Assessing the economic implications of coronavirus and Brexit

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SMF Social Market Foundation

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FOREWORD

The Social Market Foundation is a cross-party think-tank with charitable status. Our charitable object is the education of the public in the economic and political sciences. In day-to-day terms, we fulfil that mission by compiling research and organising events that help inform the public and their representatives of the consequences of different policies.

This report is part of that mission and offers clear evidence-driven analysis of the economic impact of the two most pressing issues facing the UK today: the coronavirus crisis and our future relationship with the European Union when the transition period comes to an end.

That evidence shows that both ending our close trading relationship with the EU and the measures taken to combat the coronavirus will have negative impacts on the UK economy as a whole. This report will deepen public understanding of those impacts by showing which sectors will be most severely affected and using that analysis to demonstrate which regions and places stand to lose most. To date, there has been no economic impact on how these events will interconnect.

In some cases and some places, that double impact will be severe. This report demonstrates the simple fact that leaving a developed free-trade agreement with our nearest and largest trading partners at the same time as facing a pandemic will expose many local areas of the UK to a painful double economic impact.

This analysis of smaller local areas is vitally important for both economic and political understanding. National and even regional aggregate economic data can conceal wide and significant variations between places. And people ultimately live in places, not nations or regions. Showing how the double impacts of leaving the transition period at the end of the year – whatever form it takes – and the coronavirus will be felt at the local level is an important part of educating the public and their representatives about the likely economic future and the role public policy plays in that future.

How policymakers should respond to the picture revealed in this report is beyond our remit here. For the avoidance of doubt, this report does not take a position on which form Brexit should take or express any view on the choices that policymakers should make over Britain's future relationship with the EU. We acknowledge that our sponsors take a clear view about those policy choices, including on the possible extension of transitional arrangements. The SMF expresses no view on that, in this report or elsewhere.

Our purpose here is not to influence policymakers' decisions but to inform them – and also to inform the public they serve. This report shows the public what sort of future awaits the economy – nationally, regionally and locally – as Britain begins its new relationship with the EU and tries to manage the coronavirus. Armed with this information, the public and their representatives can now decide the best way forward from here.

James Kirkup, SMF Director

EXECUTIVE SUMMARY

Whether the UK ends its Brexit transition period at the end of 2020 with a Free Trade Agreement (FTA) with the EU or fails to agree such a deal, changing the trade relationship with Europe will have a significant negative impact on the UK economy which will simultaneously be experiencing the negative impact of the coronavirus crisis.

While there will always be uncertainty associated with the size of the impact of different trade scenarios on the economy, the direction in the both the short and long run is clear:

- **The Government's proposed deal (FTA): medium-size negative impact on GDP.**
- **Leaving without a deal in place (WTO): large negative impact on GDP.**

Coronavirus exposure

The third chapter of this report focuses on the economic impact of coronavirus on the different sectors of the UK economy and on the regions and local areas of the UK. Our analysis of the impact of the coronavirus shows that over the next three years a range of sectors will be negatively impacted by the coronavirus crisis and subsequent recession. In broad industry terms 'Finance, Banking and Insurance etc.' and 'Construction' are likely to be severely impacted.

- Manufacturing which accounts for 10% of UK Gross Value Added faces a medium negative impact from coronavirus
- Finance, banking and insurance etc. faces a severe negative hit from coronavirus. This sector accounts for 33% of UK GVA.

Using this sectoral analysis, we analyse regions and local areas by how their economic activity and employment relies on the different sectors. Enabling us to identify the regions and places that will face the greatest proportional economic harm from the coronavirus crisis.

- London is likely to face the biggest coronavirus-induced underperformance as the majority (86% or £192.8 billion) of its total GVA is from sectors facing medium or highly-negative impacts.
- Wales and Scotland will be least affected as almost a third (31% and 30% or £20.2 billion and £42.4 billion respectively) of their total output is reliant on sectors least severely impacted by the coronavirus.

Analysing coronavirus impacts at the level of NUTS3 units, we find that the local places most severely affected by the coronavirus – because they rely most heavily on the most-exposed sectors – are found not just in London but also in the South East and North West of England.

We also show how reliant local employment levels are on the industries most severely impacted by coronavirus.

- There are 3.2 million (72%) London jobs in industries facing the greatest impact from coronavirus.
- By comparison there are 859,000 jobs (62%) in Wales in the highest impact industries, making Wales the least at-risk region. Public sector employment protects around a third (33%) of the workforce across all regions.

Brexit and coronavirus double-impact analysis

Using our sectoral analysis of regions' exposure to the impact of coronavirus, we assess the joint impact of Brexit and the coronavirus on a regional basis. If the UK fails to negotiate a deal with the European Union, the North West, West Midlands and East of England are likely to face a disproportionately severe double impact from the changing relationship between the UK and the EU and the coronavirus pandemic, due to the sectors that contribute most to their economic activity.

Under the FTA Brexit scenario, the five English regions most affected by the double impact of coronavirus and Brexit are the South East, East of England, West Midlands, North West and North East.

The impact under coronavirus and either scenario for the future trading relationship between the UK and EU have been categorised into five quintiles of severity, with one representing the mildest harm and five the most severe.

In the first instance, this is based on the industrial composition of local GVA. If an FTA is secured, the double-impact of this agreement and coronavirus would be most severely felt in parts of London and the South of England. The North West and West Midlands are the only two regions with areas ranked into the third category of impact due to their reliance on industries such as distribution, hotels and restaurants and manufacturing.

If a deal is not secured, and trade becomes subject to WTO terms, the economic impact is likely to be more severe. There are 70 areas ranked in the top quintile of impact under ending the transition period without a deal and coronavirus.

- 76% of areas in London are in Category 5, the highest double-impact. The double impact is not exclusive to London and the South, 50% of areas in the North West of England are in Category 5.
- 11 areas in Category 5 have more than 50% of their GVA coming from manufacturing and finance, banking and insurance etc. Four of these are in the North West and three are in London.

