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Copenhagen Economics

IRELAND & THE IMPACTS OF BREXIT

STRATEGIC IMPLICATIONS FOR IRELAND ARISING FROM CHANGING EU-UK TRADING RELATIONS

This report is prepared for the Department of Business, Enterprise and Innovation, for the Government of Ireland.

Copenhagen Economics

Disclaimer

All scenarios and analyses contained in this report assume "no policy change" – i.e. before any mitigating actions are taken by the Irish Government.

Acknowledgement

This report was prepared for the Irish government, and has benefitted from valuable inputs from all of the stakeholders listed at Appendix A and from the comments and insights by the steering group chaired by the Department of Business, Enterprise and Innovation, and consisting of representatives from the Department of Agriculture, Food and the Marine, Department of Finance, and the Department of Public Expenditure and Reform.

Copenhagen Economics would also like to acknowledge the contribution of Professor Alan Mathews and Professor Joseph Francois to this report.

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Executive Summary

The Department of Business, Enterprise & Innovation (DBEI) has requested an analysis of the strategic implications arising from changes in EU-UK trading and investment patterns after Brexit.

Our study finds that Ireland is uniquely exposed to Brexit due to a very high trade intensity with the UK. Approximately 15 per cent of Irish goods and services exports are destined to the UK. In certain sectors, the UK is an especially important market, such as the agri-food sector where around 40 per cent of exports are destined for the UK. In addition, two-thirds of Irish exporters make use of the UK landbridge to access continental markets.

This report analyses how changes in the EU-UK trade relationship could affect the Irish economy. The report quantifies how different types of EU-UK trade scenarios could affect Ireland's trade with the UK and other trading partners. Finally, the analysis provides an assessment of the related macro-economic impacts as well as sector impacts for Ireland for a range of scenarios with different combinations of tariffs and other trade costs for EU-UK trade.

Trade costs will increase in all scenarios

Notwithstanding the December 2017 interpretation of UK red lines by the Barnier taskforce from the EU Commission, which points to a free-trade agreement as being the only realistic model for a post-Brexit trade agreement with the UK, we have been asked to assess the broadest range of scenarios in order to help Ireland prepare as best as possible for Brexit.

We assess the impact of Brexit on the Irish economy, across four long-term scenarios:

- **A European Economic Area (EEA) scenario**, where we assume similar levels of trade costs between the EU and the UK as are currently observed between the EU and the EEA-members (Norway and Iceland). The scenario includes duty free trade for most products, though with some tariffs on sensitive products within the agri-food sectors. Border inspections on EU-UK trade will add customs costs. The risk of regulatory divergence for both goods and services is lowest in this scenario.
- **A Customs Union (CU) scenario**, where we assume that the EU and the UK agree on a traditional customs union agreement. The scenario includes duty free trade for most products, though with some tariffs on sensitive products within the agri-food sectors. Border inspections on EU-UK trade will add customs costs. This scenario implies a higher risk of regulatory divergence for both goods and services relative to an EEA-like scenario, as a standard customs union does not cover regulatory issues for goods and does not address service trade.
- **A Free trade agreement (FTA) scenario**, where we assume that the EU and the UK agree on a free trade agreement (FTA). We use the effects of an average EU FTA as mid-point estimate, and the scenario includes duty free trade for most products, though with some tariffs on sensitive products within the agri-food sectors. Border inspections on EU-UK trade will add customs costs. As in the customs union scenario, there is a risk of emerging regulatory divergence between the EU and the UK in both goods and services.
- **A WTO Scenario (WTO) scenario**, where we assume that trade will be governed by WTO rules and other WTO agreements. In this case, the UK and the EU will impose MFN tariffs on each other's goods where these are not bound by existing plurilateral agreements or arrangements. In addition, we assume that the EU and the UK will continue to use tariff rate quotas both between them and with third countries, which implies that the effective

import duty on many products is significantly lower than the simple MFN tariff.

As in the previous scenarios, the introduction of border inspections add customs costs. The risk of regulatory divergence between the EU and the UK in both goods and services are higher than in the previous scenarios

The findings are based on in-depth modelling and extensive stakeholder engagement

We assess the impact of Brexit by applying a state-of-the-art Computable General Equilibrium (CGE) model to analyse the impacts of each of the scenarios on the Irish economy.

The long-term scenarios are assessed relative to a *2030 non-Brexit baseline.* This means that for each scenario we compare two future states of the Irish economy, namely the "no Brexit" situation with the UK remaining a full EU member in 2030 and the scenario representing the relevant Brexit scenario (EEA, Customs Union, FTA or WTO). In order to assess the shorter-term impacts of Brexit, we also assess two short-term scenarios relative to a *2020 non-Brexit baseline.*

In addition, we have analysed Irish trade data, reviewed existing reports on Brexit, and conducted interviews with a broad range of stakeholders.

Brexit will have negative impacts on the Irish economy in all scenarios analysed

Brexit will have negative impacts on Irish trade with adverse knock-on effects on Irish production and ultimately Irish GDP. The main results from the modelling are summarised in the table below.

Summary of results

	EEA Scenario	Customs Union Scenario	FTA Scenario	WTO Scenario
GDP Impact	-2.8%	-4.3%	-4.3%	-7.0%
Exports	-3.3%	-4.4%	-4.5%	-7.7%
Imports	-3.5%	-4.7%	-4.8%	-8.2%

Note: The impact on GDP under a Customs Union scenario could be reduced to 3.4% if political agreement can be reached to minimise customs procedures.

Based on our modelling, Irish GDP will be 2.8 per cent lower than the non-Brexit baseline level in 2030 in the EEA scenario and 4.3 per cent lower than this baseline in the customs union scenario or FTA scenario. Under the WTO scenario, GDP would 7.0 per cent lower than the non-Brexit baseline level of GDP in 2030 if UK regulation diverges to the full extent of non-FTA partners – of course, one can assume that a greater degree of regulatory divergence is more likely to occur under a WTO scenario than under the other scenarios considered. A 7.0 per cent drop in GDP corresponds to €18 billion on a 2015-basis.

Irish exports and imports of goods and services are predicted to be negatively affected by Brexit in all scenarios analysed in this report. In the EEA scenario, we predict Ireland's total exports of goods and services to be 3.3 per cent below the non-Brexit baseline level in 2030 – this figure varies depending on the degree of regulatory divergence that occurs. The impact on total Irish exports could be up to -4.4 per cent in the customs union scenario and -4.5 in the FTA scenario. In the WTO scenario, total Irish exports are predicted to be 7.7 per cent below the non-Brexit baseline level in 2030. In percentage terms, Irish imports will be slightly more affected than exports in all scenarios due to a higher exposure towards the UK in relation to the imports of goods.

Brexit will also impact Irish wages negatively for all skill groups. In the WTO scenario, our results show that real wages will be 8.7 per cent below the 2030 non-Brexit baseline level for low skilled workers, while the equivalent negative effect for high skilled workers will be 6.5 per cent. In the EEA scenario, impacts will be smaller and range between 2.6 per cent for high skilled workers and 3.5 for low skilled workers.

Five sectors are key to understanding the impact of Brexit

The impact of Brexit is particularly large in some sectors as a result of a combination of a large scale of Irish-UK trade and the scale of the Brexit impact in the specific sector. We find that the following five sectors account for the vast majority of the total impact of Brexit and are therefore of key strategic interest to Ireland in the Brexit negotiations:

- **Agri-food**, where processed foods, beef, sheep and other cattle meat and dairy are the sub-sectors in which the largest impacts occur, and where trade and production are predicted to fall significantly below the non-Brexit baseline level in 2030. Production in other primary agriculture sub-sectors such as grains, fruit and vegetables, forestry and fishing etc. will also be negatively affected – however, to a smaller extent. Impacts in the agri-food sector are driven by a combination of tariffs, customs costs and the risk of regulatory divergence.
- **Pharma-Chemicals**, which is the absolute largest export sector in Ireland. Our analysis shows that production in the sector could fall by 1-5 per cent below the non-Brexit baseline production level in 2030. Impacts in this sector are almost exclusively driven by the risk of regulatory divergence and increased border costs.
- **Electrical machinery**, which includes different types of electronic equipment such as computers, televisions and communication equipment, is another large export sector. Production in this sector is predicted to fall by 5-10 per cent below the non-Brexit baseline production level in 2030. Customs costs and the risk of regulatory divergence are the main factors driving the impacts in this sector.
- **Wholesale and retail** is an important sector in Ireland. The sector could face new costs in their supply chains as a result of diverging regulatory requirements. The sector will also be negatively affected by an overall drop in consumer demand resulting from Brexit.
- **Air transport**, which could face substantial challenges on routes to the UK as a result of Brexit.

Irish interests in the Brexit negotiations include several main elements

Of the scenarios analysed in this report, the EEA-scenario is the outcome that would minimize the economic loss (in GDP) for Ireland in the EU-UK trade negotiations. Measured relative to Irish GDP in 2015, the difference between the "best" (EEA) scenario and the "worst" (WTO) is €11 billion in 2030 (in 2015 levels). In a hypothetical situation, where regulatory divergence for goods and services could be avoided and where the Brexit impacts only relate to tariffs and border costs, the theoretical loss to Irish GDP would be further reduced to around 1 per cent of GDP or approximately €3 billion in 2015 terms.

With the objective of minimizing the overall economic loss to Irish GDP, the best possible trade negotiation outcome for Ireland would be an agreement that has an acceptable balance of rights and obligations for all parties and with the following main elements:

- No tariffs
- Large quotas for agricultural products
- Low border costs
- Landbridge transit
- Low regulatory divergence
- Low barriers for service trade

Domestic policy responses can mitigate Brexit impacts

Based on findings described in the report and extensive engagement with Irish stakeholders, including many business organisations, we also identify domestic policy responses to mitigate the impacts of Brexit. These fall into three broad categories:

1. **Trade promotion policies** (e.g. helping existing exporters to access new markets, or new exporters to engage in exporting)
2. **Enterprise policies** (e.g. helping the transition from declining to growing sectors)
3. **Skills policies** (e.g. supporting skills required by the unavoidable adjustments)

Each of these categories are discussed in more detail in the report. This is followed by a short discussion about the domestic policies required to pursue the few opportunities from Brexit that also arise (notwithstanding the fact that the overall impact of Brexit will be negative for Ireland).

Acronyms & Definitions

CAA	Civil Aviation Authority
CGE model	Computable General Equilibrium model (See Appendix B)
CRD	Capital Requirements Directive: These Directives introduced a supervisory framework in the EU which reflect the Basel II and Basel III rules on capital measurement and capital standards
CSO	Central Statistics Office
CU	Customs Union: A form of economic integration in which members not only eliminate trade barriers internally, but also establish a common trade regime (including a common external tariff) with respect to non-members
EASA	European Aviation Safety Agency
ECAA	European Common Aviation Area
ECB	European Central Bank
EEA	European Economic Area: The EEA comprises the 28 EU member states, as well as three of the four member states of the EFTA (Iceland, Liechtenstein and Norway). Membership provides for the free movement of persons, goods, services and capital within the European Single Market
EFTA	European Free Trade Association: EFTA is a regional trade organisation and free trade area consisting of Iceland, Liechtenstein, Norway, and Switzerland. It operates in parallel with the EU and all four member states participate in the European Single Market. They are not, however, party to the EU Customs Union
FABs	Functional Air Blocks: FABs are airspace blocks based on operational requirements and established regardless of State boundaries. They are vital for reducing airspace fragmentation and are necessary to accommodate growing traffic
FDI	Foreign Direct Investment
FOB	Free on Board: FOB refers to the value of a shipment of goods at the port of departure from the exporting market, before insurance and transport charges are added
FTA	Free Trade Agreement: An FTA is an agreement between two or more countries that establishes the free exchange of goods and services among parties. Each party to an FTA retains its own independent trade regime with respect to non-members (unlike the case of a customs union). FTAs are subject to the disciplines and oversight of the WTO
GDP	Gross Domestic Product: GDP is the market value of all goods and services produced in a country in a year
GTAP	Global Trade Analysis Project database global data base describing bilateral trade patterns, production, consumption and intermediate use of commodities and services

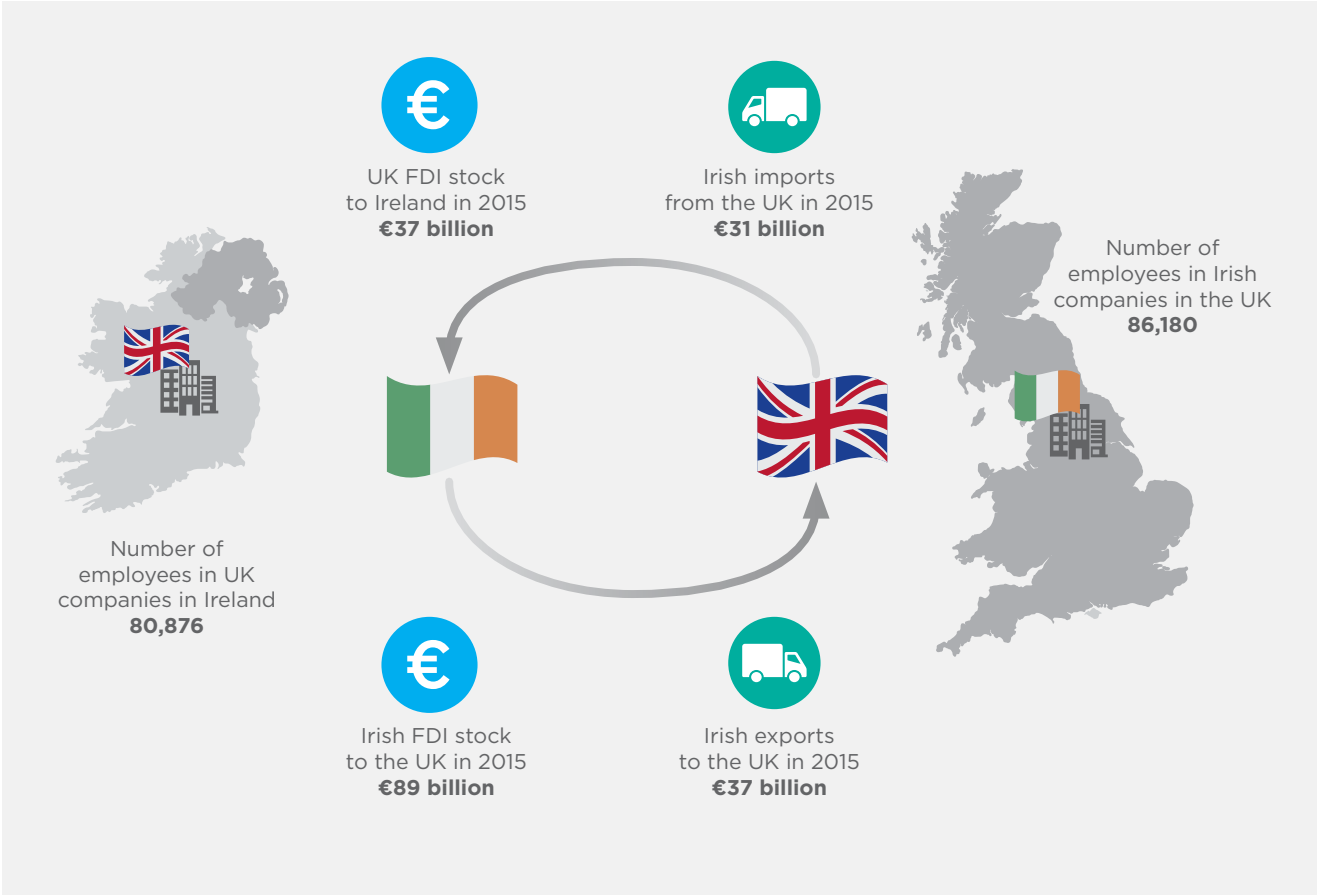
ICT	Information and Communication Technology
ITA	Information Technology Agreement: 82 ITA participants are committed to completely eliminating tariffs on IT products covered by the Agreement
MFN	Most Favoured Nation: MFN is the cornerstone of non-discrimination among WTO members. Any favourable treatment provided by a WTO member to any other country must immediately and unconditionally be provided to all other WTO members
MiFID	Market in Financial Instruments Directive: MiFID provides harmonised regulation for investment services across the 31 member states of the EEA
National Schedules	Lists of products and services, and the access conditions attached to them for each WTO member
NTBs	Non-tariff barriers: NTBs refer to all restraints on the import of goods other than tariffs
PSD	Payment Services Directive: The Directive regulates payment services and payment service providers throughout the EU and EEA
Rules of Origin	Rules of Origin are the rules by which customs and other authorities determine the source of an imported product
SPS	Sanitary and Phytosanitary Measures: Measures to protect human, animal or plant life and health
Single Market	The European Single Market seeks to guarantee the free movement of goods, capital, services, and labour – the "four freedoms" – within EU. It encompasses the EU's 28 member states, and has been extended, with exceptions, to Iceland, Liechtenstein and Norway through the Agreement on the European Economic Area and to Switzerland through bilateral treaties
SMEs	Small and medium-sized enterprises
Tariff	A duty levied on goods entering a new customs area – sometimes refered to as a customs duty
TRQ	Tariff Rate Quota: A quota within which imports enter a market with a tariff advantage. A TRQ is a volume of imports whose tariff is lower than the tariff charged for imports above the quota
Transit	The act of goods passing over or through territory belonging to another country
WTO	World Trade Organisation: The WTO is the international organization dealing with the rules of trade between nations. Its goal is to ensure that trade flows as smoothly, predictably and freely as possible

CHAPTER 1
Current Ireland-UK trade and investment relationship

This chapter shows that the UK is a very important partner for Ireland measured in terms of both trade and investments, cf. Figure 1 and as a result, Ireland is uniquely exposed to Brexit.

Irish exports of goods and services to the UK equalled almost €37 billion in 2015, while imports from the UK reached €31 billion. The UK is also an important destination for Irish FDI as well as an important origin of FDI into Ireland, supporting more than 80,000 jobs in Ireland.

Figure 1. Ireland-UK trade and investment relation



Note: *FDI is measured as total year end positions in 2015, and stems from the balance of payment statistics. The number of employees in UK companies in Ireland and vice versa is obtained from Central Statistics Office Ireland (2016), Brexit: Ireland and the UK in Numbers and the factsheet FDI in Ireland 2015.*

Source: *Copenhagen Economics based on data from CSO.*

1.1 Current Ireland-UK trade in goods and services

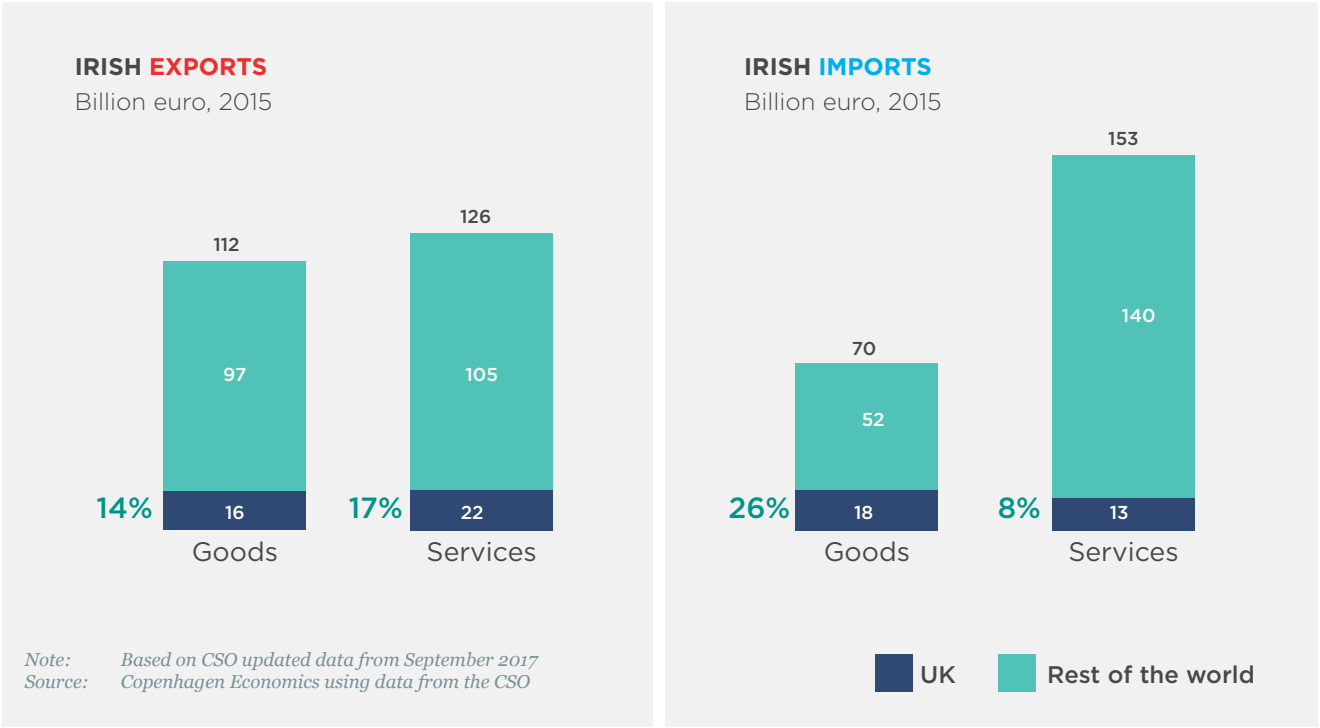
The UK is an important trading partner for Ireland. Goods exports to the UK amounted to €16 billion or around 14 per cent of total Irish goods exports in 2015. Ireland exported €22 billion worth of services, corresponding to 17 per cent of total Irish service exports in 2015, cf. Figure 2.

Ireland is also very dependent on the UK for imports of goods. Ireland imported €18 billion of goods from the UK for (or 26 per cent of total Irish goods imports) in 2015. According to CSO statistics for service trade, Ireland is relatively less dependent on the UK when it comes to service imports, where the €13 billion imported from the UK made up only 8 per cent of total Irish service imports in 2015, cf. Figure 2.

Irish exports to the UK suffered during the financial crisis, and the pre-crisis level was regained only in 2014.[1] The relative importance of the UK market has been declining, from 20 per cent of total exports (goods and services) in 2008 to around 15 per cent in 2015. Recent goods trade statistics from October 2017 show a similar share of Irish exports to the UK of around 14 per cent of total Irish goods exports, when looking at the average over the preceding twelve months.

Irish imports from the UK have only recently reached the pre-crisis level. The relative importance of the UK as source of Ireland's imports declined from 24 per cent of total imports in 2007 to around 14 per cent in 2015. In the same year (2015), goods imports from the UK made up 26 per cent of total Irish goods imports.

Figure 2. Irish trade with the UK and the rest of the world, 2015



Note: *Based on CSO updated data from September 2017*
Source: *Copenhagen Economics using data from the CSO*

1 Based on CSO updated data from September 2017. Note that CSO trade statistics deviate from GTAP data used in most models, for a number of reasons. The CSO for example reports services exports based on ownership and include exports from Irish affiliates based outside of Ireland. As GTAP data provides a better picture of the economic activity in Ireland, we use this data to model the impact of Brexit on Ireland.

