs accounted for 20 per cent of EU agri-food exports to Mexico up from six per cent in 2000, cf. Figure 27. Milk and cream accounted for 20 per cent of EU exports in 2000 but the share had fallen to 1.5 per cent in 2014. Malt extract is another agri-food product that has become less important in EU agri-food exports to Mexico between 2000 and 2014 (down from 18 per cent to 8 per cent).

Figure 27 Composition of EU agri-food exports to Mexico, 2000 and 2014



Source: Copenhagen Economics based on UN Comtrade

After the entry into force of the EU-Mexico FTA, wine also became a more important export product and the share in EU agri-food exports doubled from five per cent in 2000 to 10 per cent in 2014. The development in EU wine exports to Mexico is described in more details in the wine case study carried out as a part of this study. The main findings have been summarised in Box 8.

Box 8 Developments in French wine exports to Mexico

The wine case study finds that French wine exports to Mexico have increased only slightly after the EU-Mexico FTA entered into force, and the increase in exports that can be observed took place mainly in the high-end market where demand is less price sensitive. This implies that French wine exports are relatively insensitive to changes in tariff barriers, including the impact of other trade agreements. Spanish-speaking countries (e.g. Chile, Argentina and Spain) have a strong natural advantage in Mexico.

In spite of the consolidation in the French wine sector, the main problem for France to be able to compete outside the high-end sector seems to come from atomicity. The small wine companies are not able to penetrate the Mexican market and compete in terms of marketing means, branding and distribution networks (e.g. against large wine producers in Australia and New Zealand). Mexico is not targeted at the collective level (by regional trade bodies) as an interesting or strategic market for French wine producers and more attention is given to other markets outside the EU such as China, the US and Japan.

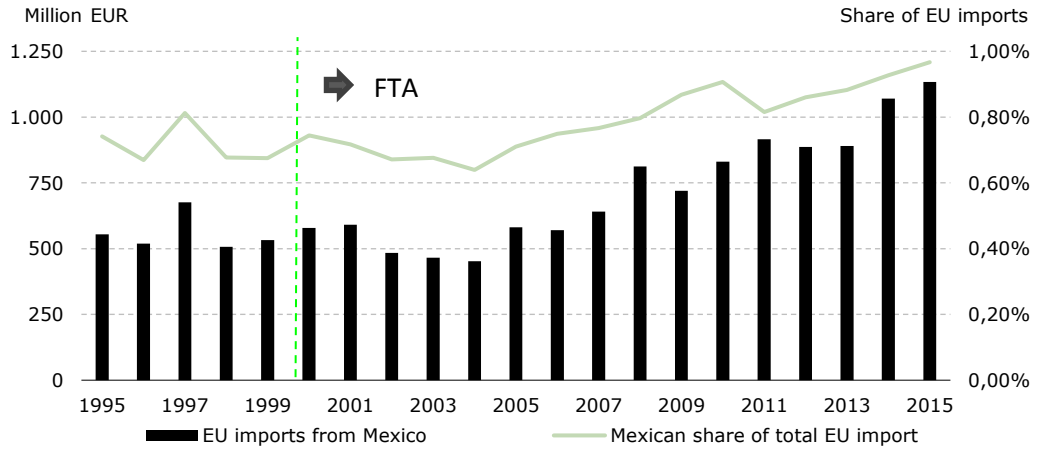
The FTA appears to have helped maintain the current trade position in Mexico rather than boost bilateral trade. Without the FTA, the French wines' position in Mexico could be worse, especially compared to Chile, Argentina and the US who also benefit from FTAs with Mexico.

Source: Copenhagen Economics based on the wine case study

EU agri-food imports from Mexico

EU agri-food import from Mexico increased only slightly the first few years after the entry into force of the FTA but fell towards 2004 where EU agri-food imports from Mexico reached the lowest level during the period 1995-2015, cf. Figure 28. The year 2004, however, marked the year of a turnaround in Mexican agri-food exports to the EU, and EU imports increased from around 450 mn. EUR in 2004 to 1.15 bn. EUR in 2015. During this period, Mexican agri-food business also gained a larger share of the EU market, and the Mexican share of EU agri-food imports increased from around 0.6 per cent in 2004 to almost 1 per cent in 2015.

Figure 28 EU agri-food imports from Mexico, 1995-2015

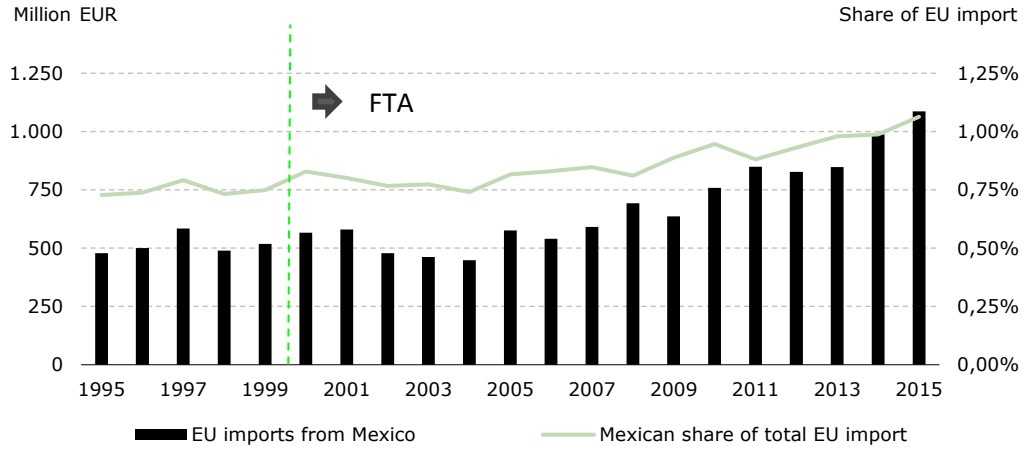


Note: Data are in constant 2010 EUR. Intra-EU trade is not included in EU imports. The figure includes all 600 agri-food products.

Source: Copenhagen Economics based on UN Comtrade

On the EU side, the FTA covers 485 out of the 600 agri-food products. It appears that EU imports of these products has increased steadily after the FTA entered into force and the Mexican market share is slightly larger, cf. Figure 29. Our prior expectation is the FTA has had a positive but relatively small impact on EU imports from Mexico.

Figure 29 EU agri-food imports of covered products from Mexico, 1995-2015

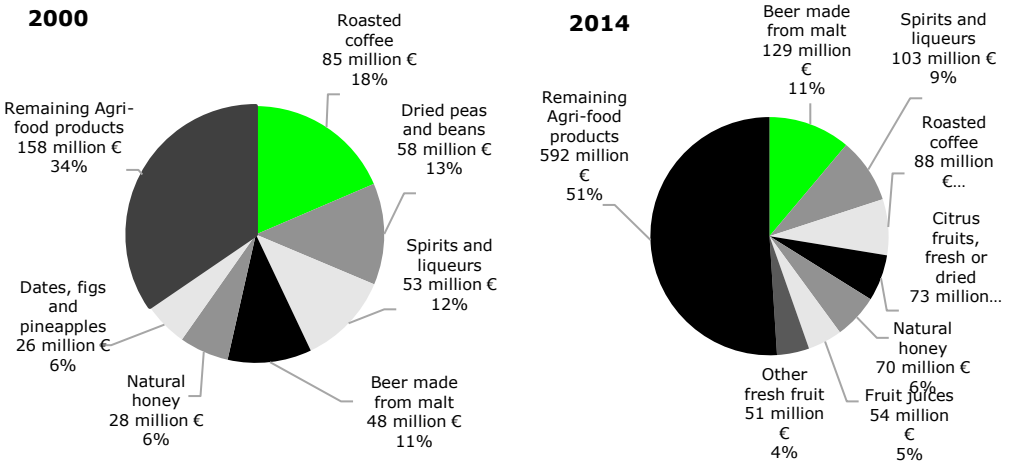


Note: Data are in constant 2010 EUR. Intra-EU trade is not included in EU imports. The figure includes the 485 products covered by the EU-Mexico FTA on the EU side.

Source: Copenhagen Economics based on UN Comtrade

Beer accounted for 11 per cent of EU agri-food imports from Mexico in both 2000 and 2014, cf. Figure 30. However, while beer accounted for the largest share of EU agri-food imports in 2014, it was only the 4th most important product in 2000. This can be mainly explained by a lower share in EU imports of roasted coffee (from 18 per cent to only 8 per cent) but also reduction in import shares of dried peas and beans (from 13 per cent to 4 per cent) and spirits and liqueurs (from 12 per cent to 9 per cent).

Figure 30 Composition of EU agri-food imports from Mexico, 2000 and 2014



Source: Copenhagen Economics based on UN Comtrade

Citrus fruits accounted for four per cent of EU imports from Mexico in 2000 and were the 8th most important product in EU imports. In 2014, citrus fruits accounted for six per cent and were the 4th most important import product. The main findings from the case study on EU imports of citrus fruits from Mexico have been summarised in Box 9.

Box 9 Developments in EU citrus fruits imports from Mexico

Trade in citrus fruits between Mexico and the EU is small but has increased in recent years, with both sides supplying some niche products to the other market, such as EU imports of lime fruits and Mexican imports of clementine. As the production of citrus fruits in Mexico and the EU is in most cases complementary, trade between the two countries gives consumers in both markets access to a larger number of citrus fruit varieties with limited adverse impacts on domestic producers.

The increase in trade seems to have preceded the FTA that entered into force in 2000. While there are no exceptional safeguard measures, there remain several barriers to the trade in citrus fruits (as well as other fruits and vegetables) between the two countries. On the EU side, entry price tariff mechanisms may restrict EU imports and impose an informational burden on both importers and exporters. While there are no tariff quotas on citrus fruits imports from Mexico, quotas on other fruits and vegetables reduce the scale of EU imports from Mexico and increase transportation costs for citrus fruits. This will make the EU market less attractive, particularly compared to the US market. On the Mexican side, strict SPS requirements pose a serious barrier to trade.

Source: Copenhagen Economics based on the citrus fruit case study

Trade disputes between the EU and Mexico

Since the creation of WTO in 1995, Mexico has been involved in 37 trade disputes. 12 of these 37 disputes have concerned agri-food products with the US and the EU as the most frequent counterparts.

In total, there has been five trade disputes between Mexico and the EU for agri-food products that have involved only two products: Bananas and olive oil. This means that there are *de facto* only two dispute cases. In the dispute concerning bananas, Mexico was the complainant, whereas the EU was the complainant in the case of olive oil.

The three banana dispute cases concerned the EU regulations regarding import, sale and distribution of bananas.[27] In these cases, the EU was accused of offering favourable tariffs and tariff quotas for some developing countries with which it had long-standing relationships while at the same time imposing higher tariffs for other banana producing countries, such as Mexico. The panel assembled by the WTO found that the EU practice was against the functioning of MFN system, to which all WTO member states adhere and that the EU should therefore adjust their import regulations accordingly.

[27] The three cases, which were filed in 1995, 1996 and 1999, are largely similar. For instance, the only difference between the dispute case from 1995 and 1996 is that Ecuador was a complainant in 1996, but not in 1995.

The three cases all predate the trade agreement between the EU and Mexico but since the latest case from 1999 was officially settled as late as 2012, it is relevant to consider these disputes in an evaluation of the FTA.[28]

For olive oil, the dispute case concerns countervailing measures that Mexico imposes on olive oil from the EU to counter the subsidies EU provides for the olive growers.[29] Although the EU did indeed subsidise the olive growers[30], the panel assembled by the WTO found that the countervailing measures put in place by Mexico were against WTO regulations. This is so because Mexico failed to verify properly that Mexican producers lost revenue as a direct result of the EU subsidies – a key requirement for the countervailing measures to be in line with WTO regulations.[31] In 2008, Mexico removed the countervailing measures imposed on olive oil from the EU thus complying with the WTO regulations.

Evolution of the SPS situation between the EU and Mexico

According to the Market Access Database[32], the EU currently has five SPS issues with Mexico. Although these issues are very different, they could all potentially impede trade.

Two of these barriers concern issues with import permits. For some fruits and vegetables, these permits are very burdensome to obtain and require costly and disproportionate measures. For instance, mitigation measures apply to the entire EU rather that the relevant region and cooling under transport are required for products for which this is not necessary for food safety. Unnecessary regulatory requirements also exist for specific products such as Spanish ham, which can only enter Mexico through the US, thereby adding extra costs to the EU exports to Mexico.

Another issue concerns the Mexican ban of imports of pigs from the EU. Whilst this issue initially involved pigmeat, pig semen and breeding pigs, negotiations between the two parties imply that currently it is only import of breeding pigs that are banned and where negotiations are still ongoing.

Mexico also applies a burdensome and costly procedure when listing establishments for exports, as the Mexican authorities require on spot evaluations for each establishment at the expense of EU exporters. A prelisting system that reduces the burdens of these requirements is in place for dairy products but not for meat products. The EU requests equivalence for all products and has negotiated a deal with Mexico that aims at removing the barriers that exist for some sectors. The deal is currently being implemented for some specific member states but the SPS issue still persists as a barrier for others.

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28 For more information, including the panel reports etc., we refer to http://trade.ec.europa.eu/wtodispute/show.cfm?id=239&code=2.

29 As for the banana disputes, the two olive oil cases concern the same dispute. The case from 2004 concerns *provisional* measures and 2006 *definitive* measures.

30 But importantly not olive oil producers, which makes the link between the subsidy and EU exports of olive oil weaker cf. Bown and Meagher (2010).

31 For a detailed review of both the legal and economic side of this dispute case, we refer to Bown and Meagher (2010).

32 This is an EU database, which tracks and labels different barriers to trade. It is maintained by DG Trade and can be found at: http://madb.europa.eu/madb/sps_crossTables.htm.

The final issue relates to the Bovine Spongiform Encephalopathy (BSE) disease, as Mexico bans all imports of beef from animals more than 30 months old. This is against the guidelines from the World Organisation for Animal Health (OIE) as the EU is considered an area of negligible risk. Although Mexico has accepted the risk status of EU and agreed to re-evaluate trading conditions for products from animals younger than 30 months, the ban has not been lifted totally and the issue still stands.

All five SPS issues are still ongoing and thus need to be settled before the FTA will have full effect on all products. This is so because a tariff reduction matters little for a product that is, in effect, banned from entering Mexico.

3.2 The EU-South Korea FTA

The EU-South Korea has been selected because and is the most ambitious agreement ever implemented by the EU. This FTA is also the EU's first trade deal with an Asian country, and the study could provide important lessons for future trade agreements with other Asian countries such as Japan. The FTA promises great expected gains to the EU as South Korea is the EU's 10th largest export destination.[33] For agri-food products, however, South Korea accounts only for around two per cent of EU exports.

The EU-South Korea FTA entered into force in July 2011. The agreement is unprecedented both in terms of the scope as well as the speed with which trade barriers are removed. With respect to agriculture, the agreement eliminates duties on almost all products, except for a small share of agri-food products, e.g. rice, of which the EU has very little export. The agreement also provides duty-free import quotas for a number of EU exports (European Commission, 2011).

The agreement also contains a chapter on Sanitary and Phytosanitary (SPS) measures, which has as its aim to further promote bilateral trade, ensure full transparency with respect to SPS measures affecting trade and to reach a common understanding on animal welfare (European Commission, 2010a).

These aims will be met via the introduction of a formal dialogue on SPS issues affecting trade as well as specific commitments on transparency, consultation and working towards developing a common understanding on international standards and equal treatment of all EU member states (European Commission, 2010a).

Cooperation will furthermore focus on the recognition of disease-free areas, which will increase the predictability for EU exporters to Korea and reduce the negative impacts of a local outbreak of certain animal diseases in the EU (European Commission, 2011). In specific, a committee on SPS measures will be established to oversee the implementation of the chapter and function as a forum for the discussion of potential problems arising within this context (European Commission, 2010a)

[33] From Eurostat. For more information on the EU-South Korea FTA see http://ec.europa.eu/trade/policy/countries-and-regions/countries/south-korea/.

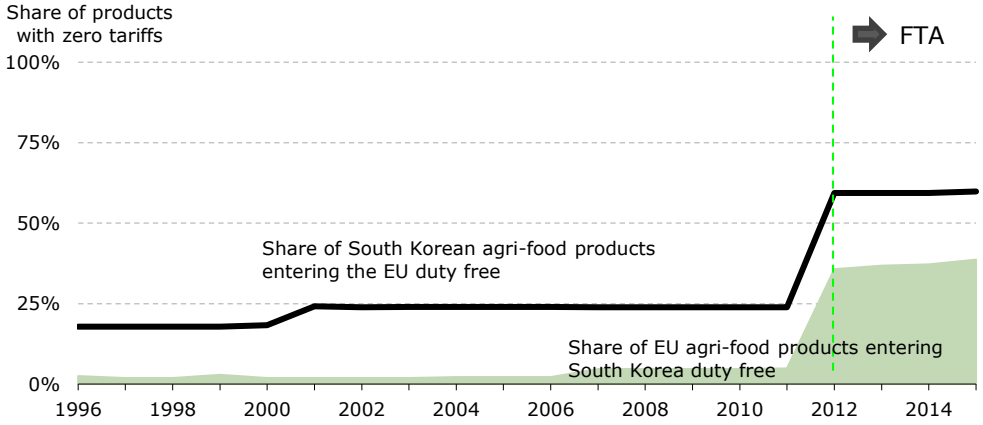
The agreement also contains important provisions on rules of origin, in which the EU standard rules of origin are simplified. However, in some sectors, including sensitive agricultural sectors (such as sugar, pasta, olive oil) and textiles and clothing, the standard EU rules of origin remain in place. Finally, the agreement also contains a high level of protection for EU geographical indications, such as e.g. Champagne and Prosciutto di Parma.

In total, 165 EU geographical indications are protected in the EU-South Korea FTA (of which 63 are South Korean) from the onset of the agreement (European Commission, 2010a) and more can be added following the FTA implementation process.

Tariff concessions in the EU-South Korea FTA

Tariff dismantling occurs relatively fast under the EU-South Korea FTA. In 2015, 60 per cent of South Korean agri-food products could thus be exported duty free into the EU compared to 24 per cent prior to the agreement, cf. Figure 31. In the case of EU agri-food exports to South Korea, 39 per cent of the agri-food products could enter duty free in 2015 compared to five per cent in 2011. According to the agreement, 85 per cent of EU agri-food products will be granted duty free access to South Korea after 10 years and 95 per cent after 18 years, while the remaining five per cent are excluded from the FTA.[34]

Figure 31 Number of agri-food products covered by the EU-South Korea FTA, 1996-2015



Note: The share of products with zero tariffs is calculated as the share of product lines where the applied tariff is zero. The figure covers agri-food products only. Products with quotas, seasonal tariffs and other non-ad valorem parts of the tariffs are excluded.

Source: Copenhagen Economics based on UN Comtrade

Measured in terms of value, 85 per cent of South Korean agri-food exports to the EU in 2014 entered duty free, cf. Figure 32. The same was the case for less than 20 per cent of EU exports to South Korea.

[34] http://eeas.europa.eu/delegations/south_korea/documents/eu_south_korea/presenter_1-1_tariff_liberalisation_en.pdf.

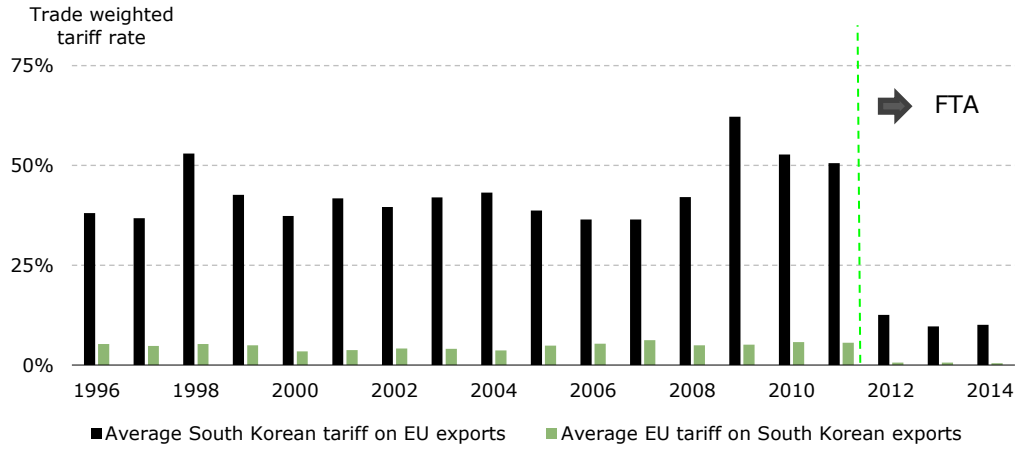
Figure 32 Value of agri-food trade covered by the EU-South Korea FTA, 1996-2014

Note: The share of trade value with zero tariffs is calculated as the share of total trade value where the applied tariff is zero. The figure covers agri-food products only. Products with quotas, seasonal tariffs and other non-ad valorem parts of the tariffs are excluded.

Source: Copenhagen Economics based on UN Comtrade

South Korea applies relatively large MFN tariff rates on agri-food imports. Prior to the agreement, the average duty paid on EU agri-food exports to South Korea was thus 51 per cent (trade weighted) compared to only 13 per cent in 2012 and 10 per cent in 2014, cf. Figure 33. The tariff removals on the South Korean market therefore provides EU exporters with a significant advantage compared to exporters from other countries that continue to exports to the South Korean market under MFN rates. The relative advantage for South Korean exporters to the EU market is significantly less, as MFN rates are much lower on the EU market. Prior to the agreement, the average tariff rate applied to Korean exports into the EU market was thus only six per cent.

Figure 33 Trade weighted tariff rates in the EU-South Korea FTA, 1996-2014



Note: The trade weighted tariff rate is calculated using the EU's export value of the particular product as a weight on the tariff applied to the product. The figure covers agri-food products only.

Source: Copenhagen Economics based on UN Comtrade

Comparing the two tariff concession schedules, we find that:

- Before the entry into force of the FTA, more South Korean products entered the EU duty free than vice versa. This imbalance remained in 2015 but will be fully neutralised after 18 years when the agreement is fully implemented.
- Measured in terms of the value of trade, the FTA appears to have benefited South Korean exports more than EU exporters in the first years of implementation, and only around 20 per cent of EU exports now enter South Korea duty free.
- EU tariffs on covered products were eliminated immediately after the FTA entered into force while South Korean tariffs remained relatively high reaching an average of 10 per cent in 2014. This tariff level should be seen in relation to the very high tariffs on South Korean imports from the EU before 2011.

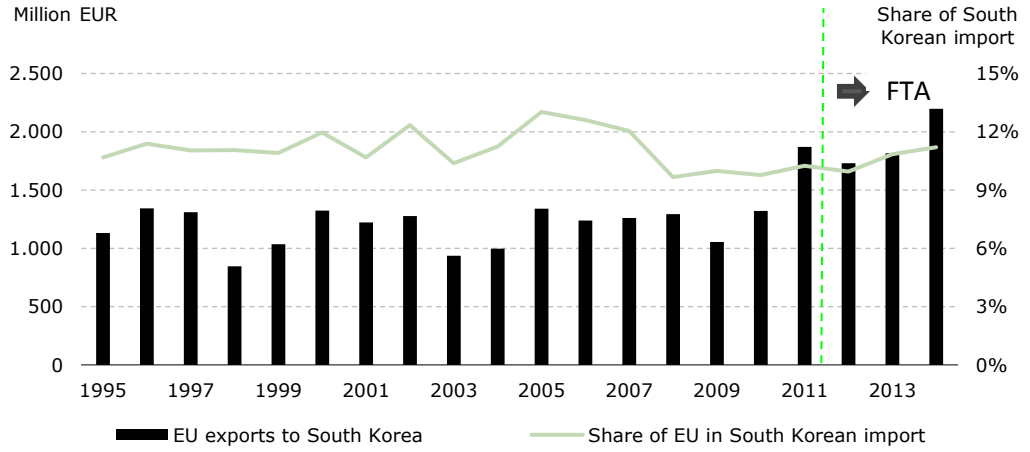
EU agri-food exports to South Korea

EU exports of agri-food products to South Korea increased rapidly from 2009 to 2011, when the agreement entered into force, cf. Figure 34. Hereafter, there was a slight fall from 2011 to 2012 after which exports again increased and reached 2.2 bn. EUR in 2014. While the increase in exports right up to the implementation of the agreement may be partly due to anticipation effects, this does not explain the slight fall in exports immediately after the implementation of the agreement.

Similarly, the increase visible from 2012 until 2014 could also be seen as suggestive evidence of an impact from the agreement. However, while EU exports increased just over 26 per cent over this period, the EU's share of South Korean agri-food imports only increased weakly from 10 per cent in 2012 to 11 per cent in 2014. This indicates that there was a general increase in South Korean imports in that period. If that is the case, the increase in EU exports to South Korea starting shortly after the implementation of the agreement could simply have been due to some other non-FTA related factors. In the econometric analysis presented in the next chapter, we take these factors into account and estimate the isolated impact of the FTA on EU agri-food exports to South Korea.

On the South Korean side, almost all agri-food products are either covered by the FTA or have a MFN rate of zero, meaning that there are limited scope for inclusion of further products. Figure 34 therefore gives an overview of the change in EU exports to South Korea after the FTA entered into force. Our prior expectation is that the FTA has had a positive and relatively large impact on EU exports to South Korea.

Figure 34 EU agri-food exports to South Korea, 1995-2014

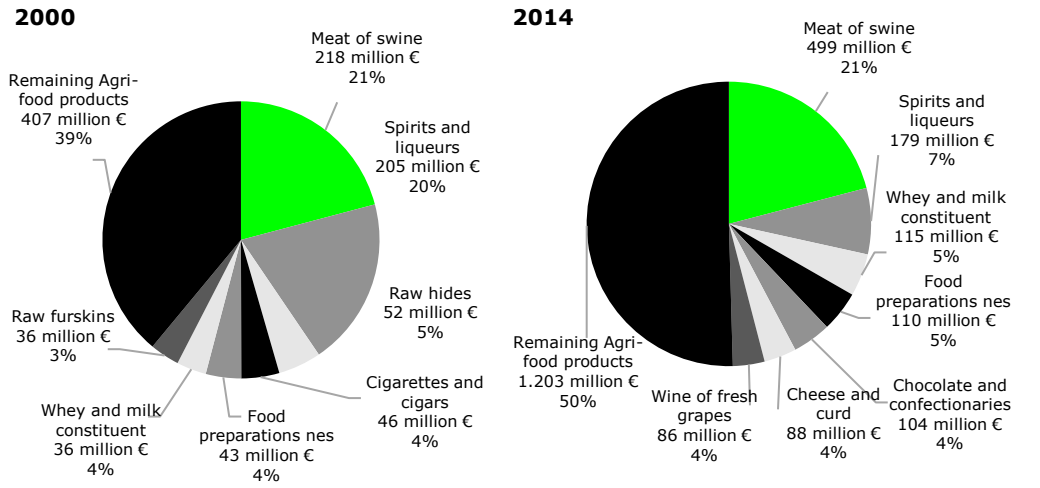


Note: Data are in constant 2010 EUR. The figure includes all 600 agri-food products, and all 600 products are covered by the FTA on the South Korean side.

Source: Copenhagen Economics based on UN Comtrade

In terms of the composition of EU agri-food exports to South Korea, meat of swine accounts for the single largest share (21 per cent) in 2014. This share has remained unchanged since 2000, cf. Figure 35.

Figure 35 Composition of EU agri-food exports to South Korea, 2000 and 2014



Source: Copenhagen Economics based on UN Comtrade

As pigmeat is the most important product, a case study of Danish exports of pigmeat to South Korea was carried out as a part of this study. The main findings have been summarised in Box 10.

Box 10 Danish exports of pigmeat to South Korea

In general, the Danish pigmeat industry had positive expectations of the EU-South Korea FTA, and the pigmeat case study confirms that there are no significant administrative, technical, political or other barriers that could be removed in the FTA. The case study finds that the Danish pigmeat industry has competitive advantages relative to the South Korean producers. In spite of this, the Danish export of pigmeat to Korea has not increased as much as expected by market players before 2011, and there appears to be no significant change of Danish export of pigmeat to Korea. This is mainly because other markets have been more attractive (e.g. China and Japan) and because of consumer preferences for local products.

However, it is important to keep in mind that the FTA has been an important prerequisite for maintaining exports to South Korea because other countries (e.g. the US, Canada and Australia) also signed FTAs with South Korea over the same period. The South Korean import market for pigmeat is very price sensitive, and even small price increases will cause demand to fall instantly. Overall, the FTA therefore seems to have had a positive impact on Danish pigmeat production and thus also on both income in the industry and employment. The improved access to the Korean market has also stabilised prices, and a further decline in prices for pig producers (e.g. due to the Russian import ban) has been avoided or reduced.

Source: Copenhagen Economics based on the pigmeat case study

Spirits and liqueurs are also important in EU agri-food exports to South Korea, accounting for seven per cent in 2014 compared to 20 per cent in 2000. Thus, while these products still make up a relatively large share of EU agri-food products to South Korea, the share has been reduced significantly since 2000 as exports of other agri-food products have increased relatively faster.

One of the product groups, which has increased its share, but which still account for only a minor share of EU exports to South Korea, is sugar confectionaries, which made up 0.8 per cent of EU agri-food exports to South Korea in 2000 and 1.5 per cent in 2014. The main findings from the case study on Polish exports of sugar confectionaries have been summarised in Box 11.

Box 11 Polish exports of sugar confectionaries to South Korea

The case study on sugar confectionery finds that the EU-South Korea FTA has made new transactions possible as the reduction of customs tariffs improved the cost effectiveness of Polish exporters and improved their competitiveness in the South Korean market. The positive export development is not only a consequence of the FTA but reflects a longer continuing trend: Polish exports to South Korea took off after the FTA was implemented but before tariffs on sugar confectionary were fully phased out.

One explanation for this could be that South Korean consumers have increasingly become open to western food products, which means the Chinese advantage in terms of having knowledge and familiarity with South Korean culture, customs and habits become less important. Also, urbanisation and economic growth have increased South Korean consumers' demand for food variety and convenience foods. The competitiveness of Polish exporters is very much dependent on input prices, in particular EU sugar policies that increase the volatility of sugar prices. Regulations connected with customs clearance are still a main barrier to Polish exports of sugar confectionary.

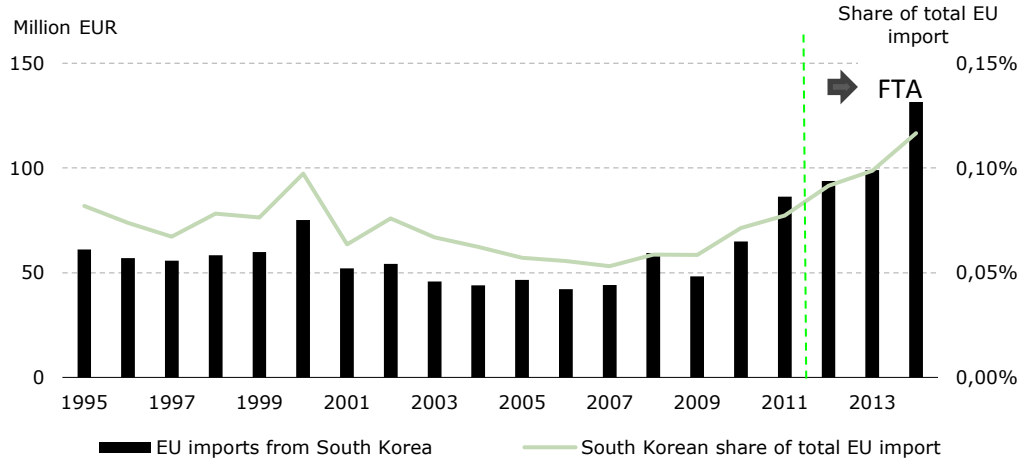
Source: Copenhagen Economics based on the sugar confectionary case study

EU agri-food imports from South Korea

EU agri-food imports from South Korea have also increased after the FTA entered into force but also in this case does the development appear to have started before the FTA entered into force, cf. Figure 36. The share of EU agri-food imports from Korea also increased significantly following the implementation of the agreement (from 0.07 per cent in 2011 to 0.12 per cent in 2014), which suggests that EU agricultural imports from South Korea increased more than imports from other non-EU countries. In the next chapter, we will use an econometric model to assess if this is due the preferential access granted to South Korea under the FTA or some other factor.