List of areas in Q5 of coronavirus and WTO analysis with more than 50% of GVA from manufacturing, finance, banking, insurance etc.

Local areas	Region	GVA from manufacturing and finance, banking, insurance etc.
Camden and City of London	London	71%
Tower Hamlets	London	68%
Cheshire East	North West	62%
East Surrey	South East	56%
Swindon	South West	56%
Solihull	West Midlands	55%
Cheshire West and Chester	North West	55%
Telford and Wrekin	West Midlands	53%
East Lancashire	North West	53%
West Cumbria	North West	52%
City of Edinburgh	Scotland	51%
West Kent	South East	50%
Bromley	London	50%

Source: SMF analysis

Ending the transition period on 31st December 2020 will not only impact GVA but also employment. Based on the same weighted industrial impact rankings we can create quintiles of impact, using the same methodology as above but with job composition rather than GVA.[i] Again, it is clear to see that the severity of impact is highest in the scenario where the UK fails to negotiate a deal with the EU. One sixth of the areas in Category 5 (11 out of 66) have more than a third of their labour market working in either manufacturing or finance, banking and insurance etc. Across the 66 areas facing the most severe double impact 3.9 million are employed in the two industries facing the hardest impact. Four of the 66 areas have more than 100,000 jobs in these two industries.

Areas in quintile 5 of coronavirus and WTO impact with more than 100,000 jobs in manufacturing, finance, banking and insurance etc.

Area	Region	Jobs in manufacturing, finance, banking and insurance etc.
Hertfordshire	East of England	160,400
Berkshire	South East	131,100
West Surrey	South East	118,400
Leeds	Yorkshire & The Humber	109,000

Source: SMF analysis

The last recession in the UK has shown us that some areas are more resilient to economic downturns and are able to recover more quickly which is an important consideration when focusing on the double impact of ending the transition period and the coronavirus pandemic.

Given the large increase in government expenditure as a result of coronavirus it is hard to see how the Government could afford another stimulus package in early 2021 due to failing to secure a deal without adding to already unprecedented borrowing and potentially testing the patience of gilt buyers.

Coronavirus has bought with it a need for more workers in certain industries, often ones which are reliant on labour from the EU and who do not meet the minimum income thresholds, such as social care. There is a risk that these sectors could face workforce shortages in 2021.

[i] Unfortunately, this analysis excludes Northern Ireland due to data availability

CHAPTER 1: INTRODUCTION

Britain voted to leave the European Union in June 2016. More than three years later, a Brexit Withdrawal Agreement was endorsed by Parliament. The UK formally left the EU on January 31st 2020, but with a transition period in place. During the transition, pre-existing rules on trade, travel, and business between the EU and UK will continue to apply.[1] It is expected that Britain will use this period to negotiate its future trade relationship with the EU. The Government under Boris Johnson has said its aim is to secure a Free Trade Agreement (FTA). The outcome of this process is currently uncertain.

Brexit has fallen down the agenda of the public and the media amid the coronavirus crisis. But the issue of Britain's future relationship with the EU has not gone away, and there is an urgent need to ensure that policy continues to be properly analysed and assessed even (and perhaps especially) during this crisis.

Coronavirus and the lockdown that came with it will impose greater economic burdens on some people and areas more than others. Meanwhile, the transition period is due to end on December 31st 2020. The deadline for extending this phase is much closer. The UK and the EU must agree any extension to the transition period by 30th June 2020. The purpose of this report is to offer an empirical analysis of how the effects of coronavirus and the consequences of the different Brexit outcomes might be felt in different parts of the UK economy.

To do this, we have assessed existing analysis of the two main outcomes of the Brexit process on the existing timetable: a new FTA and the transition period ending without any such deal in place, relying only on the provisions of the World Trade Organisation (WTO), where applicable, to govern trade with the EU. We have also made our own assessment of how the coronavirus downturn will affect different parts of the UK. Finally, we combine these two sets of analysis to offer a single assessment of the economic future that awaits the UK and its constituent parts if Britain's Brexit transition ends on 31st December 2020.

Report structure

The report is structured as follows:

- Chapter 2 summarises forecasts of the economic impacts of Brexit.
- Chapter 3 looks at how coronavirus could impact the economy, nationally and locally.
- Chapter 4 assesses the combined effects of the two factors.

Methodology

Economic impact of ending the transition period

In order to conduct analysis on the economic impact of either gaining an FTA or leaving the EU without a deal we conducted a thorough literature review. Where possible we have used official analysis of the impact of either trade policy scenario. There is a lack of substantial analysis on the impact either option would have on different sectors or industries in the UK. Based upon evidence produced by the Government and other sources we have devised our own magnitude of impact scale, 'mild', 'medium' and 'severe'. In mildly impact industries we envision the negative impact of either outcome to be small in magnitude, for medium impacted sectors the magnitude of the negative impact is higher but not as high as in severely impacted sectors.

The regional analysis is based upon evidence produced by HM Government. These areas are not ranked using our magnitude of impact scale as the data includes the raw data on how a region's Gross Value Added (GVA) may be affected.

Economic impact of coronavirus

Our analysis focused on the medium to long-term economic impact of coronavirus on different sectors and industries in the UK. We forecasted the severity of this impact based on a detailed literature review of sectoral responses to previous recessions, polling data on consumer behaviour and likely long-term consequences of social distancing measures. Evidence of this literature is referenced in the sectoral impact section of Chapter 3. The severity of impact attributed to each sector follows the aforementioned 'mild', 'medium' and 'severe' relative scale (as seen in Table 10). We expect that sectors forecast as mild will face a lesser negative impact from a coronavirus-related downturn relative to moderate and severe sectors. This scale is conceptual and does not attribute raw figures to the impact groupings.

The regional analysis forecasts the extent to which regional and local economies rely on sectors facing the greatest negative economic impact from coronavirus (i.e. moderate or severe sectors). The raw data shows the GVA contribution of these sectors to regional and local economies, signalling the extent to which areas are exposed to a severe economic hit. Additionally, we include raw data from Nomis on local labour markets to show the magnitude of jobs that rely on moderately and severely impacted sectors.