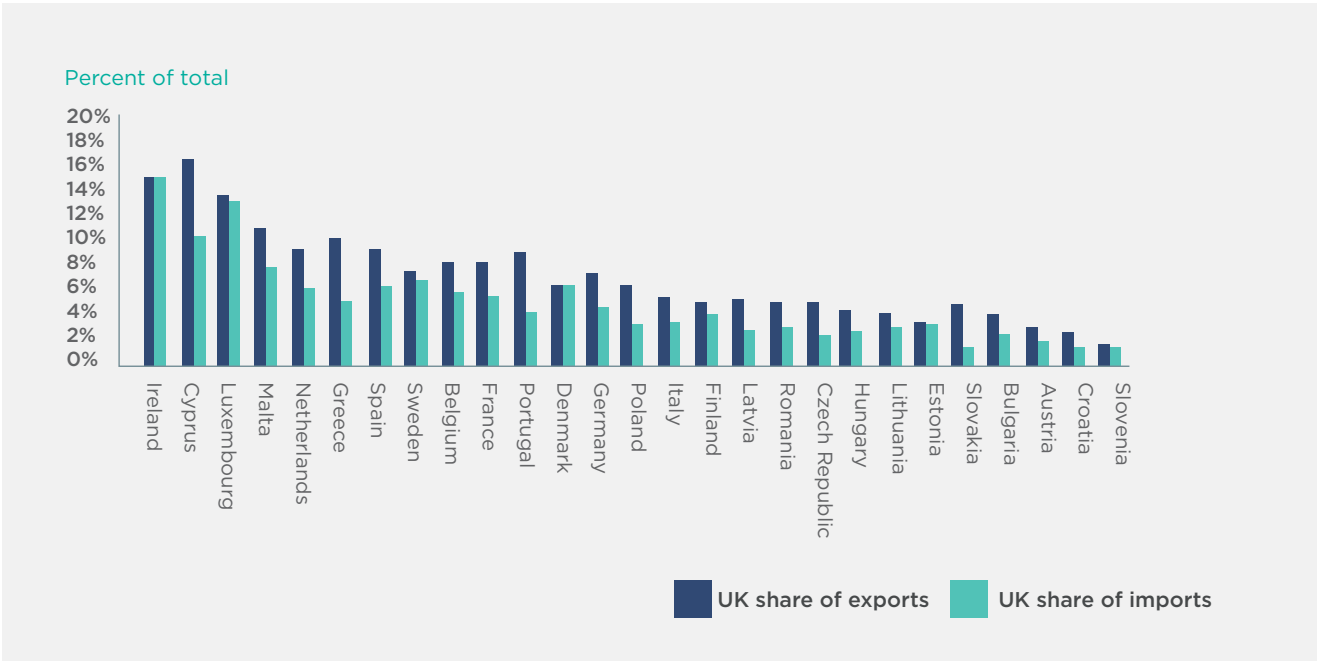
1.2 Ireland's unique exposure to Brexit

In comparison to the remaining 26 EU members, Ireland is highly dependent on trade with the UK, cf. Figure 3. While Ireland exports around 15 per cent of its goods and services exports to the UK, larger countries such as Germany and France only have half the exposure, with 8-9 per cent their exports going to the UK. Smaller countries such as Finland and Denmark export 5-7 per cent of their goods and service exports to the UK, while Cyprus, Luxembourg and Malta are also relatively highly dependent on the UK as an export market, which is in all cases due to a large share of their services exports going to the UK.[2] The picture is similar in terms of imports, with Ireland being the most dependent on the UK as a source of imports.

Many exporting firms, including foreign owned firms are dependent on imports as inputs to their exports, and both Irish owned and foreign owned firms in Ireland are sourcing a large number of inputs from the UK, which implies a double impact of Brexit for exporters.

Ireland's high intensity of trade with the UK makes Ireland uniquely exposed to Brexit. The high intensity of trade with the UK also underlines the need for diversification of Ireland's export base after Brexit.

Figure 3. Intensity of trade with the UK



Note: *The figure shows the share of goods and service exports and imports to and from the UK, as a share of total goods and service exports and imports. Data is from 2015, and service exports and imports are measured using balance of payment data.*
Source: *Copenhagen Economics using data from Eurostat.*

2 Financial services account for just over half of Luxembourg's services exports to the UK, while travel services are especially important service exports from both Malta and Cyprus to the UK.

Ireland's unique exposure to Brexit is a result of the deep integration between the Irish and British economies over generations. Besides both being EU members since 1973, there are many other underlying and historical reasons for why Ireland is uniquely exposed to Brexit:

- **Common border and language**: First of all, the UK is Ireland's nearest neighbour and the only country with whom we share a land border. In addition, Ireland and the UK are both English speaking countries
- **All Island economy**: There is a well-functioning all island economy with fully integrated commuting patterns and shopping habits, and a closely knitted value chain across the Island
- **Common Travel Area**: A common travel area is in existence between Ireland and the UK since the 1920s
- **Same consumer taste**: In terms of consumer preferences, Ireland and the UK are in many aspects considered as one market with similar tastes and identical products being offered
- **Common-law basis of legal systems**: The UK and Ireland both have a common-law legal system, which places greater emphasis on previous court decisions, compared to a civil-law legal system, which is in place in other European countries.[3]
- **Joint commercial contracts**: Commercially, there is a very close integration of business and enterprises across the Irish-UK market. The UK and Ireland are often treated as one market, e.g. in the organisation of many companies, and reflected in many commercial contracts
- **UK-only exporters and importers**: Like many countries, Irish SMEs are less active in international trade compared to larger enterprises. As a special feature, many of Ireland's exporting and importing SME's have the UK as the first and only export/import market[4] and is hence extremely exposed to Brexit
- **UK landbridge**: Two-thirds of Irish goods exporters make use of the UK landbridge to access continental markets.[5]

The issue of the UK landbridge (see Box 1) was considered as a Phase 1 'disentanglement' issue which is specifically addressed in the negotiating Directives.[6] The fact that a large share of Irish trade within the EU's internal market is passing via the UK land connection is a unique challenge for Ireland. But the issue is not only affecting Ireland. It poses serious issues for other Member States also dependent on the UK land bridge to transport goods into Ireland and is therefore a single market access issue for the EU27 as a whole.

3 https://www.lawlibrary.ie/Legal-Services/The-Courts-System.aspx
4 IBEC "Brexit challenges with solutions: Priorities of Irish business in EU-UK negotiations"
5 Survey conducted by the Irish Exports Association among its members, and discussed in their Quarterly Export Eye Q1, 2017. Based on ESRI work, 53 per cent of Irish goods exports with the rest of the world (i.e. excluding the UK) in volume terms, passed through the UK, see Martina Lawless, *Ireland's International Trade & Transport Connections*, WP#573, October 2017.
6 Council of the European Union, "Directives for the negotiation of an agreement with the United Kingdom of Great Britain and Northern Ireland setting out the arrangements for its withdrawal from the European Union", 22 May 2017. See para. 14 saying: "The Agreement should also address issues arising from Ireland's unique geographic situation including transit of goods into and from Ireland via the United Kingdom".

Box 1. UK landbridge is key for Irish trade with the rest of EU

The UK landbridge is key for Irish trade with the rest of the EU and further afield. The ESRI (2017) has estimated that 53 per cent of Irish goods exports (measured in volume) to all countries other than the UK are transported via the UK.[7]

Depending on the ultimate Brexit agreement, the UK could be considered a third country for customs purposes. Traders who use the UK land bridge as a transport route to access the single market would be required to move their goods under the transit procedure.

The use of the UK as a land bridge is the fastest and most efficient route when compared to the alternative of direct sea routes into mainland Europe. The introduction of border procedures between the UK and Ireland and between the UK and the continent would impact the efficiency and speed of land bridge routes.

In addition, industry has expressed concerns that the UK may apply road charging schemes or other cost-adding or time-consuming rules, which will affect the cost of trade between Ireland and the continent as a result of Brexit.

In the short term the alternative sea routes to the continent do not have sufficient capacity to cope with massive shifts in volumes from the UK landbridge, and the longer transport time makes it unsuitable for time sensitive cargo.

Source: Copenhagen Economics

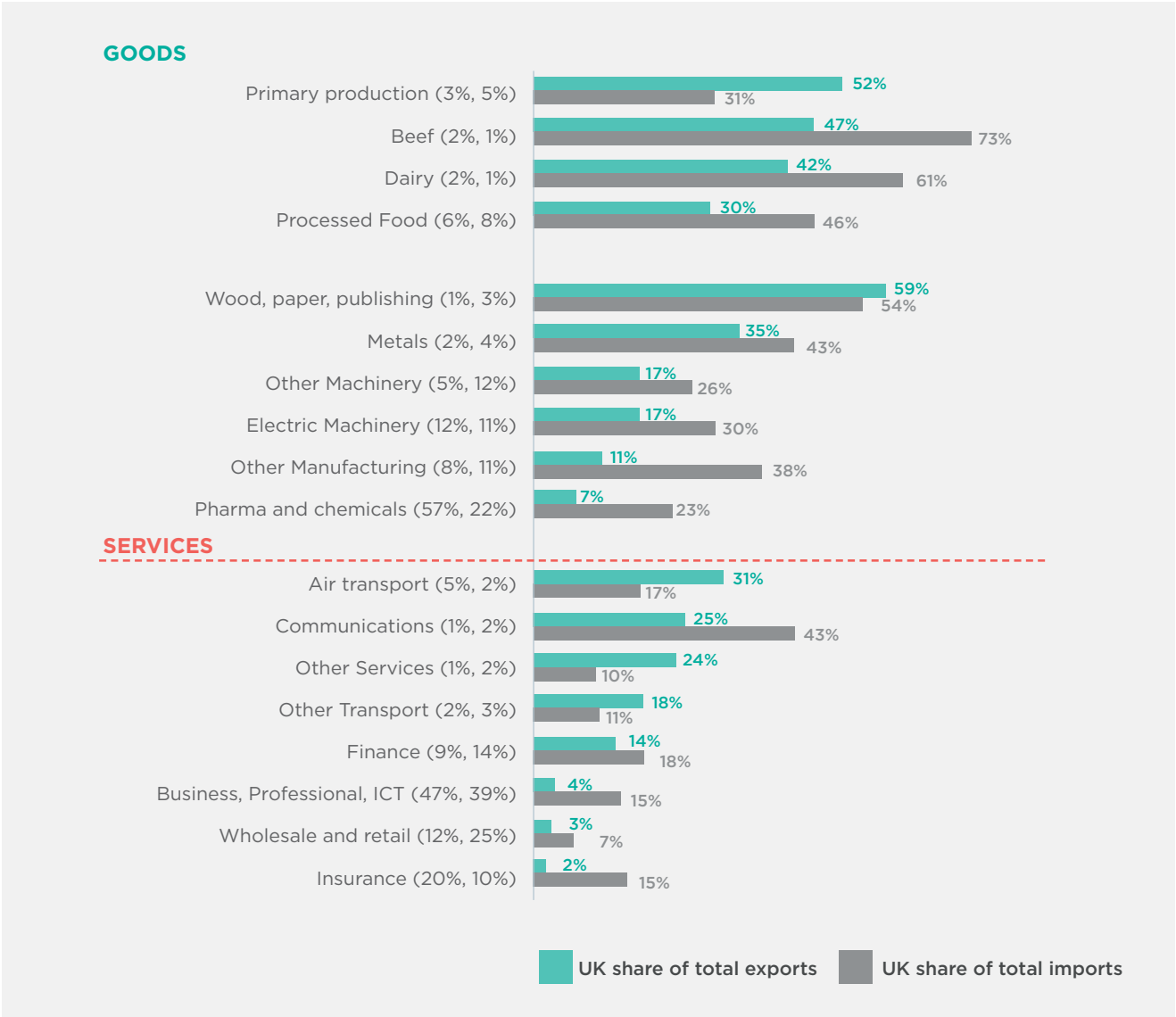
1.3 High exposure at the sector level

The exposure to Brexit is even more pronounced at the sector level. Ireland is highly dependent on exports to the UK in certain sectors, e.g. the agri-food sector where an average of around 40 per cent of exports are destined for the UK. For specific sub-sectors, the UK market accounts for an even greater share of exports, including beef (47 per cent), cheese (60 per cent) and mushrooms (90 per cent).[8] A high share of employment in exposed sectors such as the agri-food sector is found in regions outside of Dublin. As a result, regions outside of Dublin are more exposed to the impact of Brexit. Likewise, the impact is likely to be more pronounced amongst indigenous firms who account for between 80 and 100 per cent of enterprises in the agri-food sector, cf. Chapter 4. For certain sectors such as beef, dairy and processed foods as well as the majority of the manufacturing sectors, Ireland's import dependency on the UK is even greater than the export dependency, cf. Figure 4.

7 Lawless, Martina and Morgenroth, Edgar L. W. (2017) "Ireland's international trade and transport connections". ESRI working paper No. 573
8 Bord Bia (2017), Export Performance & Prospects: Irish Food, Drink and Horticulture 2016-2017.

Figure 4. Exposure to UK market at sector level

Share of total exports or imports with UK (% of total)



Note: *Based on 2015 trade data across GTAP sectors. Small export sectors (<1% of total) not shown. The first percentage figure in the parentheses following the sector label is the share of the sector in total Irish exports of goods (upper part of the figure) and the share of the sector in total Irish exports of services. The second percentage figure in parentheses shows the equivalent information for imports. Primary production includes other agricultural sectors than beef and dairy farming and include wheat, other cereal grains, vegetables, fruits, nuts, oil seeds, sugar beets, plant based fibres, other crops, wool, some minerals, forestry and fishing. Processed foods include processed meat and vegetables products, processed rice and sugar products, other processed foods products and beverages and tobacco.*

Source: *Copenhagen Economics based on GTAP data.*

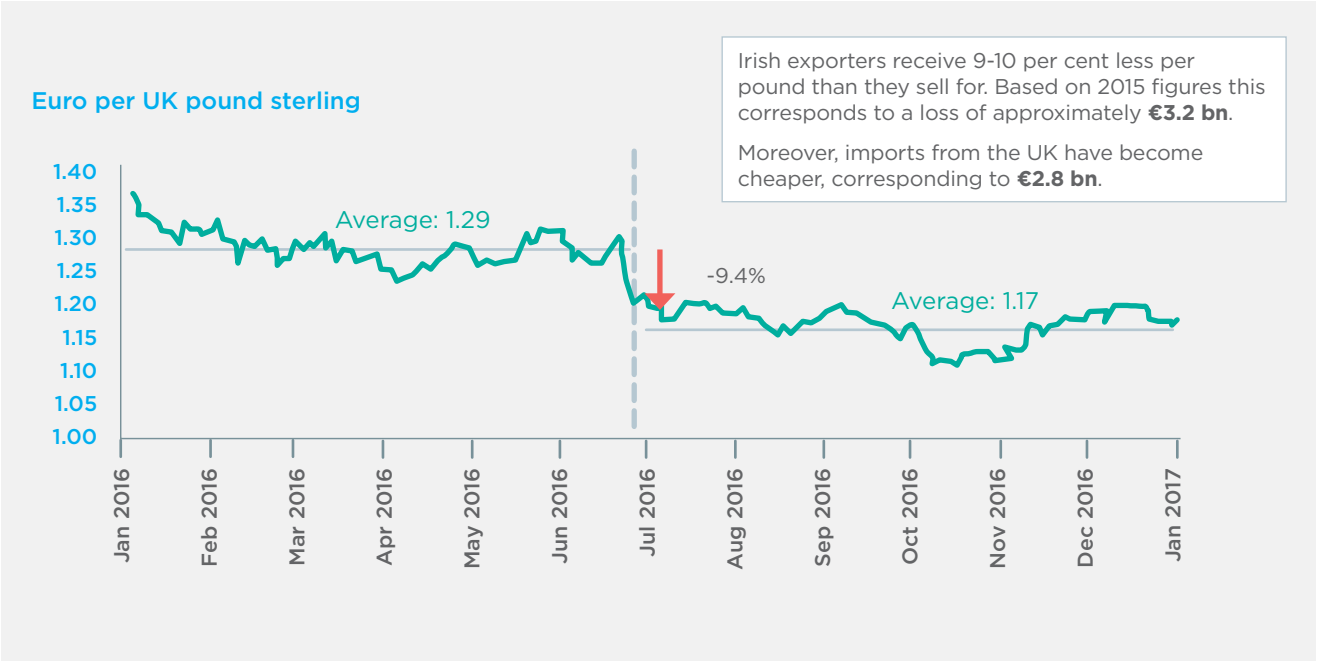
All the issues raised above indicate that the implications of Brexit for Ireland are complex, and the economic assessment of Brexit needs to capture these complexities. It is beyond doubt, however, that there will be a huge difference between the worst and the best-case scenario for Ireland. This indicates that there is room for Irish policy makers to seek to influence the forthcoming negotiations and ensure that key Irish interests are protected in the new EU-UK trade agreement.

1.4 Impacts of the exchange rate have already been felt

Immediate impacts of Brexit can already be felt for Irish companies with the exchange rate dropping by 10 per cent after the referendum on 23 June 2016, cf. Figure 5. The weakening of the pound means that Irish exporters receive 9-10 per cent less per pound than they sell for in the UK. Based on 2015 figures for Irish exports to the UK, this corresponds to a loss in income of approximately €3.2 bn. Over time, Irish losses might be recouped by charging higher prices in the UK, resulting in higher UK inflation.

Imports from the UK have also become cheaper, corresponding to a saving of €2.8 bn., to the benefit of Irish consumers and producers.

Figure 5. Loss of income due to drop in exchange rate



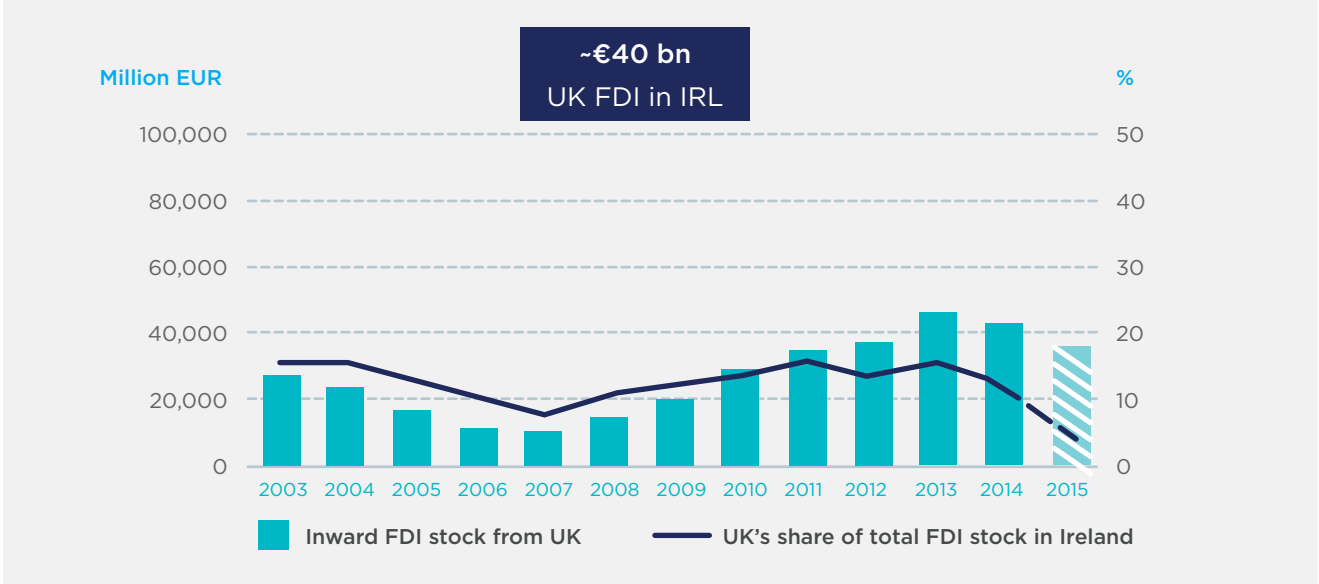
Source: Copenhagen Economics based on daily exchange rate data from the ECB.

1.5 Current Ireland-UK investment positions

In terms of foreign direct investment (FDI), Ireland is also highly integrated with the UK. The stock of UK-owned firms in Ireland was valued at close to €40 billion in 2015, or around 5 per cent of the total the stock of FDI into Ireland of €800 billion at the end of 2015. We note a drop in both the absolute and relative size of UK investment into Ireland, cf. Figure 6.

According to CSO numbers, the Irish stock of direct investment abroad was €815 billion at the end of 2015 of which the UK accounted for 11 per cent, or almost €90 billion, cf. Figure 7. So, the value of Irish direct investment in the UK is double the value of UK investments in Ireland. More than 86,000 persons are engaged in Irish owned foreign affiliates in the UK, which is 28 per cent of the total number of persons engaged in Irish owned affiliates abroad.[9]

Figure 6. UK investment of around €40 bn in Ireland in 2015



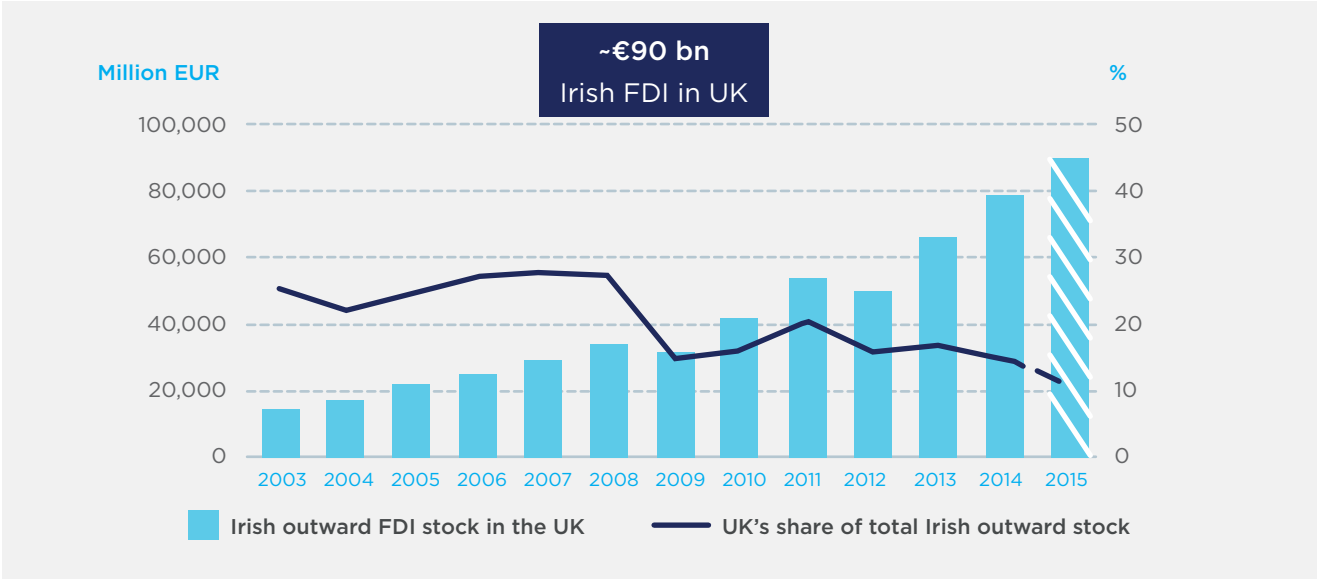
Note: *The drop in the UK's share of Ireland's FDI stock in 2015 is mainly due to a large increase in Ireland's total inward FDI stock in 2015 that was caused by a revision of the measurement of the balance of payments, which included a re-location of US firms into Ireland, increasing Ireland's inward FDI stock.*
Source: *Copenhagen Economics based on data from Eurostat & CSO.*

9 See the report CSO, "Brexit – Ireland and the UK in Numbers", December 2016

Brexit is likely to influence the investment decisions of multinational companies. On the one hand, foreign companies that have invested in Ireland in order to serve the UK market from Ireland may become more mobile after Brexit. On the other hand, foreign companies that have located in the UK in order to serve other EU Member States may also consider relocating.