On the EU side, the FTA covers 551 out of the 600 agri-food products, and these products accounted for 80 per cent of EU agricultural imports from South Korea in 2014. The development of trade in the covered products therefore total agricultural trade. Our prior expectation is that the FTA has had a positive impact on EU imports from South Korea. Measured in absolute terms, the impact is expected to be relatively small because the EU imports so little agri-food products from South Korea.

Figure 36 EU agri-food import from South Korea, 1995-2014

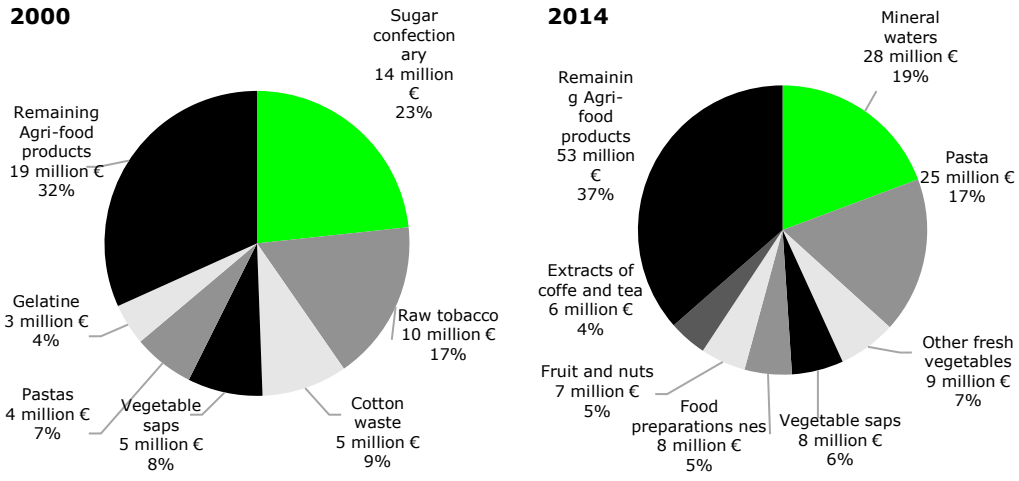


Note: EU refers to EU27. Data are in constant 2010 EUR. Intra-EU trade is not included. All 600 agri-food products are included in the figure.

Source: Copenhagen Economics based on UN Comtrade

In terms of the composition of EU agri-food imports from Korea, mineral waters and pastas make up the largest share in 2014, and the two products combined account for 36 per cent of EU imports, cf. Figure 37. This is a very different picture than the one from 2000, when sugar confectionaries and raw tobacco combined made up 40 per cent of EU agri-food imports from South Korea.

Figure 37 Composition of EU agri-food imports from South Korea, 2000 and 2014



Source: Copenhagen Economics based on UN Comtrade

Trade disputes between the EU and South Korea
South Korea has been involved in 32 dispute cases since 1995, with eight of these disputes concerning agri-food products. Only one of the agricultural dispute cases had EU as a counterpart.

In this dispute, dating back from 1998, EU was the complainant arguing that the safeguard measures imposed by South Korea on certain dairy products from the EU is against WTO regulation. Although WTO at first declined to assemble a panel to rule on the matter, such a panel was eventually formed. It was found that the measures imposed by South Korea were partly breaching WTO regulations, and the panel recommended some specific adjustments to the safeguard measures. These were eventually adapted by South Korea, and the dispute was settled in 2000, when South Korea lifted the safeguard measures.

Evolution of the SPS situation between the EU and South Korea
Currently, there are three issues with South Korea's SPS measures towards the EU, according to the Market Access Database. The first issue concerns imports of beef and similar products from the EU, which South Korea bans due to BSE related restrictions. However, as South Korea has resumed the import from other countries with the same disease status as the EU, EU considers the measures by South Korea unjustified. South Korea has recently started to evaluate applications for exports of beef from EU member states but has not yet indicated the timeframes for the overall process.

The two other SPS issues both concern the approval of EU products for exports, where the EU consider the requirements for both animal and plant products unnecessarily burdensome. South Korea currently applies an approval system that has similarities with the EU system regarding approval of EU establishments of animal products eligible to export, with one major exception, as South Korea requests inspection of each establishment by South Korean competent authorities prior to approval. Also for plant products, EU exporters experience problems, as new types of products and origins are not allowed for imports to South Korea before the lengthy approval procedure. For both types of products, the extra requirements from the South Korean authorities prolong the approval procedure unnecessarily at the cost of EU exporters.

3.3 The EU-Switzerland trade agreements

Trade between the EU and Switzerland is regulated by the EU-Switzerland FTA from 1972. Since the entering into force of the FTA, several sectoral agreements have been signed that have gradually liberalised trade in agri-food products between the EU and Switzerland, cf. Box 12. The sectoral agreements are important as Switzerland is by far the largest neighbouring trading partner in agri-food products for the EU, which makes the EU-Switzerland trade agreements the natural choice for this analysis.

Box 12 Trade relations between the EU and Switzerland

The cornerstone of EU-Swiss relations is the FTA from 1972.

As a consequence of the rejection of the EEA membership in 1992, Switzerland and the EU agreed on a package of seven sectoral agreements signed in 1999 (known as "Bilaterals I"). These include: Free movement of persons, technical trade barriers, public procurement, **agriculture** and air and land transport. This package of sectoral agreements entered into force in 2002 and gradually removed tariffs on trade in primary agricultural products.

A further set of sectoral agreements was signed in 2004 (known as "Bilaterals II"), covering, inter alia, Switzerland's participation in Schengen and Dublin, and agreements on taxation of savings, **processed agricultural products**, statistics, combating fraud, participation in the EU Media Programme, the Environment Agency, and Swiss financial contributions to economic and social cohesion in the new EU Member States. Liberalisation of trade in processed agri-food products entered into force in 2005.

In overall, around 100 bilateral agreements currently exist between the EU and Switzerland. The on-going implementation of these agreements obliges Switzerland to take over relevant Community legislation in the covered sectors. These bilateral agreements between the EU and Switzerland are currently managed through a structure of more than 15 joint committees.

Source: Copenhagen Economics based on http://ec.europa.eu/trade/policy/countries-and-regions/countries/switzerland/

The EU-Switzerland Agricultural Agreement the so-called *Agreement between the European Community and the Swiss Confederation on trade in agricultural products*, is one of the seven sectoral agreements under Bilaterals I. The agreement entered into force in 2002 and improves market access by reducing both tariffs and NTBs on a number of agricultural products. Tariffs were reduced on cheese, fruits and vegetables, horticulture, meat and wine (Swiss Confederation, FDFA, 2016).

The agreement also reduces or eliminates NTBs arising due to regulatory differences. A number of regulations in the areas of plant health, animal feed, seeds, organic farming, wine and spirits as well as quality norms for fruit and vegetables have thus been mutually recognised as being equivalent (Swiss Federal Office for Agriculture, 2016).

In 2011, the Agreement on mutual recognition of Protected Designations of Origin (PDO) and Protected Geographical Indications (PGI) entered into force and was integrated into the Agreement on Agriculture, assuring mutual recognition for Geographical Indications (Swiss Federal Office for Agriculture, 2016).

Trade in processed agri-food products was also gradually liberalised with the latest and more ambitious liberalisation taking place in 2004 with the adoption of the *Agreement on Processed Agricultural Products* under Bilaterals II. The agreement entered into force in 2005 and liberalises to a great extent processed agri-food products and provides for a compensation for the difference in prices of raw materials.[35] The EU no longer levies customs duties on a range of agri-food products (e.g. chocolate, biscuits and sweets) and refrains from paying export subsidies. In return, Switzerland reduces customs duties on imports from the EU, as well as its subsidies for exports to the EU, to the level of the difference in the raw materials prices.

The quantitative analysis in this report covers all agri-food products and thus takes trade liberalisation provided by all the sectoral agreements into account.[36]

Tariff concessions in the EU-Switzerland trade agreements

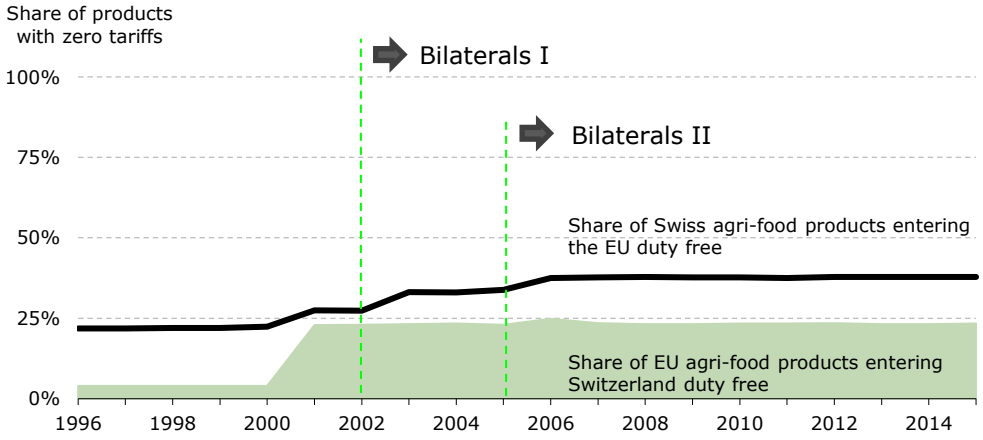
The original EU-Switzerland FTA itself provided preferential access with zero tariffs for only around five percent of the 600 agri-food products covered in this analysis. The sectoral trade agreement covering primary agricultural products that entered into force in 2002 and the sectoral trade agreement covering processed products that entered into force in 2005 increased this number to 25 per cent of the agri-food products covered in this study, cf. Figure 38.

Throughout the period, the trade agreements between the EU and Switzerland have given preferential access to more agri-food products exported from Switzerland to the EU than vice versa. Before the sectoral agreements from 2002 and 2005, Swiss exports of 22 per cent of agri-food products entered duty free into the EU. After the sectoral agreements were fully phased in, 38 per cent of the agri-food products entered duty free.

35 See Swiss Confederation (2009).

36 One of the main advantages of the triple-difference model applied in the quantitative analysis is exactly that the model takes into consideration the timing of trade liberalisation for each product individually. The model compares trade before and after the tariff was removed on the particular product rather than a predefined year of entering into force of the overall trade agreement.

Figure 38 Number of agri-food products covered by the EU-Switzerland trade agreements, 1996-2015

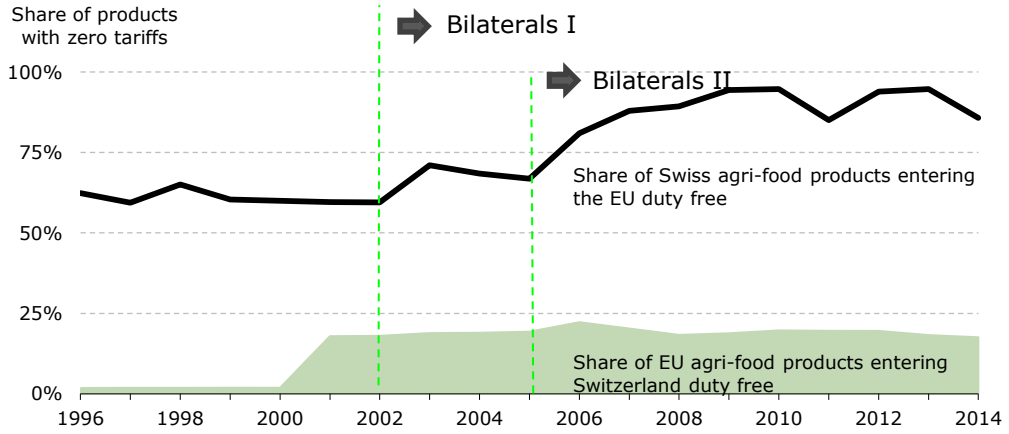


Note: The share of products with zero tariffs is calculated as the share of product lines where the applied tariff is zero. The figure covers agri-food products only. Products with quotas, seasonal tariffs and other non-ad valorem parts of the tariffs are excluded. Two agri-food products are recorded to enter duty free into Switzerland in 2006 but not in 2007. This drop is caused by a reclassification of agri-food products in the Swiss side across HS codes and not actual changes in tariffs.

Source: Copenhagen Economics based on UN Comtrade

While only a limited number of products enter duty free, the trade agreements appear to give preferential access to some of the main EU import products from Switzerland. In 2014, 86 per cent of EU imports from Switzerland in terms of value thus entered duty free, cf. Figure 39. The same does not seem to be the case for EU exports as less than 20 per cent of the agri-food products exported to Switzerland entered duty free.

Figure 39 Value of agri-food trade covered by the EU-Switzerland trade agreements, 1996-2014



Note: The share of trade value with zero tariffs is calculated as the share of total trade value where the applied tariff is zero. The figure covers agri-food products only. Products with quotas, seasonal tariffs and other non-ad valorem parts of the tariffs are excluded.

Source: Copenhagen Economics based on UN Comtrade

A key part of any trade agreement is the reduction of the tariffs. The trade agreements between the EU and Switzerland are no exception. With regards to the actual implementation of tariff reductions, Switzerland is an exception because Swiss tariffs are specific and not *ad valorem* as is the case for almost all other countries in the world.[37] To be able to measure the effects of the tariff reductions for Switzerland, we use the specific rates. These vary greatly depending on unit of measure and trade value of a particular good, which makes it impossible to calculate a trade weighted average tariff on Swiss imports from the EU, cf. Box 13.

[37] Caliendo et al. (2015) explicitly mention Switzerland as the key exception country.

Box 13 The special case of Swiss tariffs on EU exports

Switzerland has a unique tariff scheme, as their tariffs almost exclusively are in the form of a specific rate per unit rather than a certain percentage of the traded value. Such tariff rates are called *specific* rather than *ad valorem* tariff rates.

To enable comparisons of specific and ad-valorem rates, ad-valorem equivalents of the specific rates are often calculated. This can be done by dividing the specific tariff rate per unit with the international price per unit and multiply with 100 to get a percentage. This method is illustrated in box 2.1 in WTO (2012) and is implemented directly in WTO's tariff database.

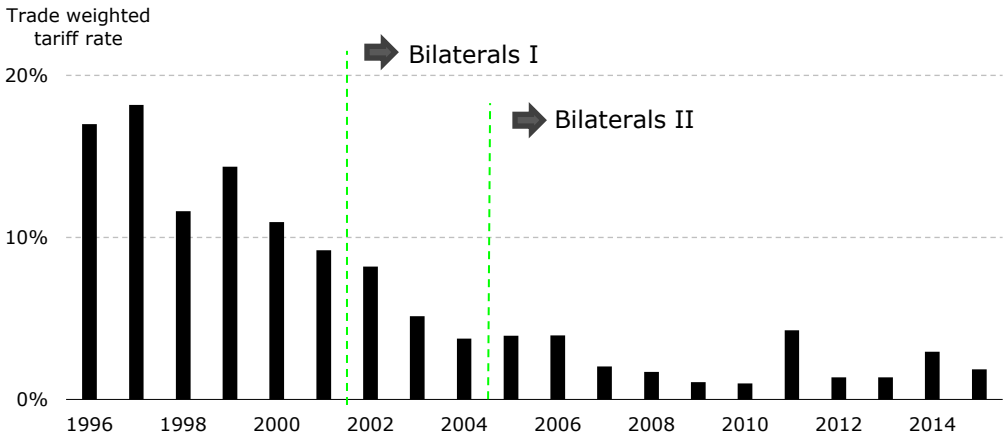
As is directly evident from the calculation method, the ad-valorem equivalents can change over time price even though the specific tariff rates are constant, i.e. if either the exchange rate or in the world market prices changes. This feature, which would imply changes in the ad-valorem equivalent, when no actual tariff concession is achieved, makes the tariff equivalents unsuitable for this analysis where we use changes in tariff rates to quantify the impact of the trade agreements.

We therefore include the actual specific rates rather than calculating ad-valorem equivalents in this analysis, as this enables us to estimate the impact of actual tariff concessions resulting from a trade agreement. This means that the average tariff concessions cannot be depicted, but this has no influence on the quantitative analysis.

Source: Copenhagen Economics based on WTO (2012)

EU tariffs decreased as a result of the trade agreements, with the average tariff dropping from around eight per cent in 2001 to five per cent in 2003, cf. Figure 40.

Figure 40 EU trade weighted tariffs on imports from Switzerland, 1996-2015



Note: The trade weighted average tariff rate is calculated using the Swiss export value of the particular product as a weight on the tariff applied to the product. The figure covers agri-food products only.

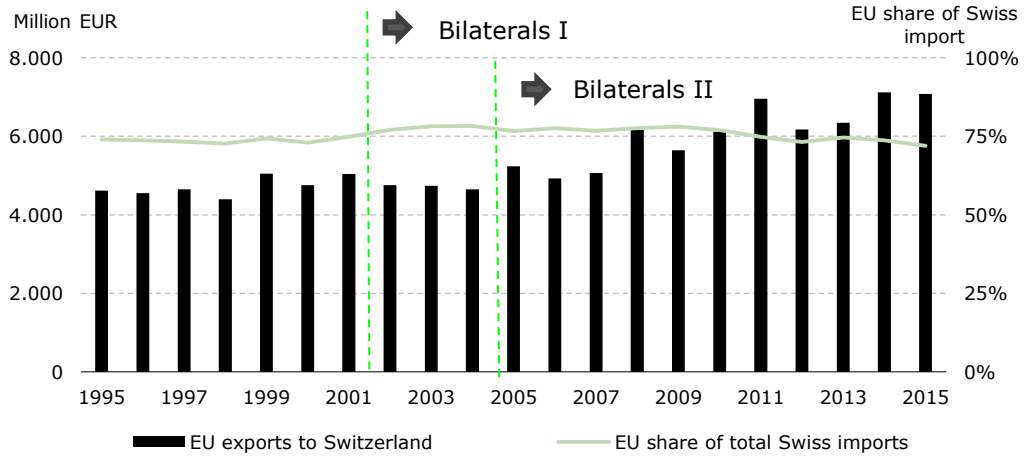
Source: Copenhagen Economics based on UN Comtrade

EU agri-food exports to Switzerland

The EU has a large share of the Swiss market and accounted for more than 72 per cent of the total Swiss imports of agri-food products in 2014, cf. Figure 41. EU exports to Switzerland showed no tendency to increase after the sectoral agreement on primary agricultural products entered into force in 2002. The sectoral agreement on processed agri-food products that entered into force in 2005 was followed by an increase in EU exports that year and there has been a positive trend in EU agri-food exports to Switzerland. EU exports this increased from around EUR 4.6 bn. EUR in 2004 to almost than 7.1 bn. EUR in 2015. The trade agreements thus seem to have enabled the EU to maintain its share of the Swiss market.

On the Swiss side, the trade agreements cover 551 out of the 600 agri-food products. These products accounted for more than 98 per cent of total EU agri-food exports to Switzerland in 2014, and Figure 41 gives a good overview of the development in EU exports before and after the trade agreements. Our prior expectation is that there has been a positive and relatively large impact on EU exports, which is mainly driven by processed agri-food products.

Figure 41 EU agri-food exports to Switzerland, 1995-2014

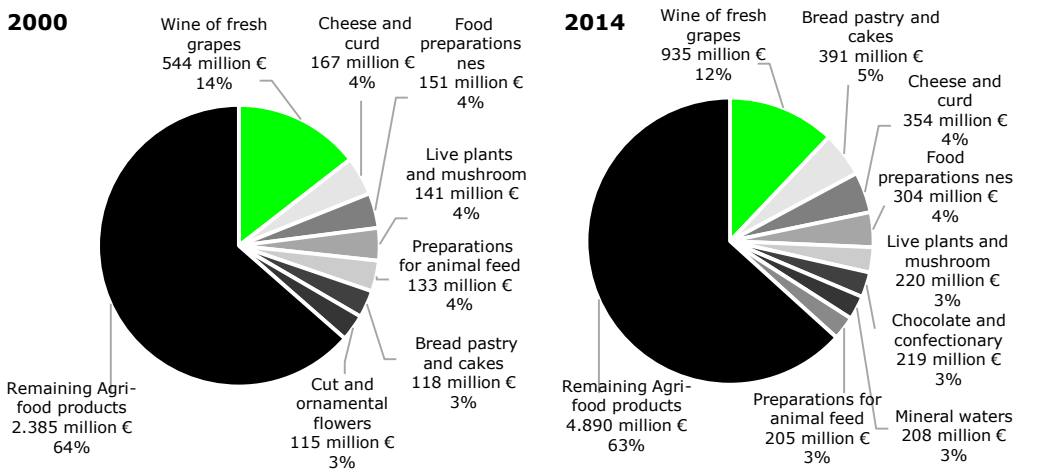


Note: EU refers to EU27. Data are in constant 2010 EUR. The figure includes all 600 agri-food products.

Source: Copenhagen Economics based on UN Comtrade

In terms of the composition of EU's agri-food exports to Switzerland, wine of fresh grapes account for the largest share in both 2000 and 2014, although its relative size has decreased from 14 per cent to 12 per cent over the period, cf. Figure 42. In general, EU exports a wide range of products to Switzerland, which is underlined by the fact that the seven most exported products only account for just over a third of the total exports, cf. Figure 42.

Figure 42 Composition of EU agri-food exports to Switzerland, 2000 and 2014



Source: Copenhagen Economics based on UN Comtrade

The geographical location of Switzerland as a neighbour to EU makes it a very important market for products that are very sensitive to long transport times. The dairy sector to some extent matches these criteria and, as a result, the Swiss market is a very important export market for EU dairy producers. However, despite the implementation of the trade agreements over the period, the dairy sector account for an unchanged share of just above 6 per cent of total EU exports to Switzerland in both 2000 and 2014, with cheese and curd being the most exported product, cf. Figure 42 above. The main findings from a study on German cheese exports to Switzerland have been summarised in Box 14.

Box 14 Developments in German cheese exports to Switzerland

Cheese trade between the EU and Switzerland has been liberalised in stages as part of the trade agreements, and it has been possible to export and import all types of cheese without customs duties since 2007.

The case study on German cheese exports to Switzerland identifies a considerable rise in both imports and exports after the trade agreements between the EU and Switzerland was implemented. Germany increased its exports in the lower price segment, while Switzerland increased its exports in the higher price segments.

As 100 per cent of the Swiss cheese imports already came from the EU, the increase in imports reflects mainly an increase in demand for cheese rather than trade creation following the sectoral agreements. The increase in German exports to Switzerland therefore reflects an increase in production (supported by the expiration of the milk quotas and the deregulation of subsidies for butter and skimmed milk products) rather than diversion of exports to other countries. Increased exports and production has had a (small) positive social impact on the German cheese sector.

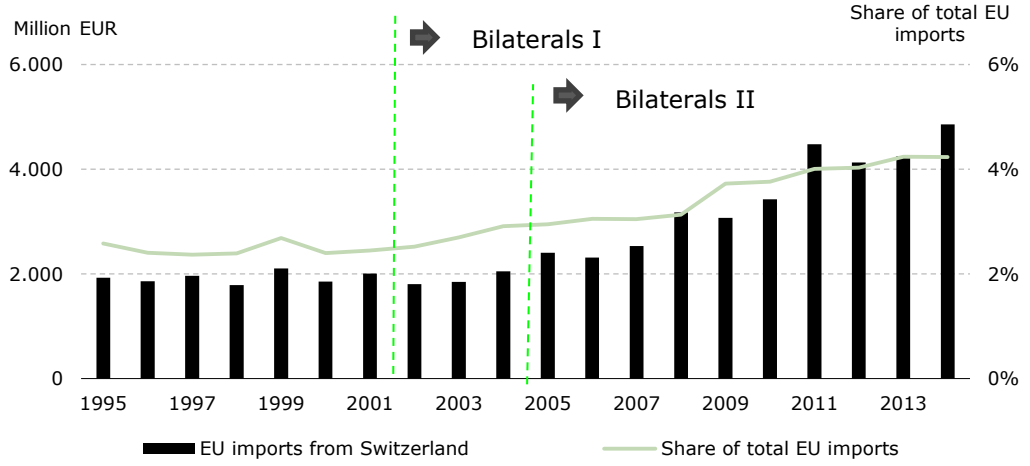
It is generally perceived that tariffs and NTBs pose no barrier to trade in cheese between the EU and Switzerland. The abolition of the contingents and the harmonisation of food and veterinary standards led to an administrative relief, and increased competition impacted the market positively. M&As of foreign cheese companies is expected to become increasingly important implying that tax-based conditions will become more important than the trade agreements. The only exception are some regulations concerning food standards that have not been harmonised (e.g. the fat content of cheese, which means that products exported from Switzerland to Germany will have to be labelled differently).

Source: Copenhagen Economics based on the cheese case study

EU agri-food imports from Switzerland

EU imports from Switzerland have increased faster than exports throughout the period and reached almost 5 bn. EUR in 2014 from a starting point of just below 2 bn. EUR in 2001 before the trade agreement on agricultural products entered into force, cf. Figure 43. The Swiss share of EU agri-food imports has also increased, and Switzerland accounted for almost 4.2 per cent in 2014 up from 2.6 per cent in 1995. EU agri-food imports from Switzerland have increased since the trade agreement on processed agri-food products entered into force in 2005. We would therefore expect that the main impact of the trade agreements was on trade in processed agri-food products.

Figure 43 EU agri-food imports from Switzerland, 1995-2014



Note: EU refers to EU27. Data are in constant 2010 EUR. Intra-EU trade is not included. The figure includes all 600 agri-food products.

Source: Copenhagen Economics based on UN Comtrade

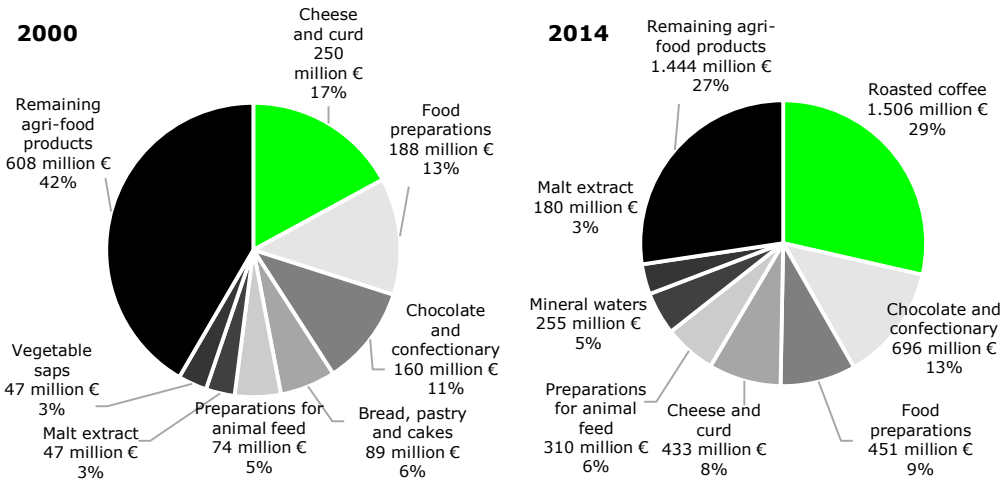
The import of agri-food products from Switzerland to the EU has not only increased substantially in absolute terms from 2000 to 2014, the composition has changed significantly as well. For instance, cheese and curd were the most imported good in 2000, where it accounted for 17 per cent of total imports, but was only the 4th most imported product in 2014 with a share of 8 per cent, cf. Figure 44.

Roasted coffee has experienced a rapid growth over the period and, as a result, accounts for more than 25 per cent of total agri-food imports from Switzerland in 2014 compared to 1 per cent in 2000. Coffee exported from Switzerland is high value, processed coffee. Switzerland therefore accounts for a substantial share of the EU imports of coffee in terms of value, but only a minor share in terms of volume.[38] A likely reason for the high import value of coffee from Switzerland are the fact that Nestle produces a variety of high value products, such as the Nespresso pods in Switzerland enabling the company to fetch a significant price premium on the quantity sold.[39]

[38] DG Agri (2014) highlights this point.

[39] See for example http://qz.com/207466/how-switzerland-turns-a-little-coffee-into-a-lot-of-money/ and https://www.nestle-nespresso.com/newsandfeatures/nespresso-continues-to-invest-in-switzerland-with-third-production-centre for more on this.

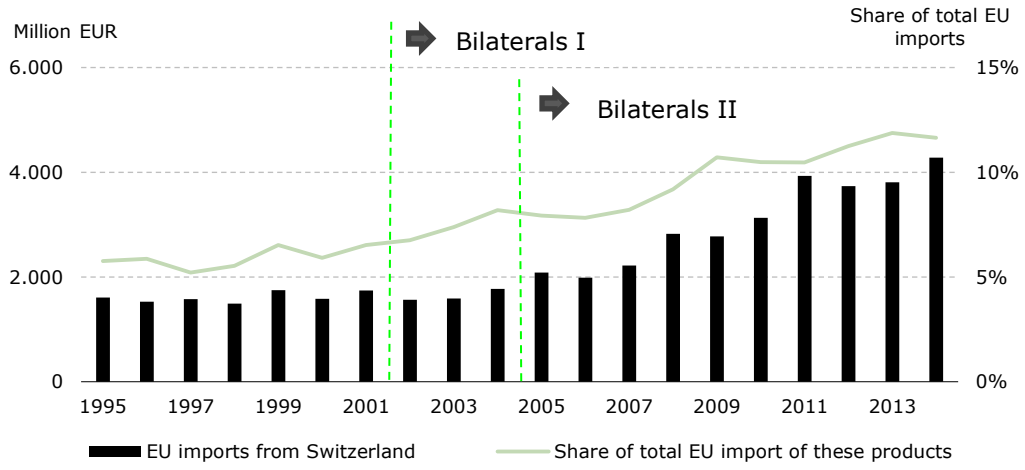
Figure 44 Composition of EU agri-food imports from Switzerland, 2000 and 2014



Source: Copenhagen Economics based on UN Comtrade

On the EU side, the trade agreements cover 226 out of the 600 agri-food products, and these products accounted for 73 per cent of EU agri-food imports from Switzerland in 2014. Switzerland has increased its share of the EU market, and EU imports have grown at a faster rate since the agreements entered into force, cf. Figure 45. We would therefore expect a positive impact of the agreements on EU imports from Switzerland.

Figure 45 EU agri-food imports of covered products from Switzerland, 1995-2014



Note: EU refers to EU27. Data are in constant 2010 EUR. Intra-EU trade is not included. The figure includes 226 out of the 600 agri-food products.

Source: Copenhagen Economics based on UN Comtrade

Trade disputes between the EU and Switzerland
Switzerland has been involved in four trade disputes since its membership of WTO in 1995. Only one of these disputes concerns agri-food products and has Slovakia as the counterpart in a case regarding dairy products. However, as this dispute dates back to 1998, before Slovakia became an EU Member State, the EU is not involved as a counterpart in this dispute. Furthermore, this dispute was settled soon after it was raised, as the two parts found a mutually acceptable solution[40], and will therefore be very unlikely to have an effect on trade between the EU and Switzerland.

3.4 Summary and concluding remarks

A comparison of trade flows before and after the entry into force of the three trade agreements suggests that there is no immediate measurable impact on EU agricultural trade with the three partners. This is not surprising as tariffs are phased out only gradually and because a wide range of other factors also have an impact on the development in trade.

EU agri-food exports to *Mexico* have increased throughout most of the period 1995-2014, and the positive trend in EU agri-food exports to Mexico thus seems to have started before the entry into force of the EU-Mexico FTA. Growth in EU exports to Mexico has fallen behind the general increase in Mexican agri-food imports, and the FTA does not seem to have reversed the falling EU share of Mexican agri-food imports although the rate of decline appears to have been lower. Spirits, liqueurs and wine account for around a third of EU agri-food exports to Mexico and EU exports of these products have increased since the entry into force of the EU-Mexico FTA.

