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Contents

Abstract 3
1. Introduction 4
2. Options for EU-UK Trade after Brexit 6
2.1 Free Trade Agreement 7
2.2 WTO 11
2.3 Customs Union 12
3. Scenario Results 13
4. Selected Sectoral Issues 16
5. Conclusions 17
References 19

Dealing with Friction: EU-UK Trade and the Irish Economy after Brexit

Thomas Conefrey and Graeme Walsh [1]

Abstract

Following the UK's exit from the EU on 31 January 2020, negotiations have commenced to determine the nature of its economic and trading relationship with the EU in the future. The latest information indicates a UK preference for a Free Trade Agreement (FTA) with the EU after Brexit. This *Article* examines the possible impact on the Irish economy of an EU-UK FTA. The analysis finds that an orderly move to a FTA would result in smaller upfront losses than associated with a disorderly no-deal Brexit, but a basic FTA would still imply significantly higher trade frictions than exist today. We estimate that a transition to an EU-UK FTA after 2020 would lower Irish output by around 3.5 per cent in the long run. A more comprehensive EU-UK agreement than the FTA we model would reduce these losses. In contrast, if the UK moves to trading on WTO terms after 2020 this would lead to a larger decline in Irish output of over 5 per cent. Whatever the precise nature of any future deal, no arrangement will replicate the degree of trade and economic integration of EU membership, creating significant challenges for exposed sectors, particularly agri-food. As more details emerge as to the ultimate EU-UK trading relationship after Brexit, further analysis will be required to estimate the impact on the Irish economy.

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[1] The authors work in the Irish Economic Analysis Division. The views expressed in this article are those of the authors only, and do not necessarily reflect the views of the Central Bank of Ireland. The authors would like to thank Stephen Byrne, John Flynn and David Horan for helpful comments and suggestions.

1. Introduction

On 17 October 2019 the UK Government and the EU concluded negotiations on a revised Withdrawal Agreement and Political Declaration. The UK parliament passed the revised agreement and on 31 January 2020, the UK formally left the EU. A stand-still transition period applies until 31 December 2020 during which time it is intended that the UK will negotiate a new future trading relationship to replace EU membership. Beyond 2020, the UK will trade with the EU under the terms of the new arrangement or default to trading on World Trade Organisation (WTO) terms, barring an extension of the transition period.

In this article we aim to quantify the macroeconomic impact of the UK leaving the EU compared to what would happen if the UK remained a member of the EU. This is not a straightforward exercise since the exact nature of the UK's trade and broader economic relationship with the EU in the future is yet to be decided. The revised Political Declaration agreed in October 2019 sets out the broad framework for future UK-EU trade. It envisages that the UK will leave the EU single market and customs union with the ambition of operating a free trade agreement.

The revised Political Declaration appears to envisage a more distant EU-UK trading relationship after Brexit than the version negotiated by Prime Minister May's Government. Under Prime Minister May's original Political Declaration, for trade in goods the parties envisaged "a trading relationship [...] that is as close as possible". The relevant passage in the Political Declaration has been replaced by "an ambitious trading relationship [...] on the basis of a Free Trade Agreement". In addition, a number of analysts have pointed out that commitments to so-called level playing field provisions have been weakened in the revised Political Declaration (Hantzsche *et al.*, 2019; UK in a Changing Europe, 2019). These apply in areas such as state aid, competition, taxation, environmental standards and labour and social protection. The aim of these provisions is to prevent undercutting of EU standards to gain a competitive advantage. The less stringent commitment to these provisions in the new Political Declaration implies greater scope for regulatory divergence between Great Britain and the EU.[2] Greater regulatory divergence would in turn make it more difficult to agree a comprehensive FTA with the EU and would therefore result in higher barriers to trade.

