

THE ECONOMIC IMPLICATIONS OF A UK EXIT FROM THE EU FOR NORTHERN IRELAND

A BRIEFING PAPER

FEBRUARY 2016

INTRODUCTION

This report provides an overview of research commissioned by the Department of Enterprise, Trade and Investment (DETI) on the economic implications of a UK exit from the EU for Northern Ireland. The analysis builds on a wider research project which assessed the macroeconomic implications of a UK exit from the EU for the UK and the rest of the world across nine alternative scenarios. The scenarios vary across two main dimensions: the new trade and market access agreement that is agreed between the UK and the Rest of the EU (REU) post-UK exit from the EU; and the policy options that the UK government adopts with any new “policy sovereignty”. Further detail on the precise nature of each scenario can be found overleaf.

To quantify the regional economic implications of each scenario, a separate model was developed for the UK’s NUTS 1 regions. The model simulates the impact on each region’s factors of production (its capital stock and labour supply) and trend productivity to assess how economic output (as measured by Gross Value Added (GVA)) would be affected across different sectors.

This paper summarises the major findings of this modelling exercise with a particular focus on the impact on Northern Ireland in comparison to the UK as a whole. The document concludes with an assessment of the limitations of the modelling exercise with a particular emphasis on how they relate to the estimated impact on Northern Ireland.

1. SCENARIO DEFINITION

To provide greater context of the results presented in later chapters this section of the report documents how the nine scenarios were developed. We begin by discussing different trade and market access models that would be available to the UK following exit from the EU, then identify the areas where the UK would potentially gain greater policy freedom following exit from the EU and finally summarise the key assumptions which lie behind each scenario.

1.1 ALTERNATIVE TRADE MODELS

How much access to the single market Britain retains and how much policy freedom it regains will be determined by the type of trade and market access arrangement that is negotiated in the two years following a vote to leave. The main options include:

- (1) **Retaining membership of the European Economic Area (EEA):** a settlement modelled on the Norwegian-EU relationship would entail the UK leaving the EU but retaining membership of the EEA and therefore maintaining full access to the single market. In effect, the UK would still have to abide by the EU's rules but would have a much more limited role in setting them. In this scenario, the UK would make a reduced (but still substantial) net contribution to the EU budget and would retain freedom of movement of people.
- (2) **Establishing a dynamic relationship via bilateral accords:** this option would be similar to the current Swiss model. Individual treaties would establish the UK's access to the single market across different sectors. As a result, the UK would need to progressively adopt EU regulations but would have the freedom to set its own tariff structure and negotiate trade deals independently. Whether the UK would be able to impose restrictions on the free movement of people under such an arrangement is uncertain (Switzerland currently does not reflect its signature to the Schengen agreement) and it is likely that the UK would still need to make an, albeit reduced, contribution to the EU budget.¹
- (3) **Joining a customs union:** the UK could opt to join a customs union with the EU. This would ensure that no tariffs emerged on goods trade and a continued degree of product market regulatory harmonisation. On the other hand, in this scenario, the UK would gain little in terms of trade policy independence—it would be compelled to adopt the Common External Tariff (CET) and would not have the authority to negotiate trade deals with third-party countries. It would no longer have to contribute to the EU budget and would regain complete control over migration policy.
- (4) **Signing a Free Trade Agreement (FTA):** the UK could negotiate an FTA to retain its favourable trade terms with the EU, thus avoiding the emergence of tariff barriers with EU countries but at the same time giving it independence to negotiate third-party trade agreements and to set its own tariff structure on imports from third-party countries.² In this scenario, the UK would likely regain full control over migration policy and would no longer be liable to make any contribution to the EU budget. However, as in any FTA, the UK would need to trade-off product and standards harmonisation with its own regulatory independence.

¹ Our bilateral scenarios assume that Britain would still contribute 30 percent of its existing net contribution.

² The extent of the emergence of any non-tariff barriers (NTBs) such as import bans or onerous regulatory conditions, will reflect the specifics of the FTA and the extent to which the UK government wishes to be able to design its own regulatory regime.

- (5) Moving to WTO Most Favoured Nation (MFN) status:** the UK would lose all trade privileges with the EU and its trade settlement would become like that of any third-party country with which the EU has not agreed a preferential trade deal. On the other side of the coin, however, this option would involve the fullest repatriation of powers from the EU, maximising regulatory freedom, giving the UK full control over migration policy and requiring no contribution to the EU budget.