As Ireland has one of the most attractive investment climates in the EU, Ireland may become a preferred location for many of these investments.[10]

Figure 7. Irish investment in the UK around €90 bn in 2015



Note: *Note the revision in 2015 of the balance of payments, which means limited comparability between 2014 and 2015.*
Source: *Copenhagen Economics based on data from Eurostat & CSO.*

10 Copenhagen Economics (2016), *Towards a FDI Attractiveness Scoreboard*, finds that Ireland is the EU country with the most attractive FDI policies in place.

CHAPTER 2
Scenarios for a new EU-UK trade agreement

This chapter describes the future EU-UK trade relationship for a range of scenarios and outlines the assumptions about tariffs and other trade costs imposed in each scenario. Furthermore, it explains how the impacts on Irish trade are quantified and finally, provides assumptions about the sequence of events and how possible transitional arrangements are treated in the analysis.

2.1 Two short-term scenarios analysed

The analysis comprises two short-term scenarios for the transition period immediately after Brexit in March 2019:

- **"Soft Brexit"**: This scenario represents a transition arrangement in which duty free trade is continued and no customs clearance procedures are implemented, which in essence means that the UK will remain in the Single Market during the transition period. While this will require a regulatory freeze in the UK and will require the UK to maintain all current regulation aligned to the EU Single Market rules, the scenario assumes a moderate increase in trade costs for both goods and services to reflect the uncertainty around the future trade relationship and the risk of future regulatory divergence.
- **"Hard Brexit"**: In this scenario, there is no transitional arrangement between the EU and the UK, and both the EU and the UK will implement MFN tariffs on goods, border procedures, and there will be some emerging deviations in regulation for both services and goods. Furthermore, the scenario assumes additional transit costs for Irish goods exported to the European continent across the UK landbridge due to the delays and infrastructural challenges that are expected to materialise in the scenario.

On 8 December 2017, the European Commission recommended to the European Council to conclude that sufficient progress had been made in the first phase of the Article 50 negotiations with the UK.

On 15 December, the leaders of the EU27 confirmed that sufficient progress had been achieved on citizens' rights, Irish issues and the financial settlement, and adopted guidelines to move to the second phase of the negotiations. This means that the next phase of the negotiations on the framework for the future trade relationship could begin in early 2018.

The communication from the Commission[11] suggested a transition period, which shall include a range of conditions. The transition period is in effect a standstill with the UK facing the same obligations, financial and regulatory, as a full EU member with the only difference being that the UK would have no say in shaping the common rules during the transition period.[12]

In particular, the Commission sets out the following:

11 European Commission - Press release "Brexit: European Commission recommends draft negotiating directives for next phase of the Article 50 negotiations", Brussels, 20 December 2017.

12 This means the UK will not be participating in the institutions, or as expressed in Article 17 of the draft Directives "In line with the European Council guidelines of 15 December 2017, the United Kingdom should however no longer participate in or nominate or elect members of the Union institutions, nor participate in the decision-making or the governance of the Union bodies, offices and agencies." See ANNEX to the Recommendation for a COUNCIL DECISION supplementing the Council Decision of 22 May 2017 authorising the opening of negotiations with the United Kingdom of Great Britain and Northern Ireland for an agreement setting out the arrangements for its withdrawal from the European Union, Brussels, 20.12.2017, COM (2017) 830 final.

- *There should be no "cherry picking": The United Kingdom will continue to participate in the Customs Union and the Single Market (with all four freedoms). The Union acquis should continue to apply in full to and in the United Kingdom as if it were a Member State. Any changes made to the acquis during this time should automatically apply to the United Kingdom.*
- *All existing Union regulatory, budgetary, supervisory, judiciary and enforcement instruments and structures will apply, including the competence of the Court of Justice of the European Union.*
- *The United Kingdom will be a third country as of 30 March 2019. As a result, it will no longer be represented in Union institutions, agencies, bodies and offices.*

The Commission recommended a transition period that is clearly defined and precisely limited in time. The Commission recommended that this period should not last beyond 31 December 2020.

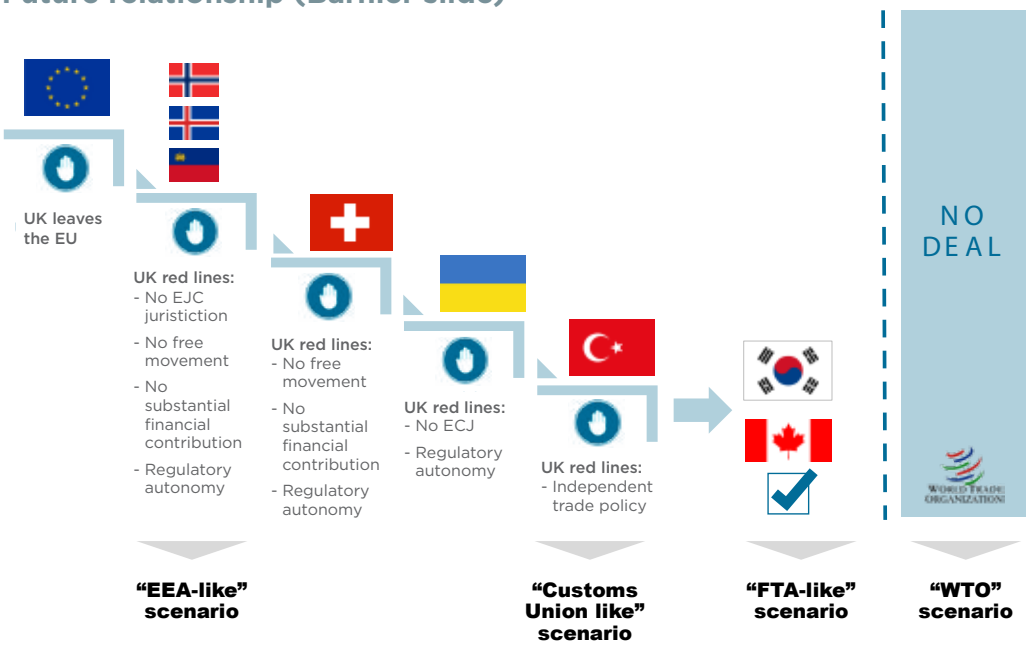
2.2 Four long-term scenarios analysed

The analysis comprises four scenarios for the future trade relationship between the EU and the UK. Each scenario is based on known "archetype"[13] trade agreements for which there is an empirical basis for the impacts on trade costs.

At the time of this analysis, there are no formal negotiating positions from either side other than the expression from the UK government of a "deep and special relationship" or a "bespoke deal".

The interpretation from the EU side – by method of exclusion – is that the UK *red lines* would mean that a free-trade agreement (e.g. as with South Korea or Canada) is the only realistic model for a post-Brexit trade agreement with the UK, cf. Figure 8.

Figure 8. Future relationship (Barnier slide)



Note: *Slide presented by Michel Barnier, European Commission Chief Negotiator, to the Heads of State and Government at the European Council (Article 50) on 15 December 2017.*

Source: *European Commission, TF50 (2017) 21, link: https://ec.europa.eu/commission/sites/beta-political/files/slide_presented_by_barnier_at_euco_15-12-2017.pdf, downloaded 22-12-2017.*

13 All trade agreements differ and there are no strict archetypes that can be readily applied.

Our analysis makes no presumptions about the form of the actual EU-UK agreement, and it is acknowledged that a future agreement may not be exactly like any of the scenarios analysed in this report. The report makes no presumptions about which scenario is more likely. Similarly, we make no presumptions about each scenario being exactly identical to the agreement with the EEA members, Turkey, Canada or South Korea.

The key element in the scenarios is how each type of trade agreement is capable of reducing trade costs. Consequently, each of the scenarios in this report should be read as an "EAA-like trade agreement", a "Customs Union similar to that with Turkey", and "a standard average EU FTA with similar features as per recent agreements e.g. Canada or South Korea". The details of the scenarios are described in the following:

- **European Economic Area (EEA) agreement:** This scenario assumes similar levels of trade costs between the EU and the UK as are currently observed between the EU and the EEA-members (Norway and Iceland). The scenario does not assume an agreement that is necessarily 100 per cent identical to the agreement with Norway, but rather an EEA-like agreement with similar effects on tariffs and other trade costs. The scenario includes duty free trade for most products although with some tariffs on sensitive products within selected agri-food sectors. The scenario also assumes that the UK would commit to a high degree of regulatory alignment with the Single Market rules (e.g. including mutual recognition agreements, harmonisation of some standards, etc.). In this scenario, despite retaining access, the UK will be leaving the Single Market, and it will become necessary to impose border inspections on EU-UK trade by whatever means. The UK will naturally still have access to the Single Market, but UK exporters will be facing higher costs of exporting related to border controls, tariffs and emerging regulatory differences. The EEA-scenario also has an impact on service barriers. We make the scenario operational by imposing a new trade barrier on EU-UK trade in services of similar size as the existing trade barrier between the EU and the EEA countries.
- **Customs Union (CU):** In this scenario, the EU and the UK agree on a traditional customs union agreement. Such an agreement typically removes most tariffs although some tariffs on agri-food products can remain. A customs union will require a common external tariff. Consequently, in this scenario the EU and the UK would continue to have a common external trade policy, and the UK will not be able to negotiate its own free trade agreements independently of the EU. Just as in the case of an EEA solution or an FTA solution, the UK exit from the Single Market implies that border checks on EU-UK trade will be needed, unless political agreement on their removal can be reached. A standard customs union does not cover regulatory convergence for goods or for services trade, and there is a higher risk of regulatory divergence for both goods and services relative to an EEA-like agreement.
- **Free trade agreement (FTA):** In this scenario, the EU and the UK agree on a free trade agreement (FTA). We use the effects of an average EU FTA as a mid-point estimate. The scenario includes duty free trade for most products although with some tariffs on sensitive products within selected agri-food sectors. The average EU FTA shows very limited ability to ensure regulatory alignment with the Single Market rules, and the scenario includes a risk of emerging regulatory divergence between the EU and the UK in both goods and services. Just like the previous scenarios, border measures are imposed. In this scenario, the UK will be free to set its own external trade policy.

- **WTO Scenario (WTO):** If no other solution can be found, trade will be governed by WTO rules and other WTO agreements. In this case, the EU and the UK will impose MFN tariffs on each other's goods where these are not bound by other agreements or arrangements. In this scenario, it is assumed that the UK will comply with plurilateral commitments on tariffs in the WTO such as the Information Technology Agreement (ITA)[14], the Pharmaceutical Agreement[15] and other similar agreements. These agreements grant duty free trade on a range of listed products between the signatories. This means that MFN tariffs will not apply across the board on EU-UK trade. Furthermore, the EU uses so-called tariff rate quotas (TRQs)[16] on a range of products[17] whereby imports from third countries can enter the EU with zero or low tariffs up to a certain quantity for a given time period, and with MFN tariffs only applicable when imports exceeds the quota. This implies that the effective import duty on many products is significantly lower than the simple MFN tariff. In the WTO scenario, we assume that the EU and the UK will continue to use such TRQs both between them and with third countries.[18]

  Furthermore, we assume that a similar level of effective tariffs will apply on EU-UK trade as for the EU's current external trade with mainly North America. This will imply significantly lower effective tariffs on a range of products such as beef and butter. The scenario thus implies that the EU and the UK will exchange such tariff rate quotas and that the quantities allowed will be sufficiently large to reach a similar level of protection as is provided in the current external EU agreements.

For simplicity, the scenarios are henceforth denoted as "EEA", "Customs Union (CU)", "FTA" and "WTO".

We compare each of these scenarios to the counter-factual situation where the UK had remained a full member of the EU. In all scenarios, we assume that the UK replicates the EU's current external tariffs as its external tariff scheme, although we acknowledge that UK would be free to set its own external tariff after exiting the EU. We also assume that the UK achieves access to the EU's current third-country trade agreements under the same conditions. This will be up to the UK and the relevant third countries to agree upon. The UK's replication of the EU's external trade agreements is an assumption only for the purposes of this study, and there is no guarantee that this will happen.

While it is natural to assume that the WTO scenario is the default "no agreement" scenario, it has been argued by some observers, that the most obvious fallback situation would be the EEA-scenario since the UK is already a

14 The *Information Technology Agreement* is a plurilateral WTO agreement to eliminate tariffs on certain information and communications technology (ICT) products. The ITA covers a wide range of ICT products, including computers and computer peripheral equipment, electronic components including semiconductors, computer software, telecommunications equipment, semiconductor manufacturing equipment, and computer-based analytical instruments. To date, 82 WTO Members are ITA participants representing 97 per cent of world trade in ICT products.

15 The Pharmaceutical Agreement is a WTO agreement signed by Canada, the EU and its 28 Member States, Japan, Norway, Switzerland, the United States, and Macao (China). The agreement was reached during the WTO Uruguay Round negotiations, where the EU and several other major trading partners agreed to reciprocal tariff elimination, a "zero-for-zero initiative", for pharmaceutical products and for chemical intermediates used in the production of pharmaceuticals. The list of items eligible for duty elimination has been updated several times and includes more than 10,000 products.

16 The EU maintains tariff rate quotas (TRQs) for three general types of imports: agricultural products, autonomous MFN quotas, and imports from certain countries pursuant to preferential agreements. In addition, pursuant to a 2012 EU regulation, the EU has established tariff quotas for high-quality beef, applying only to imports from certain countries. Many MFN tariff quotas are allocated on a "first-come, first-served" basis. When the quotas of the application period for the products in question are used up, normal import duties are applied.

17 According to the latest WTO Trade Policy Review of the European Union, there were 1,006 categories of TRQs applied on a variety of products as of October 2016. The majority of the TRQs were country- or regional-specific TRQs to implement FTA commitments, and about 230 were open to all importers as autonomous quotas. The TRQs open to all importers are mainly applied on fish, agricultural products, chemicals, metals, machinery and equipment. Other TRQs apply bilaterally to certain countries for individual products or to certain sectors such as handcrafts.

18 The allocation of the existing EU quotas vis-à-vis third countries is assumed to allow for current quantities from third countries.

party to the EEA agreement and that status enjoys protections under international law.[19] Against this is the argument raised by the EU that participation in the EEA Agreement presupposes membership in either the EU or EFTA. This would imply that, by the UK's withdrawal from the EU, it would automatically no longer participate in the EEA.[20]

Finally, the scenarios assume no changes in multilateral or plurilateral agreements (e.g. the Agreement on Government Procurement) or other FTAs (e.g. EU-Japan), although the future negotiating positions could be different without the UK as an EU member.

2.3 Quantification of tariffs in each scenario

For each scenario and for each element of the scenarios (tariffs, customs, regulatory, and services), we use detailed data and estimates at the sector level to quantify the trade costs in each scenario.

Tariff levels in the WTO-scenario are calculated based on the EU's current external tariff schedule and weighted with Ireland's trade to the UK within each sector. These are the so-called MFN tariffs. For each tariff line these are the same for all non-preferential trading partners. For other scenarios, e.g. the FTA scenario the tariff level for the same tariff line may differ from country to country, although most are zero. In these scenarios, we are using trade weighted averages sector by sector across the relevant FTAs, building on data from the GTAP database.

For the EEA scenario, we rely on sector average tariffs for EU's trade with the EEA countries. These are based on the actual tariffs on trade with the EEA.

For the CU scenario, we use sector averages on EU trade with Turkey as a proxy, without any presumption that the detailed tariff schedules of EU-Turkey trade would apply to the future EU-UK trade.

For the FTA scenario, we use sector averages on EU trade with FTA partners as a proxy. The detailed tariff schedules of future EU-UK trade would naturally not be identical to this average, but the level of tariffs in each sector is assumed to be a plausible level for the scenario in each sector.

Average trade weighted tariffs across all goods sectors on Irish exports to the UK are low in most scenarios (<1 per cent) and 3.6 per cent in the WTO-scenario.

Figure 9. Overview of scenarios

	EEA	CU	FTA	WTO
Tariffs on agri-food products	Low	Lowest	Medium	Highest[1]
Tariffs on manufactured goods	None	None	None	Highest[1]
Customs Procedures	Yes	Yes[2]	Yes	Yes
Regulatory divergence and costs	Smallest	Medium	Medium	Highest
Service barriers	Smallest	Highest	Highest	Highest

Note: *1) The analysis assumes that the UK replicates the EU's current external tariffs and arrangement of tariff quotas (TRQs) in key agriculture sectors, e.g. beef and dairy.*
2) Unless a political or technical agreement can be reached to avoid customs procedures.
Source: *Copenhagen Economics.*

19 See Yarrow, G. (2017), "Brexit and the Single Market Revisited", Essays in Regulation, NS 7.2, Regulatory Policy Institute, December 2017.
20 See 19 Dec 2017 paper Informal papers on certain legal and technical aspects of the UK's withdrawal from the EEA.

2.4 Quantification of customs costs

Customs costs are based on the lower end of the range of econometric studies on trade costs and vary from 2 to 4 per cent depending on the sector with agri-food products facing the highest trade costs.[21]

Customs costs will be incurred as the UK leaves the EU Single Market and customs union. Customs procedures will be implemented for all goods crossing the border between the UK and an EU member to ensure compliance with the rules of origin. This implies extra administration and delays that increase the trade costs for Irish exports to the UK (irrespective of whether tariffs are imposed or not) and imports from the UK.

It is assumed that customs clearance is not imposed before the UK has implemented a state-of-the-art customs system with the lowest possible administrative burdens on exporters and importers, and on this basis, trade costs related to customs clearance are estimated to be at the lower end (2-4 per cent).

The customs costs in individual sectors depend on several factors, such as the complexity of the rules of origins (e.g. processed goods will generally have more complex rules of origin than primary goods), the sensitivity of the good to delays (e.g. agri-food products will be more sensitive to delays than other goods), and the complexity of the value chain of the affected good (e.g. rules of origin can be more difficult to comply with for goods with more complex global value chains).

2.5 Quantification of costs related to regulatory divergence

Due to the Single Market, there is a high degree of regulatory alignment between the EU and the UK. With the UK's exit from the Single Market, there is a risk of future regulatory divergence in areas that are currently covered by common EU regulation or where national rules are subject to EU notification.

The trade cost impact of regulatory divergence is high and difficult to measure with precision. The long-term trade cost implications of regulatory divergence are estimated based on econometric analyses.[22] The estimates are made sector by sector.

In the EEA scenario, the average regulatory costs are estimated at 7 per cent corresponding to the average of the EU's other EEA agreements (with Norway and Iceland).

In the Customs Union and FTA scenarios, the costs are on average 10 per cent corresponding to the average of the EU's other FTAs.

Finally, in the WTO scenario, the costs can on average increase up to 24 per cent corresponding to the average for the countries with which the EU has no trade agreement.

The risk of future regulatory divergence differs sector by sector. The risk of regulatory divergence is highest in sectors such as processed foods and dairy due to the level of common EU regulation in place. The risk is high but somewhat lower in primary agriculture, beef, pharmaceuticals, motor vehicles and electric machinery. The risk of regulatory

21 See Francois, J., Hoekman, B. and Manchin, M. (2006), "Preference erosion and multilateral trade liberalization", The World Economic Review
CEPR (2013), "Trade and investment: Balance of competence review",
Hayakawa, K. (2011), "Measuring fixed costs for firms' use of a free trade agreement: Threshold regression approach", Economics Letters,
Carrere and de Melo (2004), "Are different rules of origin equally costly? Estimates from Nafta",
Anson, J., Cadot, O., Estevadeorda, A., de Melo, J., Suwa-Eisenmann, A., Tumurchudur, B. (2004), "Rules of origin in North-South preferential trading agreements with an application to NAFTA", Review of International Economics
Cadot, O., Carrere, C., de Melo, J., Tumurchudur, B. (2006), "Product specific rules of origin in EU and US preferential trading agreements: An assessment", World Trade Review.

22 See Peter Egger, Joseph Francois, Miriam Manchin and Douglas Nelson (2015), "Transatlantic trade II", CEPR.

divergence is lower in other sectors where either the importance of technical regulation is less pronounced or in areas where international standards and regulations dominate.

At a more general level, the risk of regulatory divergence is higher in *harmonised areas* that are covered by common EU regulation (see box). The risk of divergence is also high in *non-harmonised* areas where national rules are subject to EU notification (see box). In areas governed by international standards and regulations, there will be a lower risk of regulatory divergence, as it is assumed that the UK will remain party to such international agreements post Brexit.

Box 2. Harmonised and non-harmonised areas of EU trade

In the harmonised area, which covers around 50 per cent of all intra-EU goods trade, common EU rules apply today. Harmonised sectors are subject to common rules across the EU. If manufacturers follow these rules, their products can be sold freely in all EU countries. Harmonised rules thus preclude the adoption of possibly divergent national rules and ensure the free circulation of products within the EU. In these product areas, the UK's exit from the Single Market would mean - in the shorter term - that the UK can deviate from the common technical regulation except in areas where EU directives have been implemented in UK legislation. In the longer term, the UK would be free to change its technical regulation in these areas and this implies that the UK can deviate from all common rules in all harmonised areas, but not that the UK necessarily will deviate from all current EU common rules.

In the non-harmonised areas, technical regulations are not subject to common EU rules and may come under the national rules or may be governed by international standards and regulations. In the Single Market, national rules in the non-harmonised areas are subject to a notification procedure to ensure the rules do not create undue barriers to trade. To ensure the free movement of goods in non-harmonised areas, the principle of mutual recognition is in place. The UK's exit from the Single Market will imply that the UK is no longer obliged to notify other EU member states and take objections into consideration. Thus, the UK can impose a new technical regulation e.g. labelling, animal welfare, or building regulations. The UK can, without any restrictions, impose a new technical regulation in all non-harmonised areas. A UK shift towards regulatory regimes of third countries is an option, e.g. in relation to free trade agreements. The principle of mutual recognition is not necessarily maintained.

Source: Copenhagen Economics.