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[2] Under the revised Protocol on Ireland and Northern Ireland, to ensure that the north-south border remains open, NI will stay aligned to EU rules on customs and will follow certain EU Single Market rules and regulations which affect trade in goods. This alignment does not apply to Great Britain. See Hayward (2019): http://qpol.qub.ac.uk/the-revised-protocol-on-ireland-northern-ireland/

Our analysis published in 2019 assessed the impact of a disorderly no-deal Brexit. In this article, we focus on modelling the effect of a basic free trade agreement as this appears to be the current preferred outcome of the UK Government. Drawing on previous work, we also outline the impact on the economy if the UK reverts to trading on WTO terms after the end of the transition period. We compare the effect of a FTA outcome to the impact on the economy of other Brexit scenarios, namely a customs union agreement and, for reference, our disorderly Brexit scenario published in 2019. Although there is a high degree of uncertainty attached to the various estimates, the scenarios are informative about the *relative* economic impact of various economic relationships and transitions to them.

A number of studies have estimated the impact of a FTA on the UK economy. UK in a Changing Europe (2019) and Hantzsche (2019) focus specifically on modelling the type of FTA envisaged in the revised Political Declaration. Both studies find that the reduction in market access for goods and services under a FTA would lead to a loss of GDP compared to a scenario where the UK remained in the EU. In the Hantzsche (2019) study, the long run reduction in GDP is estimated at 3.5 per cent. IMF (2018) estimate that moving from EU membership to a FTA would reduce UK GDP by between 2 and 3.3 per cent in the long run. Analysis published by the UK treasury on the impact on the UK economy of an average FTA estimated a long-run loss of output of 4.9 per cent.

Regarding the impact on Ireland, Bergin *et al.* (2017) estimate that an EU-UK FTA would lower output by around 2.7 per cent after ten years. Copenhagen Economics (2020) find that a Brexit outcome based on the revised Political Declaration would reduce Irish GDP by between 3.2 and 3.9 per cent by 2030 compared with a baseline where the UK remains a member of the EU.

As with all modelling exercises of this type, the estimates in this paper should be treated with caution. We examine how the different Brexit scenarios would affect the Irish economy using the latest information and best available modelling techniques. At the same time there are several unavoidable sources of uncertainty: our models do not provide a complete picture of all economic relationships, there is uncertainty around the scale and pace of decline in UK trade in each scenario and how key economic variables such as foreign direct investment and productivity will be affected by Brexit. Moreover, as the UK is the first country to leave the EU there is no historical precedent for the scenarios we are attempting to model.

The article is organised as follows. Section 2 provides a description of the different possible future EU-UK trading options and outlies the specific

modelling assumptions used for the scenario analysis, focussing on the implications for trade in goods and services. Section 3 describes the main results. Section 4 outlines challenges for specific sectors in managing the impact of a FTA or WTO arrangement. Section 5 concludes.

2. Options for EU-UK Trade after Brexit

In this Section, we outline three options for EU-UK trade after Brexit: a FTA, trading on WTO terms and a Customs Union (CU). We discuss the main characteristics of each arrangement and the key modelling assumptions used to estimate the macroeconomic impact of each scenario on the UK economy and on Ireland (Table 1). Although it appears unlikely at present that the trade relationship between the UK and EU after Brexit will take the form of a customs union, we include it in the analysis as it is useful to consider the relative macroeconomic impact of the different trading options.

Brexit will affect the economy through a number of key channels including trade in goods and services, migration and investment. The magnitude of the impact will depend on the precise form of the future EU-UK relationship after Brexit. Figure 1 provides an illustrative overview of the extent of the possible restrictions to trade, migration and investment under different Brexit outcomes.

Figure 1: Overview of the Effect of Brexit Scenarios on Key Transmission Channels

	EU Membership	Customs Union	Free Trade Agreement	WTO Terms
Tariffs on goods	None	None	None	Highest
Non-tariff restrictions on goods and services	None	Medium	High	Highest
EU-UK migration	High mobility	Some restrictions	Some restrictions	Lowest mobility
EU-UK investment	High	Reduced	Reduced	Lowest

Source: Based on Dhingra *et al.* (2017), European Commission (2018) and Hantzsche *et al.* (2018).