1.2 WHAT KIND OF POLICIES WILL THE UK SEEK TO ADOPT?

The type of trade settlement that is negotiated with the EU essentially sets the limits of UK autonomy but this is only a part of the picture. It establishes the rules of the game, but not the policy direction that government adopts within those rules. In this, understanding possible scenarios requires consideration of the use to which the UK's new-found-freedom might be put. To help to simplify this complex issue, we have divided the policy changes into four main areas—these affect the inputs into our modelling in the various scenarios that follow. The headline discussion below explores the kinds of change that could ensue and how they would impact upon economic activity.

1.2.1 Trade policy

During the negotiation process a new trade settlement between the UK and the Rest of the EU (REU) would be agreed. That new framework will impact on a number of economic drivers, including trading patterns, prices, Foreign Direct Investment (FDI) and the sectoral allocation of resources. The increase in trading costs that is an outcome under many of the options is likely to result in a degree of “trade destruction” as increased barriers encourage firms and consumers in both the UK and the REU to switch to domestically-produced goods and services. Beyond this, any change in trade is likely to have an impact on productivity both at home and in the REU as it affects competitiveness and the ability of firms to exploit economies of scale.

1.2.2 Regulation

Depending on the new trade settlement the UK would have the option of implementing a set of regulatory reforms in areas such as labour and product markets, energy, climate change and consumer protection. Having such freedom, of course, does not imply that change would occur and how keenly this agenda would be pursued is uncertain. Therefore, we have designed a set of alternative options related to the scale of regulatory reform that is implemented consistent with the various assumed trade settlements (which may restrict policy freedom in certain areas). At one end of the scale, very little may change—perhaps due to a lack of freedom to act or simply a lack of political will. At the other end, with the shackles lifted, government may adopt a policy of aggressive deregulation. The extent of change in policy will affect associated costs that businesses face (both in terms of time and money) in regulatory compliance. Other things equal, such changes will alter businesses' incentives to invest in the UK as well as having a more direct impact on the efficiency of firms' existing operations.

1.2.3 Migration

Were the UK to gain freedom to restrict the free movement of people, the likelihood is that the incumbent party would opt to restrict inward migration from the EU, particularly for job seekers. The reduced size of the labour force would negatively impact on the economy's capacity and tighten labour market conditions, putting upward pressure on earnings in the short-term. Conversely, other things equal, a reduction in population size would, by reducing demand, act to lower house prices, and to reduce pressure on existing public services (schools, doctors, social housing etc.). However, given that economic migrants from the EU are predominantly of working-age, lower net migration will also raise pressures on the fiscal position in a manner which potentially counters any benefit from reduced demand for services.

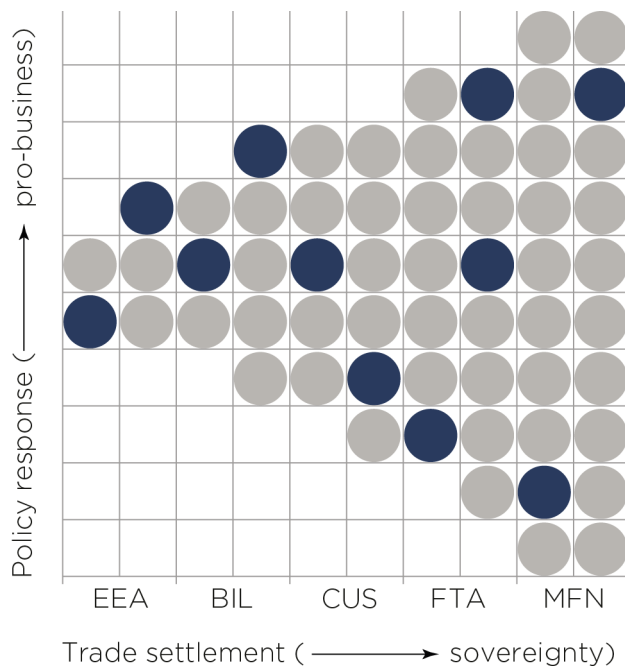
1.2.4 Fiscal policy

One of the most clearly identifiable benefits of UK exit from the EU is the “fiscal windfall” that would be enjoyed as a result of a reduction in the UK’s contribution to the EU budget. The scale of the reduction is likely to vary according to the new trade settlement agreed with the EU. The extent to which the UK opts to continue supporting projects financed by the EU budget will have important sectoral and regional implications. In addition, the government would have a wide range of options with regards to how it uses the money it now retains. For example, increasing spending and transfer payments might support demand in the short-term while crowding out private sector activity in the long-run. On the other hand, a tax cut could support businesses and consumers, helping to stimulate private spending and investment. Finally, of course, it may be that the government simply opts to save the windfall in line with its ongoing austerity agenda, resulting in a faster reduction in government debt, other things equal.