Double impact; coronavirus and ending the transition period

In the final chapter of this report we focus on the double economic impact of ending the transition period and the coronavirus pandemic. This uses the same magnitude of impact scale as mentioned previously. Using the mild, medium and severe scale, the industries are ranked into nine categories ranging from 'mild & mild' to 'severe & severe' under Brexit and coronavirus.

The regions are ranked on a scale from 1 to 24 depending on the predicted impact from an FTA or failing to secure a deal (WTO terms) and then put into six groups of four based on this ranking. We then compare the regional impact of either future trade policy with our regional coronavirus impact to create a weighted index. The same scale applies across either trade policy option.

Finally, we use local area data to create a weighted index of severity with respect to the industrial composition of local GVA and the labour market. This is then divided into five quintiles, with Q1 representing the lowest impact and Q5 representing the highest. The same quintile scale applies across either trade policy option.

Glossary

Term	Definition
Coronavirus Job Retention Scheme (CJRS)	CJRS is a UK government income support scheme offering organisations grants to cover up to 80% of the salaries of furloughed staff during the coronavirus pandemic.
Gross Value Added (GVA)	GVA is the measure of the value of goods and services produced in an area, industry or sector of an economy.
Free Trade Agreement (FTA)	A Free Trade Agreement is a treaty between two or more countries to facilitate trade and eliminate trade barriers. It aims at eliminating tariffs completely from day one or over a certain number of years.
Lockdown	Lockdown refers to the emergency measures taken by the Government to close non-essential businesses and restrict travel to prevent the spread of coronavirus. As lockdown measures ease, we expect some businesses will re-open but enforced distancing measures will continue.
World Trade Organisation Terms (WTO)	The World Trade Organization (WTO) deals with the global rules of trade between nations.
Short-term	Short-term includes the duration of impact over the course of the year (2020).
Medium-term	Medium-term includes the duration of impact over one to two years (2020-2022).
Long-term	Long-term includes the duration of impact from 2023 onwards. In the Brexit analysis, long-term often refers to the 10 year impact.
Mild impact	Our analysis uses a relative impact scale to forecast the severity of coronavirus-related poor performance in different sectors and regions in the UK, comparative to each other. Mild impact refers to a lesser (low-severity) coronavirus-related negative impact (underperformance) on a sector or region, relative to other sectors or regions.
Moderate impact	Moderate impact refers to a medium-severity coronavirus-related negative impact (underperformance) on a sector or region, relative to other sectors or regions.
Severe impact	Severe impact refers to the greatest coronavirus-related negative impact (underperformance) on a sector or region, relative to other sectors or regions.

CHAPTER 2: THE ECONOMIC IMPACT OF DIFFERENT BREXIT SCENARIOS

The decision to leave the European Union (EU) has already had a material impact on UK economic activity through increased uncertainty, reduced investment and reductions in productivity.[2] NIESR has calculated that GDP is now around 2.5% smaller than it would have been had the UK decided to stay in the EU.[3] Research by the Resolution Foundation in 2019 found that household incomes were £1,500 a year lower than they were expected to be before the referendum.[4]

In this chapter, we review the evidence available on how different Brexit scenarios may impact the UK economy. We assess the evidence on the economic impact of a Free Trade Agreement versus trading under World Trade Organisation terms. This analysis was conducted prior to the outbreak of coronavirus in the UK. The additional uncertainty due to coronavirus could affect the scale or size of the forecasts below, although we would expect the direction of impact to remain the same.

Summary of Brexit options available to the UK government

- **The Government's preferred deal / Free Trade Agreement**
  Under Boris Johnson's preferred deal, the UK would not be a member of either the EU's single market or the customs union. The relationship between the EU and the UK would be based on a Free Trade Agreement. An FTA could lead to the conditional removal of quotas and tariffs. This type of arrangement would allow the UK to negotiate new FTAs with countries such as the US, New Zealand and Australia.

- **Leaving without a deal / World Trade Organisation terms**
  If the UK fails to secure a deal with the EU trade between the EU and UK would be subject to World Trade Organisation (WTO) rules. This means that the UK is not a member of the single market or the customs union. In this scenario most favoured nation (MFN) treatment[ii] would be applied to EU-UK trade and there would be non-tariff barriers, most significantly on services. MFN means countries cannot normally discriminate between their trading partners, they cannot lower trade barriers or open up a market without having to do the same for all other WTO members.

- **Extension to the transition period**
  The transition period is due to end in December 2020. The government is able to seek an extension of up to two years – although this must be done by the end of June 2020. This would enable the UK to continue to trade with the EU as if it were a member of the EU for the duration of the extended transition period.

[ii] https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm

The UK economy

Each Brexit trade scenario is set to impact the economic growth of the UK in different ways. There have been a range of economic forecasts produced since the UK voted to leave the European Union.

Each model in Figure 1 assesses the long-term impact of different trading relationships on GDP.5 The assumptions used within Figure 1 are presented in Appendix A. Most analysis focuses on the long-term economic impact of Brexit due to the uncertainty associated with forecasting the short or medium-term. While each of the forecasts below shows a different impact of Brexit on GDP in 2030, it is apparent that leaving the EU without securing a deal and subsequently trading under World Trade Organisation terms is the worst outcome.[6] Under an FTA, the EU and UK would agree not to impose tariffs or quotas on trade in goods between them. However, in the scenario that the UK fails to secure a deal and WTO rules apply, the UK would trade with the EU as it would any other nation. This will lead to tariffs being imposed on imports and exports and lead to an increase in non-tariff barriers to trade.

Figure 1: Forecast long-term impact of Brexit on GDP, compared to remaining in the EU

Note: most of the studies project the impact on economic output in 2030. The three exceptions are EFT, HMG and Treasury, which project forward 15 years (implying an end date of 2032, 2032 and 2031, respectively).