2.1 Free Trade Agreement

As noted, the current preference of the UK Government as reflected in the October 2019 Political Declaration is to conclude a FTA with the EU before the end of the transition period. This preference was reiterated by Prime Minister Johnson in his speech of 3 February 2020 setting out the UK Government's proposed approach to the negotiations with the EU.[3] Free trade agreements typically allow for tariff- and quota-free trade in goods and in this regard a FTA is an improvement relative to trading under WTO terms (see below). Nevertheless, UK firms would still face significantly more frictions in trading with the EU than under current arrangements. A basic free trade agreement would lead to higher non-tariff barriers to EU-UK trade due to the introduction of customs procedures, rules of origin requirements and other trade costs as UK and EU economic regulations diverged over time.[4] Because the UK would no longer be part of the EU customs union, exporters would need to prove that their products meet the "rules of origin" criteria of the EU-UK FTA. The purpose of these criteria are to verify that goods entering the EU from the UK were produced in the UK (and not, for instance, in China). Compliance with these rules comes with complications, paperwork and cost (see Lowe, 2019).

Moving from EU membership to a FTA is likely to introduce other administrative burdens. As outlined by Lowe (2019), businesses trading between the EU and UK will be required to manage new import and export formalities, including customs and security declarations, risk-based inspections and the payment of tariffs (for any goods not covered by the FTA) and other taxes payable on import such as VAT and excise duty. In relation to EU-UK trade in products of animal origin, significant new frictions will arise. Unless in circumstances where the UK agrees to adhere fully to the EU's sanitary and phytosanitary regime (for food and plant hygiene), trade in agri-food products will require export health certificates and there will be a need for veterinary border inspections. Taken together,

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[3] In the Prime Minister's speech, he states that the UK Government will aim for a "comprehensive free-trade agreement covering substantially all trade". See https://www.gov.uk/government/speeches/the-future-relationship-between-the-uk-and-the-eu

[4] Non-tariff barriers refer to any measure that raises the costs of trade but does not take the form of a tariff. It covers everything from quantitative trade restrictions such as import licensing to border costs of complying with customs procedures and behind the border costs caused by regulatory or product standard differences across countries. The EU Single Market has reduced non-tariff barriers between member states by removing customs procedures and harmonising regulations and product standards (Dhingra and Sampson, 2017).

these additional non-tariff restrictions mean that although a FTA could eliminate tariffs and quotas on most products, UK firms would face substantially increased trade costs relative to the status quo.

Moreover, in relation to services trade a standard FTA would not provide the same level of market access as membership of the single market. As discussed by Dhingra *et al.* (2017), it is currently only countries that are members of the European Economic Area (EEA) that have passporting rights for financial services. As a result, it is likely that the UK financial services sector would lose its ability to trade freely across EU member states and there would be new regulatory barriers to trade. Some recent FTAs such as the Canada-EU FTA go beyond tariff-free goods trade and include some provisions to increase trade in services, however, even this arrangement enables significantly less comprehensive trade in services than is possible with Single Market membership. The reality of the new trade frictions that would apply even with a comprehensive free trade agreement were outlined clearly in a statement by Michel Barnier on 3 February.[5]

Based on this evidence, Hantzsche *et al.* (2019) assume that under an EU-UK FTA, UK-EU goods trade would be lower by 40 per cent and services trade by 60 per cent relative to continued EU membership (Table 1). These effects are assumed to build up gradually over time after the end of a transition period in 2021. The UK would be free to restrict immigration to a greater extent than under EU membership leading to an assumed reduction in net migration of 50,000 people per year. Foreign direct investment is assumed to be lower by over 20 per cent.[6] As a result of reduced EU trade and migration, UK productivity would be lower by 1.3 per cent in the long run. Leaving the EU customs union would provide the UK with flexibility to negotiate FTAs with the rest of the world. Following Ebell *et al.* (2017), the simulation assumes that agreements with main Anglosphere trading partners (USA, Canada, Australia, New Zealand) bolster bilateral goods trade by around 25 per cent. The assumed increase in UK trade with these countries would provide a marginal offset to the reduction in UK-EU trade amounting to around 0.2 per cent of GDP.

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[5] In the statement, Barnier states "It is important, however, to understand that, even if we do achieve such a 'best-in-class' free trade agreement, it will not be 'business as usual' ". See https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_20_185

[6] Brexit could result in an increase in FDI to Ireland either from the diversion of some existing UK FDI or by attracting new FDI to Ireland that would otherwise have been destined for the UK. Based on the estimates in Lawless and Morgenroth (2016), the FTA, WTO and customs union scenarios in this paper assume that in the long run, some of the negative effect of Brexit is partially offset by higher FDI inflows to Ireland.