1.3 HOW MIGHT THIS PLAY OUT?

The range of outcomes is vast but for the purposes of this report we have modelled a range of scenarios, as presented conceptually in Fig. 1. These represent points on a loose continuum of trade settlement options from, at one end, privileged access to the single market that is not far removed from the current situation (albeit with a marked reduction in our ability to influence the EU agenda) to, at the other end, much-increased freedom to operate unconstrained. The UK operating under WTO MFN status with the EU represents this end of the spectrum.

Fig. 1. A stylised range of scenarios following UK exit from the EU



The scenarios also take account not just of the rules that are put in place (governing trade and single market access) but also the policy direction that is adopted within those rules—with positions spread broadly along an axis between populist and pro-business positions. These scenarios are not intended to represent either a best-guess of what might happen or any position on what ‘ought to happen’: rather they are illustrative of the range of trade-offs, risks and opportunities that might exist under a UK exit from the EU scenario, in order to provide insight into what the economic outcomes of Britain leaving the EU might be.

NINE MODELLED SCENARIOS

1: Populist Bilateral (POP BIL)—Britain seeks to pursue a “Swiss” arrangement centred on an initial FTA. With its newly–returned sovereignty it adopts a populist position—aggressively clamping down on migration and spending its fiscal windfall on front line services and welfare. Regulations that lie outside the accords remain unchanged.

2: Liberal Bilateral (LIB BIL)—Britain negotiates bilateral accords but seeks to maximise the advantage to UK business by eliminating all existing tariffs on imports from third-party countries. In both migration and fiscal policy it adopts a similarly pro-business position, effectively retaining freedom of movement as it is now (akin to the Swiss approach) and using the fiscal windfall to reduce the tax burden for business. It adopts pragmatic but initially limited regulatory reforms.

3: Populist Customs Union (POP CUS)—Crucially, the formation of a customs union avoids some of the administrative costs associated with a new hard customs border. In this scenario, it is assumed that Britain adopts a populist position—clamping down on migration, investing heavily in public services and failing to exploit opportunities for deregulation.

4: Liberal Customs Union (LIB CUS)—In our second customs union scenario, Britain takes a much more liberal approach, implementing only modest restrictions on freedom of movement—predominantly on unskilled labour, seeking to encourage business investment and consumption through tax cuts and implementing a more ambitious programme of deregulation.

5: Populist Free Trade Agreement (POP FTA)—Britain, in seeking to retain its favourable trade terms, signs an FTA with Europe and opts to retain the same tariff structure as EU countries, mimicking as far as possible the conditions for trade that exist in the EU. As in POP BIL, it uses its greater freedom to act in policy terms by aggressively clamping down on migration and going on a fiscal spending spree. Regulations are left broadly alone.

6: Moderate Free Trade Agreement (MOD FTA)—Britain signs an FTA with Europe and opts to retain the same tariff structure as EU countries, mimicking as far as possible business conditions for trade on the continent. It takes a robust approach to migration—implementing a points system that brings net migration down to the ‘tens of thousands’— and it adopts pro-business regulatory reforms in an, initially limited, number of areas. It retains a fiscally conservative approach and opts to use the windfall to fund further deficit reduction.

7: Liberal Free Trade Agreement (LIB FTA)—Britain signs an FTA retaining privileged access to the single market and opts to use its new-found policy freedom to unilaterally eliminate all existing tariffs on imports from third-party countries. In further support of a pro-business stance it makes only modest efforts to curb migration, aggressively deregulates and spends the fiscal windfall on reducing tax liabilities for employers and employees alike.

8: Populist Most Favoured Nation (POP MFN)—Regarded as a worst case scenario for business, in this option Britain fails to agree an FTA with the EU and reverts to WTO Most Favoured Nation status. New policy freedoms are used to aggressively clamp down on migration, little regulatory reform is undertaken, and the fiscal windfall is used to fund an expansion of public services and welfare—ultimately increasing the size of the state at the expense of private sector growth.