EU agri-food import from Mexico increased only slightly the first few years after the entry into force of the FTA, fell towards 2004 but picked up again in 2004 where EU agri-food imports from Mexico increased and Mexican agri-food businesses gained a larger share of EU imports. The main import product in 2014 was beer, while roasted coffee has become significantly less important with a share of EU agri-food imports falling from 18 per cent to only 8 per cent.

Based on the descriptive analysis in this chapter, our prior expectation is that the EU-Mexico FTA has had a positive but relatively small impact on EU exports to and imports from Mexico. It is also likely that the impact will be larger for EU imports than exports because the EU tariff concessions seem have been more generous than the Mexican: A larger share of the value of Mexican exports enters the EU duty free and the Mexican tariffs that have not been phased out are generally higher.

The EU FTA with *South Korea* entered into force in July 2011 and is the most ambitious agreement ever implemented by the EU. With respect to agriculture, the agreement eliminates duties on almost all products and contains provisions to reduce SPS measures as well as to protect geographical indications.

[40] The settlement of the dispute does not appear immediately on the WTO webpage, but is mentioned in OECD (2000); "Agricultural Policies in OECD Countries: Monitoring and Evaluation".

The descriptive analysis indicates that EU-South Korea trade in agri-food products has increased after the implementation of the agreement. Tariff dismantling occurs relatively fast under the FTA and 59 per cent of South Korean agri-food products and 39 per cent of EU agri-food products were traded duty free already in 2015. This difference will be neutralised once the FTA is fully implemented after 18 years. In 2014, only around 20 per cent of EU exports entered South Korea duty free. South Korea applies high tariffs on imports of agri-food products in general, which means that the FTA provides EU exporters with a significant advantage vis-a-vis exporters from other countries that are subject to MFN rates.

Based on the descriptive analysis, our prior expectation is that the EU-South Korea FTA has had a positive and relative large impact on EU exports to South Korea, whereas the impact on imports from South Korea is likely to be positive but relatively small.

The EU-*Switzerland* trade agreement is different from the two FTAs as trade in agri-food products is covered by two sectoral agreements particularly designed to reduce tariffs and NTBs to trade in a limited number of agri-food products (25 per cent of the number of products exported from the EU to Switzerland and 38 per cent of the number of Swiss export products). The agreements appear to cover the most important EU import products from Switzerland, whereas some of the main EU export products to Switzerland have been excluded from the agreement. The sectoral agreements on processed agri-food products under Bilaterals II that entered into force in 2005 appears to have had a positive impact on agri-food trade between the EU and Switzerland.

Based on the descriptive analysis, our prior expectation is that the EU-Switzerland trade agreements have had a positive and relative large impact on trade in processed agri-food products between the EU and Switzerland.

Chapter 4

Impacts of the three trade agreements on EU agri-food trade

Based on the descriptive analysis in the previous chapter, our prior expectation is that:

- EU-Mexico FTA has had a positive but relatively small impact on EU exports to and imports from Mexico
- The EU-South Korea FTA has had a positive and relative large impact on EU exports to South Korea, whereas the impact on imports from South Korea is likely to be positive but relatively small
- The EU-Switzerland sectoral trade agreements on agri-food products have had a positive and relative large impact on EU exports to and imports from Switzerland

In this chapter, we analyse the *causal impact* of the three trade agreements, i.e. the impact on EU trade due to the agreement once we control for other factors that have an impact on the development in trade. We assess the impact on both the value of trade (the intensive margin) and the number of products that are being traded (the extensive margin).

4.1 Method to estimate the isolated impact of trade agreements

Obtaining preferential access to our trading partners' home markets gives EU firms a competitive advantage vis-à-vis exporters from third countries. We would therefore expect trade agreements to create new trade. However, trade also may be growing for reasons that are unrelated to the agreement. The central question in this study is: Do trade agreements create new trade or is the EU just making agreements where trade is growing anyway? This is the genuine causal impact of the trade agreement that our chosen method can help us estimate.

We use a so-called triple-difference model to assess the impact of the three trade agreements on EU imports and exports of agri-food products. Using data in three dimensions (time, product and trading partner), this model is particularly well suited for isolating the change in EU trade that is attributable to the trade agreement from other changes, which may coincide with the agreements.

First, by using this model we take into account that the EU may have actively engaged in trade agreement negotiations with partner countries where trade is expected to increase in the future. If this so-called selection bias is not solved, the general increase in EU trade with the partner country will be accredited the trade agreement and the estimated impact will thus be exaggerated (upwards bias). *Second*, by using this model we take into account a range of other factors besides the agreement that may have an impact on bilateral trade flows. *Third*, the model allows us to assess impacts of the trade agreement on EU trade with other countries.

How the triple-difference model solves the problem of selection bias
In order to isolate the impact caused by a trade agreement, the relevant comparison to be made is the development in EU exports (or imports) of a given agri-food product *with* and *without* the agreement in place. As we cannot observe how trade with a given partner country would have developed if the agreement had not been implemented, we need to employ a suitable benchmark (e.g. another trading partner) to which we can compare the growth in EU export and imports after the agreement enters into force.

However, as the EU and the partner countries have actively chosen to negotiate and implement a trade agreement, the evolution in bilateral trade flows between them may be very different from the evolution in bilateral trade flows between the EU and other countries. Failure to account for this can bias the estimated impacts of the trade agreement, cf. Box 15.

Box 15 The problem of selection bias

The signing of a trade should all other things equal have a positive impact on bilateral trade flows between the trading partners. However, large or increasing bilateral trade flows may also influence the decisions about who to negotiate trade agreements with and when to proceed with a specific agreement. The EU may for example select partner countries, whose economies are expected to grow and where demand, as a result, is likely to increase in general. This means that even in the absence of the trade agreement, EU exports to this market would most likely increase anyway.

Similarly, during the negotiations of a trade agreement, the EU may naturally choose to pay special attention to ensuring preferential access for particular products, for which the export potential to the partner country is deemed especially high. If demand for e.g. wine is likely to increase especially, negotiators may naturally focus their efforts on assuring the most liberal access for EU exports of wine, which again are likely to increase even in the absence of a trade agreement.

Source: Copenhagen Economics

The triple-difference model takes this into account and creates a benchmark development in EU exports (or imports) which can be compared with actual trade. The benchmark is based on detailed product level trade data for all other countries in the world, cf. Box 16.[41]

[41] Compared to models that select one country as a benchmark, the triple-difference model thus avoids the risk of biasing our results by choosing a non-suitable benchmark country. This feature makes the model more robust than other models.

Box 16 Implementation of the triple-difference model

The analysis covers the 600 agri-food products on DG Agriculture's official product list (on a 6-digit HS level). For each of the 600 agri-food products, we have collected data on imports into the EU and each of the three partner countries from all individual countries in the world. We have also collected the applicable tariff rates.

All data are collected on an annual basis over a period spanning from up to five years prior to the implementation of each of the agreements until three years after the agreement has been fully implemented. As the EU-South Korea FTA has not been fully implemented, the impact is evaluated in 2015.

In the case of the EU-South Korea FTA, for example, we have collected data on the value of South Korean imports for each of the 600 agri-food products from each country in the world (including the EU). We have also collected data on the tariff that South Korea applies on each of the imported products (MFN rates for countries without preferential access to South Korea, South Korean GSP rates for eligible countries and preferential rates for countries with an FTA with South Korea).

The triple-difference model estimates the impact of the EU-South Korea FTA on South Korean imports from the EU (EU exports to South Korea) by comparing the trend in South Korean imports of a given product from the EU in the period before the FTA entered into force with a benchmark composed of:

1) The trend in South Korean imports of the same product from all other countries in the world after the FTA entered into force. By doing so, we ensure that the impact from other factors that have a general impact on South Korean import of the product is not accredited to the FTA.
2) The trend in imports of all other products that South Korea imports from the EU after the FTA entered into force. By doing so, we ensure that the impact from other factors that have a general impact on South Korean import from the EU is not accredited to the FTA.

Using an econometric model, this comparison is undertaken for each of the products covered by the FTA. The outcome of this exercise is an estimate of the average growth in South Korean imports from the EU of all products covered by the FTA.

Source: Copenhagen Economics

To implement the triple-difference model has thus required us to collect a very large data set on EU imports from all other countries in the world (to quantify impacts on EU imports from the partner country) as well as the trading partners' imports from all other countries in the world (to quantify impacts on EU exports to the partner countries).[42]

[42] In practice, we implement the model using data only on import flows. This means that instead of estimating the impact on EU exports to e.g. South Korea, we estimate the impact on South Korean imports from the EU as well as the impact on EU imports from South Korea. We do this because import data is generally accepted as being of a higher quality than export data as countries have a stronger incentive to record import flows studiously as these generate tariffs, while exports do not.

How the triple difference model takes main trade drivers into account

The triple-difference model explains differences in trade between two countries (e.g. impacts on EU exports to South Korea) by changes in the trade regime between the two countries and a large number of product, time and partner fixed effects. Table 1 contains an overview of the type of factors controlled for in the model, using the case of EU agri-food exports to South Korea as an illustration. The triple difference model thus takes the main trade drivers described in Figure 13 in Chapter 2 into account.

Table 1 Factors controlled for in the case of EU exports to South Korea

Type of factors	*Examples*
Constant or time varying factors that impact South Korean demand for imports of agri-food products in general and agri-food products from the EU in particular	• Factors that influence South Korean demand for agri-food products in general (e.g. population growth, economic growth, increased urbanisation) • Factors that influence South Korean consumer preferences for EU agri-food products (e.g. shift in demand towards more 'Western food' or high-quality agri-food products, increased focus on buying local, environmental concerns) • Factors that influence overall supply of EU agri-food products (e.g. EU agricultural policies that influence all products) • Factors that influence transport costs (e.g. oil prices, distance) • Historical and cultural linkages • Other bilateral costs factors (e.g. exchange rate movements)
Constant or time varying factors that impact overall South Korean demand for imports of a specific agri-food product	• Supply shocks to South Korea's own production of the specific product (e.g. foot and mouth disease) • Supply shocks to the global production of a specific product (e.g. technological advances or drought in areas accounting for a large share of global production) • Global demand shocks to the specific product (e.g. Russian ban)
Constant factors that impact South Korean demand for imports of a specific product from the EU	• Consumer preferences for the product that are unchanged over the period • EU capacity constraints, export credits or other factors that remain in place before and after the implementation of the EU-South Korea FTA

Source: Copenhagen Economics

How we take impacts on EU exports to third countries into account

EU trade agreements will mainly have an impact on EU exports to the partner countries, but a trade agreement can also have both positive and negative impacts on EU exports to third countries.[43]

[43] Trade diversion can also take place on the import side. As we are mainly focused on impacts on EU farmers and actors of the EU agri-food supply chain, we focus on impacts on EU exports and intra-EU trade.

A *negative impact* may arise if the increase in EU exports to a partner country causes EU exports to other countries to fall. This is called trade diversion. Trade diversion may be particularly relevant in the case of primary agricultural products where production capacity can be constrained, e.g. by the availability of arable land or live stocks. But trade diversion is also likely to take place in markets that are highly protected by trade barriers because high prices are likely to make the market more attractive for EU exporters than other destinations. In this case, trade diversion will tend to increase the earnings of EU exporters even without an increase in production (i.e. the gains from trade creation will be larger than the losses from trade diversion).

A *positive impact* may arise if increased EU exports to the partner country paves the way for EU exports to other countries, e.g. via complementarities in production, logistics or transportation systems. As the costs of transporting food products can be relatively high (e.g. due to cooling requirements and short expiry dates), the scope for complementarities between nearby markets seem especially plausible. This will particularly be the case for primary agricultural products.

New studies in the academic trade literature have also found that if a given exporter already exports to one market, the likelihood of exporting to a market nearby increases significantly (Lawless, 2011). This means that if EU exporters start exporting to a partner country as a result of the trade agreement, they may also be more likely to start exporting to nearby markets.

We assess the impact on EU exports to third countries by estimating the impact of the trade agreements on EU exports to the country that is most likely to have been affected by the agreement. We select the country based on a number of variables, which are known from the literature to be good predictors of bilateral trade flows (GDP per capita, distance and industry specialisation). In the case of the EU-Mexico FTA, we analyse the impact of the FTA on EU exports to Brazil.[44] In the case of the EU-South Korea FTA, we analyse the impact of the FTA on EU exports to Japan. Finally, in the case of the EU-Switzerland trade agreements, we analyse the impact of the agreement on intra-EU trade.

We use the trade diversion analysis to ascertain whether there is any evidence suggesting that EU exports to third countries are likely to have been affected.[45] If we find no signs of trade diversion to these countries, we would expect that the increase in EU exports to the three trading partners reflect an increase in total EU exports that would tend to increase EU production of these products. If we find a negative impact, the estimated impact on EU exports would be an upper bound estimate of the increase in EU exports. If we find a positive impact, the estimated impact on EU exports would be a lower bound estimate of the increase in EU exports.[46]

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[44] An alternative candidate could have be Argentina. However comparing the portfolio of agricultural products exported from the EU to Mexico, Brazil and Argentina before the EU-Mexico agreement was implemented, reveals that EU exports to Brazil were more similarly composed as EU exports to Mexico than EU exports to Argentina was.

[45] Assessing whether increased EU imports from the FTA partners have resulted in lower EU imports from other countries is not possible using the triple difference methodology. This is because we other countries from which the EU imports agricultural product to estimate EU imports from the FTA partners in the absence of the trade agreements.

[46] We do not use the diversion analysis to quantify the trade diversion impacts of the FTAs on EU exports because such a quantification would require that we estimated the impact of the FTAs on EU exports to all other trading partners.

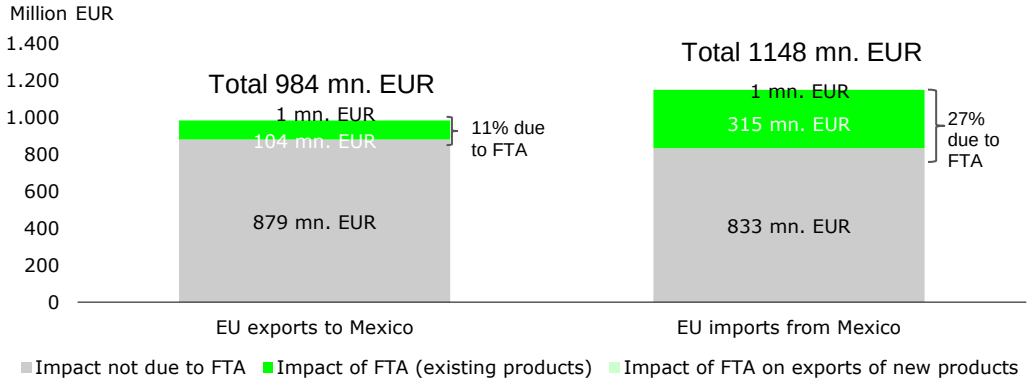
4.2 Impacts of the EU-Mexico FTA

The EU-Mexico FTA was initiated in 2000, and tariff reductions were phased in over 10 years. Our assessment is thus made in 2013, and we use the triple difference model to assess how much more/less trade is there compared to a counterfactual without the FTA. The EU-Mexico FTA has had a positive impact on trade in agri-food products between the EU and Mexico. Evaluated in 2013, three years after the full implementation of the agreement, 105 mn. EUR worth of EU agricultural exports to Mexico that year can be attributed to the FTA, cf. Figure 46.[47] Relative to the total value of EU exports of agri-food products to Mexico in 2013, this is equivalent to 11 per cent more than it would otherwise have been in the absence of the FTA. In other words, EU agricultural exports to Mexico would thus have been 11 per cent lower in 2013 if the FTA had not been in place.

Of the total impact, almost all (104 mn. EUR) is due to a growth in the value of products that the EU already exported to Mexico prior to the agreement. Only a very small part (1 mn. EUR) is due to new products being exported to Mexico because of the agreement.[48]

With respect to EU imports of agri-food products from Mexico, the agreement was responsible for 316 mn. EUR worth in 2013, equivalent to 27 per cent of EU imports of agri-food products from Mexico that year. Again, this increase is mainly due to increased imports of products that the EU already imported from Mexico prior to the agreement (the intensive margin).[49]

Figure 46 Impact on EU-Mexico agri-food trade, 2013



Note: The figure shows the value of EU agri-food exports and imports to and from Mexico in 2013, decomposed into the value due to the FTA and the value not due to the FTA.

Source: Copenhagen Economics based on estimates from Table 2,3,4 and 5 in the Technical Appendix

47 To allow trade flows to respond to the lower trade barriers, we analyse the impact three years after the full phasing-in of the agreements. Adding years where is little or no impact of the FTA would tend to lower the annual percentage increase due to the FTA estimated by the triple-difference model.

48 This is no surprise as the impact is assessed for the 27 EU member states as a whole. If a product is being exported by one member state, the full increase in export value after the FTA entered into force is interpreted as an increase in existing export products. However, it may still be that the underlying reason for the increased value of export is that more member states have started to export the product.

49 On the EU side, the agreement covers only 485 out of 600 agricultural products. The 316 mn. EUR increase in EU imports from Mexico amounts to a 30 per cent increase in EU imports of the covered products.

The positive impacts of the EU-Mexico FTA on trade flows is in line with our expectations. The larger impact of the FTA on EU imports is also as expected because the EU tariff concessions seem have been more generous than the Mexican ones.

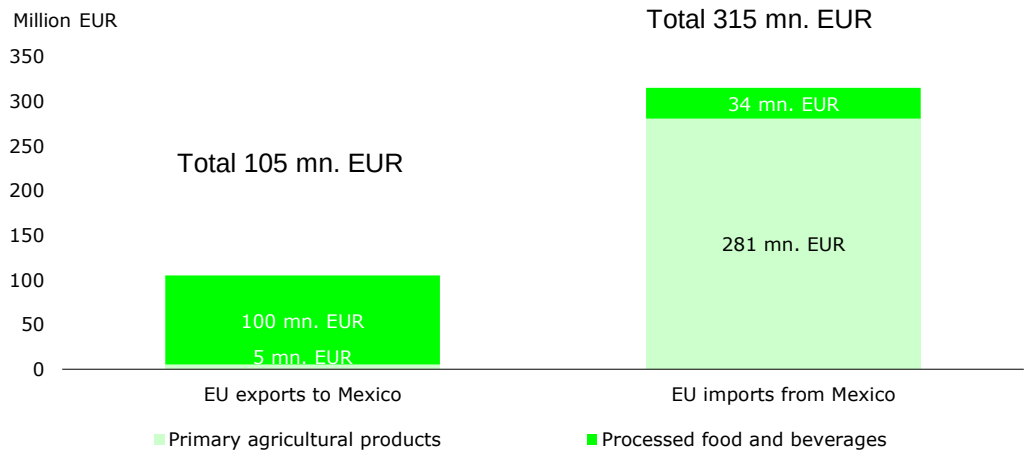
Focus in the EU-Mexico FTA was on eliminating tariffs and dismantling quotas, whereas NTBs were given less attention. The wine and the citrus case studies confirm that the FTA has not removed any of the NTBs that pose significant impediments to trade between the EU and Mexico in the two products concerned. If this is the case across all products, the impact obtained using the triple difference model, which includes only the impact arising due to the liberalisation of tariffs, provides a good estimate of the full impact of the agreement on EU-Mexico trade in agri-food products.

Impact for different products groups

The overall impact presented in Figure 46 reflects the average impact across all agri-food products. However, it may be the case that processed food and beverages respond differently to lower tariffs than primary agricultural products, as the latter group includes a number of highly homogenous products such as e.g. oats and barley for which demand may be especially sensitive to price changes.

The overall impact of the agreement in 2013 is therefore decomposed across these two product groups in Figure 47. In total, processed agri-food products account for 95 per cent (100 mn. EUR) of the total impact of the FTA on EU exports, while commodities only account for 5 per cent (5 mn. EUR). As can be seen from Figure 27, this results is likely to reflect, among others, EU exports of spirits, liqueurs and wine. In the case of imports, the picture is reversed and commodities account for the main share (89 per cent).

Figure 47 Impact on EU-Mexico agri-food trade by product groups, 2013



Note: The figure shows the value of EU agri-food exports and imports to and from Mexico in 2013, which is due to the EU-Mexico FTA. The group of processed food and beverages consists of processed foods, food preparations and beverages. The group of primary products consists of commodities, other primary products and non-edible products.

Source: Copenhagen Economics based on estimates from Table 2,3,4 and 5 in The Technical Appendix

Impacts for different preference margins

Just as we showed the split between different product types in the previous section, we can also provide details about the impact according to high or low tariff cuts. By cutting tariffs, the FTA affords EU exporters a competitive advantage in the Mexican market and vice versa. As this advantage will depend on the level of tariffs faced by competitors selling into the same market, it is likely that exports of products with a high preference margin will respond differently to the FTA than exports of products with a low preference margin.

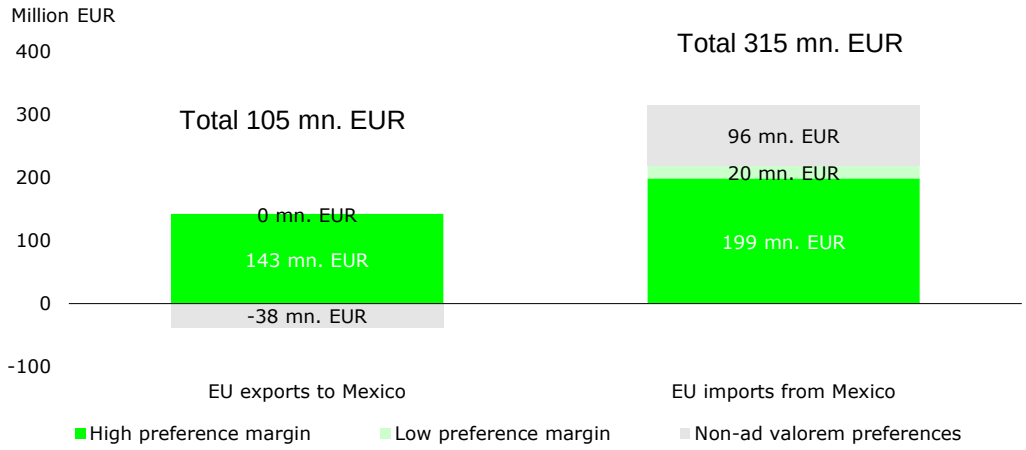
To take this into account, impacts are allowed to differ between products with a high and a low preference margin (i.e. the percentage point difference between the MFN ad valorem tariff rate and the ad valorem tariff rate applicable under the FTA).[50] The magnitude of the preference margin is only calculated for products facing an ad valorem tariff, and we therefore group all products subject to a non-ad valorem (a tariff quota or a specific or combined tariff rate) together. For this group, we assess the average impact of removing or reducing tariff protection.

[50] A key assumption in the model specification used is that the impact of a preference is the same regardless of the magnitude. This means that removing a tariff of 5 per cent is assumed to have the same impact as removing a tariff of 10 per cent. This assumption was found to hold well within different preference bands, but not across the whole sample. Based on this finding, we therefore split products in each category into groups with a high and a low preference margin. Whether or not a product has a high or a low preference margin is determined by ordering all products from low to high, based on the percentage point difference between the MFN rate and the preferential rate under the EU-Mexico agreement. The lowest 1/3 of products are classified as products with a low preference margin, and the remaining 2/3 as products with a high preference margin.

We find that the overall impact on both EU exports and imports is driven by products with a high preference margin. This is as expected, as these are the products where exporters enjoy the highest tariff advantage, compared to other exporters facing the MFN rate. EU exports to Mexico was 143 mn. EUR higher in 2013 because of tariff cuts in products with a high preference margin, cf. Figure 48. Similarly, EU imports were 199 mn. EUR higher.

While products with a low preference margin account for a minor share of impacts in both directions, the share of trade in products covered by a non-ad valorem tariffs make up a sizeable share of the overall impacts in both directions. The FTA appears to have had a negative impact on EU exports to Mexico (decrease of 38 mn. EUR) in this product group. This means that EU exports of these products have grown at a lower rate after the FTA entered into force than before. This could indicate that EU exporters have shifted towards products where trade has been fully liberalised.

Figure 48 Impact on EU-Mexico agri-food trade by preference groups, 2013



Note: The figure shows the value of EU agri-food exports and imports to and from Mexico in 2013, which is due to the EU-Mexico FTA. Products with a high preference margin include all products for which the percentage point difference between the MFN tariff rate and the tariff rate applicable under the FTA is above the 33rd percentile, while products for which the difference is equal to or below the 33rd percentile are classified as products with a low preference margin. The cut-off point between products with a high and a low preference margin is 10 percentage points in the case of EU exports to Mexico and 3.4 percentage points in the case of EU imports from Mexico.

Source: Copenhagen Economics based on estimates from Table 2,3,4 and 5 in The Technical Appendix

Impact by price and volume effects
Impacts of the FTA on the EU exports and imports can be due to changes in the volume traded and/or changes in the price. If the impact on EU trade is solely due to changes in the price, the impact on EU production and employment should be expected to be lower. In order to examine which of these impacts drive the results, we split the total impact of the EU-Mexico FTA into a price and a quantity impact.[51] We find that the full increase in the value of EU trade with Mexico is due to an increase in the volume of trade, cf. estimates from Table 6 and 7 in The Technical Appendix.

Impacts of EU-Mexico FTA on EU exports to other destinations
In order to examine whether it is likely that the EU-Mexico FTA has impacted EU exports to other markets, we examine the impact of the FTA on EU exports to Brazil as this is the export market most comparable to Mexico. We find no measurable diversion of EU exports from Brazil towards Mexico because of the FTA. As this is the export market where trade diversion is most likely to have taken place, we expect that the increase in EU exports to Mexico reflects an increase in total EU exports. We also find that the EU-Mexico FTA has had no impact on intra-EU trade. We would therefore expect that the increase in EU exports had a positive impact on EU production.

4.3 Impacts of the EU-South Korea FTA

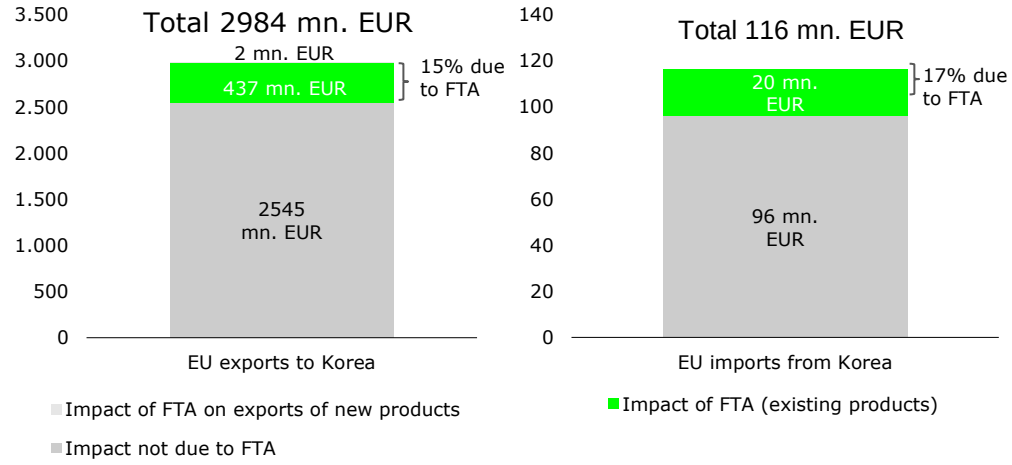
Although the EU-South Korea FTA is not yet fully implemented, the results in this chapter suggest that the FTA has caused trade in both directions to increase by 15-17 per cent, cf. Figure 49. Evaluated in 2015, almost 440 mn. EUR worth of EU exports of agri-food products to South Korea can be attributed to the FTA. Relative to the total value of EU exports of agri-food products to South Korea in that year, this is equivalent to a 15 per cent increase. Without the agreement, the value of EU agricultural export to South Korea would thus have been 15 per cent lower than of the observed value in 2015.

As in the case of the EU-Mexico FTA, almost all of the total export increase (437 mn. EUR) is attributable to the FTA comes from an increase in exports of products, which the EU already exported to South Korea prior to the agreement. Only 2 mn. EUR is thus due to exports of new products introduced in the South Korean market.

The estimated impact of the FTA on EU exports takes into account that a number of other large exporters (e.g. the US, Canada and Australia) have also signed a trade agreement with South Korea. The high MFN rates applied by South Korea mean that EU exporters would have been in a very difficult position in South Korea without the agreement. The impact of the FTAs in terms of preserving market shares and ensuring a level playing field relative to competitors in third countries is also one of the main conclusions from the case studies.

[51] As we do not have data on actual prices paid by importers, we follow the standard approach used in much of the literature in international trade and proxy prices by import unit values (calculated as the import value of a given 6-digit product divided by the quantity of imports). Import unit values exclude tariffs and any domestic taxes that may be applied to the product in either Mexico or the EU but includes the cost of insurance and freight (http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=2.

Figure 49 Impact on EU-South Korea agri-food trade, 2015



Note: The figure shows the value of EU agri-food exports and imports to and from South Korea in 2015, decomposed into the value due to the FTA and the value not due to the FTA.

Source: Copenhagen Economics based on estimates from Table 12, 13, 14 and 15 in The Technical Appendix

Relative to the overall level of agricultural imports from South Korea, the 20 mn. EUR increase is equivalent to 17 per cent and is exclusively due to increased imports of products, which the EU already imported from South Korea prior to the agreement.

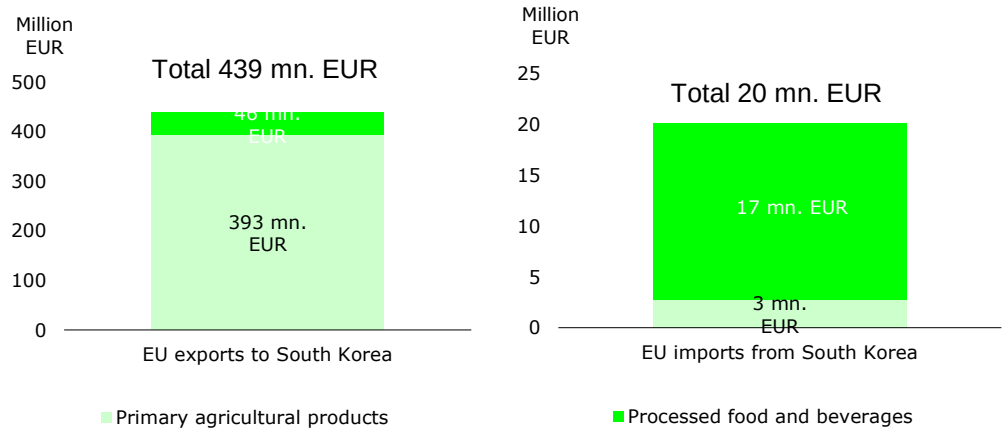
The EU-South Korea FTA is expected to eliminate both tariffs and NTBs. As the analysis at hand only examines the impact of tariff cuts, impacts of the FTA may be underestimated. However, the case studies find that the underestimation is likely to be relatively small for the products included. The pigmeat case study finds that there are no administrative, technical, political or other barriers holding back Danish exports of pigmeat to South Korea, but the exporters also found this to be the case before the FTA.

The *sugar confectionary* case suggests that no South Korean product-specific rules have been changed due to the FTA but that EU exports have been stimulated slightly by an administrative simplification on the South Korean side. Likewise, Polish exports benefited from a harmonisation of EU and South Korean standards, but this harmonisation was driven by WTO regulations that influenced all exports between WTO members.

Impacts for different product groups

Of the 439 mn. EUR additional EU exports attributable to the FTA, processed food and beverages account for 46 mn. EUR (10 per cent) compared to 393 mn. for primary agricultural products (90 per cent), cf. Figure 50. As can be seen from Figure 35, increased EU exports of spirits and liqueurs are likely to be one of the explanations for the impact on processed food and beverages, whereas increased EU pigmeat exports are likely to be one of the main drivers of the impact on primary agricultural products. The opposite is the case for EU imports, where 17 mn. EUR (86 per cent) is due to processed food and beverages.