Box A: The Duration of Trade Negotiations

Following the UK's exit from the EU on 31 January 2020, the next stage of the Brexit process will involve the UK negotiating a new trading relationship with the EU, which accounted for 49 per cent of total UK trade in 2018. Under the current timeline, there is an 11-month transition period, which ends on 31 December 2020, for these negotiations to take place. This box takes a closer look at the duration of trade negotiations and provides some examples involving the EU and US.[7]

Determinants of the duration of trade negotiations

The duration of trade negotiations can vary for a wide range of reasons, including political, economic, cultural, and geographic factors.[8,9] For example, trade negotiations are completed more quickly when the countries involved have democratic political systems, are more open to trade and share a common language or common border. Bilateral trade negotiations also tend to take less time when compared to multilateral trade negotiations, which can involve many countries with different preferences. In a study of 123 trade agreements, Mölders (2012) found that the average duration of bilateral trade negotiations took 40 months while multilateral trade negotiations lasted 48 months.

Trade negotiations involving the EU

Trade negotiations tend to be prolonged when the EU is a participant due to the increased number of countries involved (Mölders, 2012). A recent trade agreement involving the EU and an English-speaking small open economy is the Comprehensive Economic and Trade Agreement (CETA) with Canada. This trade deal took 89 months to complete.[10] As a comparison, the US and Canada reached a trade deal after 20 months.

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[7] In this box, the duration of trade negotiations refers to the length of time taken from the start of negotiations to the signing of the trade deal. This definition does not take into account the subsequent time taken for the trade deal to be implemented.

[8] See Mölders (2012). Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2152283

[9] See Moser and Kose (2012). Available at: http://faculty.haas.berkeley.edu/arose/ON1111.pdf

[10] While the negotiation period lasted 64 months, it took an additional 11 months for the deal to be implemented on a provisional basis in September 2017. See Webb (2019). Available at: https://researchbriefings.files.parliament.uk/documents/CBP-7492/CBP-7492.pdf

Case study: EU-Canada trade deal known as CETA	
Start of negotiations	May-09
End of negotiations	Sep-14
Deal signed	Oct-16
Trade deal duration	89 months

Trade negotiations involving the US

On average, it takes 18 months for the US to negotiate bilateral trade deals.[11] A recent example involving the US and an English-speaking small open economy country is the Australia–United States Free Trade Agreement (AUSFTA), which took 14 months. Trade negotiations with the US tend to be more rapid during years in which there is a US election (Mölders, 2012).

Trade deals beyond the EU

It is important to note that, by the end of the transition period, the UK will not only need to have trade agreements in place with the EU but, in addition, with all of the countries covered by the existing EU trade agreements. There are currently over 40 such EU agreements covering around 90 countries.[12] If a deal is not in place with a particular country, trade between the UK and that country will be carried out under WTO rules. To date, the UK has signed 20 trade deals covering 50 countries, which accounted for 8.2 per cent of total UK trade in 2018.[13] The UK has also signed "mutual recognition agreements" with the US, Australia, and New Zealand, which together account for 16.4 per cent of total UK trade (Table A1).[14] Trade negotiations between the UK and other non-EU countries that are ongoing (including, Canada, Japan, and Turkey) account for 6.2 per cent of total UK trade.

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[11] See https://www.piie.com/blogs/trade-investment-policy-watch/how-long-does-it-take-conclude-trade-agreement-us

[12] See Bank of England (2018). Available at: https://www.bankofengland.co.uk/report/2018/eu-withdrawal-scenarios-and-monetary-and-financial-stability

[13] See https://www.gov.uk/guidance/uk-trade-agreements-with-non-eu-countries-in-a-no-deal-brexit for the list of trade deals and The Pink Book (ONS, 2019) for the trade statistics, available at: https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/datasets/9geographicalbreakdownofthecurrentaccountthepinkbook2016