9: Liberal Most Favoured Nation (LIB MFN)—Policy freedom is gained at the expense of access to the single market in this scenario in which, again, Britain reverts to WTO MFN status. In this variant however, policy takes an overtly pro-business direction with only modest restrictions on immigration, the elimination of all tariffs on third-party imports, the implementation of a very aggressive set of deregulations across labour and product markets and tax cuts.

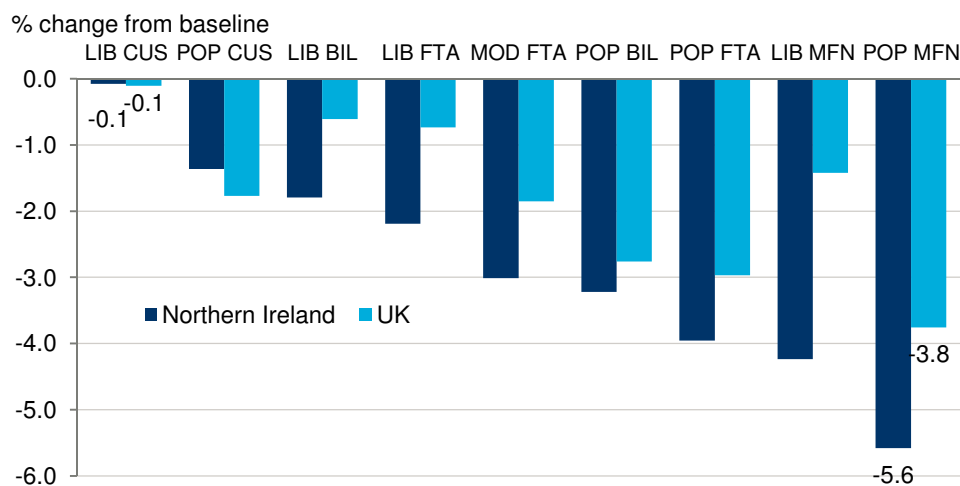
2. KEY FINDINGS

This chapter presents the core findings of our regional modelling exercise for Northern Ireland contextualised with respect to the overall impact on the UK.

2.1 OVERALL IMPACT ON NORTERN IRELAND

Overall our modelling indicates that Northern Ireland's economy is likely to be relatively more vulnerable to the type of structural changes triggered by a UK exit from the EU in comparison to the rest of the UK. The impact on Northern Ireland's GVA in 2030 is displayed in Fig.2 across the nine scenarios in comparison to the overall effect on UK GVA. On average, by 2030, UK GVA is 1.8 percent lower than baseline across the nine scenarios. In comparison, on average by 2030, GVA in Northern Ireland was 2.8 percent lower than baseline.

Fig. 2: Change in GVA in 2030 by scenario: Northern Ireland versus UK



Source: Oxford Economics

Three other significant points of interest emerge from a comparative analysis of the impact on Northern Ireland across the nine scenarios:

- (1) Northern Ireland fares better in relative (but not absolute) terms in scenarios that involve a subsequent “populist” rather than “liberal” policy response from the government. On average, the impact on Northern Ireland's GVA in 2030 is 0.7 percentage points worse than on UK GVA in the four populist scenarios but 1.4 percentage points worse in the four liberal scenarios. This is a reflection of two main factors. First, populist scenarios involve using additional fiscal space to finance increased government spending (as opposed to a tax cut). This is relatively beneficial to Northern Ireland given that public services make a proportionately larger contribution to economic activity compared to the rest of the UK. Second, liberal scenarios result in less restrictive controls being placed on the inward migration. This is particularly beneficial to sectors such as financial and professional services, which account for a relatively low share of GVA in Northern Ireland's economy compared to the rest of the UK;

- (2) Northern Ireland would be particularly vulnerable to a decision to revert to MFN status. Partly this reflects the fact that a move to MFN was found to result in the highest level of “trade destruction”³ for the UK, other things equal. Northern Ireland is particularly vulnerable to such changes because of its unique characteristic of sharing a land border with another EU member state. In addition, this deleterious impact on trade has associated implications for inflows of FDI to the UK which are expected to suffer as a result of the loss of trade openness. Northern Ireland suffers, in this respect, due to its reliance on FDI as a source of financing for investment projects; and
- (3) Northern Ireland relatively outperforms the UK in cases where it is assumed that the UK opts to maintain its customs union with the UK (CUS scenarios). The rationale for this is that these scenarios result in higher barriers to trade affecting UK services sectors (particularly financial and professional services) relative to goods-producing sectors. These more trade-intensive service sectors make a relatively small contribution to economic activity compared to the UK as a whole.