Source: Institute for Government (2018)

Most research prior to the passing of the Withdrawal Agreement focuses on a typical Free Trade Agreement, rather than the specific aspirations set out by the Johnson government. The table below shows how each Brexit option could impact income per capita in the UK. The results are based on modelling conducted by the UK in a Changing Europe using the Centre for Economic Performance's trade model.[iii] Trade integration can increase productivity by encouraging efficiency through increased competition, by reducing the cost of intermediate goods or through stimulating innovation.[7] It is important to recognise how these changes could influence income per capita: if reduced trade with the EU is accompanied by negative impacts on productivity, the overall economic impact of Brexit is much greater.

[iii]Annex A includes details of model assumptions

Table 1: Trade effect of Brexit on UK income per capita weekly (10 year impact)

	Change in weekly UK income per capita (relative to remaining in the EU)			
	Static estimates		With productivity adjustment	
	Annual percentage (%)	Pounds (£)	Annual percentage (%)	Pounds (£)
Johnson's deal – Free trade agreement	-2.5%	-£15	-6.4%	-£38
Leaving without a deal - WTO	-3.3%	-£19	-8.1%	-£48

Source: CEP calculations[8] Pound values calculated at 2018 prices using data from the ONS and rounded to the nearest £1.

The estimates in Table 1 do not account for the effects of Brexit on fiscal transfers between the UK and the EU, nor for possible gains to the UK from striking new free trade agreements with countries outside the EU. The government's long-term analysis found that even on optimistic assumptions about the UK's ability to conclude new trade agreements in addition to rolling over all existing agreements, the positive impact on GDP after 15 years would only be about 0.1-0.2%.[9]

The figures in Table 1 are further supported, in terms of scale of impact, by Table 2, which is based on NIESR calculations. Table 2 also includes estimates for the short-run impact of either trade scenario.[10] When this modelling was conducted the UK economy was expected to grow during the next parliament but with growth being suppressed by Brexit.

Table 2: Short and long-run effects of Brexit scenarios

Type of Brexit	Short run (2019 – 2024)	Long run (10 years out)
Continued EU membership	Elevated uncertainty	No change to UK-EU trade barriers and migration
Johnson's deal – Free trade agreement	Elevated uncertainty, GDP impact* -1.8% (£40bn/year)	GDP impact* -3 to -4% (£70bn/year)
Hard Brexit – WTO	Very high uncertainty, GDP impact* -2.9% (£60bn/year)	GDP impact* -5 to -6% (£120bn/year)
Continued EU membership	Elevated uncertainty	No change to UK-EU trade barriers and migration

Source: NIESR, NiGEM simulation *Notes: * relative to continued EU membership*

While there will always be uncertainty associated with the size of the impact of different trade scenarios on the UK, the direction in the both the short and long-run is clear:

- **The Government's proposed deal (FTA): medium-size negative impact on GDP.**
- **Leaving without securing a deal (WTO): large negative impact on GDP.**

Immigration

The changing nature of the relationship between the UK and the EU will impact immigration policy in the UK. After the transition period, free movement will end and the UK will implement a points-based immigration system that does not differentiate between EU nationals and those from other parts of the world.[11] If the transition period comes to an end on December 31st 2020 freedom of movement will end at that point. If the UK or the EU seek an extension to the transition period, then freedom of movement would continue.

Under a points-based immigration system, points are assigned for specific skills, qualifications, salaries and occupations that need workers. Visas are awarded to those who gain enough points. The rules for family reunion, asylum and border crossing checks are not within the scope of the points-based system. A description of the points-based system is in Appendix B.

The government has insisted that the measure it wishes to implement in 2021 will lead to lower immigration. When announcing the points-based system, the Home Office stated: "We will reduce overall levels of migration and give top priority to those with the highest skills and the greatest talents: scientists, engineers, academics and other highly-skilled workers."[12]

Research by the Migration Advisory Committee has stated that had the UK's proposed points based system been implemented for EEA migration since 2004, the population and GDP of the UK would have been lower, but GDP per capita and average labour productivity would have been higher.[13] It is difficult to estimate the impact of the proposed points-based system on the UK economy going forward - there will be winners and losers, and this is likely to affect specific sectors and regions differently. GDP overall will likely be negatively impacted, however GDP per capita is only likely to experience a small change.

Sectoral impact of Brexit options

Different sectors of the UK economy will be influenced in different ways depending upon the deal the UK agrees with the EU. Certain industries and sectors will be more exposed to the changing nature of the relationship between the UK and the EU. Industries heavily reliant on trade or the provision of services to EU member states are the most likely to suffer if the UK does not obtain a favourable deal allowing trade to continue without friction.