[14] These MRAs do not represent FTAs. For example, the UK-US MRA maintains the effects of the operational aspects of the EU-USA agreement in a bilateral context; however, it is expected that the UK and US will try to negotiate a FTA during the transition period. See https://www.gov.uk/guidance/uk-usa-mutual-recognition-agreement

Table A1: UK Trade Statistics and Coverage of Trade Deals (based on 2018 data)

	2018	Share of Total UK Trade in 2018
	£ million	%
Total UK Trade (exports and imports)	**1,322,189**	**100**
EU	648,390	49
Non-EU	673,799	51
Non-EU Trade Deals	**407,057**	**30.8**
Signed	108,964	8.2
In discussion	81,640	6.2
MRAs	216,453	16.4

Source: ONS and own calculations.

Overall, examining the average duration of trade negotiations in the past, particularly those involving the EU, the 11-month transition period appears to be an ambitious timeframe for the UK to negotiate and finalise trade deals not only with the EU, but also a large number of non-EU countries.

2.2 WTO

If the EU and UK fail to conclude a FTA in 2020, it appears likely that the UK will trade with the EU and most of the rest of the world on World Trade Organisation (WTO) terms from 1 January 2021.[15] As noted in Box A, the 11-month timeframe to conclude a new EU-UK trade deal is ambitious based on the length of time it has typically taken to negotiate FTAs in the past. Under WTO rules, each member must grant the same "Most Favoured Nation" (MFN) market access, including charging the same tariffs, to all other WTO members. The only exceptions are for countries that agree to enter into free trade agreements such as membership of the EU or EFTA.

WTO terms would mean that the UK's exports to the EU and other WTO members would be subject to the importing countries' MFN tariffs. Compared with EU or European Free Trade Association (EFTA) membership, this would raise the cost of exporting to the EU for UK firms (Ottaviano *et al.*, 2014). The UK's services trade would also be subject to WTO rules. Since the WTO has made significantly less progress than the EU in liberalising trade in services, this would mean reduced access to EU

[15] The EU has stated previously that it is possible to extend the transition period. The current stated position of the UK Government is that it will not request such an extension beyond 2020.

markets for UK service producers (Dhingra *et al.*, 2017). With the UK outside the Single Market and not constrained by any bilateral trade agreement with the EU, it would have scope to diverge from EU regulatory standards. Any such divergence would increase non-tariff barriers and further restrict EU-UK trade.

The combination of higher tariff and non-tariff barriers mean that a WTO arrangement after 2020 is assumed to result in the largest decline in trade compared to all other potential trade deal options (Table 1). Hantzsche *et al.* (2019) assume that overall EU-UK trade would be around 56 per cent lower with a WTO arrangement relative to scenario where the UK remained an EU member. Under WTO arrangements there are no provisions for free movement of labour and as a result this scenario would see the largest assumed reduction in inward migration compared to either a customs union or FTA. Foreign direct investment (-24 per cent) and productivity (-1.6 per cent) are also assumed to experience more sizable declines relative to the customs union or FTA options (Table 1).

Table 1: Modelling assumptions for UK economy under different trade options

	Customs Union	Free Trade Agreement	WTO Terms
EU-UK Trade	-30%	-46%	-56%
Goods	-25%	-40%	-50-60%
Services	-50%	-60%	-65%
Net migration	-50,000 p.a.	-50,000 p.a.	-100,000 p.a.
FDI	-18%	-20%	-24%
Productivity	-1.0%	-1.3%	-1.6%
Anglo FTAs	-	+25% goods (0.2% of GDP)	-
EU budget contribution	0.001% of GDP	0.001% of GDP	0.001% of GDP
UK GDP	-3.0%	-3.5%	-5.6%

Source: NIESR.
Note: baseline in each case is continued EU membership. The assumptions refer to long-run effects.

2.3 Customs Union

Under the original Brexit Withdrawal Agreement proposed by Prime Minister May, if the UK and EU had failed to reach agreement on a new trade deal before the end of the transition period, the whole of the UK would have stayed in a single customs territory with the EU. This was the original backstop contained in the Protocol on Northern Ireland in the

Withdrawal Agreement negotiated by Prime Minister May.[16] A customs territory would remove tariffs and quantitative restrictions (i.e. taxes) in bilateral trade between all EU Member States and the UK for the goods covered by the agreement. Membership of a common customs territory would also set a single external tariff, that is, the EU and UK would charge the same duties on imports from third countries (i.e. countries other than EU Member States and the UK).