2.6 Service Trade Restrictions

A range of service sectors will face higher costs on cross-border service trade post Brexit, including air transport, road transport, finance, insurance and professional services (such as architects, lawyers, and accountants).

In general, the integration of the service sector has not been as far reaching as the goods sector, and hence the gain from being a part of the Single Market (or other relevant agreements such as the European Common Aviation Area, ECAA[23]) is smaller for services than for goods.

Based on detailed econometric estimates of individual service sectors[24], we estimate that the EEA-scenario would imply an average increase in the cost of cross-border service trade of around 5 per cent, whereas all other scenarios would imply an additional cost corresponding to 10 per cent (weighted by Irish service export composition).

Our estimates on service restrictions may underestimate the impact of services. Future initiatives to increase the integration of services trade in the Single Market can mean that costs on services trade within the Single Market will decrease in the long run. We include only harmonisation initiatives, which have already been decided. If the EU member states succeed in increasing the integration of the Single Market for services, the increased trade costs for UK following Brexit will be larger and our estimated impacts should also be expected to be larger.

2.7 Trade costs with and without risk of regulatory divergence

If no regulatory divergence occurs between the EU and the UK, Irish goods exports will face additional trade costs related to tariffs and customs procedures corresponding to an average 4-5 per cent trade cost in the EEA, CU and FTA scenarios and around 7-8 per cent additional trade cost in the WTO-scenario.

If regulatory divergence occurs in the long run up to the maximum estimates described above, trade costs for Irish goods to the UK may increase by 12 to 32 per cent:

- **In the "EEA scenario", total trade costs are 12 per cent** resulting from customs costs, NTBs and tariffs as with current EEA-countries.
- **In the "Customs union scenario", total trade costs are nearly 14 per cent** resulting from customs costs and new NTBs that are assumed to be higher and similar to NTBs in an average of current EU FTAs.
- **In the "FTA scenario", total trade costs are just above 14 per cent** because we assume customs costs and add tariffs and NTBs as in an average of current EU FTAs.
- **In the "WTO scenario", trade costs could increase up to 32 per cent** resulting from customs costs, large NTBs arising from significant regulatory divergence and ending mutual recognition agreements. Tariffs corresponding to current EU external tariffs are added. Quotas for agri-food products are assumed to be expanded to match current flows.

23 The European Common Aviation Area (ECAA) is a single market in aviation services. It covers the EU itself and its Northern (Norway and Iceland) and South-eastern neighbours (Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, and Kosovo under UNSCR 1244). The ECAA opened up the air transport market by allowing any airline from any ECAA member state to fly between any ECAA member states airports, thereby also allowing airlines from another member state to provide flights within another member state. As a result of ECAA, the UK is also enjoying access to third countries aviation markets via ECAA's horizontal agreements including the EU-USA Open Skies Agreement and the EU-Canada Air Transport Agreement. With these horizontal agreements, EU airlines can fly from anywhere in the EU to 17 other non-ECAA countries like the USA, Australia and New Zealand with fewer restrictions.

24 Jafari, Yaghoob and David G. Tarr (2015), "Estimates of ad valorem equivalents of barriers against foreign suppliers of services in eleven service sectors in 103 countries", The World Economy

2.8 Sequence of events and notional timing of scenarios

In our analysis, we have assumed that a transitional arrangement could be agreed before March 2019 to avoid a cliff-edge Hard Brexit at that time.

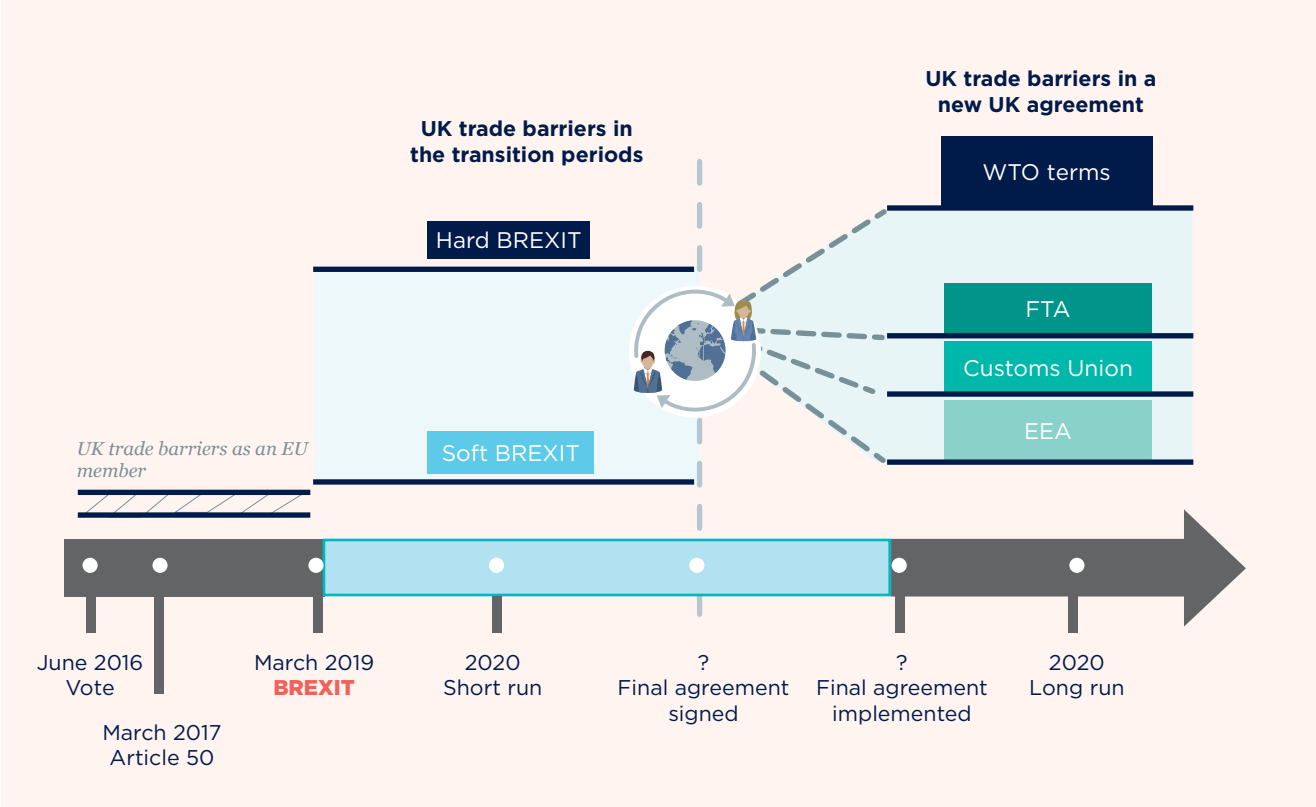
In our model simulations, we have assessed the short-term impact of the two scenarios (Soft and Hard) with 2020 as the notional baseline year as the first full year following Brexit.

For the future trade relationship with the UK we have assessed the long-term impact of four scenarios with 2030 as the notional baseline year. This is based on the assumption that the next phase towards a future trade relationship will take several years.

It takes time to negotiate, ratify and implement trade agreements. Even if everything were to go relatively smoothly in the negotiations, it is not unreasonable to expect a minimum of five years for the UK government, the European Commission and EU governments to get new arrangements ratified and put in place.

In parallel, and following the implementation of a new agreement, all economic actors will need to adjust to the new trade situation, e.g. change export patterns and re-optimise location of production. It will also take several years after implementation before the impacts are fully phased in. This means that we model the expected full impact after all adjustments have taken place. It is assumed that this will be around 2030, but we make no specific assumptions about the timing of the interim steps towards the full effect of the future trade relation. This sequence of events is depicted below, see Figure 10.

Figure 10. Sequence of events and the scenarios



Source: Copenhagen Economics

In this report, we assume a "perfect handshake" such that a soft Brexit transition period is put in place during the time of the negotiations and that the transition period would last until a smooth phasing in of a future trade agreement is possible. This would minimise the disruption for all economic actors.

Other sequences cannot be excluded and there are still risks of a more disruptive sequence of events than assumed and described above. If a transition agreement is reached as per the Commission's suggestion, the existing single market and customs union regime (i.e. soft Brexit) would remain until the end of 2020. If the negotiations of a future trade agreement are still ongoing at that point in time, it would mean that the UK would "fall off the cliff" in 2021 in a hard Brexit scenario, but then resume trade on the basis of a new agreement when it is ratified and implemented by all parties sometime in the mid-2020s. This sequence would be very disruptive and has not been analysed in detail in this report.

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CHAPTER 3
Macro Economic Impacts for Ireland

This chapter quantifies how the four long-term scenarios for the future EU-UK trade relationship will affect Ireland's trade with the UK and other trading partners, and the analysis provides an assessment of the related macro-economic impacts for Ireland. This builds on the assumption presented in Chapter 2 of a soft Brexit transition period leading into the future trade agreement.

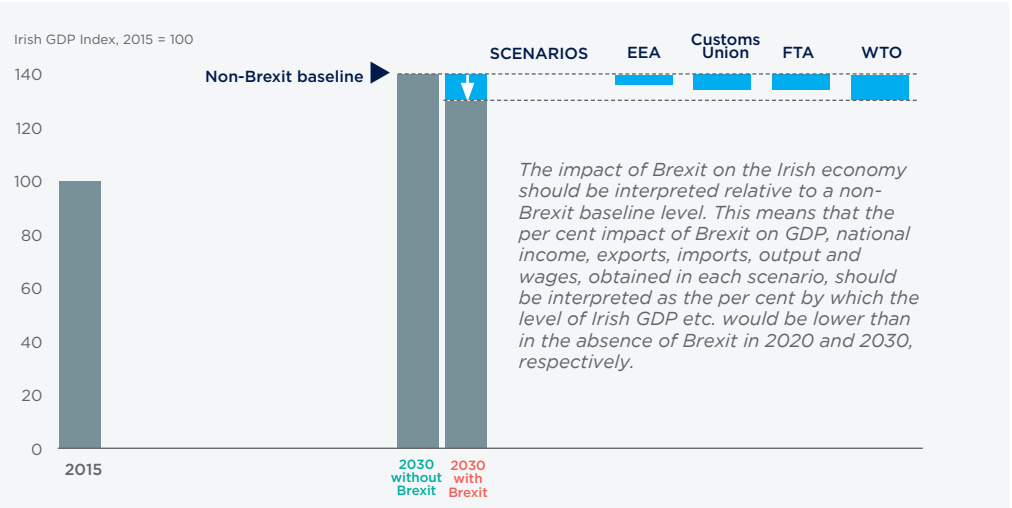
3.1 The CGE model applied

We apply a state-of-the-art CGE model to analyse the impacts of each of the scenarios for EU-UK trade. For each scenario, we analyse impacts of an increase in trade costs related to tariffs, customs clearance, regulatory barriers to trade in goods and barriers to trade in services. The model is a global CGE model, where production and demand is linked across countries and between sectors.[25]

The model includes specificities of the Irish economy, and the sectors and scenarios are adapted to reflect the Irish economy and the specific circumstances of Ireland. This is for example reflected in the sector classifications used, where key Irish agricultural sectors, such as beef and dairy are treated as separate sectors, cf. Appendix B for an overview of the model.

Each scenario for the future EU-UK trade agreement is assessed relative to a 2030 non-Brexit baseline. This means that for each scenario we compare two future states of the Irish economy, namely the "no Brexit" situation with the UK remaining a full EU member in 2030 and the scenario representing the relevant Brexit scenario (EEA, Customs Union, FTA, or WTO), cf. Box 3.

Box 3. Each scenario is relative to the non-Brexit 2030 baseline



Note: All the charts show the impact of Brexit relative to the non-Brexit baseline level

Source: Copenhagen Economics

25 See Bekkers, E. and J. Francois (2015), "Calibrating a CGE model with NTBs that Incorporates Standard Models of Modern Trade Theory," World Trade Institute working paper for the EC FP7 project PRONTO and E. Bekkers, J. Francois, and H. Rojas-Romagosa (2017), "Melting icecaps and the economic impact of opening the northern sea route" *Economic Journal*.

Finally, our approach does not allow for detailed analysis of public spending and labour mobility, and our analyses are based on a "no policy change" scenario and consequently we do not aim to model any changes in labour market regulation, environmental legislation or any others policy elements by Ireland, the EU or UK. Finally, we make no assumptions regarding future currency movements in the model.

3.2 Impacts on Ireland's trade

Ireland's trade is predicted to be negatively affected in all exit scenarios. Depending on the degree of regulatory divergence, Irish exports to the UK will be 9-24 per cent below the non-Brexit baseline in 2030 in the event of an EAA scenario. In a customs union or FTA scenario, the risk of regulatory divergence is larger, which could reduce Irish exports to the UK to 30 per cent below the non-Brexit baseline level. In a WTO scenario, exports to the UK could be more than 50 per cent below the non-Brexit baseline in 2030.[26]

Although exports to the UK are important for Ireland, they do not provide the full picture. In the medium to long-run, Irish exporters have possibilities to re-orient their exports to other destinations and have opportunities to re-organise their sourcing strategies. What our analyses and insights from interviews with stakeholders have demonstrated is that - while these possibilities do exist – they are not currently sufficient to compensate for the loss of export quantities or export value. To assess the broader impacts of each scenario, we have also analysed the impact on total Irish exports and imports to/from the rest of the world.

Ireland's total export of goods and services to the world is predicted to be 1.1 per cent to 3.3 per cent below the non-Brexit baseline in the EEA scenario in 2030. The range depends on the degree of regulatory divergence. In a Customs Union scenario, the upper end of the range will be -4.4 per cent because of the limited ability of standard customs unions to ensure regulatory alignment. The upper end export impact could be -4.5 per cent in the FTA scenario with the assumed regulatory divergence. In the WTO scenario, Irish exports to the world would be 1.8 per cent below the non-Brexit baseline if the regulation does not diverge, and a full 7.7 per cent below if UK regulation diverges from the EU regulation to the same degree as countries with whom the EU has no FTAs, cf. Figure 11.

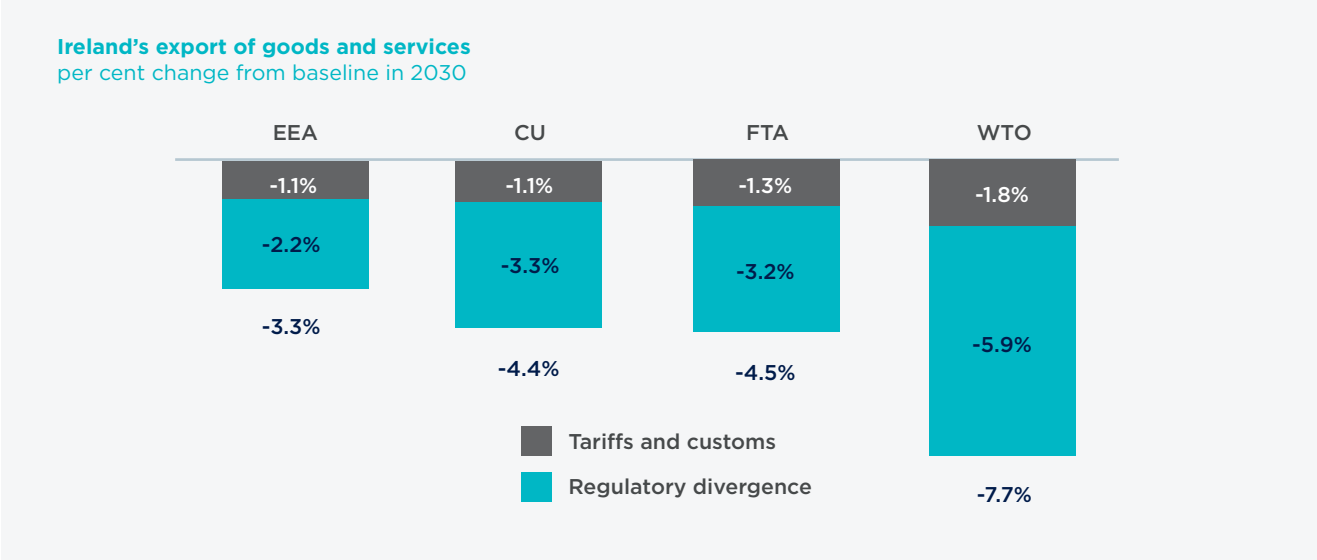
Higher barriers on cross-border service trade will also matter. Of the regulatory divergence effect shown below, the risk of increasing barriers for services explains around 1.1 percentage-points of the estimated impact in the customs union, FTA and WTO scenarios, and 0.6 percentage points in the EEA scenario, where some reductions in the barriers for service trade are effective.

In the short-term scenarios, immediately after the UK's exit from the EU, Ireland's total exports would be 0.5 per cent below the 2020-baseline in the 'soft Brexit' scenario and in a 'hard Brexit' scenario, our simulations estimate that total exports would be 3.7 per cent below the 2020-baseline.[27]

26 A simple, partial model of Brexit suggests that Irish exports to UK could fall by around 30 per cent if the EU's existing MFN rates where applied to EU-UK trade. See Lawless and Morgenroth (2016), "The Product and Sector Level Impact of a Hard Brexit across the EU", ESRI Working Paper 550.

27 The short-term scenarios are modelled based on a 2020 baseline. It may be the case that the transition period extends beyond 2020, in which case the percentage changes reported here should be understood as representative for the first full year following the end of the transition period.

Figure 11. Long-term impact of BREXIT on Ireland's total exports



Note: *The figures show the percentage effect of a new EU-UK trade agreement compared to the case where UK had remained a member of the EU. The per cent impact in each scenario should be interpreted as the per cent by which the level of Irish total exports to all countries would be lower than in the absence of Brexit in 2030.*
Source: *Copenhagen Economics based on CGE simulations in cooperation with J. Francois.*

The impact of Brexit on the Irish economy in the long-run could be severe even in the case of a deep, ambitious and comprehensive FTA with the UK. If, for example, the UK develops new approaches to technical regulation or conformity assessment procedures (e.g. for food packaging or labelling, food processing standards, pharmaceutical manufacturing inspections or food safety inspections), the disruption to Ireland-UK trade could be significant. Even slight differences in standards can add high costs and can require expensive duplication of testing and modification of sophisticated production lines or complex supply chains. This will be the case even if there are no tariffs.

If regulatory divergence can be avoided or reduced post Brexit, this would reduce the impact on Ireland's trade significantly. Of the 3.3 per cent negative impact on Ireland's exports in the EEA scenario, only one third (1.1 percentage-points) is associated with tariffs and customs costs. Most of the predicted impact is related to the risk of regulatory divergence.

A similar pattern is found in the Customs Union and FTA scenarios, with the main difference being a higher risk of regulatory divergence due to the inability of standard customs unions and standard FTAs to address regulatory divergence. It should be noted, that there is no certainty that the absence of an agreement with the UK would necessarily lead to regulatory divergence, just as there is no certainty that even the best trade agreement can fully ensure the same degree of regulatory alignment as would have occurred under continued UK membership of the EU. A very small part of the impact relates to services.

These results point to the importance for Ireland to ensure that a future trade agreement between the EU and the UK includes the most effective measures to reduce the risk of regulatory divergence between the EU and the UK in the areas where EU membership has provided a high degree of regulatory convergence.

The import side of Brexit is equally important. Ireland's imports of goods and services will also

be affected, and in percentage terms imports will be slightly more affected than exports due to a higher exposure towards the UK on the import of goods. Our results suggest that total imports would be 3.5 per cent below the non-Brexit baseline in the EEA scenario, 4.7 per cent in the Customs Union scenario and 4.8 per cent in the FTA scenario. In the WTO scenario, the results foresee Ireland's total import value to be 8.2 per cent below the non-Brexit baseline in 2030, cf. Figure 12. Regulatory divergence is the biggest driver of the results, and the impacts on imports will be significantly smaller if the risk of regulatory divergence is reduced or avoided.

3.3 Macroeconomic impacts of Brexit on Ireland

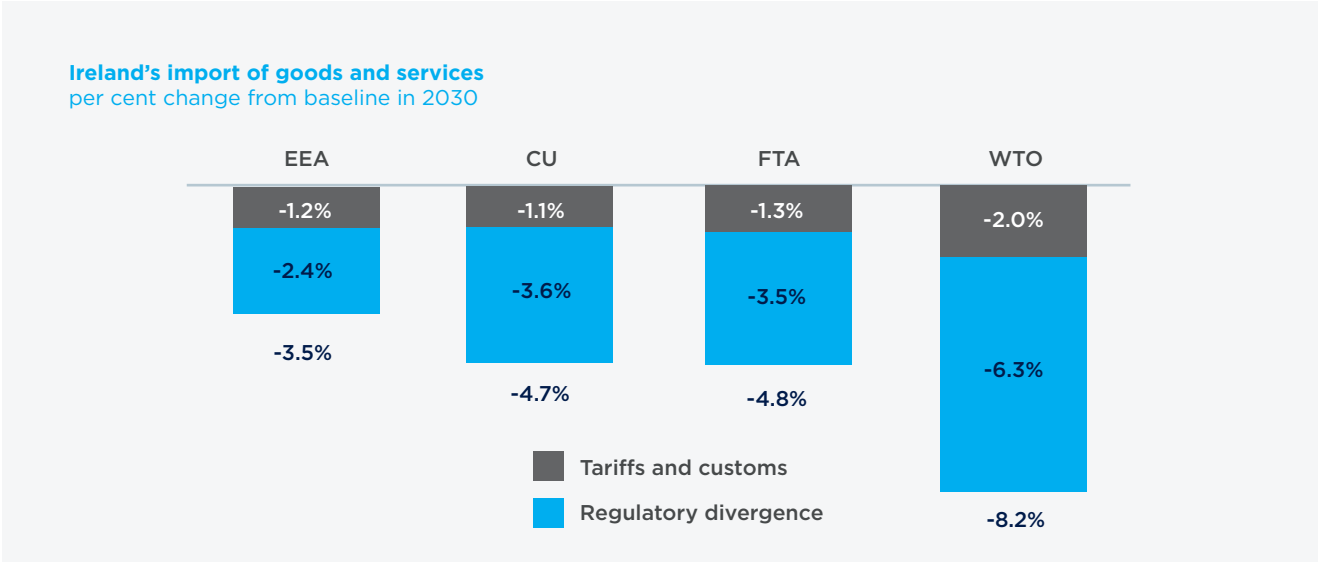
Trade – both imports and exports – is a major driver of economic growth and prosperity.

The impacts of Brexit on the Irish economy will not only translate into negative impacts for Irish exporters in the UK market. Supplier industries to the export sectors will also be affected. Likewise, Brexit will reduce the preferential access of EU producers to the UK market and thereby reduce the cost advantages that e.g. Irish agricultural products have on the UK market relative to similar products, e.g. dairy products from New Zealand or beef from Australia. Irish imports from the UK will also be hampered and this can have important knock-on effects in the value chains relying on UK imports. Furthermore, it will have consumer impacts in terms of higher prices of imported goods, but also indirectly lead to higher costs for domestic goods, since imported products and services feed in to domestic production of consumer goods and services.