Overall, the key points which underpin the relatively high vulnerability of Northern Ireland to UK exit from the EU based on our modelling exercise include:

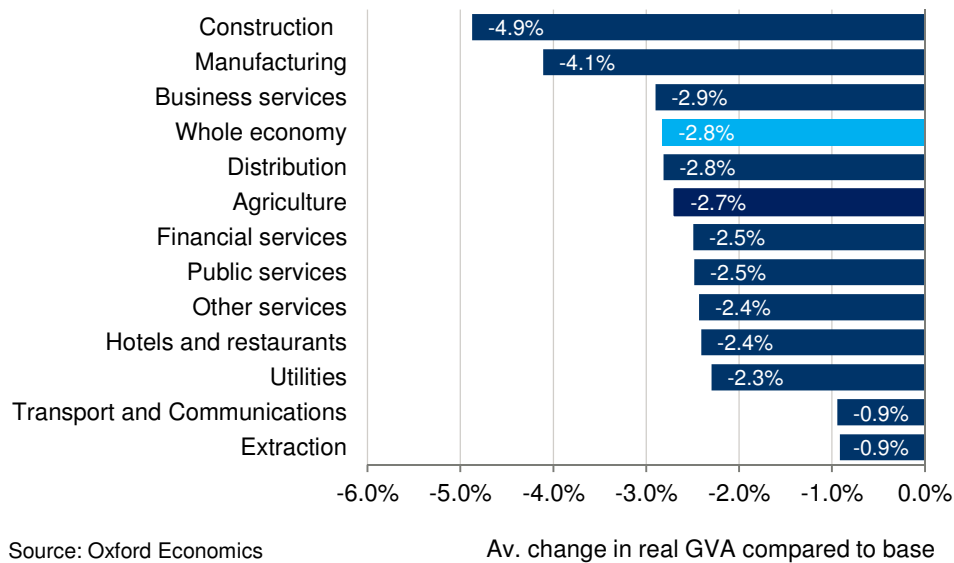
- (1) The fact that Northern Ireland shares a direct land border with another EU member state. On average across the nine scenarios Irish imports fall by a disproportionate amount (relative to other EU member states). The impact of the land border is simulated based on data collected by DETI which shows that Northern Ireland’s trade links with Ireland are much stronger compared to the rest of the UK;
- (2) The fact that the composition of manufacturing activity in Northern Ireland is skewed towards sub-sectors which according to our trade modelling are likely to be more negatively affected in the event of a UK withdrawal from the EU. In particular, Northern Ireland’s manufacturing industry currently has a relatively high dependence on both the food, beverage and tobacco and transport equipment sub-sectors which were found to be relatively more “at-risk” in our scenario analysis; and
- (3) The fact that Northern Ireland receives a relatively high level of inward FDI (compared to the rest of the UK). In our model this results in a stronger fall in TFP and therefore long-run GDP.

2.2 IMPACT BY SECTOR

Variations in the impact of UK exit from the EU by sector in Northern Ireland mirror to a large extent the findings of the main study. On average, the two most vulnerable sectors in Northern Ireland are found to be construction (-4.9 percent) and manufacturing (-4.1 percent). The former was vulnerable due to its sensitivity to business investment as a source of total demand whilst the former suffers from its reliance on goods exports and existing high levels of integration into the EU.

³ The level of trade destruction (or creation) was measured by the percentage point change in trade (exports plus imports) as a share of GDP in the UK in each scenario. On average, trade as a share of GDP was lower by 3.6 percentage points in 2030, the most significant fall across the alternative trade settlements.