Figure 50 Impact on EU-South Korea agri-food trade by product groups, 2015



Note: The figure shows the value of EU agri-food exports and imports to and from South Korea in 2015, which is due to the EU-South Korea FTA. The group of processed food and beverages consists of processed foods, food preparations and beverages. The group of primary products consists of commodities, other primary products and non-edible products.

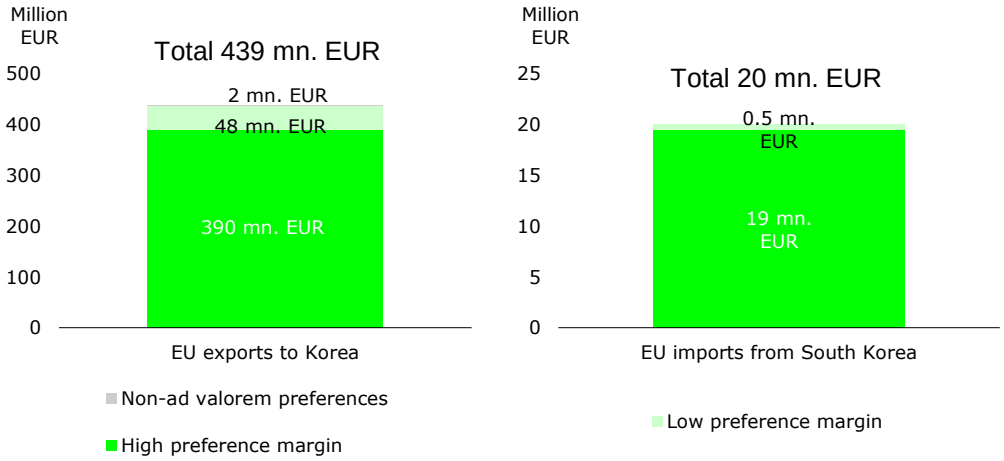
Source: Copenhagen Economics based on estimates from Table 12, 13, 14 and 15 in The Technical Appendix

The underlying estimates also show that EU exports of primary agricultural products to South Korea have on average responded more to tariff reductions resulting from the FTA, than EU exports of processed food and beverages. In the case of EU imports of agri-food products from South Korea, the impact across the groups have been more even.

Impacts for different preference margins

We find that EU exports of products with a relative high preference margin account for 89 per cent (390 mn. EUR) of the export value attributable to the agreement, cf. Figure 51. For EU imports from South Korea, the comparable figure is 97 per cent (19 mn. EUR). The estimated effects show that EU exports of products with a high preference margin have on average responded relatively more to tariff reductions resulting from the FTA than exports of products with a low preference margin. EU exports of high preference products have therefore grown relatively more as a result of the FTA.

Figure 51 Impact on EU-South Korea agri-food trade by preference groups, 2015



Note: The figure shows the value of EU agri-food exports and imports to and from South Korea in 2015, which is due to the EU-South Korea FTA. Products with a high preference margin include all products for which the percentage point difference between the MFN tariff rate and the tariff rate applicable under the FTA is above the 33rd percentile, while products for which the difference is equal to or below the 33rd percentile are classified as products with a low preference margin. The cut-off point between products with a high and a low preference margin is 5 percentage points in the case of EU exports to South Korea and 3.4 percentage points in the case of EU imports from South Korea. In the case of EU imports from South Korea, products with a low preference margin account for 0.2 mn. EUR and products with non-ad valorem preferences account for 0.4 mn. EUR. Due to rounding of decimals, the EUR values attributable to each group of products do not add up to the full impact of 20 mn. EUR.

Source: Copenhagen Economics based on estimates from Table 12, 13, 14 and 15 in The Technical Appendix

Impacts by price and quantity effects

We find that the full increase in the value of EU trade with South Korea is due to an increase in the volume of trade, cf. estimates from Table 16 and 17 in The Technical Appendix.

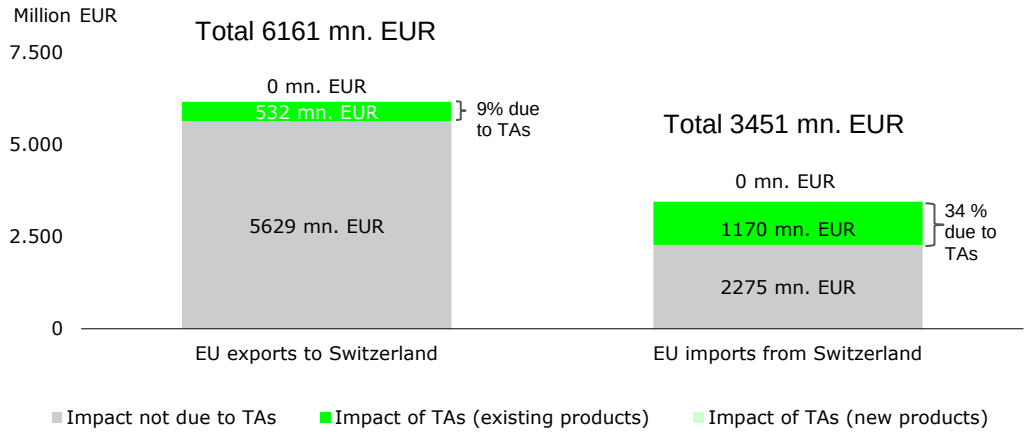
Impacts of EU-South Korea FTA on EU exports to other destinations

The results of the trade diversion analysis show that the EU-South Korea agreement has had no significant impact on EU exports to Japan. As this is the export market where trade diversion is most likely to have taken place, we expect that the increase in EU exports to South Korea reflects an increase in total EU exports. As the impact of the FTA on EU agri-food imports from South Korea is so small, there is little risk that the increase in imports has had any significant impact on EU production.

4.4 Impacts of the EU-Switzerland trade agreements

The EU-Switzerland trade agreements (TAs) have had a positive impact on EU exports and imports of agri-food products from Switzerland.[52] In 2010, three years after the agreements were fully implemented, 532 mn. EUR worth of EU exports was attributable to the agreement, cf. Figure 52. Out of the total value of EU exports of agri-food products to Switzerland, this amounts to a 9 per cent increase.

Figure 52 Impact on EU-Switzerland agri-food trade, 2010



Note: The figure shows the value of EU agri-food exports and imports to and from Switzerland in 2010, decomposed into the value due to the TAs and the value not due to the TAs.

Source: Copenhagen Economics based on estimates from Table 22, 23, 24 and 25 in The Technical Appendix

On the import side, an additional 1,170 mn. EUR imports from Switzerland can be attributed to the agreements. The larger impact on EU imports than EU exports is as expected because the agreements cover some of the main EU import products from Switzerland but exclude from of the main export products (cf. Chapter 3). In 2010, 95 per cent of the value of EU imports from Switzerland thus entered the EU duty free, compared to 60 per cent in the year prior to the agreements.

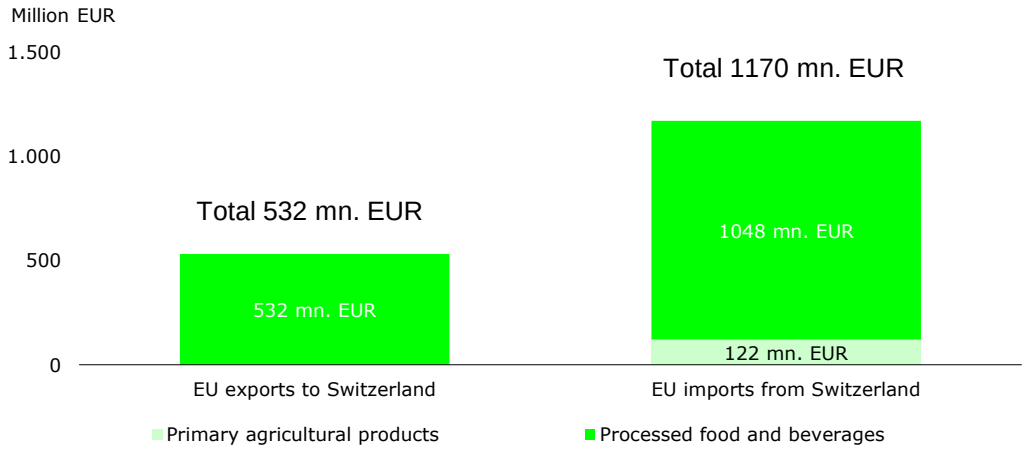
For EU exports to Switzerland, however, only 20 percent entered duty free in 2010, compared to 2 per cent prior to the agreements. In short, the agreements seem to have provided better market access for Swiss imports into the EU than vice versa. This is contrary to the finding in the cheese case study where some of the stakeholders interviewed have the perception that the agreements benefited mainly German cheese producers (this perception relates only to the particular sector).

[52] The triple-difference model is typically estimated using logarithms, which means that the estimated parameters can be interpreted a percentage changes. Given that almost all agricultural products imported by Switzerland originate from the EU, the percentage change in EU exports to Switzerland due to the trade agreements is likely to be extremely small and cannot be estimated using logarithm. The triple-difference model for EU exports to Switzerland is therefore estimated in absolute values. Due to the different estimation strategy, it is not possible to identify whether the impact of the trade agreements is due to price or volume effects. This can only be done in the case of EU imports from Switzerland.

Impacts for different product groups of the EU-Switzerland TAs
In terms of both exports and imports, the impact of the agreements is driven mainly by increased trade in processed food and beverages. Of the total export value attributable to the agreement, all of the impact (532 mn. EUR) is thus due to exports of processed agri-food products, cf. Figure 53. As can be seen from Figure 35, part of the impact could be due to increased exports of wine, bread pastry and cheese. On the import side, processed agri-food products account for 90 per cent of the total value of imports attributable to the agreement.

In the case of both exports and imports, processed agri-food products have responded more than primary agricultural goods to the agreement. The growth in exports and import of processed food and beverages resulting from the EU-Switzerland trade agreements has thus been larger for processed food and beverages than for primary agricultural goods.

Figure 53 Impact on EU-Switzerland agri-food trade by product groups, 2010



Note: The figure shows the value of EU agri-food exports and imports to and from Switzerland in 2010, which is due to the EU-Switzerland TAs. The group of processed food and beverages consists of processed foods, food preparations and beverages. The group of primary products consists of commodities, other primary products and non-edible products.

Source: Copenhagen Economics based on estimates from Table 22, 23, 24 and 25 in The Technical Appendix

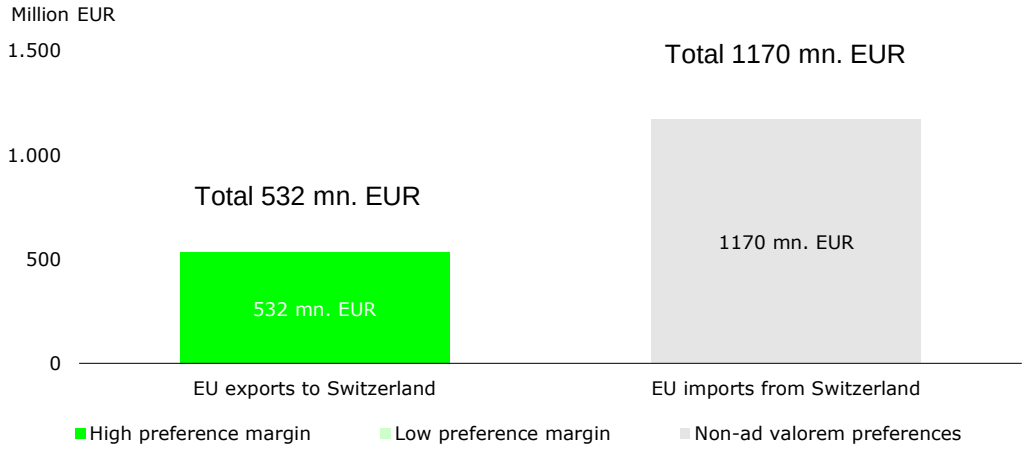
In the case study on cheese exports, we find that the EU-Switzerland trade agreements have been successful in reducing some NTBs (e.g. the harmonisation of food and veterinary standards) but far from all. Due to specific requirements of food security and the compliance with certain marketing standards, trade in agricultural products and food products of animals remains strictly regulated within the EU.

There also remain some product-specific rules for cheese (e.g. the fat content) and labelling requirements that have not been harmonised. It thus appears that there has been a general reduction in NTBs to trade in agricultural products between the EU and Switzerland and an additional reduction in NTBs for food products of animals that should be taken into account. If this is the case for other products as well, the quantified impact may be somewhat underestimated because the impact of removing NTBs is not captured in the model.

Impacts for different preference margins

Exports of products with a relative high preference margin account for all of the impact (532 mn. EUR) of the export value attributable to the trade agreements, cf. Figure 54. This is not surprising, because these are also the products in which the EU has gained the highest competitive advantage compared to exporters facing the MFN rate in the Swiss market. In the case of EU imports from Switzerland, the full impact is due to products covered by a non-ad valorem tariff on the EU side.

Figure 54 Impact on EU-Switzerland agri-food trade by preference groups, 2010



Note: The figure shows the value of EU agri-food exports and imports to and from Switzerland in 2010, which is due to the EU-Switzerland TAs. Products with a high preference margin include all products for which the percentage point difference between the MFN tariff rate and the tariff rate applicable under the TAs is above the 33rd percentile, while products for which the difference is equal to or below the 33rd percentile are classified as products with a low preference margin. In the case of EU imports from Switzerland, the cut-off point between a high and a low preference margin is 3.4 percentage point, while the equivalent cut-off point is 2.7 percentage points for EU exports to Switzerland. As all Swiss tariffs are expressed as specific tariffs (i.e. relative to the quantity imported), the magnitude of a given tariff preference is determined based on the preference margin per unit of imports.

Source: Copenhagen Economics based on estimates from Table 22, 23, 24 and 25 in The Technical Appendix

Impacts by price and volume effects

The impact of the agreements on EU imports from Switzerland is solely due to an increased volume of EU imports from Switzerland cf. estimates from Table 26 in The Technical Appendix. For EU exports this cannot be calculated (see footnote 51).

Impacts of EU-Switzerland trade agreements on EU exports to other destinations

We assess whether the agreements have impacted EU exports of agri-food products to other destinations than Switzerland by analysing the impact of the agreement on intra-EU trade. We find that the EU-Switzerland trade agreements have affected exports of agri-food goods between individual EU countries positively. This could, for example, be due to increased intra-EU sourcing (such an effect was also observed in the pig meat case study).

The agreements may also have impacted EU exports to other markets outside of the EU, and there is no guarantee that there will be no diversion of trade from other countries.

4.5 Summary and concluding remarks

The quantitative analysis in this chapter finds that the three trade agreements have had a positive impact on EU trade. The impact on EU exports amount to just over 1,000 mn. EUR, where the FTA with Mexico accounts for almost 105 mn. EUR, the FTA with South Korea for 440 mn. EUR and the trade agreements with Switzerland for 532 mn. EUR within the time periods analysed (i.e. three years after the agreements entered into force). The impact on EU imports amount to more than 1,500 mn. EUR, where the FTA with Mexico accounts for almost 315 mn. EUR, the FTA with South Korea for 20 mn. EUR and the agreements with Switzerland for 1,170 mn. EUR.

The impact on EU trade is generally driven by an increase in the volume of trade in products that have obtained a large preference margin relative to their competitors from third countries and that were already traded before the trade agreements entered into force. The impact on EU exports to Mexico and Switzerland is driven mainly by processed food and beverages, whereas the impact on EU exports to South Korea is driven mainly by primary agricultural products. The impact on EU imports from Mexico is driven mainly by primary agricultural products, whereas the impact on EU imports from South Korea and Switzerland is driven mainly by processed food and beverages.

The overall conclusion from this chapter is that there has been an increase in the volume of EU exports and that there is nothing that indicates that this is due to diversion of EU exports to other countries. For a given level of EU consumption, the increased exports therefore reflect an increase in agri-food production in the EU, which is likely to have broader positive impacts on actors in the supply chain of these products. These impacts will be quantified in the next chapter.

We also find that there has been an increase in EU imports from the three trading partners, while there has been no impact on intra-EU trade. The increase in EU imports from the three trading partners therefore reflects mainly a diversion of imports from third countries or an increase in EU consumption, while the increased imports should have little impact on EU agri-food production. Also, access to cheaper agri-food imports may benefit some actors of the EU supply chain. However, it should be kept in mind that the impacts quantified in this analysis reflect an average across different products that is likely to encompass both gains and losses for individual farmers and actors of the agri-food supply chain.

Chapter 5

Broader impacts of increased EU exports

The quantitative analysis in the previous chapter found that the three trade agreements have had a positive impact on the volume of EU exports of agri-food products – EU exports to the partner countries have increased without EU exports to third countries and intra-EU trade dropping. In this chapter, we assess how this increase in total exports translates into increased production, employment and value added in the EU agri-food sector under the assumption that EU consumption is unchanged.[53] We also assess the environmental impacts of increased production in the EU.

Increased agri-food production requires more input of production factors and may require new capital investments to adjust the capacity. Other actors in the agri-food supply chain will therefore experience positive indirect impacts of the trade agreements. In this chapter, we use a multiplier analysis to assess these indirect impacts on the EU agri-food supply chain.

5.1 Method to quantify the broader impacts of increased EU exports

Increases in EU exports of agri-food products to the three trading partners will have positive impacts on production and employment that will also benefit other sectors throughout the economy.[54]

First, increased production in the EU agricultural sector will have a positive impact on employment and value added within the sector itself. Value added is calculated as the difference between the sales price and the costs per unit sold, and trade agreements can have an impact on both elements. As mentioned in Chapter 4, trade agreements can result in higher prices if tariff cuts are not fully passed through in equally lower sales prices. Trade agreements can also reduce unit costs, e.g. by higher capacity utilisation, scale economies and improved productivity. The impact on employment and value added within the agricultural sector itself are called **direct impacts**.

53 If the increase in exports reflects a drop in EU consumption, the impact on production, employment and value added will be lower. Impacts on production in third countries are outside the scope of this report.

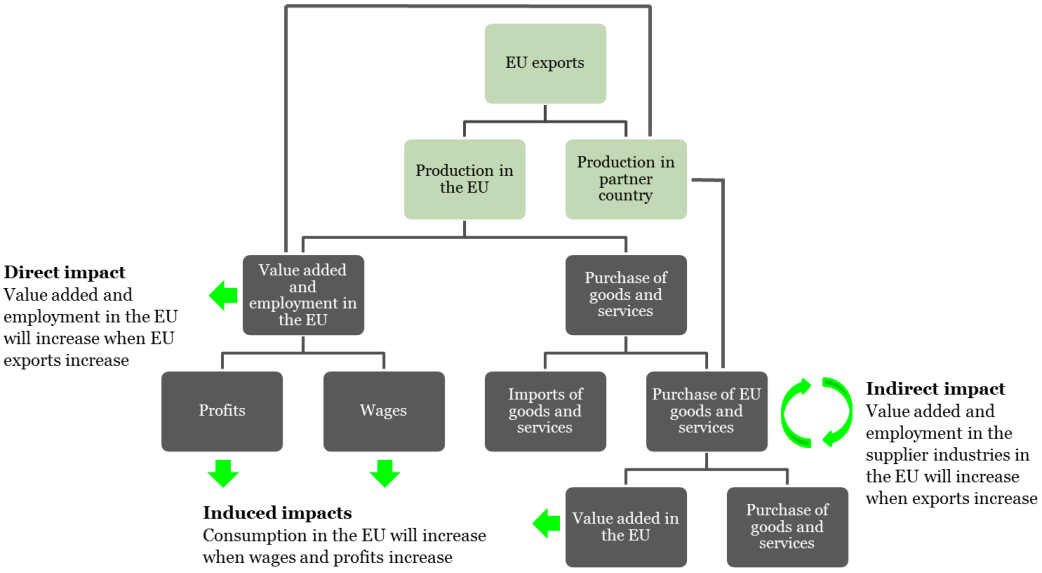
54 We base the estimates of employment, CO_2 emissions as well as value added on the additional EU exports to the three trading partners that is due to the three trade agreements, which we expect to be a good proxy for the impact on EU production. First, the quantitative analysis found that the impacts of the agreements were due to an increase in volume rather than an increase in price. Second, the quantitative analysis found no indications of diversion of trade with third countries as well as intra-EU trade.

Second, increased agricultural production in the EU increases demand for goods and services purchased from EU suppliers, which means that production in these sectors increases. This will again increase demand for goods and services purchased from EU suppliers and this process continues. The total impact on value added and employment in the supplier industries are called **indirect impacts**.

When value added in the agricultural sector and supplier industries increases, owners of the companies earn higher profits, and workers are paid higher wages. When the additional income is used for consumption, EU production is increased even further leading to more jobs and higher value added. This impact is called the **induced impact**. The induced impacts are not quantified in this report because they depend heavily on local factors such as taxation and consumption patterns, which are difficult to quantify on an EU level. Furthermore, crowding out effects (i.e. the dampening effect on private sector activity that results from the public sector activity) will tend to lower the actual induced impacts on the overall economy.

The direct, indirect and induced impacts are illustrated in Figure 55.

Figure 55 Illustration of the broader economic impacts

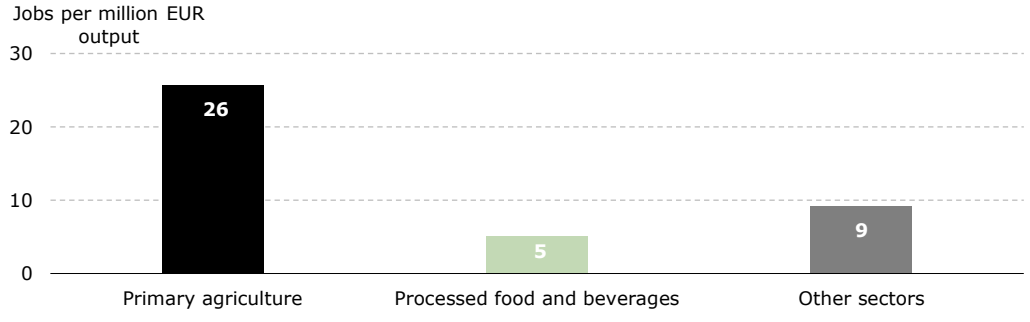


Source: Copenhagen Economics

We quantify the direct and indirect impacts on other companies that supply goods and services by using multipliers obtained from an input-output model for the EU economy.[55]

An input-output model reflects how national statistical agencies track the interdependency between sectors in the economy.[56] The size of the multipliers depends on sectoral characteristics. The primary agricultural sector has low productivity and is relatively labour-intensive. Every million EUR production in the primary agricultural sector supports on average 26 jobs in the sector, whereas every million EUR production in the processed food and beverages supports only five jobs, cf. Figure 56.

Figure 56 Direct impacts on jobs of changes in EU production



Note: The figure shows the ratio between total number of employees and output. The numbers are calculated based on an input-output table and reflect the average ratio for the EU. Data are from 2011.

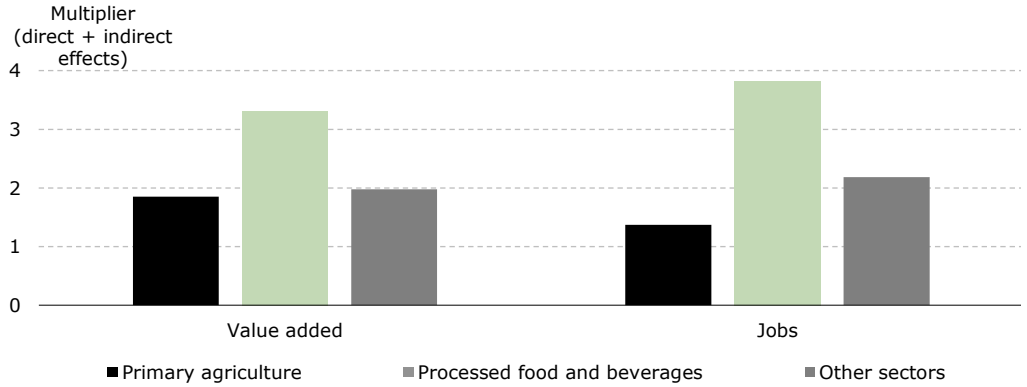
Source: Copenhagen Economics based on input output tables from World Input Output Database and own analysis

The primary agriculture sector uses relatively little supplies from other industries, compared to the processed food and beverages industry. The job multiplier for the agricultural sector captures these impacts. Every job in the primary agriculture sector thus supports less than two jobs in other parts of the economy, whereas a job in the processed food and beverages sector supports more than three jobs in the economy as a whole, cf. Figure 57. The low productivity in primary agriculture is also reflected in a relatively low value added multiplier compared to the other industries.

[55] We apply the multiplier analysis by using data from the World Input-Output Database (WIOD), which covers 27 EU countries and 13 other major countries in the world for the period from 1995 to 2011. In addition, the WIOD provides data on labour and capital inputs and CO_2 emission indicators at the industry level. The multipliers change over time as mechanisation and automatization that lead to an agricultural intensification process change the composition of input in the agricultural production. It is therefore important to use as recent multipliers as possible. In this case, the most recently available multipliers are from 2011, which means that some of the most recent technological changes are note captured by the multipliers. We use multipliers for the average producer in each sector, although multipliers on the marginal producer would be more appropriate. However, these marginal multipliers are not available. This would be especially relevant for primary agriculture as the high labour intensity in this sector also reflects considerable unemployment of labour of many farms, meaning that output could be increased without increasing labour.

[56] See also http://www.ers.usda.gov/data-products/agricultural-trade-multipliers/assumptions.aspx.

Figure 57 EU multipliers used to quantify broader impacts



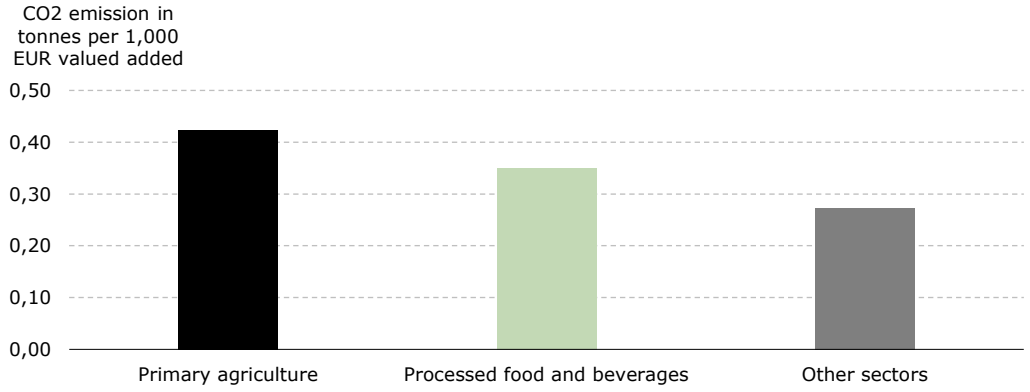
Note: The figure shows the sum of both direct and indirect effects, while induced effects are excluded. The multipliers are from 2011.

Source: Copenhagen Economics based on World Input Output Database and own analysis

When agricultural production in the EU increases because of the trade agreements, there will also be an impact on the environment in the EU as measured by CO_2 emissions. Naturally, there will be other environmental effects than CO_2 emissions, but only CO_2 emissions are modelled in this study. The impact will depend on the composition of the additional production because the different parts of the economy have different environmental footprints. For every additional 1,000 EUR value added generated in the EU primary agricultural sector, CO_2 emissions on average increase by 0.42 tonnes, cf. Figure 58. For processed food and beverages, the comparable figure is 0.35 and other industries in the economy on average increase CO_2 emissions by 0.27 for every additional 1,000 EUR value added generated.

The overall environmental impacts have not been quantified in this study. Such a quantification would require an assessment of impacts on the partner countries' production and import from third countries as well as an assessment of the environmental impacts of transportation, which are outside the scope of this analysis.

Figure 58 Average CO2 emissions per added value across sectors



Note: The figure shows the average CO2 emission per added value for the different sectors. The newest available data are use, which for CO2 emissions is from 2009, whilst value added is from 2011.

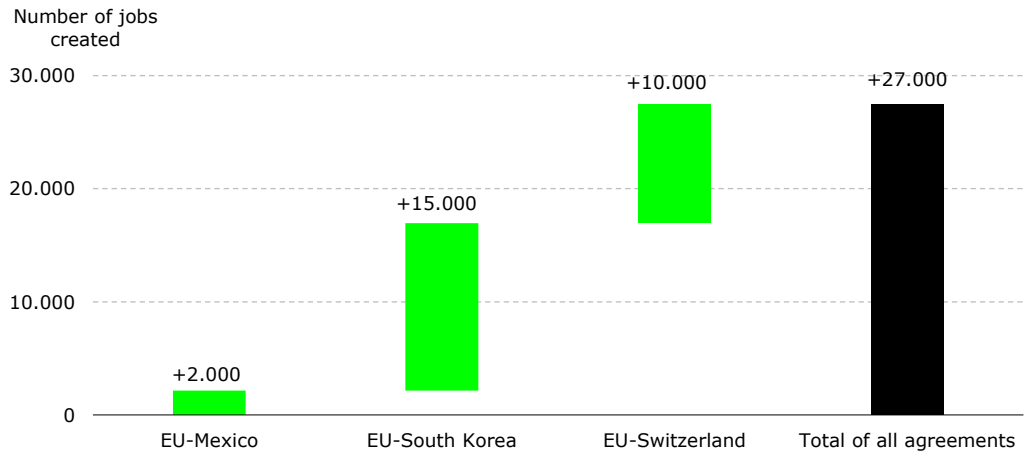
Source: Copenhagen Economics based on World Input Output Database and own analysis

5.2 Impacts on EU employment

Based on the multiplier analysis, we find that around 27,000 jobs in the EU are supported by the additional EU exports due to the three trade agreements. This number reflects large differences between the agreements, cf. Figure 59. The FTA with South Korea supports around 15,000 jobs, while the trade agreements with Switzerland support 10,000 job in the EU because of the large absolute increase in EU exports to these partner countries. The EU-Mexico FTA adds an additional 2,000 jobs.

As the trade agreements have had no measureable impact on intra-EU trade, we expect that the increase in imports reflect trade diversion from third countries or an increase in consumption, which means that increased imports will have little impact on employment in the EU. Assessing impacts on employment in the partner countries and third countries are outside the scope of this report.

Figure 59 EU jobs supported by the trade agreements



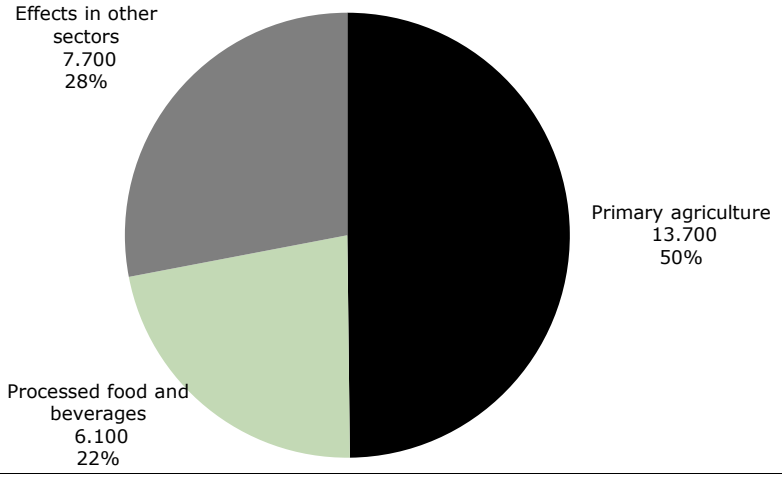
Note: The figure shows the sum of both direct and indirect impacts, while induced impacts are excluded.