Consequently, the production of the Irish enterprise sector will suffer and the gross domestic product (GDP) will be at a lower level in 2030 than it would otherwise have been in the absence of Brexit.

We predict Ireland's GDP to be between 0.8 per cent and 2.8 per cent lower than the non-Brexit baseline level in 2030 in the EEA scenario depending on the degree of regulatory divergence following Brexit. Measured in terms of the current GDP level, a 2.8 per cent drop

Figure 12. Long-term impact of BREXIT on Ireland's total imports



Note: *The figures show the percentage effect of a new EU-UK trade agreement compared to the case where UK had remained a member of the EU. The per cent impact in each scenario should be interpreted as the per cent by which the level of Irish total imports from all origins would be lower than in the absence of Brexit in 2020 and 2030, respectively.*

Source: *Copenhagen Economics based on CGE simulations in cooperation with J. Francois and data from CSO.*

would correspond to EUR 7 billion (2015-basis). The negative GDP impact could be worse in a customs union scenario or FTA scenario, where the GDP impact could be -4.3 per cent (corresponding to EUR 11 billion in 2015-level). If a political agreement can be reached to avoid customs procedures in the customs union scenarios, the GDP impact could be reduced to 3.4% in this scenario.

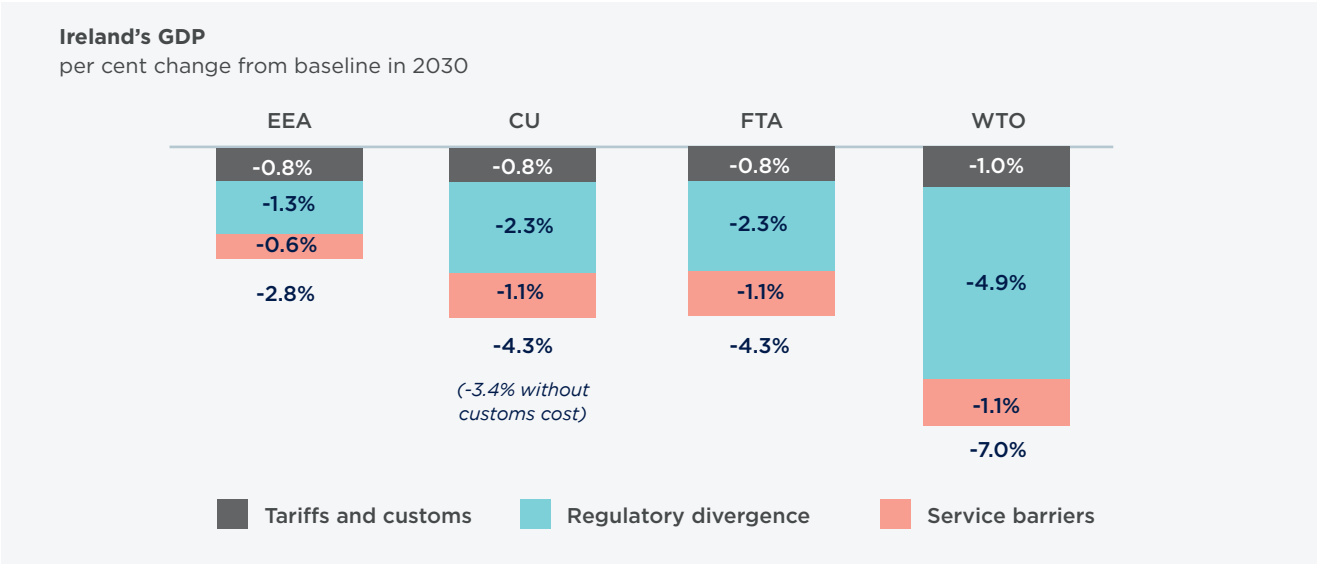
In the WTO scenario, GDP would be 1.0 per cent lower if no regulatory divergence occurs and 7.0 per cent lower than the non-Brexit baseline level of GDP in 2030 if UK regulation diverges to the full extent of non-FTA partners, cf. Figure 13. A 7.0 per cent drop in GDP corresponds to €18 billion on a 2015-basis. This impact via tariffs and customs could be larger in this scenario, if the EU and the UK does not continue to use TRQs on beef, as assumed.

Brexit will not end economic growth in Ireland. All results presented above are reductions from the non-Brexit baseline, i.e. a reduction relative to the level of e.g. GDP that would have occurred in the absence of Brexit. On the basis of an underlying long term growth rate of 2.2 per cent per year between 2017 and 2030, Ireland will still be more prosperous in 2030 than in 2017, even in the event of a WTO scenario.

Our results predict that the level of Irish GDP could be 7.0 per cent lower in the WTO scenario with full regulatory divergence compared to what it would otherwise have been without Brexit in 2030. Translated into an average annual growth rate between 2017 and 2030 (and assuming a gradual adjustment) this means that Irish GDP would be growing at 1.7 per cent per year instead of 2.2 per cent per year on average (assumed baseline growth without Brexit). Under the EEA scenario, Irish GDP would be growing at 2.0 per cent per year.

The impact of Brexit in the WTO scenario is estimated to result in GDP being 7 per cent lower in 2030 than would be the case in the absence of Brexit. In the short-term scenarios, we estimate a -0.5 per cent impact on GDP in 2020 in 'soft Brexit' and -2.1 per cent in 'hard Brexit'.

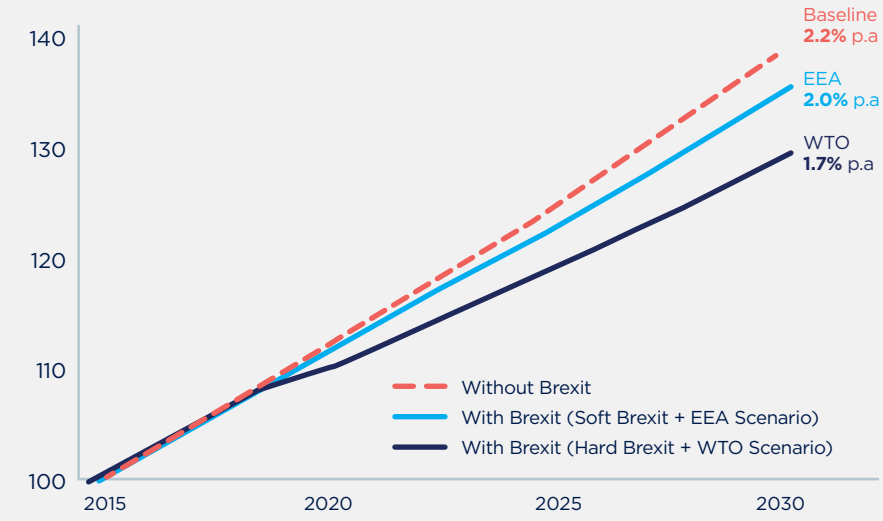
Figure 13. Long-term impact of BREXIT on Ireland's GDP



Note: *The figures show the percentage effect of a new EU-UK trade agreement compared to the case where UK had remained a member of the EU. The per cent impact in each scenario should be interpreted as the per cent by which the level of Irish GDP would be lower than in the absence of Brexit in 2030.*

Source: *Copenhagen Economics based on CGE simulations in cooperation with J. Francois.*

Figure 14. Development of Ireland's GDP with and without Brexit



Note: The figure compares the development of Irish GDP under different Brexit scenarios against a non-Brexit baseline, i.e. where the UK had remained a member of the EU. The per cent impact in each scenario should be interpreted as the annual percentage GDP growth in each scenario between 2017 and 2030. Source: Copenhagen Economics based on CGE simulations in cooperation with J. Francois and OECD/IIASA/PIK GDP forecasts.

3.4 Labour market impacts of Brexit on Ireland

In the long run, the overall level of employment in the Irish economy will be determined by structural factors, mainly labour supply and the skills composition of the Irish workforce.

Seen in this perspective, the future trade agreement with the UK will not in itself affect the overall level of employment in Ireland, but an agreement that reduces trade will without doubt affect the general wage levels in Ireland negatively.

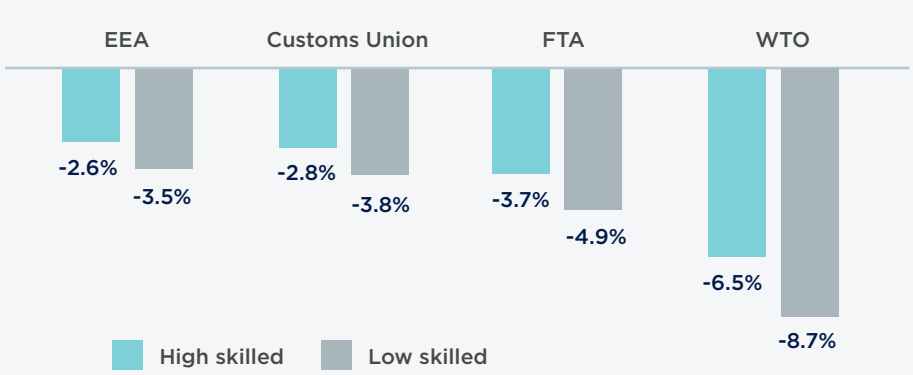
Brexit will have short term impacts on employment. These short-term impacts have not been quantified, as the impact will depend on where the Irish economy will be in the business cycle at the time of the biggest impact. Further, the impact of Brexit will not have played out at firm level in the short run.

Brexit will also have long-term effects on employment at the sectoral level, as some sectors will contract and others will expand after Brexit. The change in labour demand across sectors will give rise to wage adjustments, which will lead to redistribution of workers across sectors with wages in each skills group adjusting across these sectors accordingly. To assess the isolated impact of a new trade relationship with the UK, we have assumed no change in the long run labour supply in Ireland as a result of different trade agreements. This means that we do not model changes in labour market participation rates due to migration or other factors. Under this assumption, any changes in labour demand will be captured through wage changes.[28]

In the WTO scenario, real wages will be 8.7 per cent below the non-Brexit baseline level in 2030 for low skilled workers and 6.5 per cent below the equivalent baseline level for high skilled workers. In the EEA scenario, impacts will be smaller, with real wages being 3.5 per cent below the non-Brexit baseline level in 2030 for low skilled and 2.6 per cent below for high skilled.

28 This does not imply that we predict that Brexit cannot affect labour supply. On the contrary, Brexit may well affect labour supply in Ireland, e.g. if Ireland attracts talent from the UK as a result of Brexit. This is however outside the scope of this analysis, and would dilute the assessment of the impacts of the future trade relationship.

Figure 15. Impact on real wages for Irish high and low skilled workers



Note: The figure shows the percentage effect of a new EU-UK trade agreement compared to the case where UK had remained a member of the EU. The per cent impact in each scenario should be interpreted as the per cent by which the level of real wages would be lower than in the absence of Brexit in 2030 for both high and low skilled workers. The model does not take account of migration.
Source: Copenhagen Economics based on CGE simulations in cooperation with J. Francois

Large job reallocations will be necessary. In the WTO scenario, approximately 20,000 jobs will be reallocated between sectors. Most jobs will be lost in agri-food (-12,400) and some in manufacturing and construction (-6,300), and some in wholesale/retail and air transport (-1,300), while most of the reallocation will be to other services. Overall this is equivalent to job churning of approximately one per cent of the Irish labour force over 10 years. In the EEA scenario, the job shifts will be around half of that in the WTO scenario, implying that a reallocation of around 10,000 jobs should be foreseen.[29]

3.5 Comparing with other studies

A number of studies have quantified the impact of Brexit on the EU economy and on individual member states, including Ireland. Overall, there is consensus that Ireland will be the member state most affected by Brexit, but the reported impacts differ somewhat in magnitude, mainly due to differences in the modelling approach, and in the size of the trade costs assumed to arise as result of Brexit.[30]

Under a WTO scenario, the long-run impacts for Ireland range from -3.4 to -9.4 per cent. This can be compared to the -7 per cent impact found in this study, which is in the higher end of the range. This impact is however contingent on UK regulation diverging to the full extent of non-FTA partners and additional customs costs arising. If no regulatory divergence occurs, we find that GDP would only be 1.0 per cent lower in 2030, than it would otherwise have been in the absence of Brexit, cf. Figure 13.

In the range above, the lowest impact is found by Netherlands Bureau for Economic Policy Analysis (2016)[31], who assumes that relatively low trade costs will be imposed.[32] The highest impact is found by the European Parliament (2017)[33], who assumes very high trade costs, as

29 In comparison, almost 360,000 transitions occurred within employment in Ireland in 2016, either due to a change of employer (intra-occupational transitions) or change of occupation (inter-occupational transitions), cf.Solas (2017) "National Skills Bulletin 2017", the National Skills Council.
30 Among the main studies published, that contain impacts for Ireland are: ESRI (2016), "Modelling the medium to long term potential macroeconomic impacts of Brexit on Ireland", European Parliament (2017), "Research for AGRI Committee- EU-UK agricultural trade: state of play and possible impacts of Brexit", Rojas-Romagosa, Hugo (2016), "Trade effects of Brexit for the Netherlands", CPB Netherlands Bureau for Economic Policy Analysis Background document.
31 Rojas-Romagosa, Hugo (2016) "Trade effects of Brexit for the Netherlands", CPB Background document.
32 In Roja-Romagosa (2016) the weighted average cost of regulatory NTBs is 13 per cent, compared to 24 per cent in this study, and no additional customs costs are modelled.
33 European Parliament (2017) "Research for AGRI Committee- EU-UK agricultural trade: state of play and possible impacts of Brexit".

it is assumed that Ireland will also face higher costs of trading with the remaining EU Member States, due to higher transport costs.[34] In a scenario where additional trade costs with the remaining EU members is not assumed, the European Parliament (2017) finds a long-run GDP impact of -3.4 per cent. Findings by the ESRI (2016)[35] are of a similar size, with a long run GDP impact of -3.8 per cent.

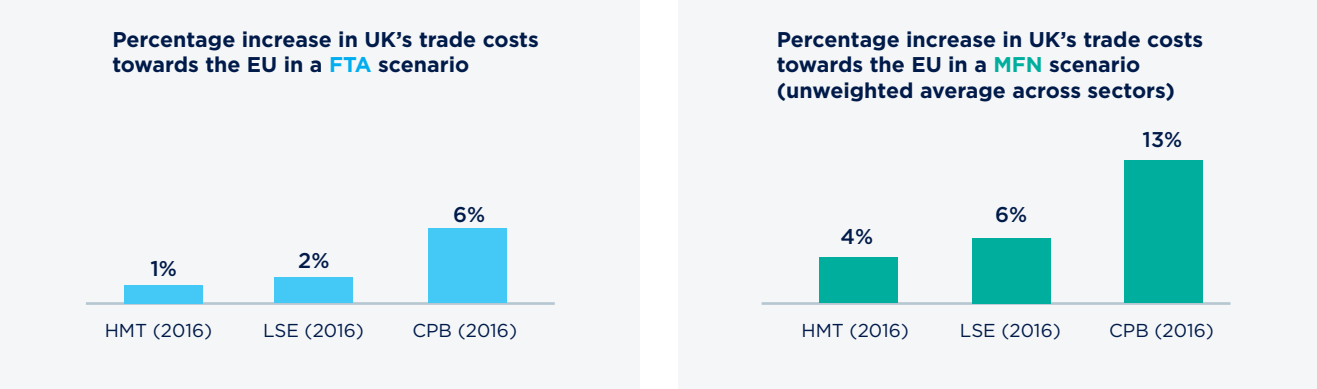
Part of the explanation for the variations in the impacts across the studies, lies in variations in the size of trade costs imposed under the WTO scenario. The costs of regulatory NTBs and service barriers thus varies significantly, and none of the above studies takes account of additional customs costs.

Available empirical studies estimate that the *average* UK trade costs across sectors could increase by 1-6 per cent if an FTA is reached. These studies also suggest a significant increase in UK trade costs of 4-13 per cent in a scenario where EU-UK trade takes place on WTO terms, cf. Figure 16.

Increased costs of trading with the UK will affect Irish GDP, exports and imports negatively. First, increased trade costs will make Irish exports less competitive on the UK market, relative to exports from non-EU countries, causing both exports to the UK and the amount of Irish production to fall. Second, the price of imports from the UK will also increase as a result of increased trade costs, which will also affect UK sourced inputs to Irish production. This will make Irish exports to all countries less competitive and further lower Irish production. The fall in Irish production will be reflected in a fall in Irish GDP. Chapter 4 contains a more detailed discussion on how increased trade costs will impact the Irish economy.

The increase in trade costs will, however, vary widely across sectors. The EU generally imposes higher tariffs on imports of sensitive products (e.g. agri-food products, textiles and automotives) from their non-EU trading partners, while other products are traded more freely (e.g. pharmaceuticals, mineral fuels & oils and paper products). Likewise, new regulatory barriers emerge more quickly in some sectors (e.g. agri-food products) relative to sectors regulated by international standards (e.g. metals).

Figure 16. Estimates of increase in UK trade costs after Brexit



Note: *The total trade cost consists of both tariffs and non-tariff barriers (NTBs). The NTB estimates in LSE (2016)[36] are calculated as the sum of the NTB-increase, which arise when UK enforces new technical regulations and new approval procedures, and the increase because the UK loses the trade benefits of being a part of the EU Single Market. The NTB estimates in HMT (2016) are calculated as the total estimated increase in trade cost less the part of the costs concerning tariffs (respectively 1% and 3% tariffs in the FTA-scenario and the MFN-scenario).*

Source: *Copenhagen Economics based on the respective studies*

34 A decrease in trade with the UK is assumed to impose higher transport costs for Ireland, due to e.g. cargoes not being fully loaded between Ireland and the EU.

35 ESRI (2016), "Modelling the medium to long term potential macroeconomic impacts of Brexit on Ireland".

36 LSE (2016), CPB(2016) and HMT(2016)

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CHAPTER 4
Impacts of Brexit on Sectors in Ireland

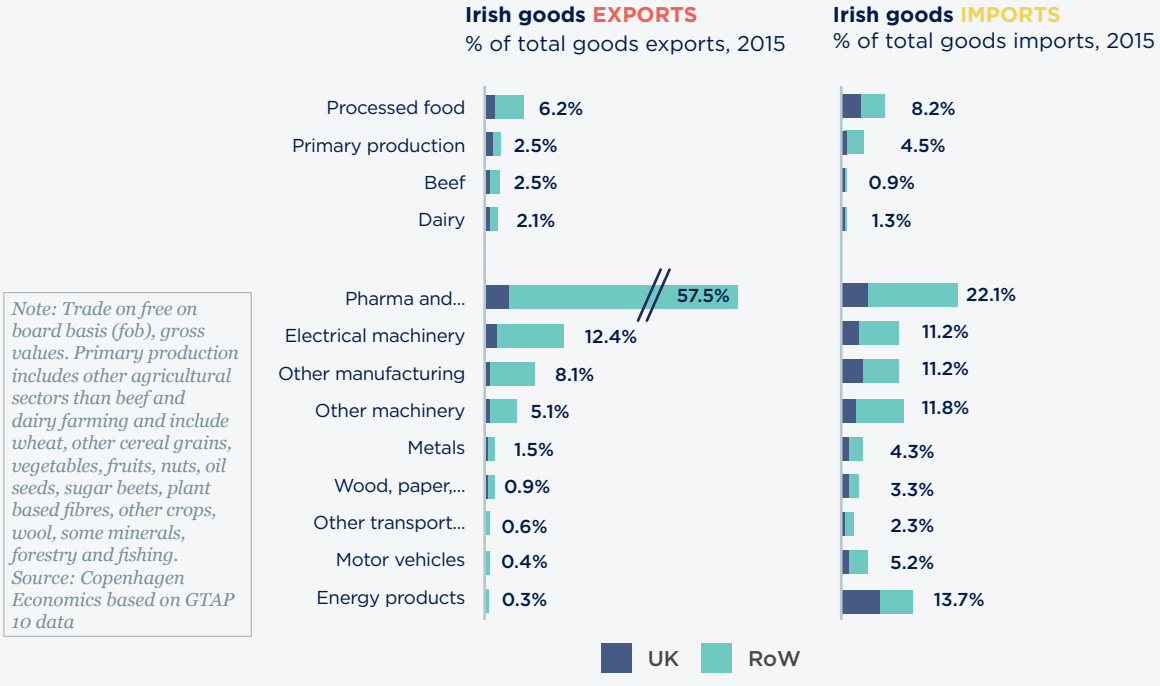
This chapter is devoted to the sector impacts in the four scenarios for the future EU-UK trade relationship. The analysis describes the impact across sectors and points towards the key sectors in understanding the majority of Brexit's impact on the Irish economy.

4.1 Current Ireland-UK trade relations across sectors

At sector level, Ireland's goods exports are vastly dominated by the pharma-chemicals sector, which is responsible for over half of Irish goods exports. The top 3 Irish export products and four of Ireland's top 10 export products are in this sector.[37] Although the sector is not overly exposed to the UK, the sector is the largest single sector when it comes to exports to the UK with around €5 billion in annual exports.

The combined agri-food sector[38] accounts for 13 per cent of total goods export in 2015, of which processed foods is the largest with 6.2 per cent of total goods exports. Electrical machinery, other machinery and manufacturing are also large export sectors, cf. Figure 17.