Fig. 3: Average change in Northern Ireland GVA in 2030 by sector



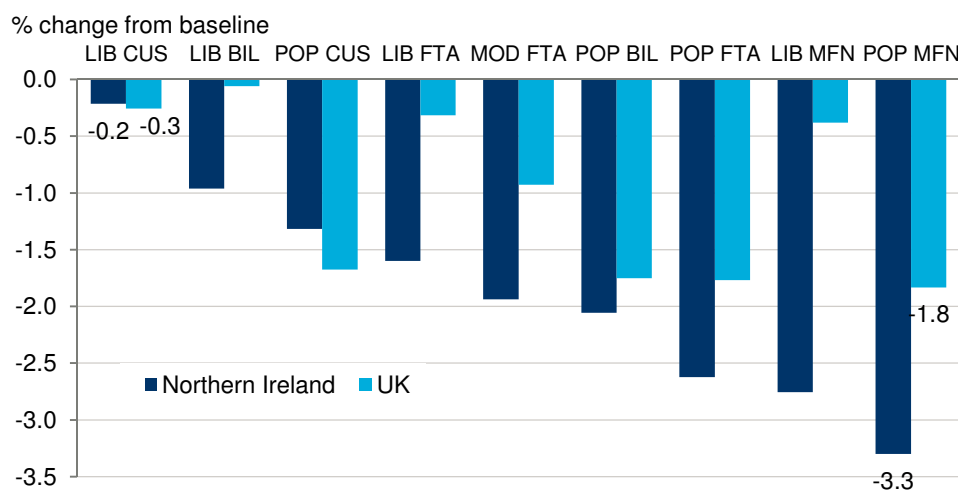
Source: Oxford Economics

A further noteworthy feature at the sectoral level is that the relative impact on financial services in Northern Ireland is less severe compared to at the national level. This reflects the fact that the vulnerability of the UK’s financial services sector is a result of the potential implications for London’s status as a global financial centre. Outside of this, it is our view that financial services activity in the UK is unlikely to be disproportionately adversely affected by the long-term structural changes associated with a UK exit from the EU, given that it primarily serves a domestic client base.

2.3 IMPACT ON THE LABOUR MARKET

The impact on employment in Northern Ireland largely mirrors the trends evident in terms of the impact on GVA. Overall, the impact on labour productivity (as measured by GVA per worker) in Northern Ireland was found to be slightly more deleterious compared to the UK overall. On average, labour productivity was 0.8 percent lower in 2030 in the UK across the nine scenarios compared to a 1.0 percent fall in Northern Ireland according to our regional model. This reflects the relatively higher dependence on FDI in Northern Ireland (compared to the rest of the UK) which in our model results in a marginally more significant impact on Total Factor Productivity (TFP) and therefore labour productivity. This productivity differential is more pronounced in scenarios where the impact on UK FDI is more significant.

Fig. 4: Change in employment in 2030 by scenario: Northern Ireland versus UK



Source: Oxford Economics

2.4 IMPACT ON INTERNATIONAL TRADE

Since our modelling exercise was focused on the impact on the supply side capacity of each NUTS 1 region we have not explicitly quantified the impact on international trade flows for each region. However, given the importance of this topic for DETI we provide some commentary on the issue here.

In general, data quality on international trade at the regional level in the UK is poor. Northern Ireland is a relative outlier, in this respect, as DETI has made (albeit) recent efforts to collect data on international trade. The data collected by DETI indicates that Northern Ireland is less dependent on (international) external demand compared to the rest of the UK – in 2011 and 2012 export sales were worth, on average, around 27 percent of GVA compared to 34 percent in the UK overall.⁴ However, within this, Northern Ireland’s disproportionate reliance on Ireland as a source of external demand is clear. Export sales to Ireland accounted for around 10 percent of Northern Ireland’s GVA in 2011/12 compared to just 1.6 percent for the UK overall. Given that the results from the main study indicated that imports in Ireland would fall disproportionately compared to other countries in the EU across most scenarios (reflecting stronger trade links with the UK) this would suggest that Northern Ireland’s exports would be more ‘at risk’, other things equal.

⁴ Based on OE calculations using data on exports in Northern Ireland provided by DETI, data on GVA in Northern Ireland from the regional statistical accounts and data for the UK on the value of exports and nominal GVA from the national accounts (both of the latter are published by the ONS).

This section has mainly focused on exports reflecting existing data constraints. In terms of imports, differential regional effects would probably be largely dictated by regional variation in the impact on domestic demand. This is likely to be highly correlated with regional variation in the impact on GVA. Therefore, our view is that imports in Northern Ireland are likely to fall disproportionately strongly, on average, across the nine scenarios modelled.

3. METHODOLOGICAL REVIEW AND EVALUATION

This section of the report provides a brief outline of our methodological approach for the regional modelling followed by an evaluation of the potential limitations of the model and what these imply in terms of a future research agenda.