Source: Copenhagen Economics based on World Input Output Database and own analysis

Half of the jobs are in the agricultural sector, where an additional 13,700 jobs are supported by EU exports to the three partner countries, cf. Figure 60. These new jobs are due both to an increase in employment due to increased EU exports of primary agricultural products (direct impact) [57] and due to increased demand for primary agricultural products when EU exports of processed foods and beverages increase (indirect impact). One quarter (22 per cent) of the jobs are in the food manufacturing sector where an additional 6,100 jobs are supported. Combined, the agricultural sector accounts for 72 per cent of the total jobs supported by the additional EU exports (19,800 jobs).

[57] Note, however that these job figures assume constant employment coefficient, which are unlikely to materialise given the underutilisation of labour that is prevalent in the agricultural sector. As such, these figures are likely to overestimate the actual employment gains in the sector.

Figure 60 EU jobs supported by sector

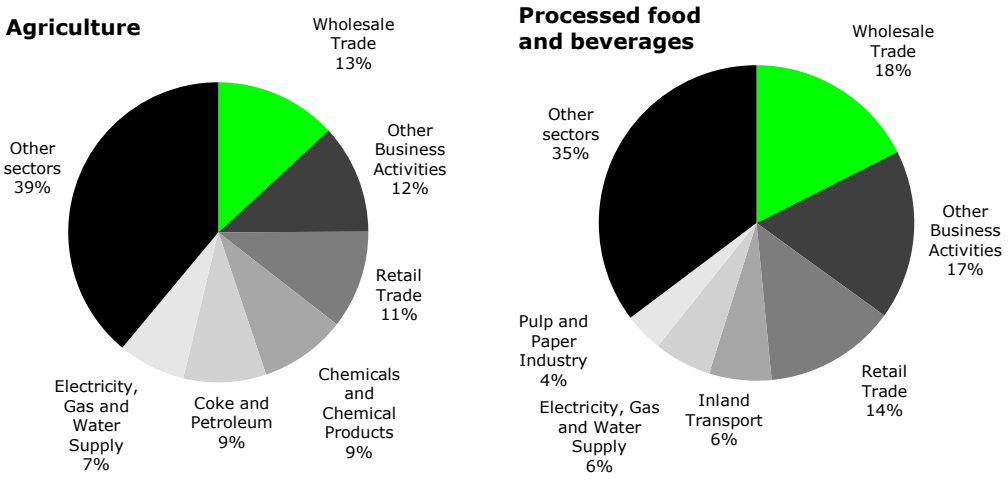


Note: The figure shows the sum of both direct and indirect impacts, while induced impacts are excluded.

Source: Copenhagen Economics based on World Input Output Database and own analysis

Due to the large interdependencies of the EU economy, the trade agreements also support jobs in many other sectors that supply goods and services to the agricultural sector. The additional exports thus support more than 7,700 jobs in other sectors. The sectors that benefit the most are service sectors as wholesale and retail trade, which rely on trading with agri-food products, cf. Figure 61. The primary agricultural sector also requires chemicals and chemical products, and the new exports of processed foods and beverages also increase demand for transportation services.

Figure 61 Sectoral split of impacts on other sectors



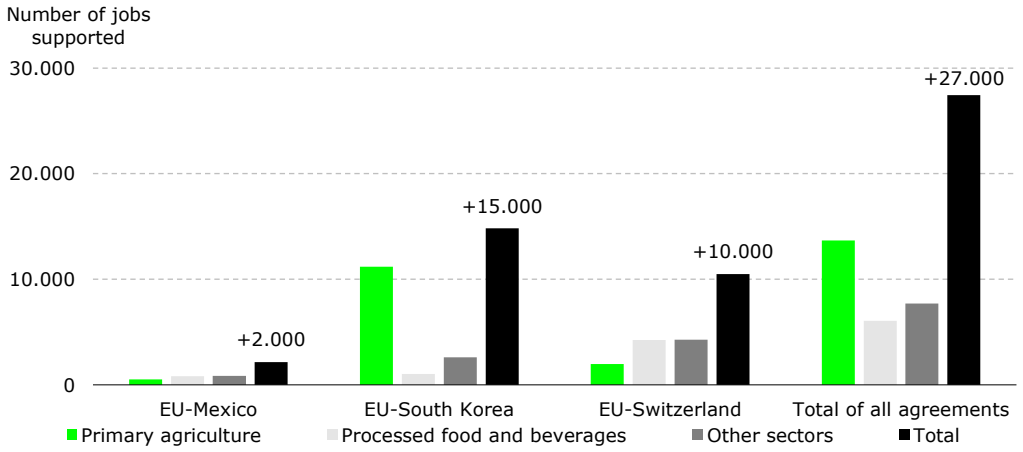
Note: The figure shows the sectors, which supply most inputs to the primary agricultural sector and processed food and beverages. Shares are calculated based on values of the inputs to each sector.

Source: Copenhagen Economics based on World Input Output Database and own analysis

Administrative simplifications related to trade agreements will also benefit the retail sector. Here, the case studies show mixed results. While there has been no significant administrative simplification of pigmeat exports to South Korea, it has become slightly easier to export sugar confectionary to South Korea. The EU-Mexico FTA has not simplified the Mexican import procedures related to wine from the EU, and the citrus fruit case study also finds that burdensome import requirement still pose a barrier to EU exports to Mexico. The EU-Switzerland trade agreements appear to have removed most administrative barriers to EU cheese exports to Switzerland.

Most of the 6,100 jobs supported in the processed food and beverages sector (4,200 out of the 6,100 jobs equal to 70 per cent) are due to the EU-Switzerland trade agreements, cf. Figure 62. The EU-South Korea had a limited impact on jobs in the manufacturing part of the agricultural sector because agricultural trade between the EU and South Korea mainly consists of primary agricultural goods. Therefore, this FTA supported 11,200 out of the 13,700 jobs in the primary agricultural sector (82 per cent).

Figure 62 EU jobs supported by sector and trade agreement



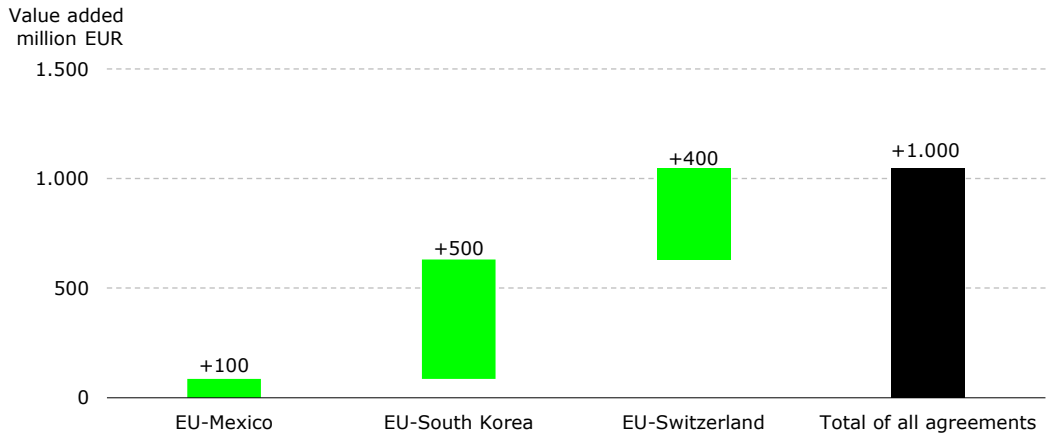
Note: The figure shows the sum of both direct and indirect impacts, while induced impacts are excluded.

Source: Copenhagen Economics based on World Input Output Database and own analysis

5.3 Impacts on EU value added

In total, the three trade agreements have created an additional value added in the EU equivalent to 1,000 mn. EUR, cf. Figure 63. As the impact on value added materialises through trade, the EU-South Korea FTA and the EU-Switzerland trade agreements are the main drivers of the increased value added and accounts for an additional value added of 500 mn. EUR and 400 mn. EUR, respectively.

Figure 63 Impacts on EU value added by trade agreements

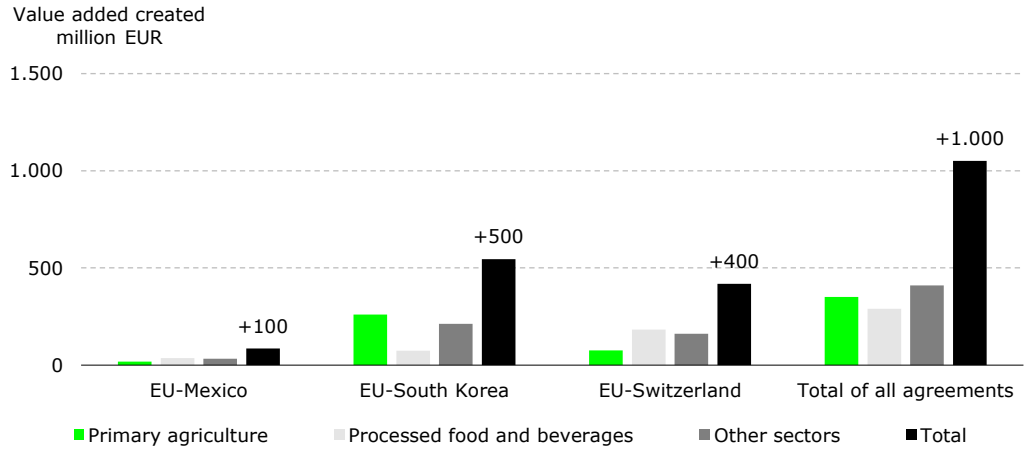


Note: The figure shows the sum of both direct and indirect impacts, while induced impacts are excluded.

Source: Copenhagen Economics based on World Input Output Database and own analysis

The agri-food sector alone accounted for around 600 mn. EUR of which 350 EUR are in the primary agriculture and 250 are in processed food and beverages, cf. Figure 64. Value added in primary agriculture is mainly supported by the EU-South Korea FTA, whereas the EU-Switzerland trade agreements have supported increased value added mainly in processed food and beverages and in other sectors that supply goods and services to the agri-food sector.

Figure 64 Impacts on EU value added by sector and agreement



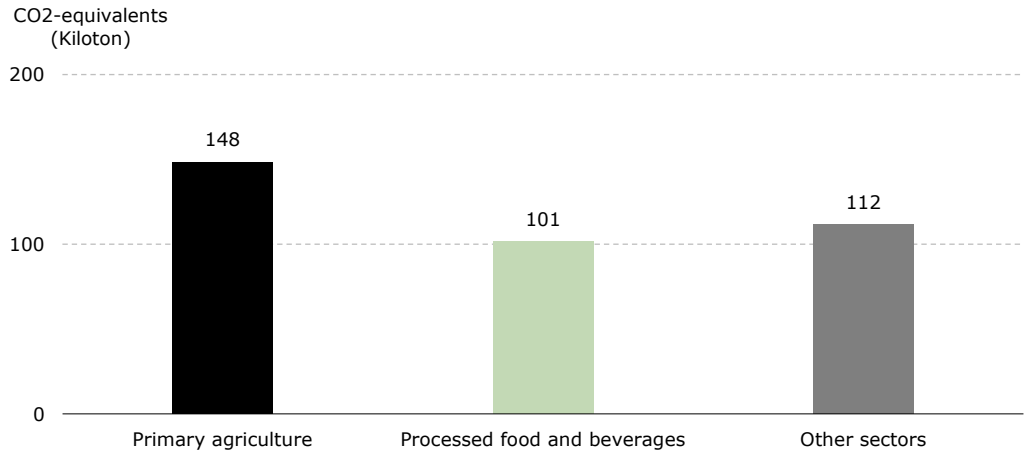
Note: The figure shows the sum of both direct and indirect impact, while induced impacts are excluded.

Source: Copenhagen Economics based on World Input Output Database and own analysis

5.4 Impacts on the environment

Increased production in the EU agricultural sector will also increase CO2 emissions in the EU. Due to the higher emissions per value added in the primary agricultural sector, this sector accounts for a relatively large part of the total increase in CO2 emissions (148 CO2 equivalents out of 362 equal to 41 per cent), cf. Figure 65.

Figure 65 Impacts on EU CO2 emissions by sector

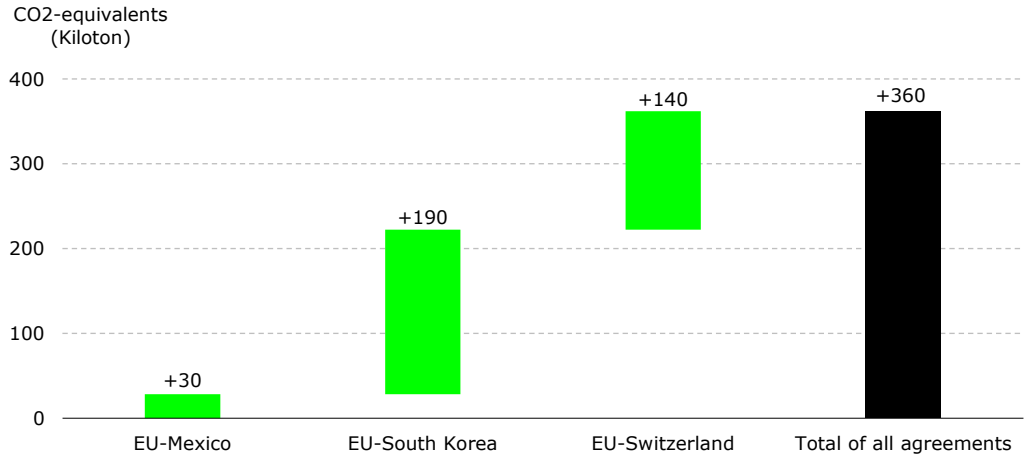


Note: This figure shows the accumulated increase in CO2 emissions resulting from the increase in EU exports due to the trade agreements. Direct and indirect impacts are included, while induced impacts are excluded.

Source: Copenhagen Economics based on World Input Output Database and own analysis

Of the total increase in CO2 emissions in the EU, the EU-South Korea FTA accounts for more than half (194 CO2 equivalents out of 362 equal to 41 per cent), cf. Figure 66. The large share of South Korea of total emissions reflects the fact that the majority of the increase in EU exports is due to the EU-South Korea FTA.

Figure 66 Impacts on CO2 emissions in the EU by agreement



Note: This figure shows the accumulated increase in CO2 emissions resulting from the increase in EU exports due to the trade agreements. Direct and indirect impacts are included, while induced impacts are excluded.

Source: Copenhagen Economics based on World Input Output Database and own analysis

As explained in Chapter 4, the increase in EU production reflects lower production in the partner country (or in a third country). When EU production replaces local production in the partner countries, products will be transported over longer distances and this will increase CO2 emissions (particularly for the agreements with South Korea and Mexico). Overall, the net environmental impact will depend on the environmental efficiency in the EU production relative to production in the partner countries (or a third country) and CO2 emissions in transportation services. As illustrated in Chapter 1, the EU agricultural sector has lowered its emissions significantly during recent years, which will make it more likely that the shift in production will benefit the global environment.

For example, the pigmeat case study concludes that the increased emissions due to the longer transportation distances is more than compensated for by the positive environmental impact that should be expected when pigmeat imported from the EU replaces South Korean products. In fact, the South Korean pig production creates environmental problems (both CO2 emissions and pollution of water and air), which are expected to limit future growth of South Korean production of pigmeat unless more efficient technological solutions are introduced and applied in the industry. In addition, a part of the increased exports from Denmark to South Korea reflects a redirection of EU exports to Russia, which means that transportation emissions have not changed significantly.

The case study also considers some broader environmental impacts. South Korean pig production has a higher feed/meat conversion ratio than Danish pig production. By replacing South Korean pigmeat with Danish pigmeat, the demand for feed will decline. South Korea - like Denmark - has a major import of feedstuff from distant countries so the environment - measured by transportation costs from import of feedstuff - will probably be improved in a global content, if Danish pigmeat production replaces Korean pigmeat production.

The cheese case study touches explicitly on trade in organic cheese. Switzerland is the country with the highest consumption of organic food products, which means that there could be a potential for increasing exports of organic cheese (and other organic agri-food products) to Switzerland. However, German exports of organic cheese to Switzerland are relatively limited, as production cannot even cover the consumption of organic cheese in Germany. This is so because German production is constrained by a limited access to organic milk imports.

5.5 Summary and concluding remarks

The increase in production due to the trade agreements analysed in this report will have positive feedback loops to retailers, exporters, processors and manufacturers, which will again have a positive impact on farmers' income, employment, investments and social situation. The analysis in this chapter finds that the additional exports due to the agreements support 27,000 job in the EU. It is mainly the EU-Switzerland trade agreements and the EU-South Korea FTA that can be accredited these jobs because these trade agreements have led to a large increase in EU exports to Switzerland and South Korea, whereas the agreement with Mexico has primarily increased imports.

Of the 27,000 jobs, 72 per cent are in the agricultural sector and the rest of the jobs are in other industries that are a part of the agri-food supply chain (mainly wholesale and retail trade, business activities, chemicals and chemical products, and transportation services). More than 13,000 jobs are supported in the primary agricultural sector that includes EU farmers. Increased production in the EU agricultural sector will also increase CO2 emissions by more than 360 CO2 equivalents. Due to the higher emissions per value added in the primary agricultural sector, this sector accounts for a relatively large part of the total increase in CO2 emissions (41 per cent).

If the increase in EU production reflects lower production in either our trading partners or third countries, the jobs in the EU supported by the trade agreements will be mirrored by a job loss in other countries. How many jobs will be transferred will depend on the labour intensity in agri-food production in these countries relative to the EU. If the EU has a lower labour intensity (as is likely to be the case due to labour productivity growth in the EU, cf. Chapter 1), there will be a net job loss.

Likewise, the increase in EU CO2 emissions will be mirrored by lower CO2 emissions in other countries. If EU production is associated with lower emissions than production in our trading partners (as is likely to be the case for South Korea and Mexico due to improvements in production techniques, methods and practices, cf. Chapter 1), the shift in the location of production will tend to lower total CO2-emissions.

If the increase in EU production reflects an increase in consumption, the trade agreements will support a net job gain and an increase in total CO2-emissions.

Chapter 6

Main conclusions and further perspectives

The quantitative analysis in this report finds that the elimination of tariffs on agri-food products covered by the three trade agreements has increased both EU exports and imports and has had positive broader impacts on EU farmers and actors of the EU agri-food supply chain.

The case studies carried out as a part of this analysis suggest that there is a range of factors that are likely to impact the capacity of the EU agri-food sector to fully benefit from the concluded trade agreements. While factors within the agreements obviously affect trade, EU agri-food trade with the three partner countries is also influenced by factors outside the trade agreements. In this chapter, we summarise some of the most important factors.

The analysis also points out some improvements that could be made to support EU food chain actors to benefit from the concluded trade agreements. *First*, we take the scope and depth of the trade agreements as given and describe some of the factors that are likely to have a significant impact on the potential to increase EU trade in the future. *Second*, we identify ways to increase trade even more by extending and improving the agreements. *Third*, we summarise some of the horizontal issues raised in this analysis and give some further perspectives on EU trade agreements. Throughout the chapter, we will consider the extent to which the conclusions can be generalised to other products and agreements.

6.1 Impacts of the implementation of the trade agreements

The three trade agreements have increased EU agri-food exports by more than EUR 1 bn. and raised value added in the agri-food sector by 600 mn. EUR. The increased exports have also supported around 19,300 jobs in the agri-food sector, of which almost 13,700 jobs are in primary agriculture. Jobs and value added in primary agriculture are supported mainly by the EU-South Korea FTA, whereas the EU-Switzerland trade agreements and the EU-Mexico FTA have to a larger extent supported increased value added and jobs in processed food and beverages.

The increased exports have also benefited other actors in the agri-food supply chain. Value added in other sectors increased by more than 400 mn. EUR and an additional 7,700 jobs in the EU have been supported by the agreements. Most of these jobs were in wholesale and retail trade and in other business activities related to agri-food production.

The trade agreements have also increased EU imports. The EU-Mexico FTA has facilitated increased imports of primary agricultural products at lower or no tariffs, which has given EU consumers and producers access to agricultural products at lower prices. The same is the case with the EU-South Korea FTA although EU imports remain at a very low level. The EU-Switzerland trade agreements have supported mainly trade in processed food products, and given EU consumers access to more agri-food products at lower prices. The agreements have had no significant impact on intra-EU trade, and increased imports thus appear to have replaced mainly imports from third countries rather than EU production (for a given level of consumption).

In all three cases, the main impact of the trade agreement was to increase the volume of trade in products that were already exchanged between the two trading partners before the agreement entered into force. The trade agreements have therefore only to a limited extent given EU consumers access to an increased variety of agri-food products.

6.2 Factors impacting the capacity of the EU agricultural sector to benefit from the three agreements

The case studies generally find that there is a potential for increasing EU trade even further without expanding the scope or depth of the trade agreements. Some of the main conclusions from the case studies are summarised below.

Conclusion 1: Fixed entry costs warrant a targeted export strategy and call for collaboration between EU exporters and for common EU promotion campaigns

EU trade agreements are in many cases a precondition for entering new markets or launching new products in existing export markets, but there is still no guarantee that trade will eventually take place. EU exporters first need to build a reputation and establish distribution networks to be able to penetrate new markets.

In some cases, EU countries can build on a natural advantage to boost trade. The wine case study, for example, found that cultural, historical and linguistic ties with Mexico give Spanish wine exporters a great advantage in terms of networking, marketing and distribution. This advantage of Spanish exporters is unlikely to be confined to wine but cuts across many other agri-food products.

In most cases, there are significant fixed costs of entering a new market. To be successful, a targeted export strategy is required. The sugar confectionary and citrus case studies show that some exporters have a step-wise export strategy and attempt to use some niche products with relatively high mark-up as a platform for increasing exports. The wine case study and pig meat case studies find that exporters of more established products such as wine and meat focus their export strategy more towards big markets (e.g. the US, Japan and China) and the Asian region in general, irrespective of the new trade agreements. This is so because the fixed entry costs (networking, promotion, advertising, etc.) in these markets have a higher probability to be amortised and because these costs in many cases are large compared to tariff costs.

Due to the fixed costs of entering a new market, it should be kept in mind that launching new products in an existing export market is likely to require fewer resources than launching the same product in a new market. It is therefore important to not only focus on expanding EU trade with new, emerging markets but also on expanding trade in existing, more traditional markets.

Here, collaboration between EU exporters and common EU promotion campaigns can be a way to capitalise from existing distribution networks and sharing some of the fixed costs of entering a new market.

Conclusion 2: Common information about new trade agreements – both EU and third country trade agreements – can help realise expected gains and administrative relief can increase preference utilisation

The pigmeat and sugar confectionary case studies find that EU exporters are not always fully aware of the tariff reductions as a result of trade agreements and have insufficient knowledge about the trade potential in new EU trade agreements. Companies and organisations thus need to be better informed about the benefits and opportunities that an agreement will bring, and there could be a scope for carrying out common information campaigns when new EU trade agreements enter into force.

This is particularly the case for SMEs who do not always fully benefit from the trade agreements. The pigmeat case study found that small Danish export companies have not yet been sufficiently able to take advantage of the trade preference granted by the EU-South Korea FTA. The case studies find that this is so both because it is complicated to use them and because there is a lack of knowledge about the possibilities.

A comparison of EU uptake of preferences across existing trade agreements confirms that the preference utilisation rate of EU exports to South Korea lies significantly below the average (64.6 per cent for South Korea compared to 74.9 per cent on average).[58] There thus seems to be a scope for increasing the utilisation of the preferences.

EU exporters are also not always informed about the threat of losing market share when their trading partners sign trade agreements with third countries. The wine case study, for example, finds that TPP is most likely to be the largest threat to increased French wine exports to Mexico. Before TPP enters into force, EU exporters would have to consolidate their commercial position in Mexico: Build strong distribution partnerships, invest in Mexican commercial infrastructures, etc. Information about new trade initiatives in main EU trade partner countries will allow them to anticipate and implement the right commercial strategies.

Conclusion 3: There is a large potential for increasing EU agri-food exports to South Korea and Asia in general market but flexibility is required to meet local preferences

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[58] Nilsson (2011).

The quantitative analysis identified a positive impact of the EU-South Korea FTA on EU exports to South Korea. The case studies on pigmeat and sugar confectionary suggest that there is a potential for increasing exports to South Korea even further, not only for the products covered by the two case studies but also more generally.[59]

First, the case studies find that South Korean consumers have become increasingly open towards new products, especially from the Western world with high food quality standards (due to increased travelling of Korean consumers and lower transportation costs). This means, for example, that the knowledge and familiarity with the South Korean culture, customs and habits that have benefitted Chinese exporters become less important in shaping future market shares in South Korea. Combined with the positive trend in the demand for healthy food, which was identified in the sugar confectionary case study, innovative EU companies that adjust their production to local preferences could face significant market opportunities in South Korea. Most stakeholders therefore expect exports to increase in the future – to South Korea and Asia more generally.

Second, due to urbanisation and economic growth, South Korean consumers demand a greater variety of food, and consumption of convenience foods has increased. This means that there is a potential to increase the number of products that are being exported to South Korea. At the same time, the sugar confectionary case finds that urbanisation alters shopping behaviours, where the trend has changed from small rural shops to department stores and hypermarkets. As a consequence, bigger supermarkets have the possibilities to offer new products.

Third, the sugar confectionary case study found that South Korea has a limited area for arable land (15 per cent of total land in 2014). This means that increases in demand will need mainly to be covered by imports. There should thus be a potential for increasing EU exports of products that are already consumed in South Korea (and thus have crossed the entry barriers) and new products (because there is sufficient scale in the market to carry the fixed costs on launching new products in the market).

The underlying arguments for the positive expectations to the South Korean market potential for EU exports are likely to also hold true for other Asian countries, in particular China and Japan. It is important to constantly monitor these countries' trade negotiations with these countries and benchmark against EU initiatives to ensure a level playing field for EU producers.

[59] There could also be a potential in increasing FDI inflows from South Korea. While China is the most important trading partner, South Korea's FDI stock in the EU is 10 times larger.

Conclusion 4: Rising protectionism and attention to the potential costs of trade can limit trade in the future and warrant a public debate about the pros and cons of trade liberalisation that is based on solid evaluations of existing trade agreements

The case studies find that various "Buy local campaigns" are being launched in some of our trading partners, and such campaigns may pose a barrier to increasing trade with these countries in the future. Rising protectionist attitudes can also be seen in the EU and in other trading partners and may hinder negotiations of new EU trade agreements.

One part of the explanation for these campaigns is the increasing attention given to the environmental costs of trade due to long distances, which make citizens avoid products from far-off countries and give a preference to national brands. That could perturb trade relations between the EU countries and South Korea but also other far-away destinations such as Japan, China and the US. Environmental costs of transportation is only part of the story, and there can also be positive environmental impacts of free trade that could be brought forward to give a more nuanced and balanced picture of the environmental impacts of free trade. The Danish pigmeat case, for example, finds that the environmental footprint of Danish production is likely to be much lower than the South Korean, and replacing locally produced pigmeat with imports from Denmark should therefore be expected to benefit the environment.

Another part of the explanation is increased protectionism in the aftermath of the economic crisis, which has increased unemployment in most economies around the world. Trade liberalisation is likely to have temporary costs for certain industries that face increased competition from abroad. If these industries are already suffering, policy makers are under pressure to protect local jobs. Again, it is important that also the gains from trade are brought forward in the public debate while at the same time initiatives are undertaken to reduce the temporary costs of free trade.

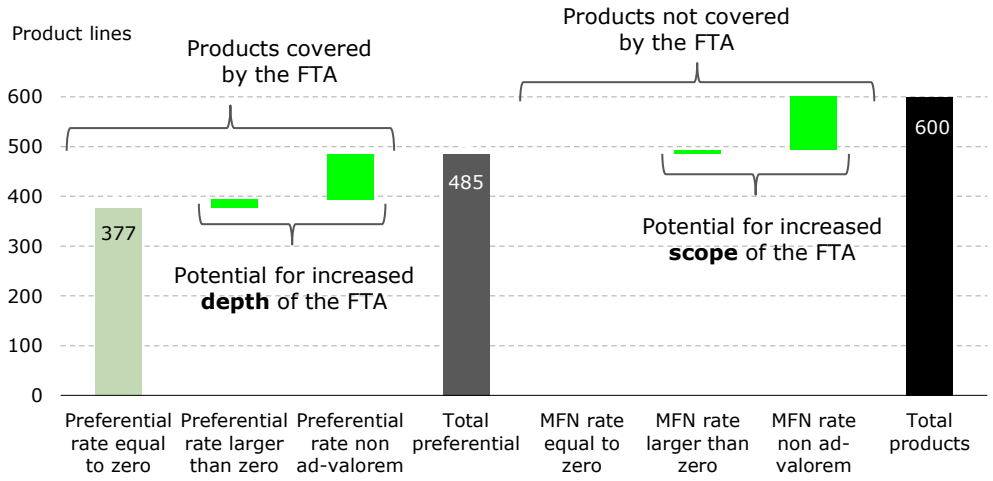
6.3 Elements in the trade agreements that can be improved

Tariffs on agricultural trade under the three trade agreements have not been fully phased out, and quotas continue to constrain trade between the EU and the three trading partners. In addition, the case studies point out that there are still important NTBs that hold back trade. There is thus a potential for increasing trade even more. In this section, we summarise some of the main conclusions regarding the room for expanding and improving the three trade agreements.

Conclusion 5: There is a trade potential in eliminating specific rates and quotas and increasing the scope of the EU-Mexico FTA on the EU side while at the same time reducing tariff peaks and solving SPS issues on the Mexican side

On the EU side, the EU-Mexico FTA covers 485 out of the 600 agri-food products that are included in the analysis, cf. Figure 67. Out of the 485 products covered by the FTA, 108 products still do not enter duty free into the EU (see also Chapter 3 for a description of the products that are not covered). Only 17 products face a non-zero preferential ad valorem rate under the FTA, but these products nevertheless account for an import value worth 126 mn. EUR. There also continue to be quotas and specific rates on 91 products imported from Mexico with an import value worth 140 mn. EUR. For the 115 products not covered by the FTA, 107 of them face quotas or specific rates (107 products out of the 115 products that do not have an ad valorem rate).

Figure 67 Depth and scope of the EU-Mexico FTA on the EU side



Source: Copenhagen Economics based on the tariff lines collected for the quantitative analysis

There thus seems to be a potential for increasing both the depth and the scope of the EU-Mexico FTA by opening up EU quotas and eliminating specific rates. This is confirmed by the citrus fruit case study, where the combined impact of specific rates on EU imports of citrus fruits (as well as other fruits and vegetables) from Mexico and seasonality means that there is a de facto adverse treatment of Mexican producers, cf. Box 17.

Box 17 Impacts of specific rates and seasonality on EU citrus fruits imports from Mexico

Mexico and the EU have the same seasonality in their citrus fruit production. This means that Mexican producers harvest citrus fruits that could potentially be exported to the EU at the same time as EU producers harvest their own citrus fruits. In years with a normal harvest, EU producers are largely able to satisfy EU demand with their own supplies. Saturated demand and low prices tend to make the EU less attractive for Mexican exporters compared to other markets, such as the US.

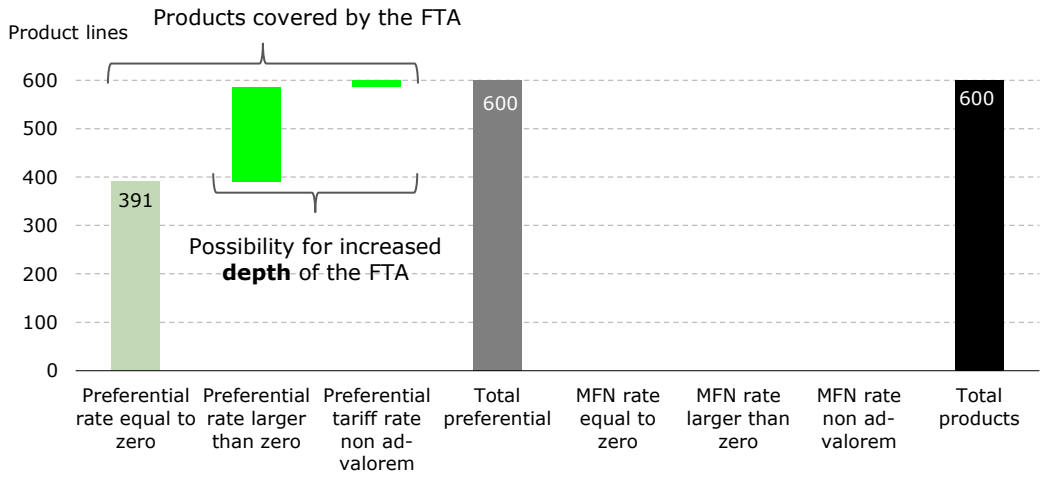
The EU-Mexico FTA has eliminated EU ad valorem tariffs on citrus fruits, but the specific rates that vary by season still apply. This means that tariffs on EU imports of citrus fruits from Mexico are highest in periods where Mexican producers harvest their citrus fruits and where the EU markets is already relatively unattractive.