As well as reducing tariffs, a customs territory arrangement would likely give rise to lower non-tariff barriers than an FTA or WTO deal. The common external tariff would eliminate the need for "rules of origin" checks as required under a FTA (or WTO). In addition, the original customs territory proposal constrained regulatory divergence between the EU and UK. This was because the UK committed to remaining aligned to EU rules in areas of taxation, environmental, social, labour, state aid and competition policy as required to avoid any frictions to North-South and East-West trade.

Taken together, Hantzsche *et al.* (2018) estimate that a customs union deal would reduce UK-EU trade by around 30 per cent in the long run, a smaller decline than under a FTA or WTO arrangements (Table 1). Services trade is assumed to fall by more than goods since customs union agreements typically do not cover services.

3. Scenario Results

Drawing on the assumptions set out in Table 1, we estimate the macroeconomic impact of the different post-Brexit trade deal scenarios outlined in the previous section. The disorderly no-deal scenario is included for reference along with the three scenarios discussed above. The disorderly no-deal scenario is the same as that published in Conefrey *et al.* (2019).

This analysis is carried out in two steps. In the first stage, we estimate the impact of each scenario on the UK economy and broader external environment using the NiGEM model of the National Institute for Economic and Social Research (NIESR) in the UK. This part of the analysis is largely based on the work by Hantzsche *et al.* (2018) and Hantzsche *et al.* (2019). In the second stage, we then take the simulation results from the NiGEM model and run these through the Central Bank's macroeconomic model of the Irish economy called COSMO. This approach allows us to capture the impact of changes in the external environment (UK GDP, exports, imports etc.) on the Irish economy in an internally consistent manner. We focus on

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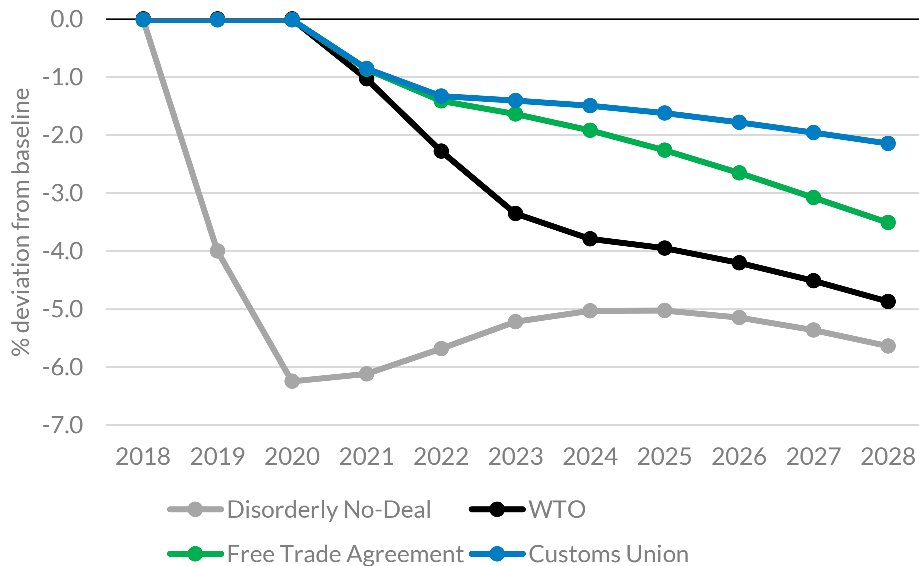
[16] See https://ec.europa.eu/commission/sites/beta-political/files/the_withdrawal_agreement_explained.pdf

the medium to long-term effects of the scenarios rather than the short-run impacts. The evidence from the literature (on which the assumptions in Table 1 are based) refers to long-run changes in trade and FDI but there is more uncertainty over the short-run adjustment.

Figure 2: Effect of Brexit Scenarios on Irish Output



Source: Own calculations using COSMO.