3.1 METHODOLOGICAL APPROACH

Our methodological approach can be summarised by a five-step process as detailed below. At various stages throughout the process, scaling was used to ensure consistency with the results simulated for the UK in the main study:

- (1) **Formation of the baseline forecast:** to begin it was necessary to generate a baseline forecast for the UK regions' components of potential output (labour, capital and TFP). OE already holds in-house forecasts for labour supply by NUTS 1 region. For the capital stock, a historical series was estimated based on ONS data on the breakdown of the UK's capital stock by sector. Regions were assigned a share of the national capital stock in each sector based on their share of national GVA. A similar exercise was then used to project this forward in order to develop a baseline forecast using in-house forecasts for GVA by sector for each NUTS 1 region. This was initially done for a group of 31 sectors with the resulting series aggregated to a 12-sector breakdown consistent with results from the main study. Finally a TFP series was estimated based on our forecast for regional GVA during the relevant period (2019-2030) assuming that the output gap in each region was the same as the forecast value for the UK.
- (2) **Estimating the impact on the capital stock by NUTS 1 region:** the first step was to produce an estimate of the change in the UK capital stock by sector for each scenario. In order to do this we assumed that the change in the capital stock was proportionate to the change in sector GVA allowing for any simulated change in the UK capital to output ratio in that scenario. For several sectors (agriculture, extraction, utilities) it was judged that we had no basis for assuming any regional variation in the impact on the capital stock.⁵ For a second group of sectors (manufacturing and financial services) a set of adjustments were made to introduce regional variation. For manufacturing, an adjustment was made based on the sub-sectoral composition of the capital stock given results from the trade model used in the main study and for the fact that Northern Ireland shares a land border with Ireland.^{6 7} For financial services an adjustment was made to account for the fact that Greater London's financial services sector is more dependent on external demand compared to the rest of the UK's. Next, a group of "follower" industries were identified (distribution, hotels and restaurants, transport and communications and other services). Here, it was judged that the capital stock would adjust depending on the movement of people since businesses in these sectors are primarily dependent on consumer demand. The 'first-round' impact on each region's labour supply was estimated based on the change in the capital stock in that sector and the capital to labour ratio in that sector in our baseline forecast. This was used to

⁵ It is worth noting that this does not necessarily imply that the impact on economic activity was uniform across NUTS 1 regions given regional variation in the importance of each of these sectors to their own capital stock.

⁶ As part of the main study the impact on resource allocation of changes in trade barriers following a Brexit was estimated using the GTAP model. This model simulated the impact at a more granular level for the manufacturing sector than was available in the GEM.

⁷ This was based on data provided by DETI on the bi-lateral structure of international trade in Northern Ireland in comparison to the rest of the UK.

scale changes in the capital stock of these sectors across the different NUTS 1 regions. Next, the resulting impact on the region's capital stock of the nine sectors previously estimated was used to model the effect on the capital stock of the construction and business services sectors.⁸ Finally, the capital stock of the public services sector was assumed to be reallocated depending on changes in the regional distribution of people. This was assumed to change in proportion to changes in the regional distribution of labour (estimated similarly to the process used for the "follower" industries as described above).⁹

- (3) **Estimating the impact on the labour supply by NUTS 1 region:** in general, it was assumed that labour would move to follow capital. Therefore, employment in each sector and region was changed by the same proportion as the estimated change in the capital stock of that sector and region allowing for any change in the UK capital to labour ratio simulated in the main study.
- (4) **Estimating the impact on TFP by NUTS 1 region:** to a large degree, the impact on UK TFP estimated in each scenario is impossible to disaggregate regionally with any precision. Indeed, it is reasonable to assume that many of the channels through which TFP was found to be affected in the main study (competitiveness, economies of scale, regulation) would have uniform regional impact. The one exception is impacts on TFP via FDI. Here, we used data from UKTI reports on the number of FDI projects by region to assess alternative regional dependencies on FDI as a source of financing.¹⁰
- (5) **Transforming these changes into impacts on GVA and employment:** the estimated changes in capital, labour and TFP were combined to produce an estimated impact on each region's potential output by sector assuming a standard Cobb Douglas production function. This was used to estimate the impact on GVA by sector.¹¹ Employment by sector was then estimated based on the estimated change in the labour supply by sector.

3.2 KEY MODELLING LIMITATIONS

The model has been designed to be as comprehensive as possible in terms of accounting for channels that would potentially cause significant levels of regional differentiation in the economic impact. In our view these include:

- (1) The fact that Northern Ireland, uniquely, shares a land border with another EU member state (Ireland) and therefore is likely to be more vulnerable to a disruption of trade flows, other things equal;
- (2) The fact that the UK regions seem to differ to the extent to which they receive FDI (proportionate to their capital stock) which is relevant given the estimated disruptions to inflows of FDI to the UK estimated as part of the main study;

⁸ These two sectors were judged to derive demand primarily through other businesses' spending (either capital or intermediate consumption). Certainly in the case of construction there would be a necessity for activity to shift depending on changes in the regional allocation of the UK's capital stock. In the case of business services this necessity does not exist but it is likely that, to some extent, firms would react in order to be closer to their primary client base.