The citrus fruits case study finds that the seasonal tariffs may have a detrimental impact on trade between Mexico and the EU as they de facto imply that the northern hemisphere suppliers are confronted with stronger import restrictions than the southern hemisphere suppliers.

Source: Copenhagen Economics based on the citrus fruit case study

On the Mexican side, the EU-Mexico FTA covers all 600 agri-food products and there is thus no possibility for increasing the scope of the FTA, cf. Figure 68. Out of the 600 products covered by the FTA, 209 products still do not enter duty free into Mexico and this is mainly due to ad valorem rates imposed on Mexican imports from the EU.

Figure 68 Depth and scope of the EU-Mexico FTA on the Mexican side



Source: Copenhagen Economics based on the tariff lines collected for the quantitative analysis

The 196 products that still face ad valorem tariffs account for a trade value of 270 mn. EUR (25 per cent of total EU agricultural exports to Mexico), cf. Table 2.[60] Of these preparations for infants (10 per cent preferential tariff rate), food preparations (5 per cent preferential tariff rate) and cheese (44 per cent preferential tariff rate) are some of the main EU export products. The remaining 13 products face tariff restrictions that extent beyond ad-valorem tariffs.

Table 2 Main EU export products faced with Mexican tariffs

Name	Value in EUR	Preferential tariff rate	Share of total trade in products with tariff > 0
Total trade value	1,089,892,164		
Total trade in products with tariffs	269,811,691		Of total trade: 25%
Preparations for infants	47,699,935	10%	18%
Food preparations	41,426,067	5%	15%
Cheese	32,687,772	44%	12%
Potato starch	17,895,128	13%	7%
Caseinates	15,541,812	4%	6%

Note: Data on both tariff lines and trade values are from 2014.

Source: Copenhagen Economics based UN Comtrade and the tariff lines collected for the quantitative analysis

In some cases, Mexican tariffs can be so high that they pose an almost prohibitive barrier to EU exports. Table 3 lists the EU export products with the highest preferential tariffs. 'Chemically pure fructose' and 'Other fructose and fructose syrup' both face tariffs above 150 per cent, and EU exports in these products are extremely limited. In spite of a tariff of 60 per cent, EU exports of roasted coffee are relatively large, which suggests that EU producers are relatively competitive in the Mexican market and that Mexican producers are willing to pay a large mark-up compared to local brands. It is likely that exports would increase further if Mexican tariffs on roasted coffee were reduced or even eliminated.

[60] As the EU-South Korea FTA has not been fully phased-in, similar tables have not been prepared for this trade agreement.

Table 3 Peaks in Mexican tariffs imposed on EU exports

Product	Tariff	Share of EU exports
Chemically pure fructose	150%	0.00%
Other fructose and fructose syrup	150%	0.00%
Animal fats and oils and fractions, hydrogenate	100%	0.00%
Fresh (unripened or uncured) cheese	75%	0.00%
Processed cheese, not grated or powdered	75%	0.17%
Extracts, essences, and concentrates	75%	0.08%
Glucose and glucose syrup	70%	0.00%
Cigarettes containing tobacco	67%	0.02%
Roasted malt	60%	0.01%
Roasted coffee, not decaffeinated	60%	1.16%
Roasted, decaffeinated coffee	60%	0.12%
Coffee substitutes containing coffee	60%	0.00%
Malt not roasted	60%	0.15%

Note: The table shows products with positive trade flows and a tariff rate above 50%. Data on both tariff lines and trade values are from 2014. Products with non-ad valorem tariffs are excluded.

Source: Copenhagen Economics based UN Comtrade and the tariff lines collected for the quantitative analysis

Besides these products, there are 13 products (mainly meat) with tariffs above 50 per cent where Mexican SPS issues exclude EU exporters from entering the market. Given that some EU meat producers are generally competitive, it is likely that EU meat exports to Mexico would increase if these SPS issues were resolved.

At the same time, stakeholders interviewed in the citrus fruit case study find the Mexican SPS requirements related to imports of fruits and vegetables imported from the EU are so strict that EU producers have difficulties complying with them. The stakeholders recommend that a SPS chapter as in the EU-Chile FTA should be included in the EU-Mexico FTA.

As described in Chapter 3, Mexico continues to be a difficult partner in the SPS field, despite the EU-Mexico FTA. Mexico has shown interest in starting negotiations for the modernisation of the FTA aiming to include a SPS chapter going beyond the WTO provisions and in line with the SPS chapters contained in recent FTAs but no progress has been made so far.[61]

[61] Based on information from DG Agri and DG Sante.

In future negotiations, the following Mexican commitments are of particular relevance:

- To establish import requirements in line with OIE recommendations for BSE, Aujeszky diseases and SBV.
- To implement the regionalization and zoning principles according to OIE and IPPC recommendations.
- To evaluate the derogation of the pre-clearance requirement for plants and plant products, according to IPPC recommendation.

Conclusion 6: The rationale for the existing depth and scope of the EU-Switzerland trade agreements may have changed over the last 15 years, and there could a trade potential in eliminating specific tariffs on the Swiss side and increasing the number of products covered on the EU side

On the EU side, the EU-Switzerland trade agreements cover only 226 out of the 600 agri-food products, cf. Figure 69. Out of the 226 products covered by the agreements, 67 products still do not enter duty free into the EU, and 58 of the 67 products face quotas and specific rates. EU imports of these 58 products amount to 2,330 mn. EUR, which is more than half of total EU imports of products covered by the agreements. Switzerland thus seems to be relatively competitive in some of the products that are in high demand from EU consumers.

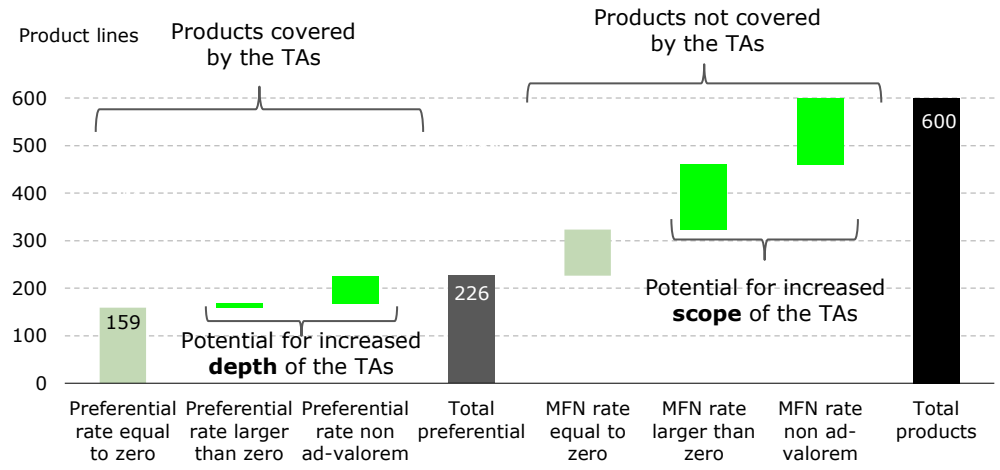
Given that the trade agreements date back 10-15 years, it could be the case that there is no longer a rationale for these quotas and specific rates. In this context, administrative and compliance costs related to trade barriers should also be kept in mind.[62]

374 Swiss export products are not covered by the trade agreements but 97 products nevertheless enter duty free into the EU because the MFN rate is zero. For the remaining 277 products, there could be a potential for increasing the scope of the agreements. However, these 277 products amount only imports worth around 580 mn. EUR. The low import value of the excluded products could reflect that the tariff barriers are prohibitive and effectively protect EU producers from competition from Swiss exporters. In this case, there could be a potential for stimulating competition in the EU market and forcing EU producers to become more productive by increasing the scope of the agreements.

The low value could also reflect that Switzerland produces very little of the excluded products or that Swiss products are not competitive in the EU market. In this case, there appears to be a limited trade potential in increasing the scope of the trade agreements. At the same time, however, the trade barrier appears to be redundant. Overall, it thus seems that there could be a potential for increasing trade and productivity in the EU agri-food sector from extending the scope of the agreements on the EU side.

[62] The impacts of specific rates and quotas will be different. Specific rates can have trade distorting effects (for example, they imply a higher ad valorem equivalent tariff on low value relative to high quality imports) but are not, as such, a barrier to trade. The exporter has full knowledge and predictability of the tariff. This is not the case for a quota, which is very trade restrictive.

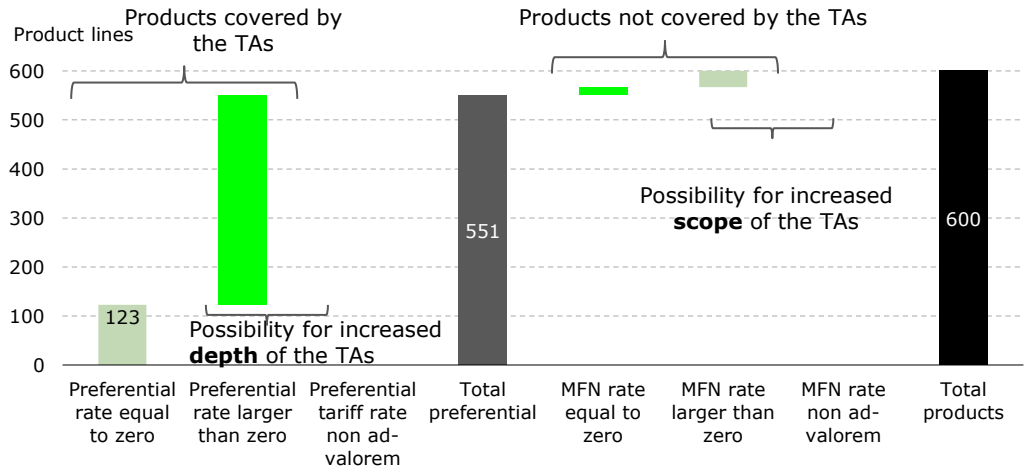
Figure 69 Depth and scope of the EU-Switzerland trade agreements on the EU side



Source: Copenhagen Economics based on the tariff lines collected for the quantitative analysis

On the Swiss side, the EU-Switzerland trade agreements cover 551 of the 600 agri-food products and there is thus little potential for increasing the scope of the agreements, cf. Figure 70. Out of the 551 products covered by the agreements, 428 products still do not enter duty free into Switzerland because of specific rates imposed on imports from the EU. The 428 products that still face tariff barriers account for a trade value of 6,252 mn. EUR (83 per cent of total Swiss imports of products covered by the trade agreements). Again, there may no longer be a rationale for these trade barriers and there could be trade potential in eliminating the non-zero preferential rates.

Figure 70 Depth and scope of the EU-Switzerland trade agreements on the Swiss side



Source: Copenhagen Economics based on the tariff lines collected for the quantitative analysis

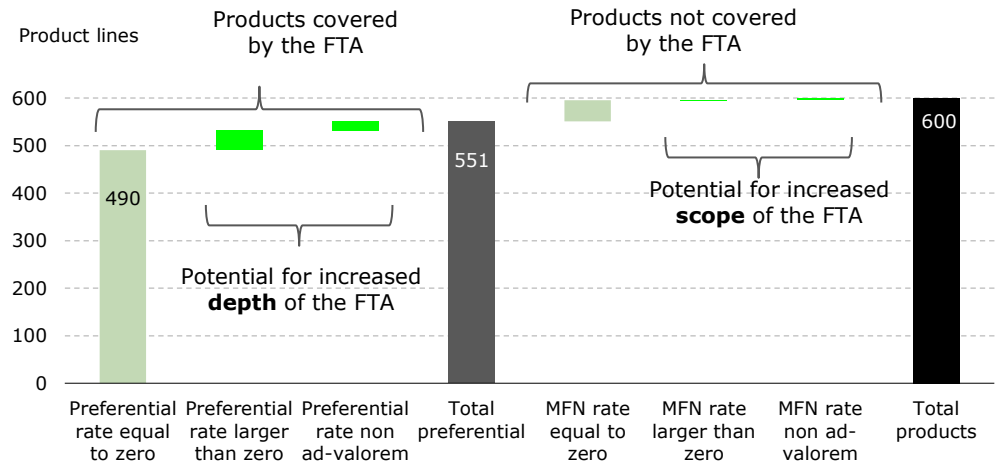
Overall, there is a significant value of trade in products that are prone to quotas and specific rates under the EU-Switzerland trade agreements and limited trade in products that are excluded from the agreements on the EU side. It thus appears that there is a limited potential for increasing the depth or the scope of the agreements although the potential for increasing trade in the excluded products could be examined further. This does not mean that there is no scope for improving the effectiveness of the trade agreements, particularly on the Swiss side. This is so because there could be significant administrative costs of utilising the preferences and ensuring compliance.

Conclusion 7: Real market access in the EU-South Korea FTA should not be taken for granted, and the implementation of the agreements is important for realising the expected trade potential

The EU-South Korea FTA is the most ambitious agreement ever implemented by the EU. On the EU side, the FTA covers 551 out of the 600 agri-food products, cf. Figure 71. On the South Korean side, the FTA covers all 600 agri-food products. As the agreement has not been fully phased in, it is too early to assess if there is a potential for increasing the depth of the FTA.

Out of the 49 products that are not covered by the FTA on the EU side, 44 products already enter South Korea duty free because the MFN rate is zero, and there thus seems to be a limited scope for increasing the scope of the FTA.

Figure 71 Depth and scope of the EU-South Korea FTA on the EU side



Source: Copenhagen Economics based on the tariff lines collected for the quantitative analysis

The elimination of tariffs is a key prerequisite for increasing exports to South Korea, but final market access is realised through administrative procedures and implementation of regulation. The pig meat case study suggests that the EU-Korea FTA matters mainly for eliminating tariffs and quotas only but are less effective in eliminating NTBs. The experience gained from FTA with South Korea is that, after the conclusion, a formalised continuous dialogue (living agreement) should have been implemented immediately, where technical and commercial barriers were identified, discussed and solved sequentially for both tariffs, technical trade barriers, bureaucratic barriers, etc. A customs committee and formalised dialogue now exist under the EU-South Korea FTA where a follow-up on relevant issues is carried out.

According to the majority of the interviewed stakeholders in the sugar confectionary case study, regulations connected with customs clearance are one of the largest barriers for Polish exports to South Korea, and this barrier is found to be important for other products as well. Other general obstacles are administrative barriers and documentation requirements.

6.4 Possible improvements to increase benefits from concluded trade agreements

In this section, we summarise some of the horizontal issues that have appeared in the analysis and that give some further perspectives on EU trade agreements.

Conclusion 8: Continuously benchmarking of third countries' trade negotiations and an efficient trade negotiation process can lower the risk of foregone trade – particularly for products where demand in very sensitive to even small price differences and in markets with large entry costs

Tariffs on some high-end products (e.g. wine) where demand is relatively insensitive to price differences have little impacts on actual trade flows. For more homogeneous products (e.g. pigmeat), even small price differences due to changes in tariff margins can have a large impact on trade and can do serious harm to the competitiveness of EU producers.

It therefore continues to be very important to monitor what third countries are being offered in their ongoing trade negotiations. In the case of pigmeat, for example, the US obtained a better agreement than the EU, and the US-South Korea FTA entered into force before the EU-South Korea FTA. The difference between the two FTAs will be fully levelled when the EU-South Korea and the US-South Korea FTAs are fully phased in, but the cost of a temporary preferential disadvantage can be permanent because US exporters are able to consolidate their commercial position in the market and establish a network and distribution channels. The risk is particularly pertinent in sectors with homogeneous products and for markets with large entry costs.

The costs of delays in the trade negotiations underline the importance of organising the trade negotiations as efficiently as possible and demand that issues in the trade negotiations are prioritised after their real potential impact. Trade agreements are increasingly used for pursuing environmental, social and sustainability goals in addition to economic impacts. If the broader agenda delays the entry into force of new agreements, the costs of delays and foregone earnings should be taken into account.

Conclusion 9: Impacts differ across member states and sectors, and aggregate EU impacts may hide large disparities across individual actors in the EU agri-food supply chain

Impacts on the EU level sometimes hide significant disparities in impacts on individual member states, and average EU impacts can thus be a too rough measure of impacts on individual countries. For important sectors or markets, is can thus be important to evaluate impacts on individual countries. Such evaluations should take into account the close interrelationship between the member states. For some products, for example, individual EU member states are each other's main competitors, which means that the trade agreements may reallocate market shares between EU member states but leave overall EU exports largely unchanged. This was the case for pigmeat exports to Korea. An assessment at the EU level will therefore hide both positive and negative impacts in individual countries. Also, outsourcing activities (e.g. of Danish slaughtering to Germany) and re-export between EU countries (e.g. through an export hub for fruits and vegetables in the Netherlands or the German gateway of Swiss cheese into the EU) should be taken into account.

Negative impacts in some sectors are in some cases counterbalanced by gains in other sectors. In this study, we have assessed the impacts of the three trade agreements on EU agri-food trade only. To understand the full impacts of the agreements, all products and all sectors of the economy would have to be included in the assessment.

6.5 Summary and concluding remarks

The findings in this report suggest that there could be a potential for increasing the effectiveness of the three trade agreements that were analysed in detail in this study through increased promotion and information activities. Improved collaboration between EU exporters and common EU promotion campaigns could be a means to assist EU exporters enter new markets and launch new products in existing markets. In addition, common information about new trade agreements can help realise expected gains and increase preference utilisation. There appears to be a large potential for increasing EU exports to South Korea (and Asia in general) for innovative EU exporters that are able to adopt their products to local preferences. However, there is increasing protectionism and scepticism about the gains from free trade that could hinder this potential to materialise. Here, better communication about the pros and cons of trade liberalisation are necessary.

The trade agreements differ both in their coverage (scope) and in generosity of the tariff concessions (depth). Apart from the EU-South Korea FTA, there appears to be a potential for expanding the scope and/or the depth of the trade agreements. For the EU-Mexico FTA, there could be a trade potential in eliminating specific rates and quotas and increasing the scope of the FTA on the EU side while at the same time reducing tariff peaks and solving SPS issues on the Mexican side. The rationale for quotas and specific rates in the EU-Switzerland trade agreements may have changed over the last 10-15 years, and there could a trade potential in simplifying the agreements on both sides and for increasing the number of products covered on the EU side. The size of these trade potentials could be analysed further.

Across the trade agreements, the analysis underlines the importance of addressing NTBs in future trade negotiation and pursuing deep and comprehensive trade agreements that provide real market access to EU exporters. The analysis finds that there can be benefits from eliminating barriers to trade both with distant countries with production structures very different from the EU as well as countries that are relatively similar to the EU.

The analysis also identified some horizontal issues that give some further perspectives on EU trade agreements. Continuously benchmarking of third countries' trade negotiations and an efficient trade negotiation process can lower the risk of foregone trade in certain products where even small differences in prices can have large impacts on trade and in markets with large entry costs. In addition, it is important to keep in mind that impacts differ across member states and sectors, which means that aggregate EU impacts may hide large disparities. The impacts of the trade agreements on EU trade in all products and sectors could thus be analysed further, and more detailed knowledge about impacts on individual member states can enable policy makers to target their initiatives to optimise gains and minimise losses.

The trade agreements have increased competition on the EU market and forced EU producers to increase their productivity. The increased productivity, scale economies and better capacity utilisation resulting from the trade agreements will also improve the competitiveness of EU producers in third countries, and there may thus be a potential in increasing EU exports even further.

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Impacts of EU trade agreements on the agri-cultural sector

Technical appendix

Appendix A

Description of the triple-difference model

In order to assess the impacts of the three trade agreements (EU-Mexico FTA, EU-South Korea FTA and EU-Switzerland sectoral trade agreements) on EU trade in agri-food products, we use a so-called triple-difference model, which allows us to uncover the *causal* impact of each trade agreement on EU exports and imports. This means that the change in EU exports and imports of agri-food products, which is due to the trade agreement, is isolated from changes caused by other factors unrelated to the trade agreement.

Being able to isolate the causal impact of each of the agreements is extremely important as there are a number of reasons to believe that only part of any changes in trade flows observed around the time of the implementation of a trade agreement is actually due to the agreement. Countries that engage in trade negotiations actively choose to do so and may select partner countries, whose economies are expected to grow and where demand is likely to increase. This means that even in the absence of a trade agreement, exports to this market would most likely increase.

Similarly, during the negotiations of a trade agreement, negotiators on both sides may pay special attention to ensuring preferential access for particular products for which the export potential to the partner country is deemed especially high. Thus, if demand for e.g. wine is likely to increase especially in a country with which the EU is negotiating a trade agreement with, EU negotiators may focus their efforts on assuring the most liberal access for EU exports of wine, which again are likely to increase even in the absence of a trade agreement.

Being able to disentangle such effects from the impact of a given trade agreement thus ensures that the impact of a given agreement is not overestimated by attributing factors such as for example economic growth or changes in consumer preferences to the agreement.

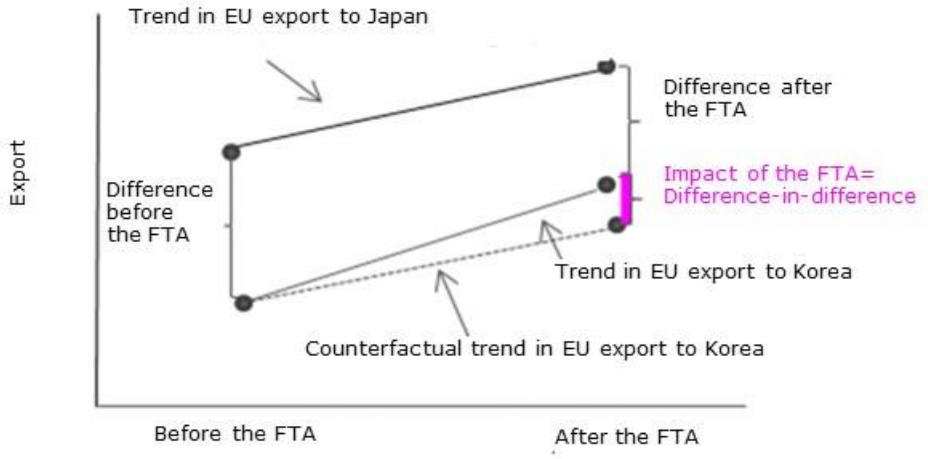
The triple-difference model is an extension of the standard *difference-in-difference* estimator, which is the most commonly used methodology to evaluate effects of a policy change. This model can also be used to estimate the impact of trade agreements and can be implemented at both the country and product level. However, in both cases estimates are subject to policy endogeneity, which can bias the estimated impacts of a given trade agreement. By using the *triple-difference* estimator it is possible to overcome the weaknesses of the standard difference-in-difference estimator and obtain causal impacts.

Below, we provide an intuitive overview of the triple-difference followed by a more formal overview of the econometric implementation of the model. We start by introducing the standard difference-in-difference model, using the example of the EU-South Korean FTA and illustrate how this could be used to estimate the impact of the agreement on EU exports to South Korea.

The difference-in-difference model

Applied at the country level, the difference-in-difference model compares the trend in EU exports to South Korea before and after the FTA goes into effect (first difference) with the same difference in EU exports to a benchmark country (e.g. Japan), where no trade agreement has been signed (second difference). The change in the difference is then attributed to the FTA, cf. Figure 72.

Figure 72 Illustration of the difference-in-difference model



Source: Copenhagen Economics based on Figure 5.2.1 in Angrist, Joshua D. and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricists Guide*. Princeton University Press.

Because the methodology exploits changes over time, unobserved importer and exporter-specific characteristics that remain constant over time are implicitly controlled for. This includes for example geographical factors, such as distance from the EU, common language, colonial ties and so on, which are standard variables in the commonly used gravity model. The methodology also accounts for factors that affect the overall growth rate of EU agri-food exports (i.e. to all export destinations included), such as global demand shocks.

Instead of using a single benchmark country, the model can be implemented by using all countries with which the EU have no trade agreement as benchmarks, which avoids the risk of choosing a non-suitable benchmark country.

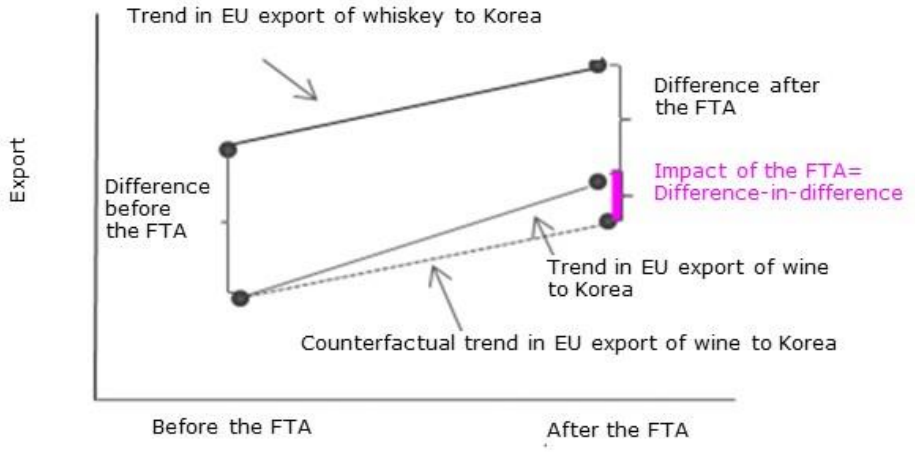
Estimates obtained from this model are likely to be biased due to the fact that countries that engage in trade negotiations actively chose to do so and may seek to maximise the benefits of doing so by choosing to focus on negotiating and implementing trade agreements with partner countries, whose economies are expected to grow and where demand, as a result, is likely to increase in general. This means that even in the absence of an EU-South Korea FTA, we may expect EU exports to South Korea to increase, compared to EU exports to other markets. By using the standard difference-in-difference model, this increase would wrongly be attributed to the FTA. We refer to this as problem 1.

One way to solve this specific problem is to apply the difference-in-difference estimator along the product dimension instead. Utilising the fact that tariffs on certain products are phased-out only gradually (e.g. tariffs on EU export of whiskey to South Korea), while tariffs on other (but relatively similar) products are eliminated immediately (e.g. tariffs on EU export of wine to South Korea).[63]

Employing the standard difference-in-difference estimator at the product level would thus amount to a comparison in the trend of EU export of a product not (yet) covered by the FTA (whiskey prior to tariff removals) with the trend in EU export of the product covered by the FTA (wine), cf. Figure 73.

[63] European Commission. 2010. "EU-Korea Free Trade Agreement: 10 key benefits for the European Union", Press Release database http://europa.eu/rapid/press-release_MEMO-10-423_en.htm?locale=en.

Figure 73 The difference-in-differences in a product dimension



Source: Copenhagen Economics based on Figure 5.2.1 in Angrist, Joshua D. and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricists Guide*. Princeton University Press

Because the comparison is now between products to the same partner country, factors that affect overall EU exports of agri-food products to that country (e.g. country specific demand shocks) will be controlled for. However, a problem still remains as it is highly likely that negotiators on both sides may pay special attention to ensuring preferential access for particular products, for which the export potential to the partner country is deemed especially high. If demand for e.g. wine is likely to increase especially in Korea, EU negotiators may focus their efforts on assuring the most liberal access for EU exports of wine, which again are likely to increase even in the absence of an FTA. By using the standard difference-in-difference model, this increase would wrongly be attributed to the FTA. We refer to this as problem 2.

By using a triple-difference model, both of the above sources of bias can be eliminated. The model is explained below.

The triple-difference model
This model combines the country and product-dimension above and identifies the causal impact of a trade agreement by comparing the before and after trend in e.g. EU exports to South-Korea of an agri-food product covered by the EU-South Korea FTA with:

1. The trend in EU exports of a non-covered agri-food product to South-Korea (solves problem 1)
2. The trend in EU exports of the same agri-food product to all countries with which the EU have no trade agreement as benchmarks (solves problem 2)

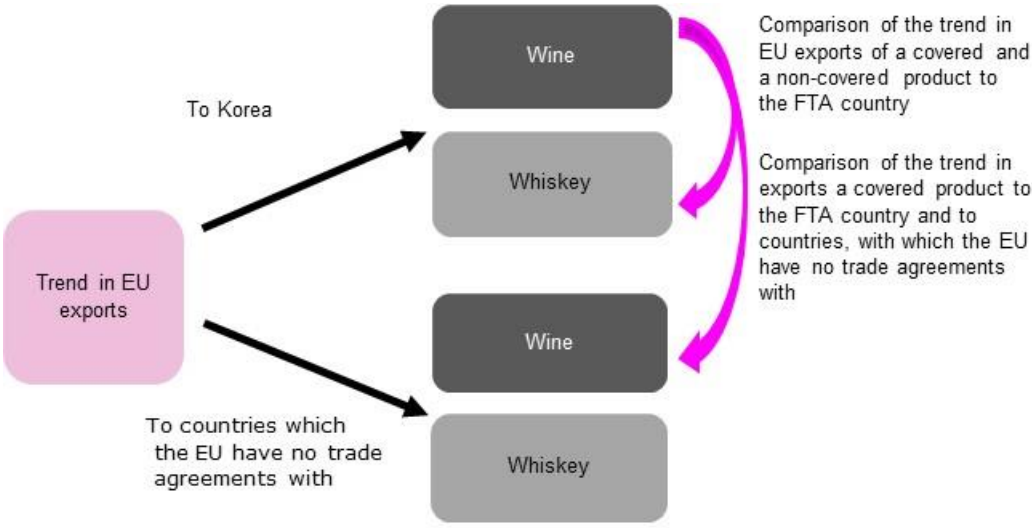
Formally, the way in which all of the above factors are controlled for in the econometric model used to implement the triple-difference model is by including a rich set of fixed effects, including:[64]

- Country/year fixed effects: These capture overall demand for EU agri-food goods in each export market in each year.
- Product/year: These capture demand for individual EU agri-food products in each year in addition to specific product supply changes due to e.g. technological advancements.
- Country/product fixed effects: These capture comparative advantage of a given country at a very detailed level.

The methodology is illustrated in Figure 74 using the example of wine and whiskey in the EU-South Korea FTA evaluated before duties on whiskey is removed.

[64] This specification means that the gravity model is actually subsumed in the triple-difference model.

Figure 74 The triple-difference model illustrated



Source: Copenhagen Economics.

Using this methodology, we are therefore able to clearly identify the impact of a given trade agreement on both the growth of EU agri-food exports and imports and to obtain extremely robust estimates.

The methodology has been used in a recent assessment of the impact of the EU's General Scheme of Preferences (GSP) on exports from developing countries to the EU, undertaken by Copenhagen Economics and Van Biesebroeck (2015) on behalf of the European Commission, DG International Cooperation and Development.[65] The methodology has earlier also been used to examine the potential for increased Canadian exports to China under a RTA[66] and in an ex-post impact assessment of the US AGOA program.[67]

Econometric implementation of the triple-difference model

This model relies on detailed product level trade data (HS 6-digit). [68] All trade flows are measured in terms of imports, which means that EU exports to e.g. South Korea is measured as South Korean imports from the EU. We do so, as it is generally accepted

[65] Copenhagen Economics and Van Biesebroeck. 2015. "Assessment of economic benefits generated by the EU Trade Regimes towards developing countries". Volume I. Project undertaken for the European Commission, DG International Cooperation and Development.