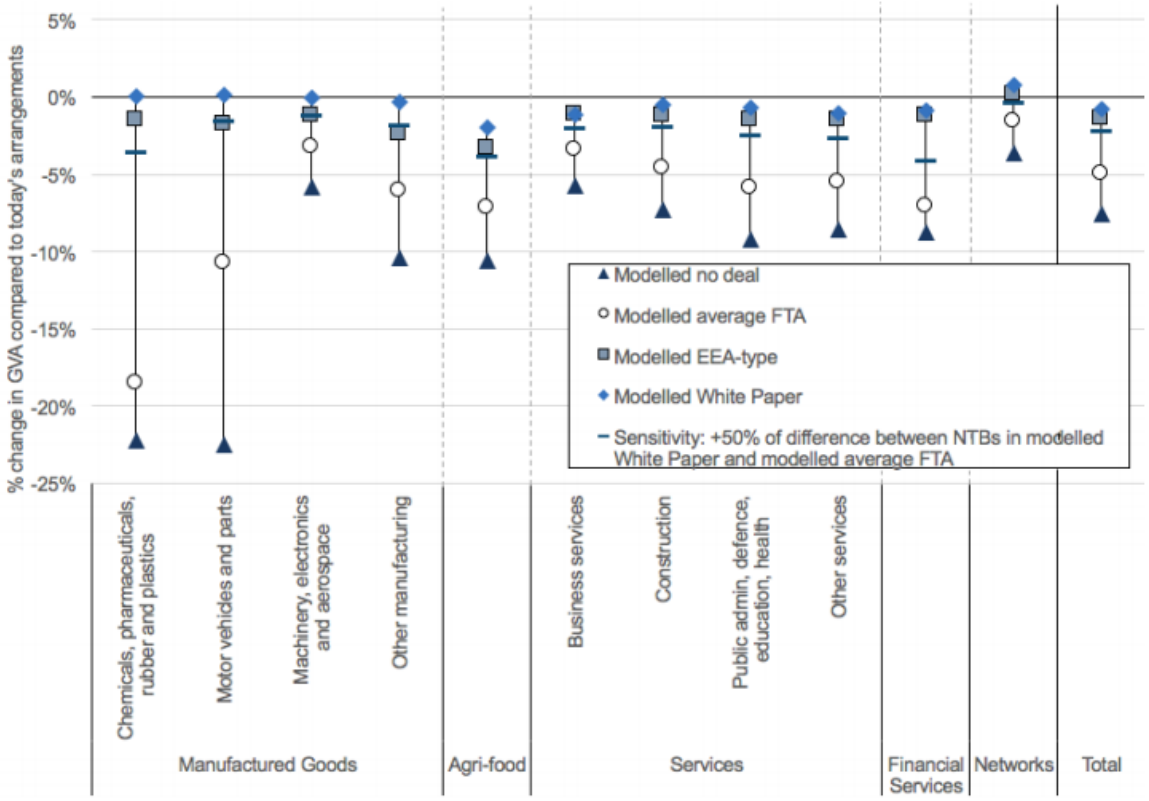
The UK Government has produced analysis on how different sectors' Gross Value Added (GVA)[iv] may be affected by Brexit – including under a WTO scenario and an FTA.[14] The FTA modelled is that of an "average" trade agreement and therefore is not a perfect proxy for the approach the Government is looking to take during its negotiations with the EU. However, it is still worthy of analysis.

Figure 2 represents the Government's sector analysis. Sectors heavily reliant on the manufacturing of goods are likely to suffer severe negative consequences if the UK fails to secure a trade deal with the EU. Industries which rely on the export / import of goods or services will be the most impacted by the ending of the transition period due to the barriers that no longer being a member of the European Union Customs Union brings. In each of the industries analysed below it is apparent that leaving the EU without a deal in

[iv] Gross Value Added is a measure of the value of goods and services produced in an area, industry or sector of an economy

place would have a larger negative impact compared to an average FTA. For some industries the difference between the two options appears negligible, such as financial services, and there are some industries which would suffer considerably more without a deal, such as motor vehicle and parts manufacturing.

Figure 2: Long-term trade only impact on UK sectors compared to status-quo for various trade models (15 years)



Note: Central estimates only. This does not include migration or regulatory flexibility effects. Other sectoral modelling suggests economic output in the agriculture sector could increase in a no deal scenario with EU MFN tariffs, although this is at the expense of consumers who face higher costs. The benefits of new trade deals with countries outside of the EU are captured in these estimates. Sectoral GVA excludes tariff revenue.

Source: HM Government (2018)

Table 3, based on the work of Arno Hantzsche et. al shows how trade volumes will be affected under different Brexit scenarios.[15] (Hantzsche is now an economic adviser to HM Treasury[16], though he took up this post after completing the work in question.)

Table 3: Trade effects on UK-EU trade volume of different Brexit scenarios (relative to remaining in the EU) in the long-run (10 years)

	Johnson's deal	No-deal
Goods	-40%	-55%
Services	-60%	-65%

Source: Hantzsche et al. (2018) and Hantzsche and Young (2019)

The trade of services is likely to experience a larger *proportional* change in trade volumes compared to goods under either scenario. The services sector is forecast to experience a 60% or 65% reduction in trade volumes under Johnson's deal and no-deal respectively. Again, it is clear to see that failing to secure a deal would have the largest impact on trade volumes.

In May 2020, the government set out its plan for trade tariffs after the end of the transition period: the UK Global Tariff (UKGT) will replace the EU's Common External Tariff.[17] This will expand tariff-free trade by eliminating tariffs on a wide range of products. Under the UKGT, 60% of trade will come into the UK tariff-free on WTO terms or through existing preferential access from January 2021. It is possible that this percentage will increase under an FTA.[18] Tariffs will be maintained on certain industries including agriculture, automotive and fishing.

Based on above analysis we can rank industries in terms of the severity of the impact on them under the FTA and WTO Brexit scenarios, as is shown in Table 4.

Table 4: Magnitude and direction of industry impact under FTA and WTO

	FTA impact	No-deal Impact
Agriculture & fishing	Mild (-)	Mild (+)
Energy & water	Mild (-)	Mild (-)
Manufacturing	Medium (-)	Severe (-)
Construction	Mild (-)	Mild (-)
Distribution, hotels & restaurants	Medium (-)	Medium (-)
Transport & Communication	Mild (-)	Mild (-)
Banking, finance & insurance etc	Medium (-)	Severe (-)
Public admin, education & health	Medium (-)	Medium (-)
Other services	Medium (-)	Medium (-)

Source: SMF analysis & HM government analysis (2018)

The scale of the impact across different sectors is dependent upon their reliance on trade between the EU and the UK.

There is some disagreement to the extent to which the agriculture and fishing industry will be impacted by different trade policy scenarios. Early government analysis forecast the industry to be positively influenced by a no-deal Brexit.[19] Due to the increase in barriers to trade, imports of agricultural food from the EU are expected to decrease. It is expected that local production will substitute for imports from the EU-27, causing agri-food's value-added to increase.[20]

The manufacturing sector is heavily dependent upon trade with the EU. In 2016, the EU-27 was the UK's largest trading partner across almost all goods sectors, with 49% (£138 billion) of the UK's total trade in the manufactured goods sector being with the EU-27.[21] Under both scenarios (FTA or WTO) non-tariff barriers are set to increase. The sector is likely to experience an increase in costs from the new custom system, border checks and new compliance activity.