Figure 17. Ireland's goods trade per sector with UK and the Rest of the World



Note: Trade on free on board basis (fob), gross values. Primary production includes other agricultural sectors than beef and dairy farming and include wheat, other cereal grains, vegetables, fruits, nuts, oil seeds, sugar beets, plant based fibres, other crops, wool, some minerals, forestry and fishing. Source: Copenhagen Economics based on GTAP 10 data

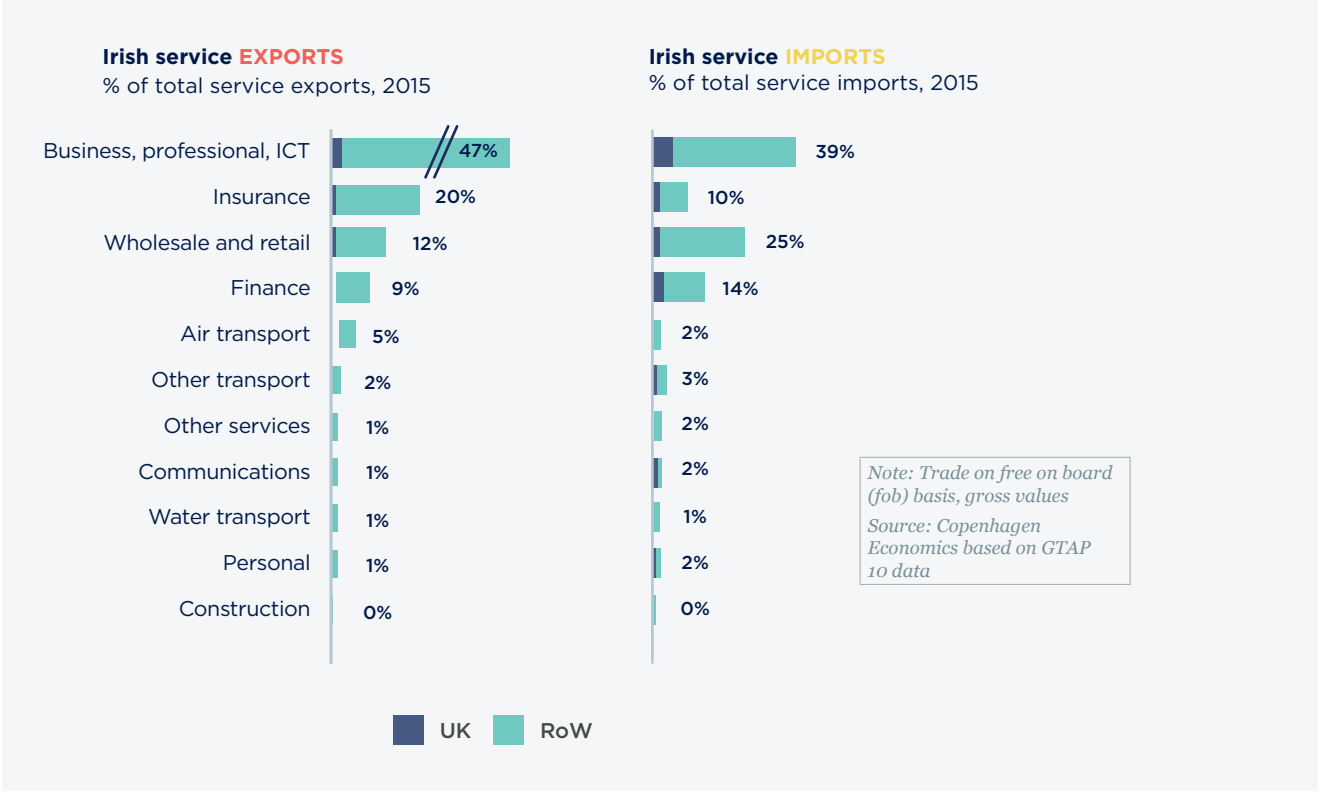
37 Based on 2015 data from the CSO, pharma-chemical products accounted for 56 per cent of Irish total merchandise exports in that year. Within this category, Medicinal and pharmaceutical products accounted for 27 per cent of total merchandise exports, Organic chemicals (19%), Essential oils, perfume materials, toilet preparations etc. (7%) and Chemical materials and products, n.e.s. (3%).

38 The GTAP data for 2015 deviates from the most recent Bord Bia figures for dairy and beef. Most recent Bord Bia data shows that dairy exports are higher than beef exports.

On the services side, exports are dominated by business services, professional services and ICT services, which account for more than 47 per cent of Irish service exports. Insurance, financial services, wholesale and retail and air transport are the other large service export sectors. None of these are particularly exposed to the UK market.

Imports are generally found in the same sectors as exports, and Ireland's trade is very much a two-way trade with large amounts of imports and exports in the same sectors, reflecting the modern integrated value chains and the need to import to be able to export. Consequently, the assessment of the Brexit scenarios is equally focussed on imports.

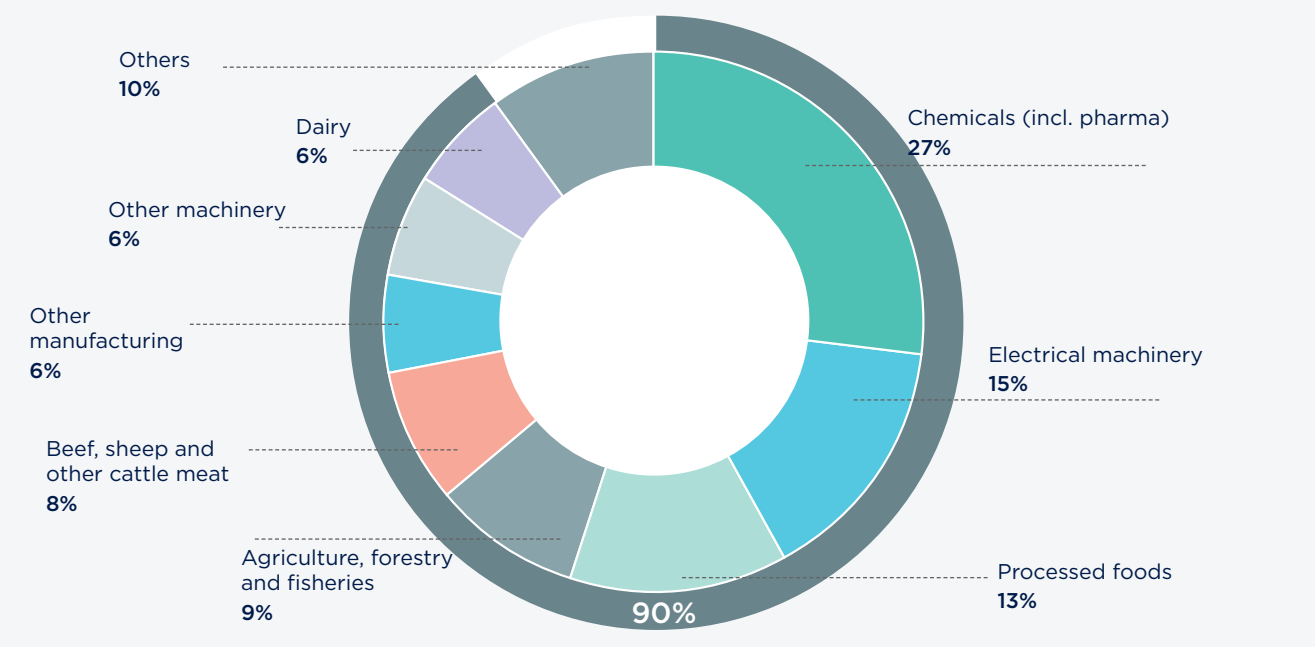
Figure 18. Ireland's trade per sector with UK and the Rest of the World



Looking at the export of goods to the UK, pharma-chemicals is again the largest sector with 27 per cent of total goods exports to the UK in 2015 followed by the same sectors as highlighted in the overall export picture, cf. Figure 19. In total, 90 per cent of goods exported to the UK are accounted for in the top eight sectors shown below.

Ireland's service exports to the UK is even more concentrated and 82 per cent is found in just five sectors, of which air transport is the largest closely followed by business, professional and ICT services, cf. Figure 20.

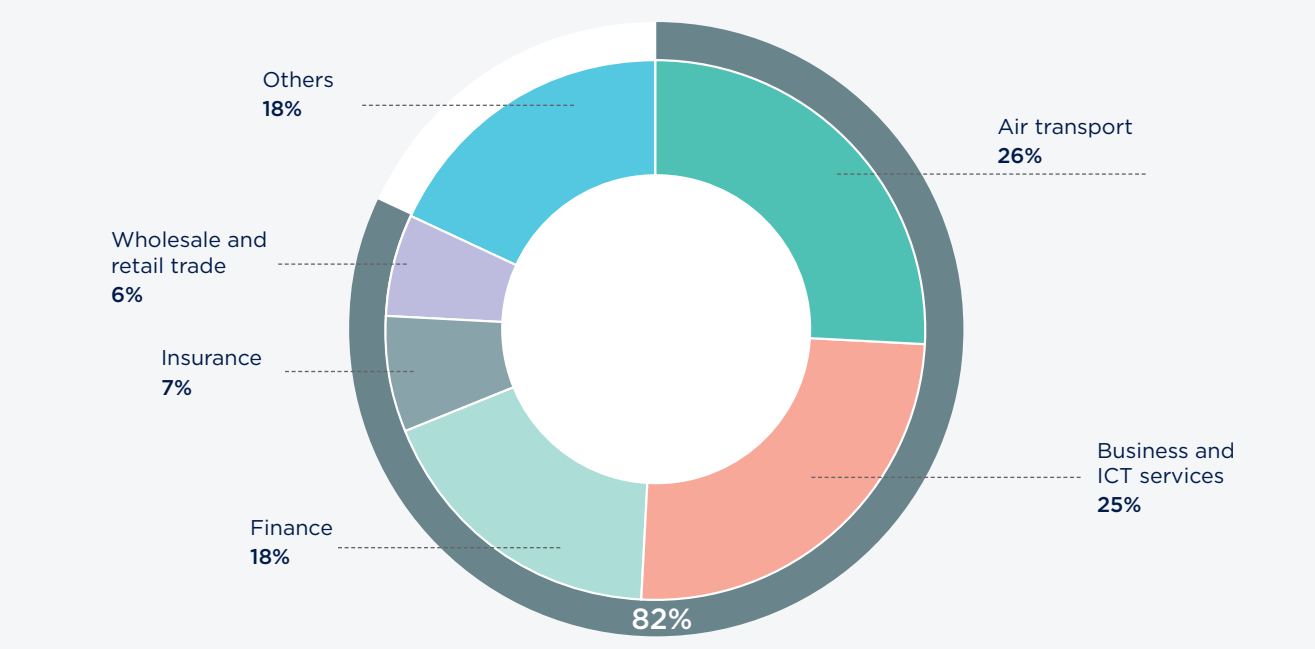
Figure 19. Ireland's key goods export sectors to the UK



Note: *The category others cover wood and paper products, metals and metal products, energy, motor vehicles and other transport equipment Agriculture, forestry and fisheries include primary agricultural sectors other than beef and dairy farming and include wheat, other cereal grains, vegetables, fruits, nuts, oil seeds, sugar beets, plant based fibres, other crops, wool, some minerals, forestry and fishing. The sector distribution is based on GTAP10 data and differs from the sector distribution in the CSO data.*

Source: *Copenhagen Economics based on GTAP 10 data*

Figure 20. Ireland's key service export sectors to the UK



Note: *The category others cover construction, water transport, other transport, personal services, communications and other services. The sector distribution is based on GTAP 10 data and differs from the sector distribution in the CSO data.*

Source: *Copenhagen Economics based on GTAP 10 data*

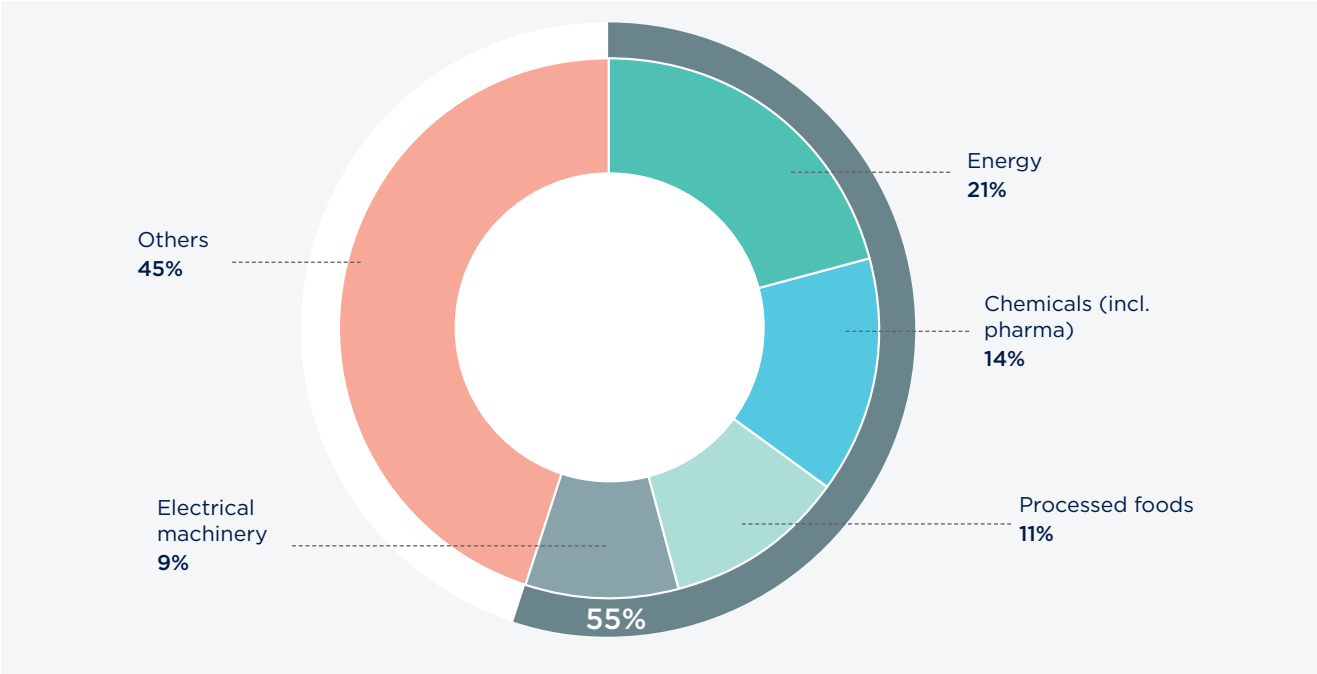
Ireland has a large import of goods from the UK, with energy and petroleum products (mainly fuel and natural gas and limited amounts of electricity) as the largest with 21 per cent of total goods imports from the UK. These products which are transported/transmitted via cables, pipelines and other specialised means of transportation are not subject to trade costs or tariffs in the same way as other products.

Pharma-chemicals is the second largest import category (14%) from the UK which reflects the integrated value chain with the UK market and this flow includes both final products from the UK and input of active substances or semi-finished products for further processing or packaging in Ireland, and some of this for re-export.

The third largest import category is processed foods, which reflects the large similarity in taste between Irish and British consumers, is partly driven by the presence of large UK retail supermarkets in Ireland and highlights the importance of their integrated sourcing from the UK for their Irish operations.

Ireland has a substantial amount of Services imports, of which a good part are from the UK and 84 per cent of total imports are accounted for by four sectors. The Services imports from the UK are predominantly in business, professional and ICT services which represents 42 per cent of total service imports from the UK. Financial services and insurance are also highly integrated with the UK, not least with City of London. As mentioned, there are also strong links between UK and Ireland in the retail and wholesale sector.

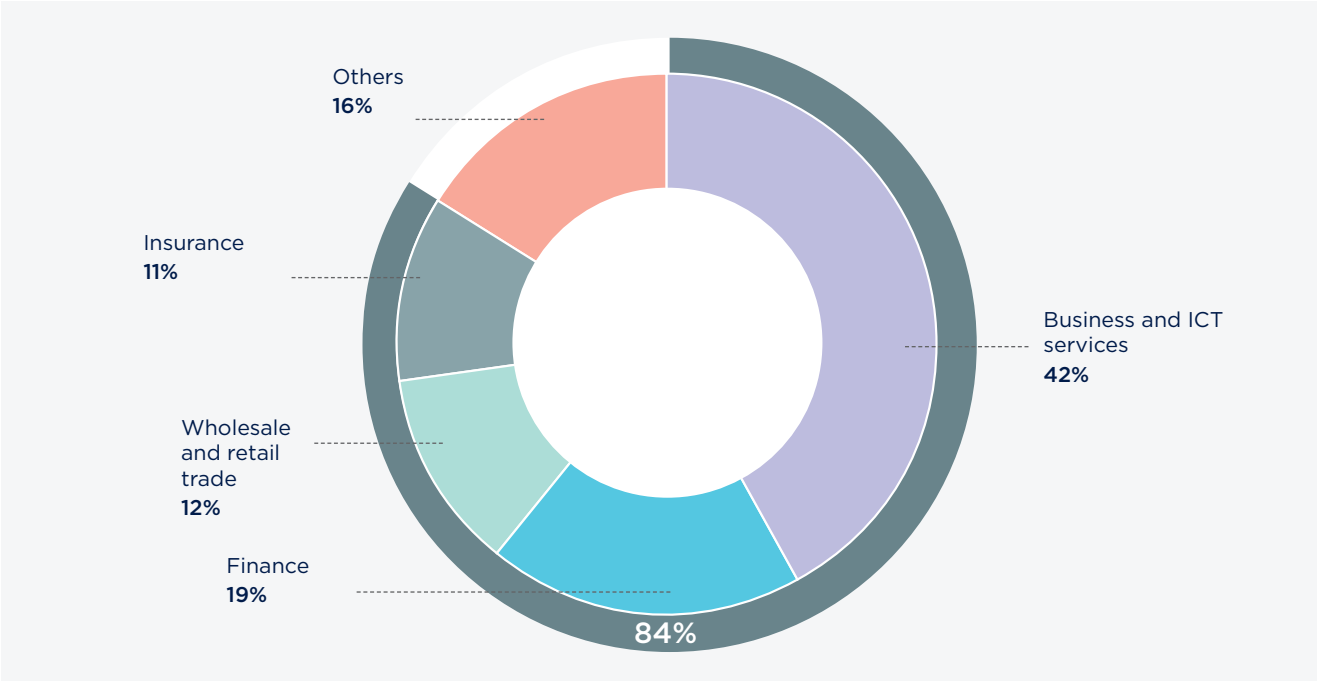
Figure 21. Key goods import sectors from the UK



Note: *The category others cover agriculture, forestry and fishing, dairy, beef, sheep and other cattle meat, wood and paper products, metals and metal products, other machinery, motor vehicles, other transport equipment and other manufacturing. The sector distribution is based on GTAP10 data and differs from the sector distribution in the CSO data.*

Source: *Copenhagen Economics based on GTAP 10 data*

Figure 22. Key service import sectors from the UK



Note: *The category others cover construction, air transport, water transport, other transport, personal services, communications and other services. The sector distribution is based on GTAP10 data and differs from the sector distribution in the CSO data.*
Source: *Copenhagen Economics based on GTAP 10 data*

4.2 Impacts of Brexit across sectors of the Irish economy

When taking all impacts of a new trade agreement with the UK into account, the change in production value (output) is the measure that best captures all the underlying dynamics. Increased costs of trading with the UK will naturally affect the exports of each sector and thereby the amount of production needed in Ireland.

Additional trade costs will also affect imports and thereby input costs for Irish manufacturing or service firms. This will also affect the amount of production in Ireland. Domestic consumption will also change as a result of Brexit, as imports get more expensive and the general cost level increases. Furthermore, all other EU countries will also face higher trading costs when trading with the UK and UK exporters to the continent will see their competitiveness decline as their products become subject to new trade costs.

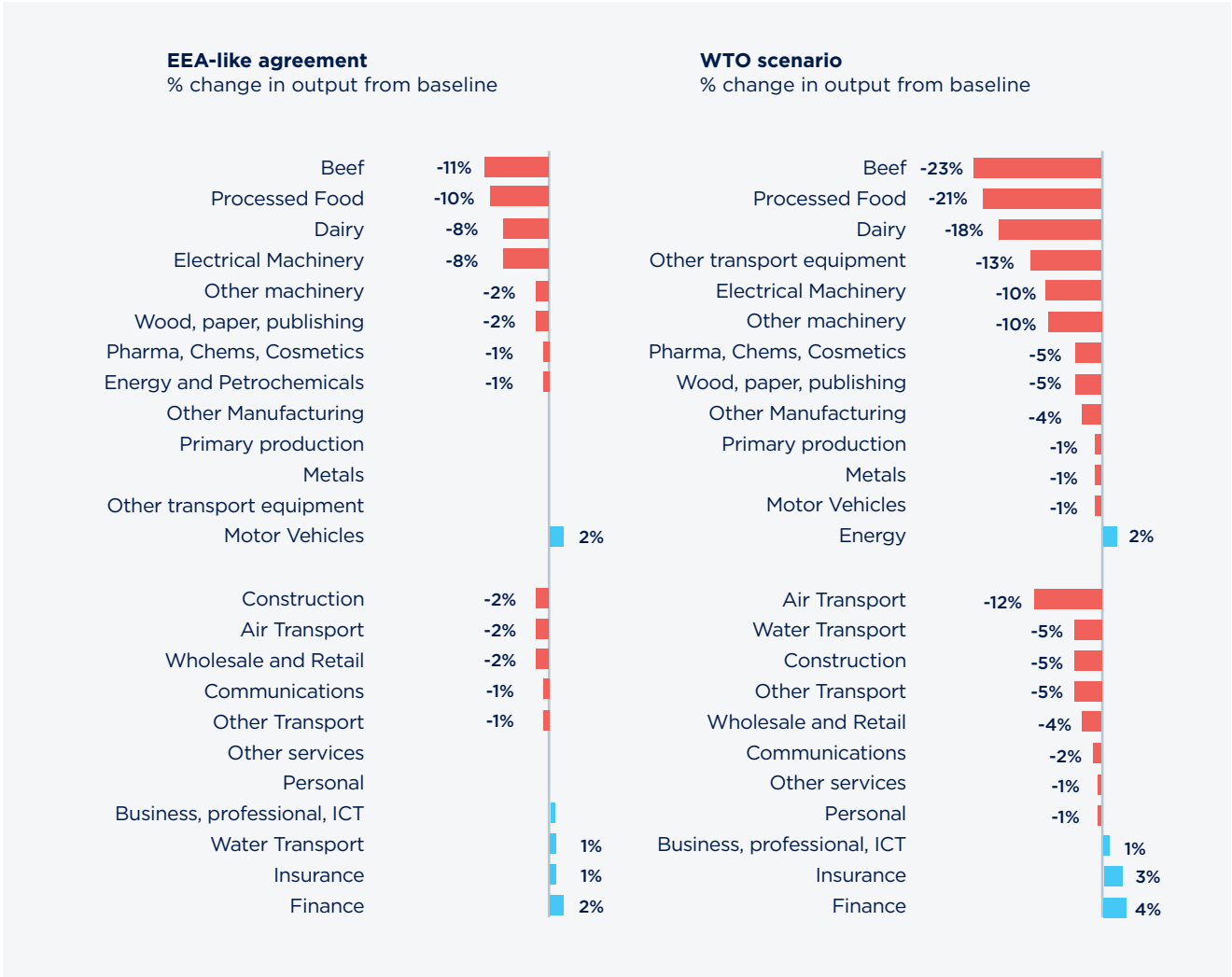
This will shift some demand away from UK suppliers towards other EU suppliers – both in Ireland and in other member states. Our estimates of changes in production (economic output) in each sector takes all of these interactions into account.

Having analysed all scenarios across 24 sectors of the entire Irish economy, we find that the agri-food sectors, notably beef, processed foods and dairy will be most affected in any scenario when measured in the percentage change of their production in Ireland. In the EEA scenario, they will face a drop in production in Ireland of around 10 per cent and in the WTO scenario, the drop will be around 20 per cent of production value relative to the 2030 baseline level. All of these results are under the assumption that the full impact of regulatory divergence will materialise. The electrical machinery sector, which is also large in absolute terms, will also see a large percentage drop in output in all scenarios of 8-10 per cent.

In the EEA-scenario, all other sectors (incl. services) will see impacts of less than 2 per cent, and some sectors will be virtually unaffected, either because of limited trade, limited trade with the UK or because of limited impact of Brexit on trade costs in that sector. The pharma-chemicals sector will see a smaller reduction of 1 per cent of sector output in the EEA scenario, but because of its large size in the overall economy, this will mean a significant reduction in output overall.

In the WTO scenario, the output from the pharma-chemicals sector will drop 5 per cent from the baseline level in 2030. These sector results are described in further details in the following sections.