The estimated impact of the different Brexit scenarios on overall output over a long-run horizon is illustrated in Figure 2. The simulation results show that all three orderly Brexit scenarios – a customs union, FTA or WTO arrangement – would result in a smaller loss of output in the Irish economy than could have occurred in the event of a disorderly no-deal Brexit. In particular, the transition to an orderly new trade arrangement after a transition period means that that the severe upfront losses associated with a disorderly no-deal outcome can be significantly mitigated. The existence of an approved Withdrawal Agreement and the time afforded by the transition period helps to reduce the negative cliff-edge effects of a no-deal outcome such as possible financial market turbulence, physical congestion at ports and abrupt rupturing of supply chains. An orderly transition to a new trading relationship also means that firms and households have more time to prepare for new trading arrangements. Whereas a disorderly no-deal outcome could have resulted in a sharp decline in consumer sentiment and a rise in uncertainty, these effects are likely to be somewhat less acute with an orderly transition.

Focussing on the long-run effects of the scenarios (Figure 2), the results show that under a FTA the level of Irish output would be around 3.5 per cent lower than if the UK remained an EU member. If a FTA cannot be concluded before the end of 2020 and WTO rules apply, the estimated fall

in output would be around 5 per cent. This is similar to the estimated reduction in output in a disorderly no-deal outcome because both a disorderly no-deal and a WTO arrangement after 2020 involve the UK trading on WTO terms. The two scenarios therefore assume a similar long-run decline in EU-UK trade. A customs union deal with a degree of regulatory alignment would result in the smallest estimated reduction in output of just over 2 per cent in the long-run. This is because the increase in trade frictions in such an arrangement would be lower than in either a FTA or WTO outcome. Unlike the estimated impact of a disorderly no-deal Brexit which is frontloaded, the loss of output under the other three scenarios takes place gradually over time.

Table 2: Long-run impact of Brexit scenarios on the Irish economy, per cent deviation from baseline

	Long-Run Impact*			
	Customs Union	Free Trade Agreement	WTO Terms	Disorderly No Deal
Output	-2.1	-3.5	-4.9	-5.6
Traded Sector	-2.6	-4.4	-5.9	-6.6
Non-Traded Sector	-1.8	-2.9	-4.3	-5.5
Personal Consumption	-1.9	-3.0	-4.7	-6.3
Investment	-2.8	-4.5	-6.2	-6.4
Exports	-2.9	-4.9	-6.6	-7.5
Imports	-3.2	-5.3	-6.8	-7.9
Employment	-1.6	-2.5	-3.8	-4.9
Unemployment Rate**	0.7	1.2	1.6	2.1

* The long-run impact refers to the estimated effect in 2028. The baseline in each case is continued UK membership of the EU.
** The effect on the unemployment rate refers to the percentage point deviation from baseline.

Table 2 shows the effects of the Brexit scenarios on key Irish macroeconomic variables in the long run. The effect of Brexit is transmitted to the Irish economy via the same channels in each scenario. The scale of the impacts are strongest for the disorderly no-deal scenario and weakest for the customs union. In each scenario the impact of Brexit is initially transmitted to the Irish economy via the traded sector. The reduction in traded sector output would arise due to the fall in demand for Irish exports (mainly from the UK). The fall in output in the traded sector and resulting decline in firm profitability would lead to a fall in investment and output in the non-traded sector. The fall in traded and non-traded

sector output would reduce employment and the unemployment rate would rise.

Overall, the scenario illustrates the potential negative impact of Brexit on the economy, with all scenarios resulting in a significant decline in output in the long run.

4. Selected Sectoral Issues

The analysis in the previous section using macroeconomic models is useful for deriving estimates of the overall impact of Brexit scenarios at an aggregate level. Given different exposures to the UK market, any future EU-UK trade deal will affect some sectors of the Irish economy more than others. This section briefly outlines some of the specific implications of either a FTA or WTO outcome for the agri-food sector.