⁹ Ideally we would have modelled such changes via an iterative solution package to account of the feedback effects that would inevitably be present here. However, we were limited in this regard by the fact that the model developed in Excel.

¹⁰ Specifically, a metric was calculated for each region based on the average number of FDI projects per £1 million of the region's capital stock. This was used to scale the incidence of the effect regionally

¹¹ Here it was assumed that the output gap in each region followed the same path as the UK output gap simulated in each scenario in the main study.

- (3) The fact that parts of London's services sector, on average, rely to a greater extent on external demand compared to the rest of the UK in light of the fact that the impact on trade flows is disproportionate across all scenarios;
- (4) The fact that regions have different industrial structures and that the impact of UK exit from the EU on different sectors of the UK is likely to be uneven – a view that is corroborated by our main study;
- (5) The fact that the UK regions differ in terms of the relative importance of EU structural funds and other types EU budget-financed projects to economic activity; and
- (6) The fact that the UK regions differ in terms of their reliance on EU migrant labour given the possibility that a UK exit from the EU would result in the curtailment of free movement of people.

In our view the first two points were reasonably well accounted for as part of the modelling exercise and the third is not relevant to Northern Ireland. Below we focus on points 4-6 and provide an assessment of their potential significance.

3.2.1 Structural funds

The regional modelling process made no adjustment for the different regional levels of dependence on structural funds. The reason for this was that in all nine scenarios run in the macro study it was assumed that the UK government opted to continue to finance all projects currently supported by the EU budget. Such a simplifying assumption is very reasonable in a macroeconomic study given the likely very limited implications of altering it for economic activity in the UK. However, the fiscal decisions of the UK government post-UK exit from the EU, in this respect, have more significance at a regional level.

Indeed, since Northern Ireland is currently the NUTS 1 region that receives the highest level of funds per capita in the UK¹², the risk is clearly more elevated in this context. The probability that the various components of the EU budget that currently support activity in Northern Ireland would continue to be financed is unknown. However, in terms of gauging the size of the risk it is worth noting that in Northern Ireland gross receipts from the EU budget as a share of GDP in 2008/09¹³ only amounted to 0.9 percent of GDP. In this respect, we would suggest that the downside risk from this channel is relatively limited (although the implications for particular groups within Northern Ireland e.g. farmers are clearly more pronounced).

3.2.2 International migration

Although it would have been possible to assume that the impact of the restrictions on inward migration modelled in the main study varied according to the current stock of EU migrants by region, this would not have been sufficient to assess the overall impact on labour supply since internal migration patterns would also be inevitably affected by such changes. The response of the latter is more uncertain and harder to estimate with any precision. This was part of the rationale for the decision to model movements of labour primarily as a function of changes in the capital stock.

The assumptions implicit in our regional study around the flexibility of the UK's labour supply are unrealistic. In reality, frictions are likely to mean that pockets of unemployment develop in areas dependent on sectors in which the UK has suffered a worsening of its comparative advantage.

¹² Based on figures from information taken from Thompson and Harari, "The economic impact of EU membership on the UK" (Government paper, HMT, 2013), p.32. Although this publication is somewhat out of date, it is unlikely that this pattern has changed significantly since 2009.

¹³ This is latest year of data that we could find at the NUTS 1 regional level.

However, at the macro level our modelling indicated that the structural changes to the UK labour market engendered by a UK exit from the EU in all nine scenarios were not sufficient to have a material impact on the natural rate of unemployment in the UK.

3.2.3 Sectoral variation

To some extent variations in each region's sectoral composition of output have been factored into our modelling exercise. However, the sectoral disaggregation of GDP and employment in the main study was limited to 12 sectors. At this level of disaggregation, most NUTS 1 regions of the UK have a broadly similar industrial structure (with the notable exception of London) but this statement is much less true at a greater level of disaggregation e.g. 2-digit Standard Industrial Classification (SIC).

It is likely that there would be considerable variation in the impact by sub-sector across different scenarios e.g. within manufacturing or within business services. As such, it is quite possible that more regional variation would emerge had the main study estimated economic impacts at a wider level of disaggregation.

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