Figure 23. Output changes in two scenarios for Brexit in 2030



Note: *Long-run changes in output relative to 2030 baseline. CU and FTA impacts are between the two. Primary production includes agricultural sectors other than beef and dairy farming and include wheat, other cereal grains, vegetables, fruits, nuts, oil seeds, sugar beets, plant based fibres, other crops, wool, some minerals, forestry and fishing.*

Source: *Copenhagen Economics based on CGE simulations in cooperation with J. Francois*

4.3 The most impacted sectors

When taking all impacts of a new trade relationship with the UK into account, the change in a few sectors explains the vast majority of the total economic impact. Identification of these sectors is thus key in understanding and preparing for the impacts of Brexit in Ireland.

Our analyses point to five industries as key in assessing the overall economic impact for Ireland of a new trade relationship with the UK:

- Agri-food
- Pharma-chemicals
- Electrical machinery
- Wholesale and retail
- Air transport

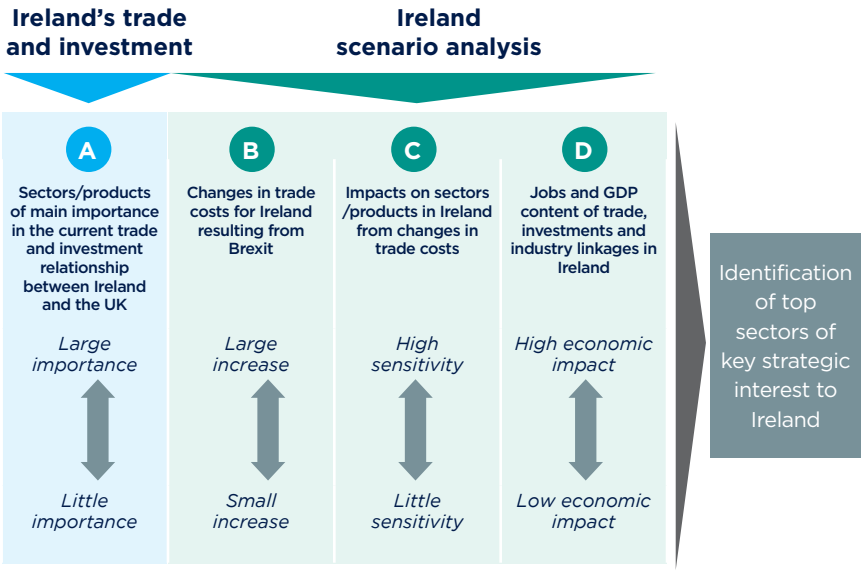
These five sectors account for the majority of the impact as a result of a combination of (i) the scale of the Brexit impact in the sector and/or (ii) the scale of Irish-UK trade in the sector.

These five sectors of key strategic interest to Ireland are identified using detailed analyses of current trade and investment patterns and via the simulations with our large-scale trade model. The identification is based on four objective criteria, cf. Figure 24.

The five sectors of key strategic interest to Ireland explain over 90 per cent of the overall GDP impact in the WTO scenario, and half of the aggregate economy-wide impact is associated with just two sectors, namely agri-food and pharma/chemicals.

In the EEA scenario, four of the five – excluding air transport[39] – explain virtually all of the impact. In the EEA scenario, the main impact is related to the agri-food sector, which is estimated to account for 1.0 percentage point of the predicted 2.8 per cent reduction in GDP compared to the 2030 baseline level. The following sections explain the impacts in each of the key sectors in more detail.

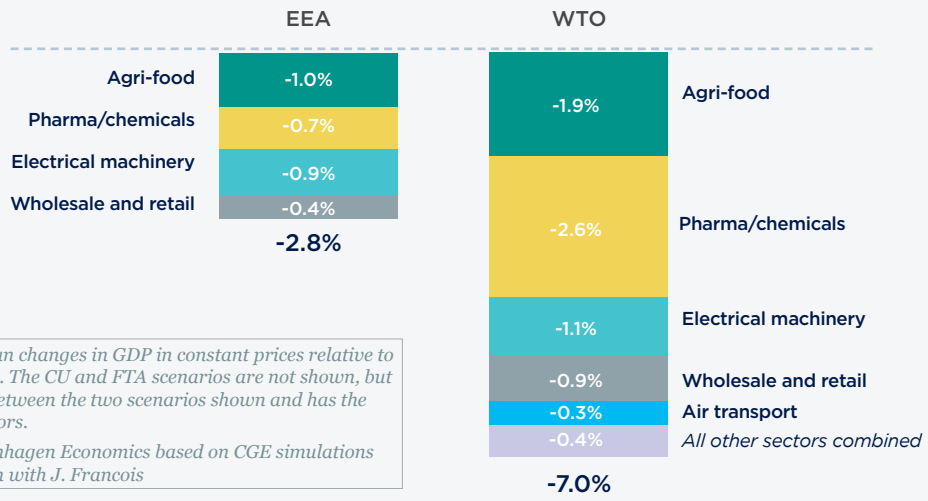
Figure 24. Criteria for identifying key sectors for Brexit



39 Air transport is not significantly affected in the EEA scenario, which per definition assumes that the UK remains a full member of the European Common Aviation Area (ECAA) in line with existing EEA-countries.

Figure 25. Key sectors explain over 90 per cent of GDP impact

Impact of BREXIT on Irish GDP
% change from 2030 baseline



Note: Long-run changes in GDP in constant prices relative to 2030 baseline. The CU and FTA scenarios are not shown, but impacts are between the two scenarios shown and has the same key sectors.

Source: Copenhagen Economics based on CGE simulations in cooperation with J. Francois

The impacts in the key strategic sectors have a specific profile with respect to regional footprint and with respect to the importance of indigenous firms.

The key strategic sectors generally have around 80 per cent of their employment outside the Dublin region, and Brexit will therefore be felt more in the rural parts of the country where these sectors dominate, especially agri-food.

The picture regarding indigenous firms is more mixed. The agri-food sectors are 80-100 per cent indigenous firms, whereas the pharmaceutical and chemicals sector and the electrical machinery sector are predominantly foreign owned (17-29 per cent indigenous).

Figure 26. Profile of key sectors

Sector	Employment share outside Dublin	Employment share for indigenous firms
Chemicals (incl. pharma)	77%	29%
Processed foods	82%	80%
Electrical machinery	-	17%
Wholesale and retail trade	72%	83%
Beef, sheep and other cattle meat	82%	100%
Air transport	-	-
Dairy	82%	100%

Note: The employment shares outside of Dublin in dairy, beef, sheep and other cattle meat and processed foods, are proxied by the employment share outside of Dublin in the Food and Beverage sector taken from the Dept. of Finance (2017). "UK EU Exit - An Exposure Analysis of Sectors of the Irish Economy". The employment share for indigenous firms is from Copenhagen Economics (2015), "TTIP impact in Ireland". Employment shares for retail are shown based on data from Retail Ireland.
Source: Copenhagen Economics based on CGE simulations in cooperation with J. Francois and data from Department of Finance and Retail Ireland.

4.4 Impacts in agri-food

The impacts in the agri-food sector are found in three sub-sectors: Processed foods, beef, sheep and other cattle meat and dairy. The production of other primary agriculture (primary production) such as grains, fruit and vegetables, forestry and fishing etc. will also be negatively affected but to a smaller extent because of limited trade, low trade barriers and few changes in the scenarios.[40]

Impacts in processed foods

The processed food sector comprises all kinds of food products of meat, vegetables and fruit as well as beverages and tobacco products. This includes for example (not exclusively) products such as meat preparations, bread, biscuits, cereal-based products, chocolate-based products and other food preparations. It does not include beef, sheep and other cattle meat (this is in the beef sub-sector) or dairy products.

In terms of its share of total value added in 2015, the processed food industry is the biggest of the three agri-food sub-sectors with 2.6 per cent of total value added.

Impacts on production and exports in the sector

- *Total exports* in the processed food sector would be 15-31 per cent below the 2030 non-Brexit baseline level in the EEA and WTO scenarios respectively, and 16-17 per cent below in the FTA and CU scenarios.
- *Exports to the UK* would be 40-87 per cent below the 2030 non-Brexit baseline level in the EEA and WTO scenarios respectively, and 45-49 per cent below in the FTA and CU scenarios

40 Primary production includes agricultural sectors other than beef and dairy farming, such as wheat, other cereal grains, vegetables, fruits, nuts, oil seeds, sugar beets, plant based fibres, other crops, wool, minerals, forestry and fishing.

- *Production* in the sector would also be negatively affected in all scenarios ranging from -10 per cent (EEA) to -21 per cent (WTO) compared to the 2030 baseline production level. The impact in the CU and FTA scenarios is -11 per cent to -12 per cent.
- *Employment* would be affected proportionately to production in the scenarios, i.e. a 10 per cent reduction in production would lead to a 10 per cent reduction in employment compared to the 2030 baseline.

Key elements in the trade relationship with the UK

The main factor affecting exports in the sector is the risk of regulatory divergence. Of the total impact on exports in the EEA scenario of -15 per cent, the risk of regulatory divergence explains -11 per cent. In the WTO scenario, regulatory divergence explains -23 percentage points of the total -31 per cent impact. The food processing industry in the EU is today benefitting from common EU regulation on food safety standards, food inspection requirements, and common labelling requirements. Upon leaving the EU, the UK would no longer be subject to these requirements and would be free (but not obliged) to change the current rules and procedures in this area.

Tariffs and customs are another risk factor for the processed food industry in the future trade relationship with the UK. Of the total impact on exports in the EEA scenario of -15 per cent we find that around -4 percentage points comes from tariffs and customs. In the WTO scenario, tariffs and custom explain -8 percentage points of the total -31 per cent impact, with around half (-4 percentage points) associated with tariffs and the other half (-4 percentage points) caused by customs costs.

Impacts in beef, sheep and other cattle meat

The beef sector also comprises sheep and other cattle meat.[41] Prepared food products containing meat of this kind (e.g. in pizzas, pies or sausages) are included in the processed food sector described above. Ireland has substantial exports of beef to the UK, with around 50 per cent of Ireland's total beef exports destined for the UK, according to 2015 GTAP data.

Impacts on production and exports in the sector

- *Total exports* from the beef sector would be 18 per cent below the 2030 non-Brexit baseline level in the EEA and CU scenario and 35 per cent below in the WTO scenario. In the FTA scenario, the impact would be 22 per cent below the baseline.
- *Exports to the UK* would be 29-53 per cent below the 2030 non-Brexit baseline level in the EEA and WTO scenarios respectively, and 28-35 per cent below in the FTA and CU scenarios.
- *Production* in the sector would also be negatively affected in all scenarios ranging from -11 per cent (EEA) to -23 per cent (WTO) compared to the 2030 baseline production level. The impact in the CU and FTA scenarios would be -12 per cent and -14 per cent.
- *Employment* would be affected proportionately.

Key elements in the trade relationship with the UK

The export impact of -18 per cent in the EEA scenario is equally divided between tariffs/ customs (-9 percentage points) and regulatory divergence (-9 percentage points).

In the WTO scenario, the risk of regulatory divergence is the main factor affecting exports from the sector. Of the total impact on exports

41 The sector includes both fresh and chilled meat and edible offal of cattle, sheep, goats, horses, asses, mules, and hinnies. The vast majority is beef.

in the WTO scenario of -35 per cent, the risk of regulatory divergence explains -24 percentage-points. The beef industry in the EU is today benefitting from common EU regulation and a common approach to non-EU products such as hormone treated beef. In a WTO scenario, the Irish beef producers would lose some of the preferential treatment they have in the UK market vis-à-vis non-EU producers, e.g. Australia or Brazil, since the increasing trade cost for EU products would cancel out some of the cost advantages relative to non-EU producers, who would face changed conditions because of Brexit.

Since Brexit would affect all EU exporters to the UK, this will imply that beef producers in other EU countries, who are today selling to the UK, will divert some of those products to other markets, and hence intensify the competition and depress EU prices on beef. This will be felt by Irish beef producers as well, and is a part of the explanation for the large negative impact on beef.

Impacts in dairy

The dairy industry consists of milk products such as fresh milk, cream, cheese, butter, yogurt and milk powder. Ireland has substantial exports of dairy products to the UK, with 42 per cent of total value of Irish dairy exports destined for the UK according to 2015 GTAP data.[42]

The reliance on the UK market is even greater for certain products such as cheddar (65 per cent) and butter (54 per cent).[43] Raw milk and fresh milk is normally not traded outside the UK. However, there is some trade in milk with Ireland, where around 600-700 million litres of milk are imported from Northern Ireland for processing in Ireland.[44] This North-South milk trade may not be commercially viable if tariffs and border costs are imposed.

Impacts on production and exports in the sector

- *Total exports* from the dairy sector would be 18 per cent below the 2030 non-Brexit baseline level in the EEA scenario and 40 per cent below in the WTO scenario. In the FTA and CU scenarios the impact would be 19 and 20 per cent below baseline, respectively.
- *Exports to the UK* would be 35 to 76 per cent below the 2030 non-Brexit baseline level in the EEA and WTO scenarios, respectively and 37 to 38 per cent below in the FTA and CU scenarios.
- *Production* in the sector would also be negatively affected in all scenarios ranging from -8 per cent (EEA) to -18 per cent (WTO) compared to the 2030 baseline production level. The impact in the CU and FTA scenarios would be -9 per cent to -10 per cent.
- *Employment* would be affected proportionately.

Key elements in the trade relationship with the UK

The export impact of -18 per cent in the EEA scenario is mainly driven by the risk of regulatory divergence (-12 percentage points of the total -18 per cent impact), while tariffs and customs account for the remaining -6 percentage points.

In the WTO scenario, the risk of regulatory divergence is also the main factor affecting exports in the sector. Of the total impact on exports in the WTO scenario of -40 per cent, the risk of regulatory divergence explains -32 percentage points. Just like beef, the dairy industry is benefitting from common EU regulation. Post Brexit there is a risk of divergence in the regulatory environment between the UK and the EU which would

42 Same figure is found in the British-Irish Chamber of Commerce submission on agri-food sectors. Recent Bord Bia figures (2017/2018 Performance and Prospects report) show this figure to be 24-25 per cent.
43 See British-Irish Chamber of Commerce submission on agri-food sectors.
44 See British-Irish Chamber of Commerce submission on agri-food sectors.

have a bearing on Ireland's trade with the UK. Regulatory divergence would add costs for Irish dairy exporters to comply with specific UK requirements[45]. In a WTO scenario, the Irish dairy producers would lose some of the preferential access they have to the UK market vis-à-vis non-EU producers, e.g. New Zealand.

4.5 Impacts in pharmaceuticals and chemicals

The pharmaceutical and chemicals sector is the absolute largest export sector in Ireland with 57 per cent of the value of Ireland's goods exports in 2015, based on CSO data. The sector is a combination of medicinal and pharmaceutical products (25 per cent of total merchandise exports in 2016), organic chemicals (20 per cent), essential oils, perfume materials, toilet preparations (7 per cent), and chemical materials and products (3 per cent).

The pharmaceutical sector in Ireland is part of a European and even global value chain, and is also integrated with the UK via its supply chains. While the UK only represents 7 per cent of the sector's total exports, 23 per cent of the imports in the sector are from the UK. Trade in these products can take several forms. For some products, the active substance is manufactured outside the UK, then further processed and packaged in the UK, and shipped to Ireland as final products. For other products, the active substance is both manufactured and processed outside the UK and only packaged in the UK before shipping the final product to Ireland. For yet other products, the active substance is both manufactured, processed and packed in Ireland, and the final products are shipped to the UK (and some even re-imported). Finally, there are also products that are manufactured, processed and packed outside the UK, which then pass through the UK in transit, sometimes in mixed consignments with different products in the same container.

In all of these instances, border inspections, product standards and good manufacturing practices requirements will impact the supply chains in and out of Ireland.

Impacts on production and exports in the sector

- *Total exports* from the pharma-chemicals sector would only be 1-5 per cent below the 2030 non-Brexit baseline level in the scenarios analysed (i.e. the smallest reduction would occur in the EEA scenario with the greatest negative impact occurring under a WTO scenario). A 5 per cent decline in exports from this sector is, however, still a large amount given the size of the sector (a 5 per cent drop in pharma-chemicals is for example more than the entirety of Irish beef exports).
- *Exports to the UK* would be 7-42 per cent below the 2030 non-Brexit baseline level in the EEA and WTO scenarios respectively, and 20 per cent below in the FTA and CU scenarios
- *Production* in the sector would also be negatively affected in all scenarios ranging from 1-5 per cent below the 2030 baseline production level.
- *Employment* would not be equally affected since the sector would still be one of the more productive sectors and can offer attractive wages, which would help to retain and attract labour from other sectors in Ireland.

Key elements in the trade relationship with the UK

The impacts in the sector are almost entirely driven by regulatory divergence and by increasing border costs. Tariffs on pharmaceutical products are already low or zero for many products as a result of the WTO pharmaceutical agreement. The compliance costs in pharmaceuticals are high

45 This could for example be if the UK adopted a mandatory front-of-pack labelling system, which is currently applied on a voluntary basis in the UK. This could become mandatory post Brexit. Another example could be the introduction of mandatory country of origin labelling, which is currently voluntary in the UK.

and divergence with UK regulation will hamper Ireland's exports and attractiveness as a global manufacturing hub for medicines.

Brexit would also add significant administrative costs related to both importing and exporting of both inputs and final products. Furthermore, some pharmaceutical products are so-called dual-packs, i.e. produced and packed jointly for the Irish and British market because of common language and common regulation, and hence for sale in Ireland and the UK with no adjustments. If changes to the regulation affect this, it would also add costs and reduce trade and production in Ireland.

4.6 Impacts in electrical machinery

The electrical machinery sector is another large export sector for Ireland. The sector is comprised of different kinds of electronic equipment such as computers, radios, televisions and communication equipment, e.g. mobile phones. The sector exported around €15 billion in 2015 (GTAP data), which is almost as much as all of the agri-food sectors combined (€16 billion, GTAP). 17 per cent of exports are to the UK, while 30 per cent of imports are from the UK.

Impacts on production and exports in the sector

- *Total exports* to the world from the electrical machinery sector would be 5-9 per cent below the 2030 non-Brexit baseline level in the scenarios analysed.
- *Exports to the UK* would be 34-40 per cent below the 2030 non-Brexit baseline level in the EEA and WTO scenarios, respectively and 20 per cent below in the FTA and CU scenarios.
- *Production* in the sector would also be negatively affected in all scenarios ranging from 5-10 per cent below the 2030 baseline production level.
- *Employment* would be 2-5 per cent below the baseline employment since the sector would still be one of the more productive sectors and can offer attractive wages, which would help to retain and attract labour from other sectors in Ireland.

Key elements in the trade relationship with the UK

The impact in all scenarios is very much driven by the risk of regulatory divergence, and to a smaller extent by border inspections. Tariffs are low on many products in the sector as a result of the WTO agreement on information technology (ITA).

4.7 Impacts in wholesale and retail

The wholesale and retail sector is another important sector in relation to Brexit. The Irish retail sector employs almost 285,000 people. According to Retail Ireland, the retail sector is the biggest contributor to the Irish exchequer, generating 23 per cent of total tax receipts in Ireland.[46]

In the model simulations, this sector also includes restaurants and accommodation, which brings total employment in the sector to around 400,000. The specific concerns for the restaurants and accommodation part of the sector are addressed in the section below on the tourism industry in Ireland.

The sector will face substantial challenges as the UK leaves the EU. This is because of the close links between the Irish and UK economies and the many retail chains operating in both markets, which could be facing new costs both in their supply chain and as a result of diverging regulatory requirements. Equally important, the sector would be negatively affected by an overall drop in consumer demand resulting from Brexit.

46 Based on data from Retail Ireland, www.retailireland.ie/Sectors/RI/RI.nsf/vPages/Retail_in_Ireland~retail-at-a-glance?OpenDocument

Impacts on production and exports in the sector

- *Total exports* from the retail and wholesale sector is in itself not the key parameter. Rather, the impact in the sector is seen more clearly from the increased costs of imports of various consumer goods from the UK, most notably processed foods.
- *Production* in the sector would be negatively affected in all scenarios ranging from 2-4 per cent below the 2030 baseline production level depending on the scenario.
- *Employment* would be relatively less affected since a large number of retail outlets around the country would still be needed despite a drop in demand.

Key elements in the trade relationship with the UK

The sector would be affected by tariffs, border costs and regulatory divergence across a range of sectors involving all kinds of consumer goods and processed foods. Introduction of customs controls and tariffs is likely to affect the product supply and add costs to the supply chain. The retail and wholesale sector would also face higher logistics costs as the UK's departure from the EU would add complications and costs to the supply chain due to products in transit through the UK, as per the possible complications arising with the use of the UK land bridge. The sector would also have to foresee increased costs associated with regulatory divergence between Ireland and the UK, e.g. on food labelling.

Finally, the sector is dependent on free movement of people (shoppers) and employees (commuters) between Northern Ireland and the Republic of Ireland. The sector would therefore be negatively impacted by an eventual inability to operate on an all island basis from both a product and a people perspective.

4.8 Impacts in other service sectors

A number of other service sectors will also be affected by the UK's decision to leave the EU. Although the effects are smaller on a macro level, they are still significant for the individual sectors, and briefly described in the following.

Air transport

Air transport is important to Ireland, and the Dublin-London route is Europe's busiest international route. Like many other services, air transport is closely related to demand and general economic activity.

The European Common Aviation Area (ECAA) is overseen by the European Aviation Safety Agency (EASA) and the rules are enforced by the European Court of Justice (ECJ). If the UK leaves the ECAA, British airlines will no longer be regulated by the EASA and instead by the UK Civil Aviation Authority (CAA).

The ECAA rules require airlines to be majority EU owned to offer intra-EU flights. With the UK outside the EU, a number of airlines will no longer be majority EU owned. If affected airlines do not change their current ownership structure, they risk losing their rights to operate intra-EU flights if the UK stays out of the ECAA.

Airlines are already taking steps to ensure they can continue their intra-EU operations after Brexit, including considerations about ownership structures to maintain the rights to operate flights within the EU.

However, if affected airlines changed their ownership structure to remain an EU carrier, they may lose access to the intra-UK market since the UK would be unlikely to allow EU carriers to operate intra-UK flights without reciprocity from the EU.

Consequently, if the UK stands outside the ECAA there will be new restrictions on flights between Ireland and the UK and between Ireland and other EU countries operated by UK-owned airlines. UK-owned airlines would also be banned from servicing domestic flights within Ireland, just like EU-owned airlines would no longer be allowed to operate intra-UK routes.

There would also be indirect impacts from this if the UK leaves the ECAA. The UK would also lose access to the EU's open skies agreements with e.g. the US. In combination, this would affect the overall aviation activity to/from the UK negatively. With fewer routes in and out of the major UK hubs such as London Heathrow and London Gatwick, this would indirectly affect air transport with Ireland.

The UK's departure from the EU may also affect air traffic management. The Single European Sky (SES)[47] divides European airspace into so-called Functional Air Blocks (FABs), which can cross national borders. Ireland's airspace is part of the common UK-Ireland FAB, the first of its kind to be fully operational.