The financial services sector will likely be one of the sectors most impacted by Brexit due the loss of the ability to trade freely across the EU (through the financial passport). In relation to the financial services sector, the political declaration in the Withdrawal Agreement states that the parties should "aim to deliver a level of liberalisation in trade in services well beyond the parties World Trade Organisation commitments".[22] Research by the Centre for European Reform suggests that under an FTA the financial services sector will experience a 59% reduction in exports to the EU.[23]

Other service industries such as public, admin, education and health and other services are set to be impacted due to the smaller size of the UK economy. Distribution, hotels and restaurants covers a range of activities including retail and hospitality. The retail sector could be influenced through changes to the supply chain, increased costs of imports and changing consumer spending behaviour.

Construction and transport, energy and water and communication are all expected to be mildly impacted by either Brexit scenario. They are not particularly exposed to changes in trade between the EU and the UK. The construction sector may be affected by changes to immigration, but this is not considered within the industrial analysis.

Regional impact

As is the case in the sector analysis, the impact of Brexit will be felt differently across the UK regions. There is disagreement among some commentators as to where the largest effects of Brexit will be felt. Analysis carried out by HM Government, shown in Figure 3, shows that the North East of England would experience the largest *percentage* reduction in GVA.[24] The Government's analysis makes it clear that under either an average FTA or WTO rules, London is likely to experience the smallest *percentage* change in GVA compared to remaining in the EU.

This approach also considers how the impact on one region can flow through to other areas of the UK as a result of integrated supply chains. A significant body of research supports the conclusion that London and the South East are likely to be the least impacted by Brexit.[25]

Figure 3: Summary of long-run trade policy impact on UK nations and English regions compared to the status-quo, *percentage change in GVA*

Note: Central estimates only. The benefits of new trade deals with countries outside of the EU are captured in these estimates. This does not include migration and regulatory flexibility effects.
Source: HM Government (2018)

The impact of Brexit is likely to be felt most heavily in areas of the country where there is a reliance on trade with the EU.

Different areas of the country are more specialised in certain sectors compared to others. For instance, the North East of England is relatively specialised in the export of goods whereas London is specialised in the export of services. The impact of Brexit in each of these areas will depend upon the nature of the agreement between the EU and the UK. A trade deal that favours the outcomes of those exporting services rather than goods will have more of a negative impact in the North East of England than in London.

In contrast to the research conducted by the Government, research by Swati Dhingra et al. on the local economic effects of Brexit scenarios concludes that London and the South East will be *most* negatively affected under either option.[26] In this analysis, the authors adjust for the extent to which industries could substitute EU inputs from domestic or other sources, and for differences in the level of likely trade barriers in each sector.

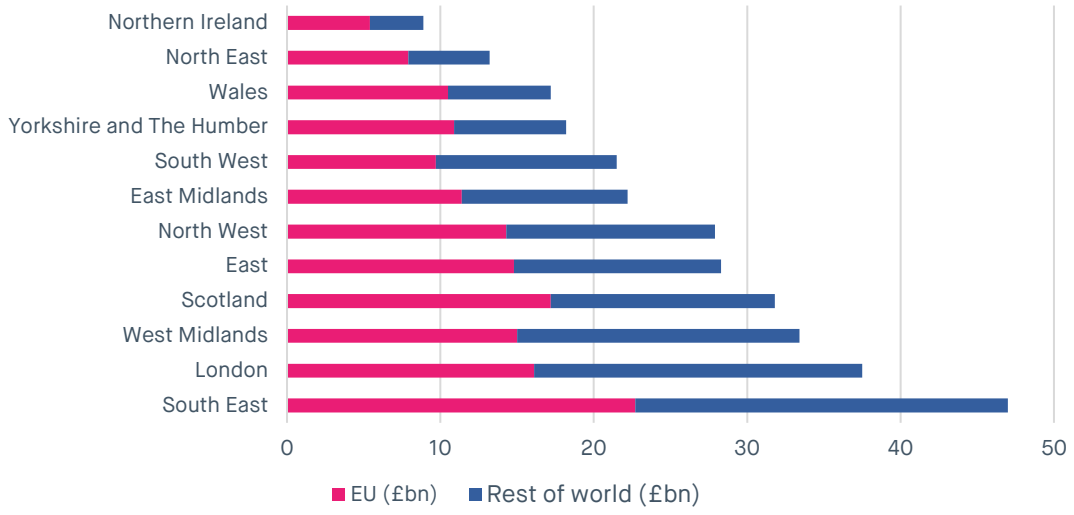
The Government's regional analysis does not include the impact of migration. The Migration Advisory Committee has produced research into how different regions would have been impacted if the thresholds being proposed by the new points-based system were applied to EEA migrants who have entered the UK since 2004. The results show all regions experience a reduction in GDP. GDP per capita is also impacted due to a changing population size, the East of England and the East Midlands are the only two regions to experience a reduction in GDP and GDP per capita.[27]

This research does not cover the impact of changes to regional funding due to the removal of the European Structural and Investment Funds programme which provides funds to support local economic growth. The funds support investment in innovation, businesses, skills and employment and create jobs.