A large number of studies have pointed to the particular vulnerability of the agri-food sector to any version of Brexit due to that sector's high dependence on the UK market as well underlying structural weaknesses, particularly in primary agriculture (Conefrey, 2019). In the event that the UK moves to trading on WTO terms after 2020, the agri-food sector would face several acute difficulties. As shown by Lawless and Morgenroth (2016) and Teagasc (2018) agricultural goods would attract the highest tariffs in a WTO scenario. The average implied WTO tariff on meat is estimated at close to 50 per cent. The average implied tariff on dairy products is over 30 per cent. The imposition of tariffs on this scale would substantially reduce, or potentially eliminate, UK demand for Irish exports of these goods (Hanrahan *et al.*, 2017). Non-tariff barriers would also be highest in a WTO arrangement. Byrne and Rice (2018) show that non-tariff barriers have a particularly large negative effect on trade in agri-food products.

Even if a FTA agreement is concluded which removes all tariffs and quotas, agri-food trade between Great Britain and Ireland would not be as frictionless as it is today. The UK is a key source of Irish imports. As outlined by Lawless (2018), more than one fifth of Irish-owned firms rely on the UK for over 75 per cent of their imports. One-third of the imports of Irish-owned firms from the UK are food products, consisting of goods both for final consumption and for use as intermediate inputs to further processing. Since Great Britain will no longer be part of the single market, these imported food products will be subject to new checks on entry into Ireland, including the possible imposition of veterinary and sanitary and phyto-sanitary controls.

More generally, imports of other non-food manufacturing goods from Great Britain will be subject to new import procedures as apply when an EU

member trades with a country from outside the EU.[17] This could create complications for firms whose supply chains involve importing goods from Great Britain.[18] It is possible that exports to the UK would also be affected by non-tariff barriers which could make trading with the UK more cumbersome. Faced with these enhanced frictions, firms could decide to reduce their trade with Great Britain or withdraw from participation in the market.

A further risk to the agri-food sector arises from new trade agreements entered into by the UK with non-EU countries. Agri-food products in the EU in general enjoy a high level of protection such that imports of these products, in particular beef, lamb and some dairy products, from countries outside the EU face relatively high tariffs. It is possible that future trade deals negotiated by the UK could result in a rise in UK agri-food imports from outside the EU. This would lead to higher competition for Irish food exporters in the UK market. Given the low margins earned by some parts of the agri-food sector currently, its capacity to withstand further competition in the UK market is likely to be limited.

5. Conclusions

With EU-UK trade negotiations about to commence, this article estimates the impact of potential future EU-UK trading arrangements on the Irish economy. The approval of the revised Withdrawal Agreement and Political Declaration by the UK parliament is a positive development as it removes the risk of a cliff-edge no-deal Brexit which had hung over the Irish economy throughout 2019. Nevertheless, the analysis points to several ongoing risks to the Irish economy from the work out of the Brexit process.

Our simulation results show that an orderly transition to a FTA arrangement would result in a smaller fall in output than a disorderly no-deal Brexit but would still have a significant negative effect on the Irish economy and employment in the long run. Our estimates indicate that under this scenario, Irish output would be around 3.5 per cent lower and the unemployment rate over 1 percentage point higher than if the UK remained an EU member.

The 11 month timeframe to conclude an EU-UK FTA is ambitious when benchmarked against the typical duration of successful trade negotiations between countries and trading blocs in the past. If a EU-UK FTA is not

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[17] The EU customs code is the set of rules covering customs matters in trade with non-EU countries. See here for details: https://trade.ec.europa.eu/tradehelp/eu-import-procedures

[18] See https://www.centralbank.ie/docs/default-source/tns/events/brexit-and-supply-chain-disruption-in-the-import-channel.pdf?sfvrsn=2

concluded by the end of 2020 and there is no extension of transition period, the UK will revert to trading on WTO terms in 2021. Although a move to a WTO trading relationship after a transition period and with an approved Withdrawal Agreement would be less damaging than disorderly no-deal outcome, the long-run loss of output for the Irish economy would be severe at over 5 per cent with the unemployment rate permanently higher by around 2 percentage points.

The scenarios we have modelled take into account as much as possible the current stated policy positions of the UK Government and the EU. However, as the negotiations proceed the ultimate nature of the UK's trading relationship beyond 2020 will become clearer. At that point further analysis will be required to ascertain the implications for the Irish economy.

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