If the UK retains access to the ECAA, it continues to benefit from the SES. Should the UK wish to govern its own airspace, its air traffic management would no longer be integrated with the rest of Europe unless special arrangements are made. This would provide further complications for the air transport sector.

The UK could negotiate to re-join the ECAA as a non-EU member (a similar agreement to Bosnia and Hercegovina). This would enable UK airlines to continue to enjoy the current freedoms. However, this would require unanimous support from the Member States which could be challenging due to potential political and technical issues.

In the EEA-scenario, it is assumed that the UK will remain a full member of the European Common Aviation Area (ECAA) in line with existing EEA-countries and hence economic activity (output) in the air transport sector is expected to follow the overall demand and be around 2 per cent below the non-Brexit baseline level in 2030.

In the event of the UK standing outside the ECAA, as is assumed in the WTO scenario, we would expect the air transport sector to be significantly below the non-Brexit baseline level in 2030.

Financial Services

Financial services employ around 90,000 people in Ireland (incl. around 20-25,000 employed in insurance)[48], which is around 5 per cent of total employment.[49] Financial services is a high value added sector and the sector accounts for around 8 per cent of gross value added in Ireland. Financial services play a bigger role in Ireland's economy than the average Eurozone country, where the sector accounts for around 4.5 per cent of gross value added.[50]

Dublin is a major global hub for fund administration, aircraft leasing, insurance and a range of wholesale banking activities.[51] The financial sector in Ireland is closely connected to the financial sector in the UK and many of the financial service activities conducted out of Ireland rests on the ability to service clients across Europe from Ireland. Hence, Ireland's financial sector is dependent on a well-functioning single market for financial services.

47 The provision of air navigation services in the SES is regulated through EC Regulations 550/2004 and 1070/2009.
48 See CSO data from 2015
49 Based on data from Department of Finance.
50 Based on data from Department of Finance.
51 See Enterprise Ireland's Financial Sector profile at www.enterprise-ireland.com/en/Start-a-Business-in-Ireland/Startups-from-Outside-Ireland/Key-Sectors-and-Companies-in-Ireland/Financial-Services-sector-profile.html

The EU single market for financial services has developed significantly over the past 20 years. Today, there are many common EU rules for financial services and financial regulation and supervision has been harmonised largely across the EU and EEA countries.

These common rules have opened national markets to the provision of financial services directly from one Member State to another and made it easier to establish branches of banks in other EU states instead of more complex and costly subsidiaries (legally separate entities). This implies that once a bank or financial services firm is established and authorised in one EU or EEA country, it can apply for the right to provide certain defined services throughout the EU/EEA, or to open branches in other countries across the EU/EEA, with relatively few additional authorisation requirements. This pan-EU/EEA authorisation is called financial services 'passporting'.

Passporting enables firms that are authorised in any EU or EEA state to trade freely in any other EU or EEA state with minimal additional authorisation. These passports are the foundation of the single market for financial services.

There are nine different passports for different types of financial services such as lending, deposit taking, trading, asset management, and payments services. Each of these passports relates to a specific EU Directive or Regulation setting the rules for certain types of activities, of which some of the most important ones are the Capital Requirements Directive (CRD), the Market in Financial Instruments Directive (MiFID) and the Payment Services Directive (PSD).

None of these nine passporting rights are available to non-EU/non-EEA firms. As a result, non-EU/non-EEA firms face significant regulatory barriers to providing cross-border banking and investment services to customers in many EU Member States. In many Member States, it is either not possible or not an option to obtain a licence to provide banking or investment services across the border to another EU country. [52]

If the UK remains an EEA-country, then it would preserve financial passporting rights since these are equally valid for EEA-members. In this case, little change would occur to the financial sector directly. However, the sector would also be affected by what happens in other sectors of the economy. Here the financial sector is exposed to several counter-acting shifts. First, the financial services sector would be negatively impacted by a general decline in economic activity all other things equal. Second, the financial sector would see needs for new loans and new investments as Irish businesses are adjusting to the impacts of Brexit, which may counter-balance the general lowering of demand. Third, and most importantly, the financial services sector is constrained by its access to talent and the sector could expand more if it had access to more people, especially high skilled labour.[53] Hence, in our EEA-scenario we predict a moderate expansion of the financial services sector of 2 per cent above the non-Brexit baseline, which is mainly driven by second order effects related to better access to talent as labour demand in other industries contracts.

In other scenarios (FTA, customs union or WTO), the UK would need to negotiate agreements on equivalence of the future UK regulation with EU/EEA regulation to preserve as comprehensive market access as possible. However, this would not grant the same level of access as full EU or EAA membership, and the financial service sector would encounter higher costs for cross-border provision of services to/from the UK in these scenarios. The same assumption is made in all scenarios, namely

52 For more detail, see European Parliament Briefing "Third-country equivalence in EU banking legislation", March 2017.

53 See for example the speech "Brexit and Financial Services" by Marc Coleman, Director Financial Services Ireland (FSI), Ibec held on Tuesday 30 May 2017 available at www.oireachtas.ie/parliament/media/committees/finance/2017/Marc-Coleman,-Financial-Services-Ireland---Opening-Statement.pdf
See also 'IFS2020: A Strategy for Ireland's Financial Services Sector 2015–2020' which sets out the Government's five-year strategy to develop Ireland as a global leader in this sector. IFS2020 sets a target to grow the level of direct employment in the international segment of the financial sector from a level of 35,000 to at least 45,000 people by 2020.

that the UK would obtain access to the EU/EEA market with a similar effect as current non-EU/non-EEA countries.

In all these scenarios, our simulations suggest that Ireland would benefit in financial services and that output in the sector would be 3-4 per cent above the 2030 baseline level. This is partly because of the above mentioned second-order effects (via the relatively better access to talent), and partly a result of relocation of activity from the UK to Ireland, in order to maintain access to the EU market.

However, it should be emphasised that this result does not capture the possible long-term structural changes that might occur if a large part of the financial sector moves out of London to a continental location, or if large parts of the financial sector shifts away from Europe to other locations, e.g. New York. In these cases, the financial service sector in Ireland would be severely negatively impacted.

Insurance

The insurance sector employs around 20-25,000 people in Ireland, and many of the characteristics described above applies equally well to the insurance industry. Compared to banking, the insurance sector is less dependent on the UK market, and hence we predict more moderate impacts in insurance than in financial services.

In the EEA-scenario, we find an expansion of around 1 per cent above the 2030 baseline (compared to 2 per cent in financial services), and in the WTO scenario, the insurance industry would expand to a level 3 per cent above the non-Brexit baseline.

ICT and Business Services

This sector is composed of various services ranging from technical services such as engineering, architecture and ICT, to professional services such as legal services and accounting, and administrative services such as employment services and facility management. In total, the sector employs around 190,000 people.[54] Postal services and telecommunication are not included (they are in the communications sector).

There are two EU Directives that support the business services sector in particular:

- The *Services Directive* allows business service providers to more easily establish in another EU country or provide services across borders. This Directive covers a large number of business services but there are exceptions such as private security services, temporary work agency services and notarial services.
- The *Professional Qualifications Directive* facilitates the recognition of professional qualifications for those wishing to work in another EU country. This Directive covers regulated professions that largely offer their services to businesses such as accountants, lawyers, consultants and engineers.

While we predict that Brexit will increase trade costs for these services, the overall impact on the sector is small, mainly because these services are less traded and many parts are relatively local in their nature (e.g. facility management). Our analyses suggest that the second-order effects via the re-allocation of labour from other sectors is dominating slightly in all scenarios, and that the sector could see a small expansion of output of around 0.5 per cent in the EEA scenario and around 1 per cent in the other scenarios.

Tourism

Tourism is important for Ireland. The tourism industry generated 39,500 jobs directly in 2016 (2.0% of total employment) and this is forecast to remain the same in 2017 at 39,500 (1.9% of total employment).[55] This includes employment by hotels, travel agents, airlines and other passenger transportation services

54 According to CSO data, around 120,000 are employed in professional, scientific and technical activities, while around 70,000 are employed in administrative and support service activities.

55 According to a study by World Travel and Tourism Council "Travel & Tourism - Economic Impact in Ireland 2017".

(excluding commuter services). It also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists.

Brexit will have a negative impact on the number of visitors to Ireland. This is because of an expected decline in outbound travel from the UK as a result of the general economic downturn following Brexit and because of the Sterling depreciation. This will unavoidably have an impact on Ireland since more than 40 per cent of inbound visitors to Ireland are from the UK.[56]

4.9 Potential impacts on Irish FDI

Brexit may impact FDI inflows from the UK as well as from third countries into Ireland, both negatively and positively.

First, FDI from the UK and from third countries into Ireland may fall in the short run, due to higher uncertainty. Increased transit costs, which increases the costs of trade in intermediate goods between the EU and Ireland, may also reduce EU activities in Ireland, in the short run. In the longer term, lower GDP growth in the UK may reduce overall UK outward FDI. Lower demand in Ireland may reduce FDI inflows from the UK as well as from third countries. Furthermore, in all Brexit scenarios, the costs of intermediate goods trade will increase, which may also cause changes in UK value chains and reduce UK activities in Ireland.

Second, FDI from the UK and from third countries may increase as the costs of final goods trade will increase in all Brexit scenarios. This may move UK production closer to Irish consumption. Increasing costs of final goods trade to the EU can furthermore make it more attractive for the UK to use Ireland as an export hub for EU destinations. Similarly, higher EU-UK trade costs can make Ireland more attractive relative to the UK for third country investors that seek access to the 500 consumers in the Internal Market.

Similarly, Irish FDI to the UK can also be affected both positively and negatively.

First, Irish FDI to the UK may fall in the short run, due to higher uncertainty. In the long run, lower demand in the UK may also reduce FDI inflows from Ireland. In all Brexit scenarios, the costs of intermediate goods trade will increase, which may cause changes in Irish value chains and reduce Irish activities in the UK. Irish companies that used the UK as an export hub to the continent may furthermore reduce their activities in the UK when trade costs increase.

Second, Irish FDI in the UK may *increase* as the costs of final goods trade will increase in all Brexit scenarios, which can make it more attractive for Irish producers to shift production closer to UK consumers, instead of exporting their products from Ireland to the UK.

While we make no predictions about how FDI to and from Ireland will be affected overall by Brexit, the overall impact is likely to be a result of both negative and positive impacts, described above.

56 See presentation by Tourism Ireland, www.tourismireland.com/TourismIreland/media/Tourism-Ireland/Research/All-island-Tourism-and-Hospitality-sectoral-meeting-on-Brexit.pdf?ext=.pdf

CHAPTER 5
Policy Options for Ireland

This chapter describes Ireland's options to best prepare for the upcoming EU-UK trade negotiations. We also describe other EU trade policy choices that could help compensate for the loss resulting from Brexit. Finally, we describe the domestic enterprise policy options for Ireland, which may help to mitigate some of the downsides from Brexit.

Policy options are based on findings in the previous chapters and our engagement with Irish stakeholders.[57]

5.1 Negotiating the best possible outcome

The December 2017 Joint Report from the Commission points at an FTA as the likely outcome of the EU-UK trade negotiations. Of the scenarios analysed in this report, the EEA-scenario would be the outcome that would minimize the economic loss (in GDP) for Ireland in the EU-UK trade negotiations. Hence, it would minimize the negative impact for Ireland if the outcome of these negotiations would come as close to the EEA solution as possible.

The EEA-scenario will reduce Ireland's GDP to a level 2.8 per cent below the non-Brexit baseline (or €7 billion in 2015-levels) compared to a WTO-scenario, which is foreseen to bring Irish GDP 7.0 per cent below the non-Brexit baseline in 2030 (corresponding to €18 billion in 2015-level). These estimates are without counting the impact of any mitigating actions or other policy responses.

The difference between "best" (EEA) and "worst" (WTO) is €11 billion in 2030 (in 2015 terms). In a hypothetical situation, where regulatory divergence for goods and services could also be avoided, and hence the Brexit impacts only related to tariffs and border costs, then the theoretical loss to Irish GDP would be further reduced to around 1 per cent impact on GDP or approximately €3 billion in 2015-level.

The 'first best' policy response to Brexit is to minimise the loss via best outcome in EU-UK trade negotiations, but a minimum unavoidable loss of €3-7 billion in 2015-levels will remain. In reality, it would be challenging to avoid any degree of regulatory divergence.

With the objective of minimizing the overall economic loss to Irish GDP, the best possible trade negotiation outcome for Ireland would be an agreement that has an acceptable balance of rights and obligations for all parties and with the following main elements:

- **No tariffs:** Avoid imposition of any tariffs on future EU-UK trade – duty free for all products
- **Large quotas:** If some tariffs have to remain on agriculture products, sufficiently large tariff quotas should be pursued to cater for expected future trade levels
- **Low border costs:** EU-UK border costs on both sides should be minimised by using state-of-the art technology and procedures, including use of authorised economic operators as much as possible to minimize border costs
- **Landbridge transit:** Arrangements should be made to ensure undisturbed transit to/from Ireland via the UK landbridge
- **Low regulatory divergence:** Mechanisms should be put in place between the EU and the UK to avoid and minimize regulatory divergence and protect against emerging divergence as the EU or the UK develops their technical regulation further. Such

57 See list of stakeholder consultations in Appendix.

mechanisms and the related dispute resolution mechanisms should apply to all areas currently covered by common EU regulation and rules (*the harmonised area*). For Ireland, this is important generally and would, in particular, be important for:

  - *Beef*
  - *Dairy*
  - *Processed food*
  - *Pharmaceuticals, cosmetics and chemicals*
  - *Electrical machinery*

- **Low barriers for service trade:** As for goods, similar mechanisms would be needed for services to avoid regulatory divergences and excessive trade costs. This would be important for all Irish service sectors, and notably for:
  - *Air transport*
  - *Financial and insurance services (continued passporting, or strong equivalence)*

While this list of priorities mentions certain sectors, it seems clear from the EU negotiation mandate that there will be "no cherry picking" and "no a la carte menu", and hence the above list is meant to suggest the areas in which the Irish government should be particularly mindful about ensuring that the agreed general modalities would yield the best possible outcome.

5.2 EU trade policy responses to mitigate Brexit impacts

In addition to seeking the best possible outcome of the trade negotiations between the EU and the UK, the negative impacts from Brexit can also be mitigated by other trade agreements yielding a positive impact for Ireland.

Here the actions can be two-fold. First, the Irish government can consider actions to best prepare for achieving the benefits of newly concluded EU FTAs with e.g. Canada and Japan.

In addition, new FTA's are to be negotiated with countries such as Australia, New Zealand and the Mercosur countries (Brazil, Argentina, Uruguay and Paraguay).

These agreements may help mitigate some of the negative impacts from Brexit. Here the Irish government can - by means of thorough impact assessments – identify main opportunities and threats for Ireland in each of these negotiations and ensure that such considerations are communicated effectively and timely in the preparation of the negotiations.

5.3 Domestic enterprise policy responses to mitigate Brexit impacts (minimizing threats)

The future EU-UK trade relationship can – in the worst case - impose serious harm to Ireland's growth possibilities and require significant adjustments in many sensitive sectors. These adjustments and domestic enterprise policy responses will need to be prepared well in advance, and preparations will therefore need to be initiated before the outcome of the upcoming trade negotiations are known.

In this section, we describe such mitigating policy options to minimize the threats imposed by Brexit. In the following section, we describe policy options to maximise the potential opportunities.

Mitigating enterprise policies should address the need for diversification of the Irish export base and minimize the costs of the necessary sector transitions (as found in chapter 3).

The domestic enterprise policy options fall in three broad categories:

- **Trade promotion policies** (e.g. helping existing exporters to access new markets, or new exporters to engage in exporting)
- **Enterprise policies** (e.g. helping the transition from declining to growing sectors)
- **Skills policies** (e.g. supporting skills required by the unavoidable adjustments)

In the following, we describe briefly the horizontal issues that can mitigate negative impacts of Brexit within each of these categories.

Trade promotion policies

Given the high intensity of trade with the UK, Irish companies should continue to diversify into new markets to enhance market access for their exports. This is a long and demanding process that can take years. Among the options are:

- Trade missions and other promotion activities (e.g. to promote Irish products in new markets)
- Training in export skills (e.g. handling customs with UK)
- Trade facilitation initiatives to reduce costs of border procedures
- Develop indigenous firms to become exporters
- Transport and logistics investments to help export sectors
- Irish Export Credit Institution, facilities or instruments (mainly to address needs of capital goods exports)

Enterprise policies

Ireland is highly dependent on its export sector and, therefore, maximising the competitiveness of the export sector in international markets is essential. At the same time, Brexit will, in all scenarios, require sectoral adjustments. The mitigating enterprise policies should thus address both these objectives. Among the options are:

- Improving general enterprise policies and investment incentives
- Financing options for SMEs and firms adapting to Brexit transition
- Improving incentives to undertake R&D

Given Ireland's unique exposure to the UK's decision to leave the Single Market and the obstruction and disturbance it causes to established intra-EU trade flows, special schemes to cope with the adjustment may be needed, in particular given the likely impact on regional and rural parts of the country.

Any support should be compatible with EU State Aid rules and should be transparent, targeted and ensure effective use of support. This means using support schemes where the return is highest and impacts are effective and targeted at vulnerable, but viable firms. Temporary dispensation from EU state aid rules will require a formal Irish request and should include a comprehensive package addressing specific needs and market failures with the least intrusive and best instruments and overall meeting the balancing test of best use of the state aid instrument.

Skills policies

Policy actions within skills should address the same objectives as the trade promotion and enterprise policies and work hand in hand. This means investing in skills which help to improve competitiveness on international markets and which hence support the diversification of the export base. At the same time, skills policies should facilitate the necessary sectoral adjustments and help to minimize the costs to the individuals from external shocks. In addition to this, the skills response to Brexit should take into account the foreseeable sectoral needs as described in section 3.4, which suggests that between 10,000 and 20,000 net jobs will be shifted between sectors, with the agri-food sectors as the most negatively affected.

5.4 Domestic policies to pursue the opportunities from Brexit

Ireland's policy response to Brexit should also pursue the (few) opportunities that emerge from Brexit. While the overall impact of Brexit will be negative for Ireland, there are certain opportunities arising from these changes.

The opportunities can be grouped into three categories: Trade, talent and investment.

Trade opportunities

Just as Irish exporters will face new barriers in the UK market, so will UK exporters in the EU market. This implies that UK products or services will be more expensive in the EU market, meaning that customers in other EU countries currently served by UK firms will be looking for alternative suppliers. This can present opportunities for Irish exporters, especially since there are many overlaps in the products export from the UK and from Ireland. One example could be cheese exports, where Irish cheese could replace British cheese in other EU markets. And similarly, for other products or services. These adjustments are already factored into to our analyses and quantifications, but the extent to which it takes place in reality depends on the actions taken by Irish exporters and how these opportunities are supported by Irish policy actions.

Talent opportunities

The general decline in economic activity in the UK following Brexit and in particular the uncertainty and sentiment of EU citizens in the UK presents another opportunity for Ireland. As the only English speaking country in the EU, aside from Malta, and with diverse job opportunities, Ireland can become a new home for talents deciding to leave the UK post-Brexit. This would particularly relevant in sectors and positions where there are already shortages in Ireland and where even the best re-schooling and job training (as per above) cannot meet the demand. This could include IT-specialists, researchers, financial service expert for example. Again, active and timely policies from the Irish government and local authorities can help maximise these opportunities.

Investment opportunities

The biggest opportunities in relation to Brexit is likely to be within the investment area. Ireland is already an attractive location in Europe for foreign direct investment (FDI), and with the right additional policies, Ireland should be well-placed to attract entire companies or parts of multinational companies wanting to be located within the EU and in an English speaking common law country.

These opportunities are not only limited to the financial sector, although this is probably the most promising opportunity of all. Other opportunities exist in other sectors where Ireland is already strong in skills and good framework conditions, such as chemicals, pharmaceuticals, it technology and digital media. In these sectors, the obstructions to trade and reduced access to the EU market will alter the relative attractiveness of the UK vs other EU locations, and here Ireland should play its card right to maximise the opportunities.

Besides a continued effort in marketing and efforts to ensure attractive and stable framework conditions for such investments, be it domestic or international, Ireland would also need to increase its capacity to accommodate more FDI especially regarding mid- and high-end housing and international schools.

Appendix A - List of stakeholder consultations

American Chambers of Commerce
Biopharmachem Ireland
Bord Bia
Bord Iascaigh Mhara
British-Irish Chamber of Commerce
Chambers Ireland
Chartered Institute of Logistics and Transport
Construction Industry Federation
Dairy Industry Ireland
Department of Agriculture, Food and the Marine
Department of Finance
Department of Foreign Affairs & Trade
Department of Public Expenditure & Reform
Department of Transport, Tourism & Sport
Enterprise Ireland
Financial Services Ireland
Food Drink Ireland
Ibec
IDA Ireland
Irish Cattle and Sheep Farmers Association
Irish Congress of Trade Unions
Irish Creamery Milk Suppliers Association
Irish Exporters Association
Irish Farmers Association
Irish International Freight Association
Irish Pharmaceutical Healthcare Association (IPHA)
Irish Small and Medium Enterprise (ISME)
Macra na Feirme
Meat Industry Ireland
Ornua (Irish Dairy Board)
Retail Excellence Ireland
Retail Ireland
Revenue
RG Data
Teagasc

Appendix B - Technical Appendix

In the CGE model, the entire economy is classified into production and consumption sectors. These sectors are then modelled collectively. Production sectors are explicitly linked together in value-added chains from primary goods, through higher stages of processing, to the final assembly of consumption goods for households and governments. These links span borders as well as industries.

The link between sectors is both direct, such as the input of steel into the production of transport equipment, and indirect, as with the link between chemicals and agriculture through the production of fertilizers and pesticides. Sectors are also linked through their competition for resources (the primary factors of capital, labour, and land).

The model uses new trade data from the so-called GTAP10 database (base year 2014 but updated to match CSO 2015 data), which among others includes global trade flows on a sectoral level for goods and services. For the purpose of this study, we use 2020 for the short run impacts of Brexit and 2030 for the long run impacts.

As there are no customs clearance procedures related to trade between the EU and UK today, intra-EU trade flows are not reported with the same precision as EU trade with third countries. This implies an uncertainty in the data, but we find that there is no reason to believe that this uncertainty will imply that we systematically over or underestimate the trade impacts of Brexit.

The CGE model applies estimates of regulatory barriers to trade in goods and barriers to trade in services from econometric analyses. There is some degree of uncertainty attached to the size of these estimates, but a literature review shows that our estimates are comparable to other empirical findings.[58]

The model-based analysis is tailored to assess the impact of different scenarios for the future EU-UK trade relationship. While this is a central element in the overall assessment of the economic consequences of Brexit, it is not the only source of impacts.

Consequently, our analysis does not capture other potential impacts of Brexit related to changes in taxation, IPR and data protection, competition and state aid rules. Nor do we aim to assess the impact of possible changes in fishing quotas or changes in agricultural subsidies.

58 See for example CPB (2016), LSE (2016) and HMT (2016).

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