Goods export and import

Different parts of the country export and import at very different rates, with varying levels of reliance on the EU for trade. Figure 4 demonstrates how different regions export goods. The South East has the highest value of goods exports standing at £47bn in 2018. On the other hand, Northern Ireland has the lowest value of goods exports at £8.9bn.[28]

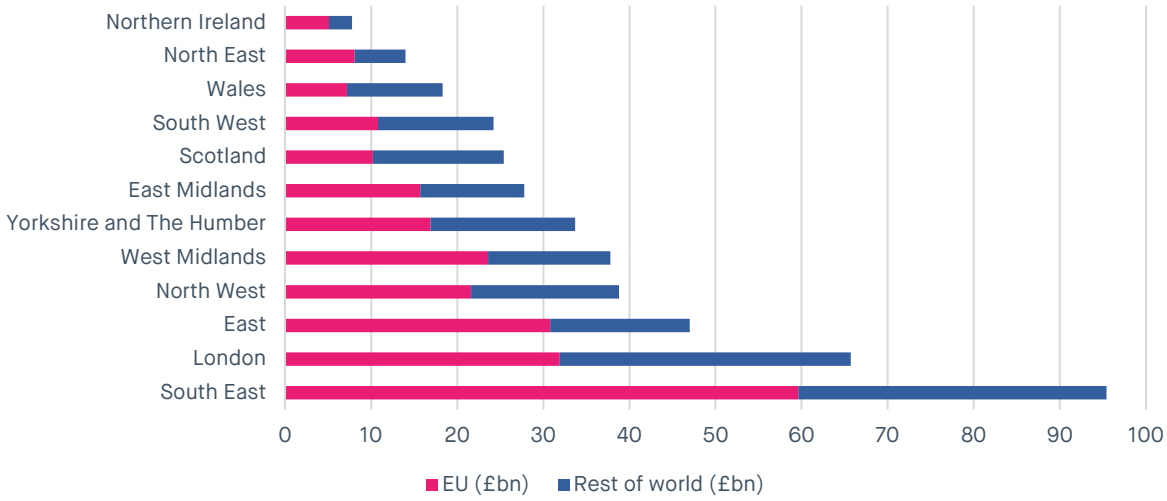
Figure 4: UK goods exports by country and region, 2018 £bn



Source: HMRC (2020)

A similar pattern emerges when focusing on goods imports – again the South East tops the list with Northern Ireland sitting at the bottom.

Figure 5: UK goods import by country and region, 2018 £bn



Source: HMRC (2020)

However, their reliance on the EU as a trading partner shows a very different picture. More than 60% of goods import and exports to / from Northern Ireland are to the EU. By contrast, the South East exports less than 50% of its goods to the EU. Northern Ireland's largest trading partner (in £'s) is Ireland, the impact on Northern Ireland will be heavily dependent on the specifics of an FTA. Barriers are guaranteed if no deal is reached and still likely under an FTA. Either outcome would impact areas of the country that are most reliant on trade with the EU.

Figure 6: Proportion of UK goods import & exports by region from / to EU

Source: SMF analysis of HMRC data (2020)

Service exports

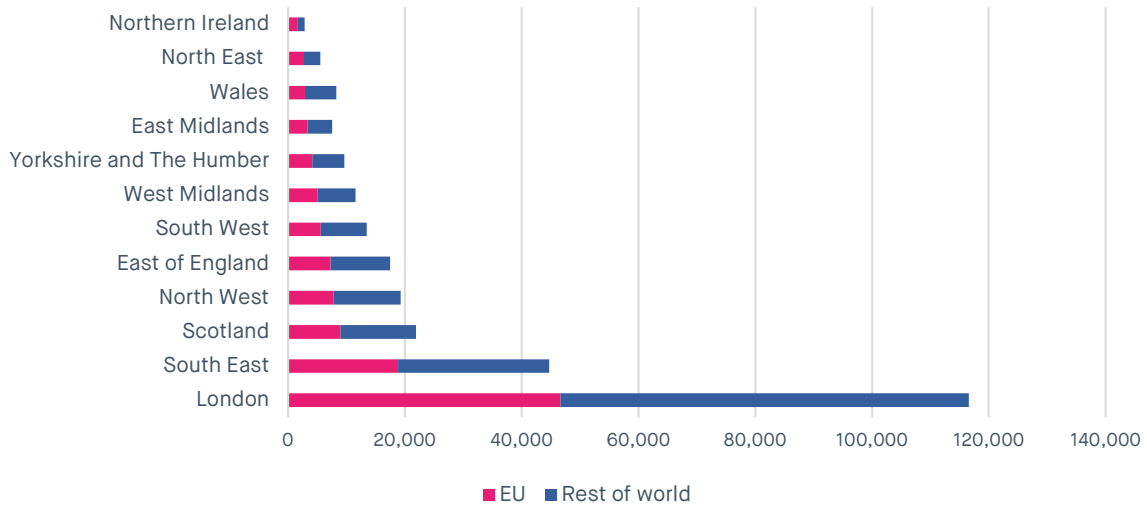
The services sector accounts for approximately 80% of UK GDP and nearly 45% of all UK exports. Any impact on services due to the changing nature of the relationship between

the EU and UK is likely to have a significant impact on the state of the economy. [29] The Government has said:

> "In a no-deal scenario, UK businesses would be treated as third-country service providers by the EU. The UK would risk a loss of market access and increase in non-tariff barriers. UK businesses would face barriers to establishment and service provisions in the EU which they had not previously faced, including nationality requirements, mobility, recognition of qualifications and regulatory barriers when setting up subsidiaries in EU Member States."[30]

NIESR has estimated that trade in services would be 40-65% lower if the UK were to leave the regulatory framework of the single market in a no-deal scenario.[31]

Figure 7: Total value of service exports from the UK by region and country (£ million)



Source: ONS (2019)

London exports the largest *value* of services to the EU and the rest of the world. There is a significant difference between London and the other regions and nations of the UK.[32] Most evidence suggests that the services sector is likely to experience difficulties regardless of the deal obtained and therefore we may immediately think of London and the South East being the hardest hit. However, we must also look at regional reliance on the EU. London has the second lowest *proportion* of services exports going to the EU (40%) and the South East sits at 44%. This compares to 55% in Northern Ireland.

Local economic areas

It is evident across a range of economic and social measures that regional analysis can often hide local inequalities, and the same is true with Brexit. The Government has not published an official analysis of how Brexit may impact local areas. Dhingra et al. however make estimates at a local authority level.