[66] Van Biesebroeck, Johannes. 2011. *Canada-China trade: potential for growth*. Report prepared for the Department of Foreign Affairs and International Trade, Canada.

[67] Frazer G, Van Biesebroeck J. (2010), "Trade growth following the African growth and opportunity act", *Review of Economics and Statistics*, vol. 91, no. 1, pp. 128 – 144.

[68] The HS 6-digit level is the most detailed level at which trade data is internationally comparable.

that import data is of a higher quality than export data, as countries have a stronger incentive to record import flows studiously as these generate tariffs, while exports do not.

The model thus relies on detailed information on imports of agri-food products in the EU and each of the three partner countries from every country in the world before and after the implementation of a trade agreement.
The model takes advantage of all three dimensions of variation in the data: Time, country (exporter) and product (at 6-digit HS level). It includes all three possible sets of double-interaction effects—country-product, country-time and product-time—as control variables in the regression. In general, the estimating equation takes the following form:

$$y_{cpt} = \alpha t_{cpt} + \gamma_{cp} + \gamma_{pt} + \gamma_{ct} + \epsilon_{cpt}.$$

The analysis straightforwardly accommodates:

- The use of different dependent variables (*y)*, e.g. the level of imports or a dummy indicator for positive or zero imports
- The use of different explanatory variables (*t)*, e.g. the level of import tariffs or an indicator variable for the presence of any trade barrier.
- We consistently employ the latter approach and include information on tariff concessions using a dummy variable that takes the value of one if the importing country grants preferential access to a given 6-digit product from a given exporter in a given year, and zero otherwise. To allow impacts to differ depending on the magnitude of the tariff concessions granted, we allow the impact to differ between products with a high and a low preference margin and products covered by a non-ad valorem tariff (i.e. tariff rate quotas or specific tariffs). The latter type of tariff concessions are also measured using a dummy variable equal to one, whenever a product from a given country in a given year is subject to a preferential non-ad valorem tariff. Thus, we do not calculate ad valorem tariff equivalents of non-ad valorem tariff rates.

The three subscripts refer to time *t*, product *p* and exporting country *c*. On a balanced panel (that includes a complete set of countries, products, and time periods), we can quasi-difference out the country-product dimension and estimate the model directly in country-product quasi-differences over time, i.e. growth rates over time across all country-product pairs:

$$\Delta y_{cpt} = \alpha \Delta T_{cpt} + \gamma_{pt} + \gamma_{ct} + \tilde{\epsilon}_{cpt}.$$

The Δ operator represents the difference of both the dependent and key explanatory variables, *y* and *T*, with the mean of the respective variable for each country-product over all time periods. The transformed residual is still mean zero. It eliminates the

country-product interaction fixed effects, while the other two sets of fixed effects remain.[69] This transformed model makes it easier to convey the intuition behind the identification strategy.

In this model, only the correlation between the growth of trade flows at the country-product level (Δy_{cpt}) with the heterogeneity in tariff declines at the country-product level (ΔT_{cpt}) contributes to the identification of the effect of interest (α). In particular, it purges any part of the correlation between product-country changes in trade flows and tariffs (or market access more generally) that can be explained by a full set of country-specific year-fixed effects (γ_{ct}) or by a full set of product-specific year-fixed effects (γ_{pt}). The first set controls for effects that influence all imports (across all products) from a given country similarly, e.g. the business cycle for each importer. The second set controls for effects that influence all imports (across all exporting countries) of a given product similarly, e.g. a demand shock in the importing country.

We estimate this model on different samples to conduct three types of analyses that are conceptually different. In each case, we use the same set of products and time periods over which market access barriers vary by country. The difference lies in the set of exporting and importing countries included in the sample in each case.

In each analysis, we estimate two separate coefficients on tariff preference variables: One for preferences awarded to all other (control) countries and one awarded to the country of interest (either the three partner countries, in the first analysis, or the EU, in the second and third analysis). We want to allow for the possibility that the country of interest displays a different sensitivity to trade preferences than control countries. When using the coefficients to calculate aggregate export effects, we use the agreement specific estimate only if it is statistically significantly different from the estimate for other countries.

The three partner countries' exports to EU27[70]

First, we estimate the model using imports into the combined EU27 area from all countries in the world as dependent variable and EU27 import tariff concessions as explanatory variable. For each of the three partner countries (South Korea, Mexico and Switzerland), we estimate the coefficient on the EU import tariff variable, which captures the evolution over time of the product-specific market access barriers they face. If other countries also experienced changes in import tariffs for the product-year observations in the sample, this is not a problem if they are shared by all other countries. If it is not shared, the information needs to be included in the model or the countries need to be omitted. The reason for including all other countries in the regression is to determine

69 If the panel is not balanced, the quasi-differencing also has to be applied to the remaining country-time and product-time fixed effects. While not difficult in principle, it does limit the dimension of the model that can be estimated as all product-year fixed effects will now become variables that vary at the country-product-year level and those coefficients have to be estimated explicitly.

70 This analysis is similar as the analysis conducted previously to evaluate the impact of GSP preferences on LDC exports to the EU for DG-Devco.

the evolution of the product-year fixed effects that control for EU product-level (import) demand shocks.

While this first analysis can in principle be conducted using a single regression, we estimate it using three separate regressions for greater flexibility. We accommodate the different sample periods for each of the three partner countries and allow each trading partner to have period-specific growth rates. We moreover allow for differential impacts of tariff concessions given to each of the three partners.

EU27 exports to the three partner countries

Second, we conducted a similar analysis from the reverse side of trade flows between the trade agreements, using for each of the three partner countries the imports from all countries in the world as dependent variable (including the EU27 area as one of the countries). The explanatory variable of interest is the import tariff that EU firms face in those countries, which evolves differently over time across products.

This second analysis has to be estimated in three separate regressions. In principle, it is possible to pool all data, but this is undesirable as we do not want to impose that business cycle fluctuations for one exporter affect its exports to each of the three partner countries to the same extent.

Diversion of EU27 exports

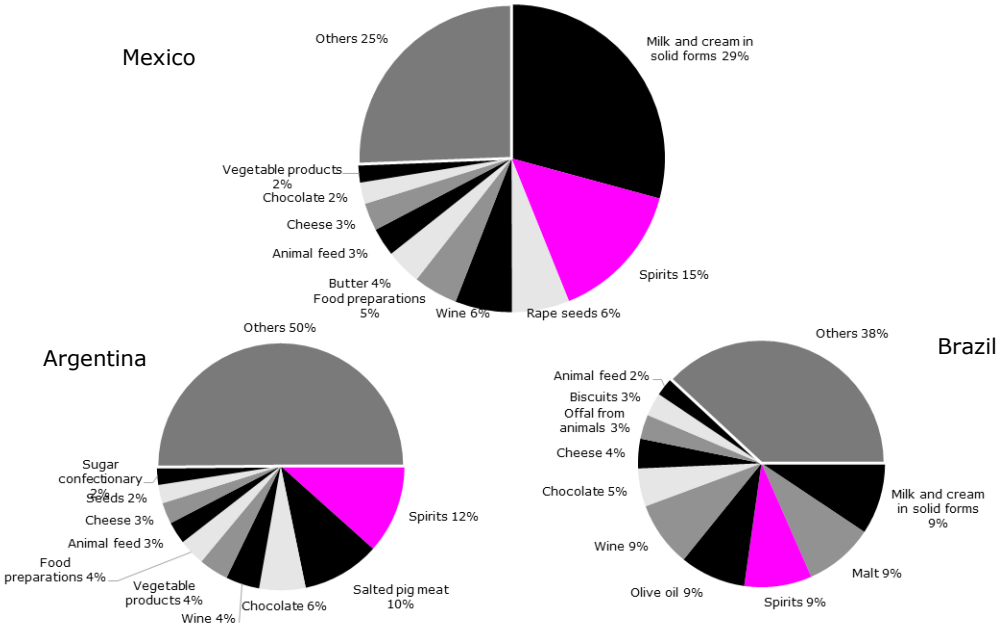
Third, we estimated a variation of the second analysis on the same sample of exporters, but using their imports into a surrogate country as dependent variable. The objective is to verify whether tariff concessions of the three partner countries to the EU are also predictive for EU exports elsewhere. If we were to find a positive and significant coefficient in the second analysis (which is what we expect), but a negative and significant coefficient in this third analysis, it would indicate diversion of EU exports from other destinations to the partner countries. In contrast, a positive coefficient in the third analysis could indicate complementarities or spillover effects, where greater EU exports to one of the three partner countries also facilitate EU exports of the same goods to nearby export destinations.

For this analysis, it is important to look at exports to a destination that is a plausible origin of goods that are now exported to each of the three partner countries (diversion), but used to be exported elsewhere. We use Japan as a surrogate country for South Korea as EU exports to Japan are a plausible substitutes for EU exports to Korea. Japan is the country most comparable to South Korea in terms of variables that predict EU exports: GDP per capita, distance and industry specialisation.

Similarly, we use Brazil as a surrogate country for Mexico. An alternative candidate could be Argentina. However, comparing the portfolio of agri-food products exported from the EU to Mexico, Brazil and Argentina before the EU-Mexican FTA was implemented reveals that EU exports to Brazil were more similarly composed to EU exports

to Mexico than EU exports to Argentina was. This makes Brazil the more likely origin of marginal exports to Mexico if trade diversion is taking place.

Figure 75 Composition of EU agri-food exports to Mexico, Brazil and Argentina (1995 – 1999)



Note: The figure shows the composition of annual average export flows from the EU15 to Mexico, Brazil and Argentina over the period 1995 – 1999.

Source: Copenhagen Economics, based on data from UNCOM trade

For Switzerland, no such surrogate country exists. The most plausible origin of marginal exports to Switzerland, if exports do not constitute marginal increases in production, is diversion of within-EU sales. We therefore examine the impact of the EU-Swiss trade agreements on intra-EU trade.

The EU-South Korea and EU Mexico FTAs may also impact EU-intra trade, and we therefore also undertake this trade diversion analysis for these two trade agreements. In order to do so, we construct an artificial country summing imports into each of the EU27 Member States from the other 26 Member States as a measure of within-EU trade (imports into the EU27 from itself). We then estimate an equation similar as in the first analysis, using as dependent variable EU27 imports from all countries, but omitting imports from the three partner countries and adding the within-EU trade flows. The explanatory variable is the one from the second analysis (just as in the case where we use Japan or Argentina/Brazil as surrogate countries)—the preferences

granted to the EU in each of the partner countries. The objective is to verify whether the intra-EU trade is negatively correlated with the improved market access that EU firms receive in the partner countries.

Appendix B
Description of data

In this appendix, we provide an overview of the data used for the triple-difference model and the sources from which we have obtained the data.

The model is estimated using trade data covering trade between the EU, each of the three partner countries and all other countries in the world, before and after the implementation of a given trade agreement. We consistently employ data only on import flows and therefore measure EU exports to each of the three partner countries as imports from the EU. We do so as it is generally accepted that import data is of a higher quality than export data, as countries have a stronger incentive to record import flows studiously as these generate tariffs, while exports do not. All import data is collected at the most detailed product level (HS 6-digit).[71]

We match the import data with data on import tariffs, taking into account that the EU and each of the three partner countries also provide preferential access to exports from third countries via other bilateral and regional trade agreements or via unilateral preference programs (e.g. GSP). In the case where a third country is not subject to preferential access, the MFN rate is assigned.

Thus for the EU and for each of the three partner countries, we have collected detailed annual import data from each country in the world. We have matched this with the import tariffs applicable to a given product from a given origin at a given point in time.

All data is collected on an annual basis over a period spanning from up to five years prior to the implementation of each of the agreements until three years after the agreement has been fully implemented. As the EU-South Korea FTA has not been fully implemented, the impact is evaluated in 2015.

Table 1 gives an overview of all trade agreements with third countries taken into account in the analysis.

[71] The HS 6-digit level is the most detailed level at which trade data is internationally comparable.

Table 4 Preferential agreements in place with third countries

South Korea	Mexico	Switzerland	EU
EFTA (2006)	Chile (1999)	Chile (2004)	Albania (2006)
Singapore (2006)	Colombia (1995)	Albania (2010)	Algeria (2005)
APTA (1976)	Costa Rica (2012)	Bosnia and Herzegovina (2015)	Andorra (1991)
ASEAN (2009)	EFTA (2001)	Canada (2009)	Bosnia and Herzegovina (2008)
Australia (2014)	GTSP (1989)	China (2014)	Cameroon (2014)
Canada (2015)	Israel (2000)	Colombia (2011)	CARIFORUM (2008)
Chile (2004)	Japan (2005)	Costa Rica (2014)	Chile (2003)
GTSP (1989)	LAIA (1981)	Egypt (2007)	Colombia (2013)
India (2010)	NAFTA (1994)	Faroe Islands (1995)	Costa Rica (2013)
New Zealand (2015)	Panama (2012)	FYR Macedonia (2002)	Côte d'Ivoire (2009)
Peru (2011)	Peru (2012)	Hong Kong, China (2012)	Egypt (2004)
PTN (1973)	PTN (1973)	Israel (1993)	EPA (2012)
Turkey (2013)	Uruguay (2004)	Japan (2009)	Faroe Islands (1997)
US (2012) GSP		Jordan (2002)	Fiji (2009)
		Lebanon (2007)	FYR Macedonia (2001)
		Mexico (2001)	Georgia (2014)
		Montenegro (2012)	Iceland (1973)
		Morocco (1999)	Israel (2000)
		Palestinian Authority (1999)	Jordan (2002)
		Panama (2014)	Lebanon (2003)
		Peru (2011)	Montenegro (2008)
		SACU (2008)	Morocco (2000)
		Serbia (2010)	Norway (1973)
		Singapore (2003)	Overseas Territories (1971)
		South Korea (2006)	Palestinian Authority (1997)
		Tunisia (2005)	Panama (2013)
		Turkey (1993)	Papua New Guinea (2009)
		Ukraine (2012) GSP	Peru (2013)
			Rep. of Moldova (2014)
			San Marino (2002)
			Serbia (2010)
			South Africa (2000)
			Syria (1977)
			Tunisia (1998)
			Turkey (1996)
			Ukraine (2014) GSP

Source: Copenhagen Economics based on WTO

In addition to the main analysis, in which we estimate the impact of each trade agreement on EU bilateral trade with each of the three partner countries, we also estimate the likely impact of the trade agreements on EU trade with third countries and intra-EU trade (cf. Appendix A). We do so by conducting a *trade diversion* analysis, in which we estimate the impact of each of the three trade agreements on EU trade with a chosen benchmark country (Japan for South Korea, Brazil for Mexico and individual EU27 Members (intra-EU trade) for Switzerland). We have therefore also collected both trade and tariff data for each of these countries.

Details on the data collected and data sources are listed below for tariff and trade data in turn.

Tariff data
In practice, we have collected tariff data from multiple sources. We aggregate tariff data up to the 6-digit level using the simple mean across 8- or 10- digit tariff lines and report the tariff data in the same HS-nomenclature as the trade data (HS1988).

In the following, we outline the specific data sources from which we have collected the data necessary to carry out the analysis.

For EU27:

- We use MFN rates provided by DG Agri, which stem from the EU Taric database for the entire period from 1996 to 2015.
- For the three partner countries, we use the EU Taric database to provide the EU preferential rates from when the trade agreement entered into force.
- We use data from WTO, when available, to cover EU trade agreements and preferences towards third countries. However, this source only contains tariff information from 2011 to 2015.
- Finally, we use data from UNCTAD's Trains database to cover EU trade agreements and preferences towards third countries from 1996 to 2010.

For Mexico and Korea:

- We use MFN rates provided by DG Agri, which stems from the EU Taric database for the period 2000 to 2015.
- As these are not available prior to 2000, we use data from UNCTADs Trains database for the MFN rates for the period 1996-1999.
- We use the EU Taric database to provide the preferential rates towards EU since the FTA entered into force.
- Finally we use data from UNCTADs Trains database to cover Mexican and Korean trade agreements and preferences towards third countries.

For Switzerland:
Switzerland is treated separately to correct for the fact that the vast majority of Swiss tariffs are non-ad valorem. Therefore, we use data on their absolute tariff rates (e.g. in

Swiss Franc per unit) provided by EU Taric database and the Swiss Customs Authorities:

- We use the absolute MFN rates in Swiss Franc per unit provided by DG Agri and which stem from the EU Taric database as well as data from the Swiss Customs Authorities.
- Similarly, we use the absolute preferential tariff rates in Swiss Franc per unit towards EU and third countries provided by DG Agri and which stem from the EU Taric database as well as data from the Swiss Customs Authorities and UNCTADs Trains database.

For Japan and Brazil:

- We use data for MFN rates from UNCTAD's Trains database for the MFN rates for the period 1996-2015.
- Finally we use data from UNCTAD's Trains database to cover Japanese and Brazilian trade agreements and preferences towards third countries.

In summary, we collect the following **import tariffs for the EU27**:

- Tariffs on EU imports from South Korea, Mexico and Switzerland (i.e. the MFN rates) prior to implementation of each of the trade agreements
- Tariffs on EU imports from South Korea, Mexico and Switzerland after the implementation of the trade agreements (i.e. the tariff dismantling schedules from the trade agreements)
- MFN rates throughout the period
- GSP rates throughout the period
- Changes in tariffs on import products from third countries that have a trade agreement with the EU and where tariffs are phased out during the estimation period.

We collect similar import tariffs for South Korea, Mexico and Switzerland as well as for the two benchmark countries Brazil and Japan. This tariff data is available from the WTO and UNCTAD through the Trains database.

Trade data

All trade data is collected from the UN Comtrade database at the 6-digit product level and reported in the HS-1988 nomenclature. This database contains annual data up until 2014 and for most countries up until 2015.

In summary, we collect annual **import flows** (value and volume) at the product (6-digit), country and year level over the period 1996 – 2014 for:

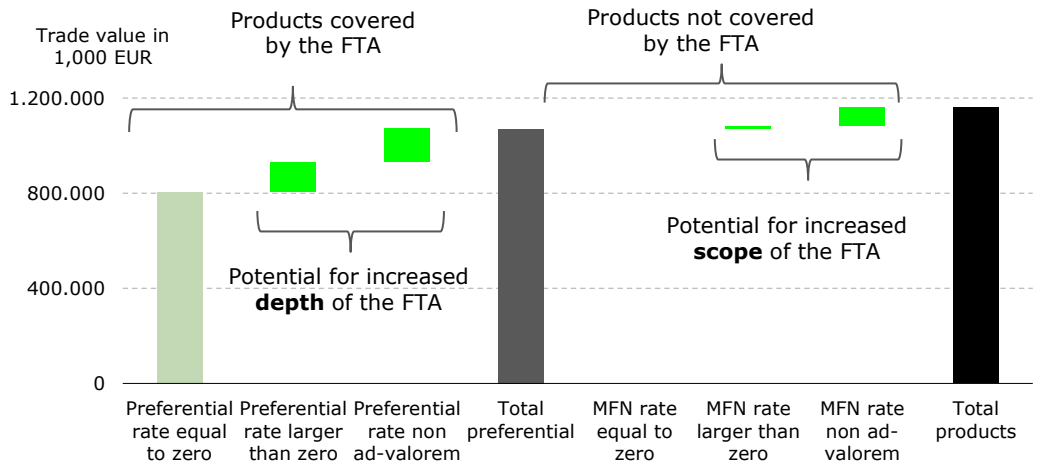
- EU27 from all countries in the world
- South Korea from all countries in the world
- Mexico from all countries in the world
- Switzerland from all countries in the world

- Japan from all countries in the world
- Brazil from all countries in the world

Appendix C

Trade-weighted tariff profiles

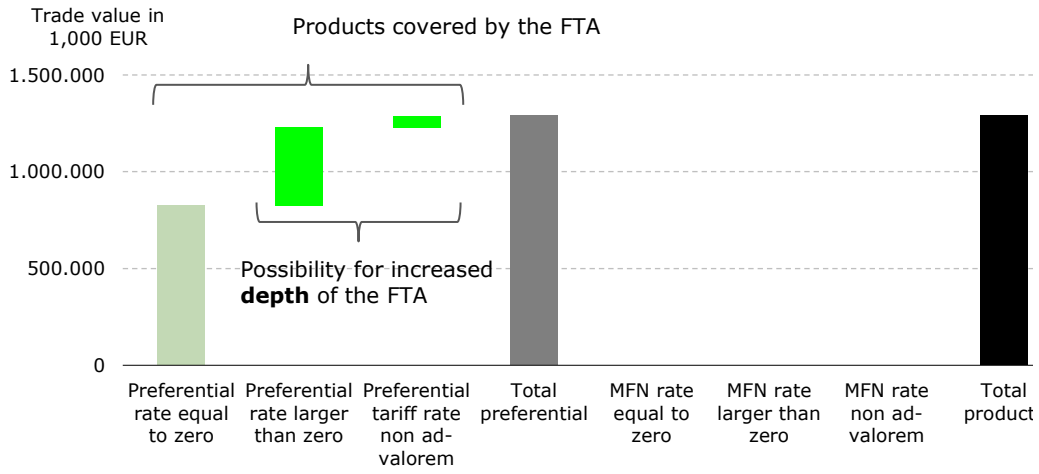
Figure 76 EU tariffs on imported products from Mexico, 2014



Note: This figure show the tariff distribution weighted by the actual trade in 2014.

Source: Copenhagen Economics based on the tariff lines collected for the analysis as described in Appendix

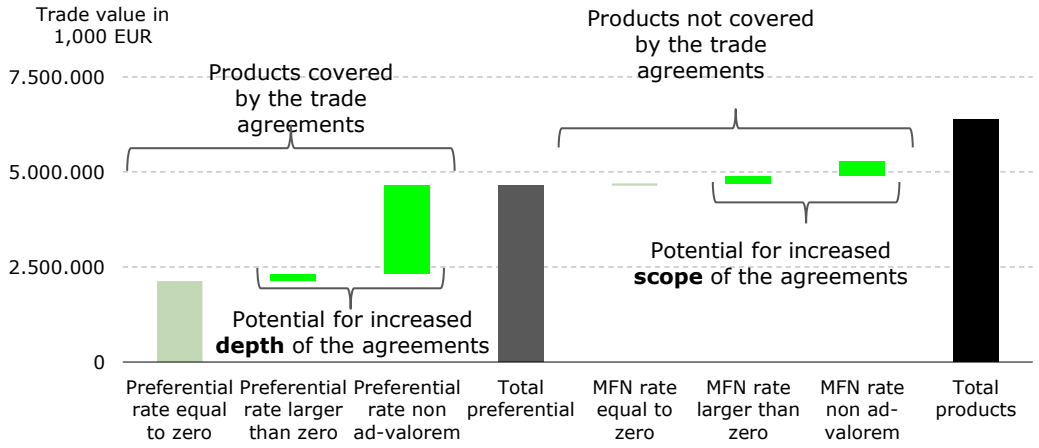
Figure 77 Mexican tariffs on imported products from the EU, 2014



Note: This figure show the tariff distribution weighted by the actual trade in 2014.

Source: Copenhagen Economics based on the tariff lines collected for the analysis as described in Appendix

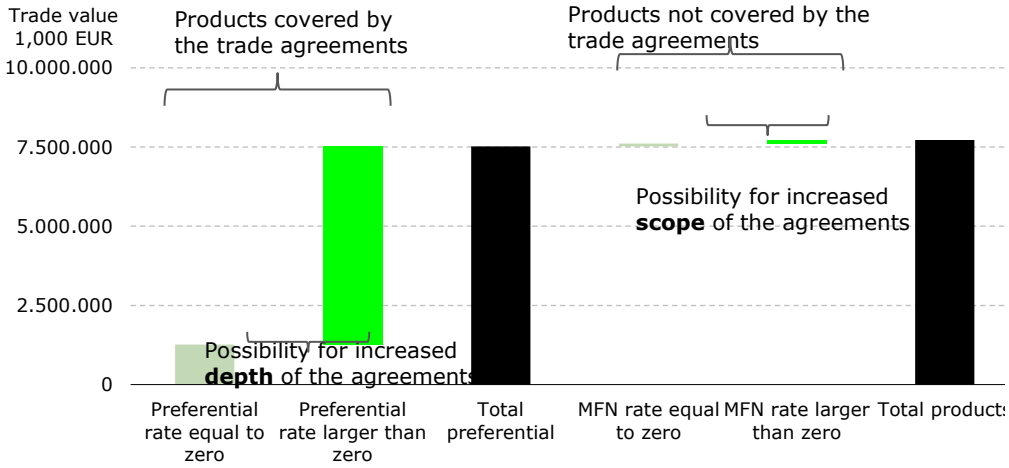
Figure 78 EU tariffs on imported products from Switzerland, 2014



Note: This figure show the tariff distribution weighted by the actual trade in 2014.

Source: Copenhagen Economics based on the tariff lines collected for the analysis as described in Appendix

Figure 79 Swiss tariffs on imports from the EU, 2014



Note: This figure show the tariff distribution weighted by the actual trade in 2014.

Source: Copenhagen Economics based on the tariff lines collected for the analysis as described in Appendix

The equivalent trade weighted figures cannot yet be made in the case of EU-South Korea FTA as the agreement is not yet fully implemented.

Appendix D

Detailed results from the triple-difference model

The estimates from the triple-difference model used to calculate the impact of each of the three agreements on EU exports and imports of agri-food products are shown below. An explanation of how to interpret the results is given in the case of the EU-Mexico FTA.

EU- Mexico FTA

The EU-Mexico FTA entered into force in 2000. To allow for a sufficient time period before and after full implementation, we estimate the impact of the agreement over the period 1996- 2013.

Impacts on EU-Mexican agri-food trade

Impact on products exported prior to the agreement

Table 5 shows the estimates, which we use to calculate the impact of the EU-Mexican FTA on EU exports to Mexico (measured by Mexican import from the EU) on products that the EU already exported to Mexico prior to the agreement.

In the model, we allow for different impacts across products with a high and low preference margin, determined as products above and below the 33rd percentile of the preference margin, measured in percentage points (i.e. the MFN rate – the EU preferential rate). Products which are protected by a non-ad valorem rate on the Mexican market are grouped together, as it is not possible to calculate the preference margin for these products based on the tariff information alone.[72] Within these three groups, we furthermore allow impacts to differ between processed agri-food products (processed foods, food preparations and beverages) and primary agri-food products (commodities, other primary products and non-edible products).

Table 5 below contains the point estimates for each of these six groups (all effects are estimated from a single equation). The table contains both the point estimates pertaining to the EU-Mexican FTA (first column) and the point estimates pertaining to other trade agreements that Mexico has in place with countries other than the EU (column 2). As noted in the description of the model, we test for equality between the EU FTA coefficients and the non-EU trade agreement coefficients. If there is no statistical difference between these coefficients, we employ the latter as these estimates are based on larger sample of products and are thus estimated more precisely. We do so only when

[72] Thus, we do not calculate the ad valorem equivalent of non-ad valorem tariff rates.

there is no statistical difference between the two coefficients. Otherwise, we utilise EU FTA coefficients.

The last column contains the percent increase in Mexican agri-food imports from the EU, as implied by the point estimate. For products with a low preferential margin, there is no impact as the applicable point estimate is statistically insignificant for both primary and processed agri-food products. For products with a high preferential margin, there is a positive and significant impact of the EU-FTA on the value of Mexican imports from the EU (EU exports to Mexico). The point estimate of 0.893 obtained for primary agri-food products with a high preference margin, thus implies that Mexican imports of EU agri-food products belonging to this group, and which are covered by the FTA, is on average 59 per cent higher in 2013, than it would have been in the absence of the FTA.[73]

Based on the average impacts in percent listed in the last column, we calculate the value of exports attributable to the agreement in 2013 by multiplying this impact with the observed 2013 value of Mexican imports of covered products in each group.

[73] This is calculated as 1-(exp(-0.893)) because the point estimates are obtained from a regression that uses the logarithm of total exports as dependent variable.

Table 5 Impacts on EU exports to Mexico (intensive margin)

Dependent variable: Log of import value				
	EU FTA	Non-EU trade agreements	Is the impact of the EU FTA and non- EU trade agreements statistically different?	Average impact
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than or equal to 10 percentage points)				
Primary products	0.231	0.491***	Yes	No impact
	(0.150)	(0.112)		
Processed products	0.279	0.194	No	No impact
	(0.255)	(0.165)		
Products with a high preferential margin (greater than 10 percentage points)				
Primary products	0.550***	0.893***	No*	59%
	(0.206)	(0.129)		
Processed products	0.469**	0.450***	No*	36%
	(0.217)	(0.164)		
Products with a tariff quota or a specific or combined MFN tariff				
Primary products	-0.610*	0.359	Yes	-84%
	(0.349)	(0.242)		
Processed products	0.545	0.682***	Yes	No impact
	(0.470)	(0.244)		
No of obs.				51,022

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

* Because the 0.550 (0.469) point estimate is not statistically different from the 0.893 (0.450) estimate, we use the coefficient on non-EU trade agreements to calculate the average impact.

Source: Authors own calculations

Table 6 below shows the equivalent results for the impact of the EU-Mexico agreement on EU import of Mexican agri-food products.

Table 6 Impact on EU imports from Mexico (intensive margin)

Dependent variable: Log of import value				
	EU FTA	Non-EU trade agreements	Is the impact of the EU FTA and non- EU trade agreements statistically different?	Average impact
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than or equal to 3.4 percentage points)				
Primary products	0.659***	0.203***	Yes	48%
	(0.204)	(0.042)		
Processed products	-0.145	0.307***	Yes	No impact
	(0.531)	(0.082)		
Products with a high preferential margin (greater than 3.4 percentage points)				
Primary products	1.100***	0.457***	Yes	67%
	(0.254)	(0.046)		
Processed products	0.462*	0.463***	No*	37%
	(0.249)	(0.069)		
Products with a tariff quota or a specific or combined MFN tariff				
Primary products	0.985***	0.378***	Yes	63%
	(0.291)	(0.063)		
Processed products	0.353	0.204***	Yes	No impact
	(0.319)	(0.065)		
No of obs.				251,283

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

* Because the 0.462 point estimate is not statistically different from the 0.463 estimate, we use the coefficient on non-EU trade agreements to calculate the average impact.

Source: Authors own calculations

Impact on products not exported prior to the agreement (extensive margin)
Table 7 below shows the estimates used to calculate the impact of the EU-Mexico FTA on new products exported to Mexico as a result of the EU-Mexico agreement.

The set-up is the same as above, where we allow impacts to differ across product groups and preference margins. Again, we show the point estimates pertaining to the EU-Mexico FTA (first column) and the point estimates pertaining to all other trade agreements that Mexico has in place with other countries that the EU (column 2). In each case, we test for equality between the EU FTA coefficients and the coefficient for non-EU trade agreements. If there is no statistical difference between these coefficients, we employ the latter, as these are obtained based on larger sample of products.

The point estimates shown in the first two columns in the table are the results from a linear probability model, which measures the direct impact of the FTA on the likelihood of importing a given product in percentage points. The point estimate of 0.036 for commodities with a low preference margin (shown in column 1) simply implies that preferences have increased the likelihood of exporting a covered product in that group to Mexico by 3.6 percentage points.

Based on the point estimates, column (4) shows the increase in the export likelihood in 2013, which is due to the FTA. This compares the percentage point increase in the likelihood with the original likelihood of positive exports before the FTA took effect. In the case of commodities with a low preference margin, this implies that the FTA has increased the average likelihood of exporting covered products in this group by 8 per cent in 2013.[74] In order to calculate the value of exports of new products attributable to the agreement in 2013, we multiply this impact with the total value of EU exports of covered products within a given product/preference group, which were not exported prior to the agreement.

[74] The fact that the coefficients for Non-EU trade agreements are consistently larger than EU FTA coefficients does not automatically mean that the impact of other countries trade agreements with Mexico has exceeded the impact of the EU-Mexico FTA, as the increase in the average export likelihood depends on the likelihood of exporting a given product prior to tariff concessions.

Table 7 Impact on EU exports to Mexico (extensive margin)

Dependent variable: Import dummy				
	EU FTA	Non-EU trade agree-ments	Is the impact of the EU FTA and non- EU trade agreements statistically different?	Increase in average export likelihood
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than equal to 10 percentage points)				
Primary products	0.036**	0.223***	Yes	8%
	(0.018)	(0.011)		
Processed products	0.079*	0.346***	Yes	10%
	(0.043)	(0.016)		
Products with a high preferential margin (greater than 10 percentage points)				
Primary products	0.078***	0.291***	Yes	16%
	(0.024)	(0.013)		
Processed products	0.032	0.359***	Yes	No impact
	(0.030)	(0.016)		
Products with a tariff quota or a specific or combined MFN tariff				
Primary products	0.079	0.310***	Yes	No impact
	(0.050)	(0.027)		
Processed products	0.004	0.358***	Yes	No impact
	(0.038)	(0.026)		
No. of obs.				989,820

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Table 8 below shows the equivalent results for impact of the EU-Mexico agreement on EU import of new Mexican agri-food products.

Table 8 Impact on EU imports from Mexico (extensive margin)

Dependent variable: Import dummy				
	EU FTA	Non-EU trade agreements	Is the impact of the EU FTA and non- EU trade agreements statistically different?	Increase in average export likelihood
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than equal to 3.4 percentage points)				
Primary products	0.042*	0.220***	Yes	8%
	(0.021)	(0.004)		
Processed products	0.095	0.182***	No*	22%
	(0.112)	(0.010)		
Products with a high preferential margin (greater than 3.4 percentage points)				
Primary products	0.061***	0.271***	Yes	11%
	(0.023)	(0.004)		
Processed products	-0.02	0.321***	Yes	No impact
	(0.033)	(0.007)		
Products with a tariff quota or a specific or combined MFN tariff				
Primary products	-0.026	0.231***	Yes	No impact
	(0.023)	(0.006)		
Processed products	-0.025	0.230***	Yes	No impact
	(0.023)	(0.007)		
No. of obs.				1327590

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

* Because the 0.095 point estimate is not statistically different from the 0.182 estimate, we use the coefficient on non-EU trade agreements to calculate the average impact.

Source: Authors own calculations

Decomposing impacts by price and quantity effects

Table 9 contains the estimates used for the decomposition of the price and quantity effects for EU exports of agri-food goods to Mexico. Estimates are shown separately for products, where Mexico applies an MFN ad valorem tariff rate and products which Mexico apply a non-ad valorem tariff.

The estimates displayed in the first column show the average impact of the EU-FTA on the value of Mexican imports from the EU (EU exports to Mexico) across all products (i.e. processed agri-food products and primary products combined). The point estimate of 0.364 implies that Mexican imports of EU agri-food products covered by the FTA (and subject to an ad valorem MFN rate) is on average 31 per cent higher in 2013 than it would have been in the absence of the FTA.[75]

[75] This is calculated as 1-(exp(-0.364)).

As the average impact on the value of imports is equal to the average impact on quantity times the average price effect and the model is specified in logs, it is straight forward to decompose the total impact into price and quantity effect. The point estimates pertaining to the impact of the EU FTA on (log) quantity and (log) price will thus sum to the equivalent coefficient in the value equation. This means that the share of the impact arising due to e.g. a quantity effect can be found by dividing the point estimate in the quantity equation by the sum of the price and the quantity point estimates.[76]

However, from the results shown in Table 9 in column (3), we see that the EU-Mexican FTA has had no statistically significant impact on Mexican import prices, while the estimates in column (2) show a positive and significant impact on the quantity of EU exports to Mexico. This implies that the entire value effect is due to the volume effect.

Table 9 Price and quantity impacts on EU exports to Mexico

Dependent variable	Log import value (1)	Log import quantity (2)	Log import price (3)
EU FTA (ad valorem)	0.364***	0.493***	-0.115
	(0.141)	(0.161)	(0.072)
EU FTA (non ad valorem)	0.07	0.105	-0.045
	(0.329)	(0.324)	(0.137)
Non-EU trade agreements (ad valorem)	0.508***	0.393***	0.068*
	(0.092)	(0.101)	(0.041)
Non-EU trade agreements (non ad valorem)	0.577***	0.635***	-0.113
	(0.184)	(0.197)	(0.075)
No. of obs.	51022	50364	50364

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

The equivalent results for EU imports from Mexico are shown in Table 10 below. The results show that in the case of products subject to an ad valorem MFN tariff rate (and covered by the FTA) the value effect of the FTA on EU imports from Mexico is due to a volume effect alone. For products subject to a non-ad valorem MFN tariff, there is also a weakly significant and negative price effect. This implies that EU imports of these products have, on average, become cheaper as a result of the FTA. In total, the results thus imply that the impact of the FTA on EU imports of these products from Mexico is due to both a price and quantity effect. However, as shown in Chapter 4 of the report

[76] The impacts on price and quantity, shown in Table 6, are estimated separately. As log (value) = log (p*q) =log (p) + log (q), the sum of these estimates should add up to the estimate from the value equation (Column (1)). This property holds because OLS is a linear projection, only in that case will the sum of the effects of the two linear components of log (value) add up to the direct effect on log (value). However, due to small differences in sample size, arising from the fact that information on quantities is not available for all products, the sum of the two point estimates do not exactly equal the equivalent point estimate in the value equation.

these products account for a relatively small share (30 per cent) of the full impact of the EU-Mexico FTA on EU imports from Mexico and, overall, the volume effect thus dominates.

Table 10 Price and quantity impacts on EU imports from Mexico

Dependent variable	Log import value (1)	Log import quantity (2)	Log import price (3)
EU FTA (ad valorem)	0.732***	0.824***	-0.078
	(0.171)	(0.197)	(0.071)
EU FTA (non ad valorem)	0.594**	0.793***	-0.194**
	(0.238)	(0.255)	(0.083)
Non-EU trade agreements (ad valorem)	0.343***	0.280***	0.055***
	(0.035)	(0.038)	(0.014)
Non-EU trade agreements (non ad valorem)	0.288***	0.324***	-0.037**
	(0.046)	(0.051)	(0.017)
No. of obs.	251283	250576	250576

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Decomposing impacts across detailed product groups

In addition to the distinction between primary and processed products used in the main results, we have also assessed the impact of the EU-Mexican FTA on more disaggregated product groups across both low and high preference margins. The results give an indication of where the strongest effects are found but are estimated on a relatively small number of products in each group, which may be the reason for the many insignificant coefficients. These results should therefore only be viewed as indicative. The results are displayed in Table 11 and Table 12.

Table 11 Impacts on EU exports to Mexico across product groups (intensive margin)

Product group	Estimation coefficient	Average impact
Products with a low preferential margin (less than or equal to 10 percentage points)		
Commodities	Insignificant	No impact
Other primary products	0.476**	38%
Processed products	Insignificant	No impact
Food preparations	Insignificant	No impact
Beverages	Insignificant	No impact
Non-edible products	Insignificant	No impact
Products with a high preferential margin (greater than 10 percentage points)		
Commodities	Insignificant	No impact
Other primary products	0.925***	60%
Processed products	Insignificant	No impact
Food preparations	Insignificant	No impact
Beverages	Insignificant	No impact
Non-edible products	0.680***	49%
Products with a tariff quota or a specific or combined MFN tariff		
Commodities	-1.019***	-177%
Other primary products	Insignificant	No impact
Processed products	Insignificant	No impact
Food preparations	Insignificant	No impact
Beverages	2.930***	95%
Non-edible products	Insignificant	No impact

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level. For each product group, the coefficient listed in column (1) is the point estimate pertaining to the EU-Mexico FTA if this is statistically different from the point estimate pertaining to other trade agreements that Mexico has in place with countries other than the EU. If this is not the case, the latter coefficient is shown, as these are obtained based on larger sample of products.

Source: Authors own calculations

Table 12 Impacts on EU exports to Mexico across product groups (extensive margin)

Product group	Estimation coefficient (1)	Increase in average export likelihood (2)
Products with a low preferential margin (less than or equal to 10 percentage points)		
Commodities	0.085***	13%
Other primary products	Insignificant	No impact
Processed products	Insignificant	No impact
Food preparations	0.105*	13%
Beverages	0.097***	-
Non-edible products	0	0%
Products with a high preferential margin (greater than 10 percentage points)		
Commodities	0.123***	26%
Other primary products	0.078***	18%
Processed products	Insignificant	No impact
Food preparations	Insignificant	No impact
Beverages	Insignificant	No impact
Non-edible products	Insignificant	No impact
Products with a tariff quota or a specific or combined MFN tariff		
Commodities	Insignificant	No impact
Other primary products	Insignificant	No impact
Processed products	Insignificant	No impact
Food preparations	-0.042**	-4%
Beverages	-0.079***	-7%
Non-edible products	Insignificant	No impact

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level. For each product group, the coefficient listed in column (1) is the point estimate pertaining to the EU-Mexico FTA if this is statistically different from the point estimate pertaining to other trade agreements that Mexico has in place with countries other than the EU. If this is not the case, the latter coefficient is shown, as these are obtained based on larger sample of products.

Source: Authors own calculations

Impacts of EU-Mexico FTA on EU exports to third countries

In order to examine whether the EU-Mexico FTA is likely to have impacted EU exports to third countries, we focus on EU exports to Brazil and use this as a surrogate country for Mexico in our analysis.

The results are shown below in Table 13 and indicate that the EU-Mexico agreement has had no statistically significant impact on EU exports to Brazil.

Table 13 Impacts on EU exports to Brazil

Dependent variable	Log import value (1)	Log import quantity (2)	Log import price (3)
EU FTA (ad valorem)	-0.062	-0.052	-0.015
	(0.148)	(0.162)	(0.049)
EU FTA (non-ad valorem)	0	0	0
	(.)	(.)	(.)
No. of observations	38247	38199	38199

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Impacts of the EU-Mexico FTA on intra-EU trade

Finally, we examine whether the EU-Mexico FTA is likely to have impacted EU-intra trade. The results show no significant impact of the EU-Mexico agreement on EU-intra trade in the majority of products (i.e. those covered by an ad valorem tariff), cf. Table 14.

Table 14 Impacts of the EU-Mexico FTA on intra-EU trade

Dependent variable	*Log import value*
EU FTA (ad valorem)	Insignificant
EU FTA (non-ad valorem)	Positive***
No. Of observations	260158

Source: Authors own calculations

EU- South Korea FTA

The EU-South Korean FTA entered into force in 2011. To allow for a sufficient time period before and after full implementation, we estimate the impact of the agreement over the period 2005-2015.

Impacts on EU- South Korean agri-food trade

Impact on products exported prior to the agreement

Table 15 shows the estimates, which we use to calculate the impact of the EU-South Korean FTA on EU exports to South Korea (measured by import from the EU) on products, which the EU already exported to South Korea prior to the agreement.

The estimates pertaining to the EU-South Korean FTA are shown in column (1), while column (2) contains the estimates pertaining to trade agreements that South Korea has in place with countries other than the EU. All but one of the point estimates displayed in column (1) are positive but all are also statistically insignificant. This does not necessarily imply that the FTA has had no impact, but rather that the FTA is relatively new. The large standard errors may thus partly be a result of the short time period after the implementation of the FTA. This seems especially likely if we compare with the equivalent results from the EU-Mexican FTA (displayed in Table 5 above), where the point estimates for the EU-FTA and the non-EU trade agreements have largely converged 13 years after the implementation of the EU-Mexican FTA.

Based on the insights from the EU-Mexican FTA estimates, we consistently employ the point estimates pertaining to the non-EU trade agreements to calculate the impact of the EU-South Korean FTA on trade in products already traded prior to the FTA. This means that we only employ the estimates shown in column (2) in Table 15 to evaluate the impact of the EU-South Korean FTA on EU exports of products already exported to South Korea prior to the FTA.

The interpretation of the point estimates follows the interpretation of the equivalent results for EU-Mexico FTA, cf. Table 5 above.

Table 15 Impacts on EU exports to South Korea (intensive margin)

Dependent variable: Log of import value			
	EU FTA	Non-EU trade agreements	Average impact
	(1)	(2)	(3)
Products with a low preferential margin (less than or equal to 5 percentage points)			
Primary products	0.06	-0.016	No impact
	(0.446)	(0.103)	
Processed products	0.678	0.295**	26%
	(0.448)	(0.117)	
Products with a high preferential margin (greater than 5 percentage points)			
Primary products	0.22	0.306***	26%
	(0.449)	(0.108)	
Processed products	0.712	0.129	No impact
	(0.451)	(0.104)	
Products with a tariff quota or a specific or combined MFN tariff			
Primary products	-0.198	0.648***	48%
	(0.655)	(0.234)	
Processed products	0.666	0.294	No impact
	(0.494)	(0.287)	
No of obs.			251283

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Table 16 below shows the equivalent estimates for EU imports of agri-food products from South Korea. As in the case of EU exports to South Korea, we use the coefficient on non-EU trade agreements.

Table 16 Impacts on EU imports from South Korea (intensive margin)

Dependent variable: Log of import value			
	EU FTA (1)	Non-EU trade agreements (2)	Average impact (3)
Products with a low preferential margin (less than or equal to 3.4 percentage points)			
Primary products	-0.107	0.320***	27%
	(0.403)	(0.082)	
Processed products	0.242	0.24	No impact
	(0.379)	(0.173)	
Products with a high preferential margin (greater than 3.4 percentage points)			
Primary products	-0.238	0.444***	36%
	(0.398)	(0.076)	
Processed products	-0.072	0.448***	36%
	(0.392)	(0.118)	
Products with a tariff quota or a specific or combined MFN tariff			
Primary products	-0.136	0.182*	17%
	(0.454)	(0.097)	
Processed products	0.002	-0.006	No impact
	(0.380)	(0.077)	
No of obs.			251283

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Impact on products not exported prior to the agreement (extensive margin)
Table 17 shows the estimates used to calculate the impact of the EU-South Korean FTA on new products exported to South Korea as a result of the EU-South Korean agreement.

As the model is estimated for the EU27 as whole, the EU specific response to the FTA may be very different than for individual countries in terms of new products being exported. In addition, the equivalent results from the EU-Mexico FTA do not show as strong a convergence over time for the impact on new products (extensive margin) as for impact on existing products (intensive margin). We therefore follow the methodology outlined under the section concerning the EU-Mexico FTA and only use the point estimates pertaining to non-EU trade agreements with South-Korea if these are not statically different from the point estimates pertaining to the EU FTA with South Korea.

The interpretation of the estimates follows the interpretation of the equivalent results explained for the EU-Mexico agreement (see Table 7 above).

Table 17 Impacts on EU exports to South Korea (extensive margin)

Dependent variable: Import dummy				
	EU FTA	Non-EU trade agreements	Is the impact of the EU FTA and non- EU trade agreements statistically different?	Increase in average export likelihood
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than equal to 5 percentage points)				
Primary products	0.077*	0.174***	Yes	16%
	(0.041)	(0.012)		
Processed products	-0.006	0.100***	Yes	No impact
	(0.046)	(0.015)		
Products with a high preferential margin (greater than 5 percentage points)				
Primary products	0.063	0.185***	Yes	No impact
	(0.042)	(0.013)		
Processed products	0.009	0.145***	Yes	No impact
	(0.043)	(0.013)		
Products with a tariff quota or a specific or combined MFN tariff				
Primary products	0.099	0.088***	Yes	No impact
	(0.072)	(0.030)		
Processed products	-0.112**	-0.019	Yes	-10%
	(0.046)	(0.046)		
No. of obs.				568799

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Table 18 below shows the equivalent estimates for EU imports of agri-food products from South Korea.

Table 18 Impacts on EU imports from South Korea (extensive margin)

Dependent variable: Import dummy				
	EU FTA	Non-EU trade agreements	Is the impact of the EU FTA and non-EU trade agreements statistically different?	Increase in average export likelihood
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than equal to 3.4 percentage points)				
Primary products	0.023	0.226***	Yes	No impact
	(0.056)	(0.009)		
Processed products	-0.135**	0.191***	Yes	-12%
	(0.053)	(0.021)		
Products with a high preferential margin (greater than 3.4 percentage points)				
Primary products	0.073	0.285***	Yes	No impact
	(0.047)	(0.007)		
Processed products	-0.036	0.293***	Yes	No impact
	(0.052)	(0.011)		
Products with a tariff quota or a specific or combined MFN tariff				
Primary products	0.045	0.271***	Yes	No impact
	(0.046)	(0.010)		
Processed products	0.024	0.203***	Yes	No impact
	(0.051)	(0.010)		
No. of obs.				811305

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Decomposing impacts by price and quantity effects

Table 19 contains the estimates used for the decomposition of the price and quantity effects for EU exports of agri-food products to South Korea. As the main impact of the agreement is due to increased exports of products traded already prior to the FTA, we utilise the point estimates pertaining to non-EU trade agreements, which show no statistically significant price effect.

The interpretation of the estimates follows the interpretation of the equivalent results explained for the EU-Mexico agreement (see Table 9 above).

Table 19 Price and quantity impacts on EU exports to South Korea

Dependent variable	Log import value (1)	Log import quantity (2)	Log import price (3)
EU FTA (ad valorem)	0.329	0.228	0.163*
	(0.432)	(0.457)	(0.097)
EU FTA (non-ad valorem)	-0.1	-0.061	-0.027
	(0.611)	(0.680)	(0.252)
Non-EU trade agreements (ad valorem)	0.154**	0.182*	-0.01
	(0.075)	(0.098)	(0.033)
Non-EU trade agreements (non-ad valorem)	0.540***	0.582**	0.003
	(0.189)	(0.243)	(0.084)
No. of obs.	50434	44622	44622

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Table 20 below shows the equivalent estimates for EU imports of agri-food products from South Korea.

Table 20 Price and quantity impacts on EU imports from South Korea

Dependent variable	Log import value (1)	Log import quantity (2)	Log import price (3)
EU FTA (ad valorem)	-0.153	0.076	-0.092
	(0.356)	(0.381)	(0.126)
EU FTA (non-ad valorem)	-0.063	0.228	-0.163
	(0.377)	(0.404)	(0.124)
Non-EU trade agreements (ad valorem)	0.404***	0.307***	0.01
	(0.061)	(0.071)	(0.030)
Non-EU trade agreements (non-ad valorem)	0.077	0.046	-0.059**
	(0.062)	(0.072)	(0.025)
No. of obs.	173425	166629	166629

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Decomposing impacts across detailed product groups

Table 18 contains the results estimated across more disaggregated product groups across both low and high preference margins. The results give an indication of where the strongest effects are found but are estimated on a relatively small number of products in each group, which may be the reason for the many insignificant coefficients. These results should therefore only be viewed as indicative.

Table 21 Impacts on EU exports to South Korea across product groups (intensive margin)

Product group	Estimation coefficient (1)	Average impact (2)
Products with a low preferential margin		
Commodities	Insignificant	No impact
Other primary products	Insignificant	No impact
Processed products	Insignificant	No impact
Food preparations	0.305**	26%
Beverages	Insignificant	No impact
Non-edible products	Insignificant	No impact
Products with a high preferential margin		
Commodities	0.642***	47%
Other primary products	0.277**	24%
Processed products	Insignificant	0%
Food preparations	Insignificant	0%
Beverages	Insignificant	0%
Non-edible products	Insignificant	0%
Products with a tariff quota or a specific or combined MFN tariff		
Commodities	Insignificant	No impact
Other primary products	0.892***	59%
Processed products	Insignificant	No impact
Food preparations	Insignificant	No impact
Beverages	Insignificant	No impact
Non-edible products	Insignificant	No impact

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Table 22 Impacts on EU exports to South Korea across product groups (extensive margin)

Product group	Estimation coefficient	Increase in average export likelihood
Products with a low preferential margin		
Commodities	0.172***	38%
Other primary products	0.090**	37%
Processed products	Insignificant	No impact
Food preparations	Insignificant	No impact
Beverages	Insignificant	No impact
Non-edible products	Insignificant	No impact
Products with a high preferential margin		
Commodities	0.176***	30%
Other primary products	Insignificant	No impact
Processed products	Insignificant	No impact
Food preparations	Insignificant	No impact
Beverages	Insignificant	No impact
Non-edible products	Insignificant	No impact
Products with a tariff quota or a specific or combined MFN tariff		
Commodities	Insignificant	No impact
Other primary products	0.084**	14%
Processed products	Insignificant	No impact
Food preparations	-0.11**	-
Beverages	Insignificant	No impact
Non-edible products	Insignificant	No impact

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Impacts of the EU-South Korea FTA on EU exports to third countries

In order to examine whether the EU-Korea FTA is likely to have impacted EU exports to third countries, we focus on EU exports to Japan and use this as a surrogate country for South Korea in our analysis. The results are displayed in Table 23 below and should be interpreted in the same way as the results pertaining to the impact of the EU-Mexico FTA on EU exports to Brazil.

In short, the results show that the EU-South Korean FTA has had no statistically significant impact on EU exports to Japan.

Table 23 Impacts of the EU-South Korea FTA on EU exports to Japan

Dependent variable	Log import value (1)	Log import quantity (2)	Log import price (3)
EU FTA (ad valorem)	-0.295	-0.119	-0.177
	(0.211)	(0.275)	(0.114)
EU FTA (non-ad valorem)	0.148	0.198	-0.05
	(0.287)	(0.367)	(0.149)
No. of obs.	35093	35088	35088

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Impacts of the EU-South Korea FTA on intra-EU trade

Finally, we examine whether the EU-South Korea FTA is likely to have impacted EU-intra trade. The results show no significant impact of the EU-South Korea agreement on EU-intra trade, cf, Table 24.

Table 24 Impacts of the EU-South Korea FTA on intra-EU trade

Dependent variable	*Log import value*
EU FTA (ad valorem)	Insignificant
EU FTA (non-ad valorem)	Insignificant
No. Of observations	178684

Source: Authors own calculations

EU- Switzerland trade agreements

In the case of Switzerland we see tariff concessions starting in 2000, cf. Figure 38 in the main report. To allow for a sufficient time period before and after full implementation of the trade agreements, we estimate the impact over the period 1997- 2010.

Impacts on EU Swiss agri-food trade

Impact on products exported prior to the agreements

Table 25 shows the estimates, which we use to calculate the impact of the EU-Switzerland trade agreements on EU exports to Switzerland (measured by import from the EU) on products, which the EU already exported to Switzerland prior to the agreement.

The interpretation of the results differs slightly from the interpretation of the equivalent results in the case of the EU-Mexican FTA and the EU-South Korean FTA, as the dependent variable is measured as the absolute value (in USD) of EU exports to Switzerland instead of in logs.

The reason that we do this is that the EU accounted for a very large share (75 per cent) of Swiss imports of agri-food products already prior to the trade agreements. In order to isolate the causal impact of the trade agreements, we need to take this into account.

We can think of a situation where the Swiss Government, as part of the trade agreements, has granted especially lenient access to products for which it anticipates that demand will be higher (e.g. due to a change in Swiss consumer preferences). In this case, Swiss imports of these products from the EU would likely have increased even in the absence of the trade agreements. Given the high initial EU exports to Switzerland, we cannot isolate the causal impact of the trade agreements if we measure imports in logs, as this would require that the *percentage* growth in imports from the EU and elsewhere would be similar in the absence of the trade agreements. Given the high level of EU exports to Switzerland before the trade agreements, it is unlike that the EU would be able to increase exports by the same per cent as others. In such a situation, the estimated impacts of the trade agreements would likely be negative, simply due to the fact that the percentage increase in Swiss imports from the EU would be less than from other countries. Thus, even if the agreement had in fact caused EU exports to increase, the impact we would obtain from the triple-difference model would likely be negative or insignificant.

In order to avoid this, we measure Swiss imports in absolute values (USD), which means that we control for factors such as the above via absolute changes in Swiss imports from other countries. The results are displayed in Table 25 below. The only statistically significant point estimate is found for processed agri-food products with a high preference margin. The point estimate shown implies that EU exports of products covered by the trade agreements, within this group, is on average 8,700,000 USD higher

due to the trade agreements. In order to obtain the total impact, we multiply this estimate with the number of goods, within this group, which receives a preference and which the EU exports to Switzerland.

Table 25 Impacts on EU exports to Switzerland (intensive margin)

Dependent variable: Import value (USD)			
	EU trade Agreements	Non-EU trade agreements	Is the impact of the EU trade agreements and non- EU trade agreements statistically different?
	(1)	(2)	(3)
Products with a low preferential margin (less than or equal to 2.7 percent percentage points)			
Primary products	-1100000	46000	No
	(870000)	(840000)	
Processed products	22000000	-6900000	No
	(14000000)	(6100000)	
Products with a high preferential margin (greater than 2.7 percent percentage points)			
Primary products	-330000	760000	No
	(870000)	(630000)	
Processed products	8700000***	-2400000	Yes
	(3100000)	(1800000)	
No obs.			251283

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level. The sample limited to top 12 countries accounting for at least 0.8% of total Swiss agri-food imports in 2000 and includes EU, US, Brazil, Turkey, China, Colombia, Australia, New Zealand, South Africa, Canada. As all Swiss tariffs are expressed as specific tariffs (i.e. relative to the quantity imported), the magnitude of a given tariff preference is determined based on the preference margin per unit of imports.

Source: Authors own calculations

Table 26 below shows the equivalent estimates for EU imports of agri-food products from Switzerland. The interpretation of these results is equivalent to the interpretation of the equivalent results for the EU-Mexico FTA, displayed in Table 6.

Table 26 Impacts on EU imports from Switzerland (intensive margin)

Dependent variable: Log of import value				
	EU trade agreements	Non-EU trade agreements	Is the impact of the EU trade agreements and non-EU trade agreements statistically different?	Average impact
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than or equal to 3.4 percentage points)				
Primary products	0.61	0.333***	Yes	No impact
	(0.451)	(0.048)		
Processed products	0.476	0.254***	Yes	No impact
	(0.509)	(0.091)		
Products with a high preferential margin (greater than 3.4 percentage points)				
Primary products	0.032	0.589***	Yes	No impact
	(0.222)	(0.054)		
Processed products	0.28	0.488***	Yes	No impact
	(0.217)	(0.082)		
Products with a tariff quota or a specific or combined MFN tariff				
Primary products	0.326*	0.476***	No*	38%
	(0.172)	(0.073)		
Processed products	0.996*	0.243***	Yes	63%
	(0.516)	(0.073)		
No of obs.				251283

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

* Because the 0.326 point estimate is not statistically different from the 0.476 estimate, we use the coefficient on non-EU trade agreements to calculate the average impact.

Source: Authors own calculations

Impact on products not exported prior to the agreement (extensive margin)
Table 27 below shows the estimates used to calculate the impact of the EU-Switzerland trade agreements on new products exported to Switzerland as a result of the agreements. The interpretation of the estimates follows the interpretation of the equivalent results explained for the EU-Mexico agreement (see Table 7 above).

Table 27 Impacts on EU exports to Switzerland (extensive margin)

Dependent variable: Import dummy				
	EU trade agreements	Non-EU trade agreements	Is the impact of the EU trade agreements and non-EU trade agreements statistically different?	Increase in average export likelihood
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than equal to 2.7 percent percentage points)				
Primary products	0.052***	-0.002	Yes	5%
	(0.013)	(0.002)		
Processed products	-0.018*	0.017*	Yes	-2%
	(0.009)	(0.010)		
Products with a high preferential margin (greater than 2.7 percent percentage points)				
Primary products	0.006	0.002	No	No impact
	(0.010)	(0.001)		
Processed products	-0.010	-0.004	No	No impact
	(0.007)	(0.003)		
No. of obs.				806400

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Table 28 below shows the equivalent estimates for EU imports of agri-food products from Switzerland.

Table 28 Impacts on EU imports from Switzerland (extensive margin)

Dependent variable: Import dummy				
	EU trade agreements	Non-EU trade agreements	Is the impact of the EU trade agreements and non-EU trade agreements statistically different?	Increase in average export likelihood
	(1)	(2)	(3)	(4)
Products with a low preferential margin (less than equal to 3.4 percentage points)				
Primary products	-0.008	0.214***	Yes	No impact
	(0.027)	(0.005)		
Processed products	-0.027	0.170***	Yes	No impact
	(0.048)	(0.011)		
Products with a high preferential margin (greater than 3.4 percentage points)				
Primary products	0.007	0.275***	Yes	No impact
	(0.022)	(0.005)		
Processed products	-0.007	0.331***	Yes	No impact
	(0.018)	(0.008)		
Products with a tariff quota or a specific or combined MFN tariff				
Primary products	-0.027	0.224***	Yes	No impact
	(0.023)	(0.007)		
Processed products	-0.032**	0.238***	Yes	-3%
	(0.013)	(0.008)		
No. of obs.				1032570

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Decomposing impacts by price and quantity effects

Because the impact of the trade agreements on EU exports to Switzerland is estimated using the absolute value of imports, it is not possible to decompose the value effect into a quantity and price effect and we therefore only do so for EU imports from Switzerland.

These estimates are shown in Table 29 below. As the impact of the trade agreements on EU imports from Switzerland is due entirely to products covered by a non-ad valorem tariff, the results indicate that the increase in the value of imports is due alone to a volume effect.

Table 29 Price and quantity impacts on EU imports from Switzerland

Dependent variable	Log import value (1)	Log import quantity (2)	Log import price (3)
EU trade agreements (ad valorem)	0.196	0.054	0.145**
	(0.151)	(0.157)	(0.058)
EU trade agreements (non ad valorem)	0.621**	0.707***	-0.078
	(0.246)	(0.257)	(0.086)
Non-EU trade agreements (ad valorem)	0.431***	0.380***	0.041**
	(0.040)	(0.044)	(0.017)
Non-EU trade agreements (non-ad valorem)	0.354***	0.404***	-0.054***
	(0.052)	(0.059)	(0.020)
No. of obs.	188388	187904	187904

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Decomposing impacts across detailed product groups

Table 30 and Table 31 contain the results obtained across more disaggregated product groups across both low and high preference margins. As the results should only be viewed as indicative due to the relatively small number of products in each group, the sign of the impact (as opposed to the impact in USD) is listed in the case of the intensive margin.

Table 30 Impacts on EU exports to Switzerland across product groups (intensive margin)

Product group	Impact (1)
Products with a low preferential margin	
Commodities	Insignificant
Other primary products	+
Processed	Insignificant
Food preparations	Insignificant
Beverages	Insignificant
Non-edible	Insignificant
Products with a high preferential margin	
Commodities	Insignificant
Other primary	-
Processed	Insignificant
Food preparations	+
Beverages	+
Non-edible	Insignificant

Note: The sign in column (1) shows the sign of the estimated impact in those cases where there is a statically significant result.

Source: Authors own calculations

Table 31 Impacts on EU exports to Switzerland across product groups (extensive margin)

Product group	Estimation coefficient (1)	Increase in average export likelihood (2)
Products with a low preferential margin		
Commodities	Insignificant	No impact
Other primary	Insignificant	No impact
Processed	Insignificant	No impact
Food preparations	-0.028**	-3%
Beverages	Insignificant	No impact
Non-edible	0.067***	7%
Products with a high preferential margin		
Commodities	Insignificant	No impact
Other primary	Insignificant	No impact
Processed	Insignificant	No impact
Food preparations	-0.029***	-3%
Beverages	Insignificant	No impact
Non-edible	Insignificant	No impact

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

Impacts of EU-Switzerland trade agreements on EU exports to third countries

In order to examine whether the EU-Switzerland trade agreements are likely to have impacted EU exports to third countries, we focus on EU-intra trade (exports from one EU country to another). The results are displayed in Table 32 below and should be interpreted in the same way as the results pertaining to the impact of the EU-Mexican FTA on EU exports to Brazil.

In short, the results show that the trade agreements has had no statistically significant impact on EU-intra trade.

Table 32 Impacts of the EU-Switzerland trade agreements on intra-EU trade

Dependent variable	Log import value (1)	Log import quantity (2)	Log import price (3)
EU trade agreements (ad valorem)	0.024	0.032	-0.009
	(0.036)	(0.042)	(0.017)
EU trade agreements (non-ad valorem)	0	0	0
	(.)	(.)	(.)
No. of obs.	195103	194622	194622

Note: Standard errors (in brackets) are clustered at the country-product level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Source: Authors own calculations

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