10 highest impacted areas[v]

- City of London (-4.3%)
- Aberdeen City (-3.7%)
- Tower Hamlets (-3.6%)
- Watford (-3.1%)
- Mole Valley (-3%)
- East Hertfordshire (-2.8%)
- Reading (-2.8%)
- Reigate and Barnstead (-2.8%)
- Worthing (-2.8%)
- Islington (-2.8%)

10 lowest impacted areas

- Eden (-1.3%)
- Moray (-1.3%)
- North Lincolnshire (-1.3%)
- Corby (-1.3%)
- Anglesey (-1.2%)
- South Holland (-1.1%)
- Crawley (-1.1%)
- Isles of Scilly (-1.1%)
- Melton (-0.8%)
- Hounslow (-0.5%)

Source: S. Dhingra et al. (2017)

While the authors' overall conclusion was that London and the South East would be badly affected, local authority areas in both regions were in the "top 10" most affected and the "bottom 10" least affected if the UK failed to secure a deal.

On this basis, we can conclude that focusing analysis purely on government office regions is likely to overlook the significant variation in impact within each region.

[v] Percentage figures represent the change in GVA

Summary of economic impact of Brexit scenarios

The UK economy is likely to be negatively impacted following the end of the transition period – NIESR predicts this impact will be more severe if the UK fails to negotiate a Free Trade Agreement with the EU and leaves without a deal.

- Gaining an FTA would lead to elevated uncertainty and is expected to reduce GDP by 1.8% (2019 to 2023).
- Failing to secure a deal (WTO rules) would cause very high uncertainty in the short term and reduce GDP by 2.9%.[33]

Sectoral impact

The impact will be felt differently depending upon the sector and its reliance on the EU for trade or workers. The scale of the impact will depend upon the specifics of the trading relationship between the UK and the EU-27.

	FTA impact	No-deal Impact
Agriculture & fishing	Mild (-)	Mild (+)
Energy & water	Mild (-)	Mild (-)
Manufacturing	Medium (-)	Severe (-)
Construction	Mild (-)	Mild (-)
Distribution, hotels & restaurants	Medium (-)	Medium (-)
Transport & Communication	Mild (-)	Mild (-)
Banking, finance & insurance etc	Medium (-)	Severe (-)
Public admin, education & health	Medium (-)	Medium (-)
Other services	Medium (-)	Medium (-)

Source: SMF analysis

Regional impact

The regional impact depends upon the composition of the local economy. Different areas of the country are more specialised in certain sectors compared to others and therefore the regional impact will depend on how these sectors will be impacted by different trade scenarios.
Analysis shows that the North East of England would experience the largest *percentage* reduction in GVA under either scenario.[34] Followed by the North West and West Midlands. The Government's analysis makes it clear that under an average FTA or WTO rules, London is likely to experience the smallest *percentage* change in GVA compared to remaining in the EU.

CHAPTER 3: THE ECONOMIC IMPACT OF CORONAVIRUS

This chapter reviews current evidence on how the coronavirus pandemic may impact the UK economy over time, including looking at the same sectoral and regional dimensions that were considered in Chapter 2.

On 23rd March, the UK Government imposed extensive emergency measures to prevent the spread of the coronavirus, including the closure of schools, universities, restaurants, pubs, leisure facilities and many other non-essential businesses, and instructing most people to "stay at home". The lockdown imposed immediate disruption on economic activity, both on the supply side (as businesses are forced to close their doors) and on the demand side as consumers and businesses are restricted in their spending options. While the Government's fiscal policies (particularly statutory sick pay, the Coronavirus Job Retention Scheme and self-employment support) will probably offset some of the immediate economic damage, the speed and pattern of recovery remains uncertain at this point.

Economic growth

The ONS reported that GDP fell by 2% in the first quarter of 2020 in comparison to a growth of 0.7% over the three-month period in 2019. Immediate projections of the economic impact of coronavirus estimate that Q2 of 2020 will see the sharpest quarterly contraction of the entire pandemic as the easing of some lockdown measures will likely stabilise Q3 and Q4. With both supply and demand restrained by the temporary closure of many businesses, Q2 presents a less generous quarterly picture than was seen at the peak of either the 2008-09 recession (-2.1%) or the 1974 recession (-2.7%).[35]

Table 5: GDP projections for 2020 by organisation and date of forecast

	UK GDP percentage (%) change on previous period	
	q/q Q2 2020	Annual 2020
IMF (14th April)	-	-6.5
OBR (14th April)	-35	-12.8
NIESR (28th April)	-13.6	-7.2
KPMG (29th April)	-7.8	-8.4
PwC 'smooth exit' (6th May)	-12	-5
PwC 'bumpy exit' (6th May)	-16	-10
EY ITEM Club (May)	-15	-8
HMT consensus (20th May)	-15.6	-8.6

Source: IMF, OBR, EY, NIESR, PwC, HMT & KPMG (2020)

Some models project a V-shaped recovery in which the economy suffers a significant early shock but rallies quickly in Q3 and returns to the 'pre-virus normal' by the end of 2020 or early 2021 with limited medium to long-term implications. We believe that this is an overly optimistic scenario; instead, our view is that the economy will see a sluggish "U-shaped"

recovery as enforced social distancing measures, reduced consumer confidence and the withdrawal of government income support limits activity for the majority of 2020.

Chancellor Rishi Sunak's fiscal response will likely soften the blow to the economy by preventing widespread business failures and unemployment, at least in the immediate term. Over the period between the 20th April and the 3rd May, less than 1% of businesses reported they had permanently ceased trading, while 79% of those continuing or temporarily pausing trade had made use of at least one of the government schemes (CJRS and VAT deferrals proving most popular).[36] However, it is unclear how long this intervention will remain effective.

Looking forward, external estimates suggest that GDP is likely to return to its pre-virus level over the next four or five years. Many of these forecasts were conducted in the early days of lockdown and therefore tend to be slightly optimistic compared to the general feeling today. EY and NIESR forecast that UK GDP is unlikely to return to 2019 levels until late 2021 or 2022 – it will therefore take the UK a while to get back onto its previous trajectory.

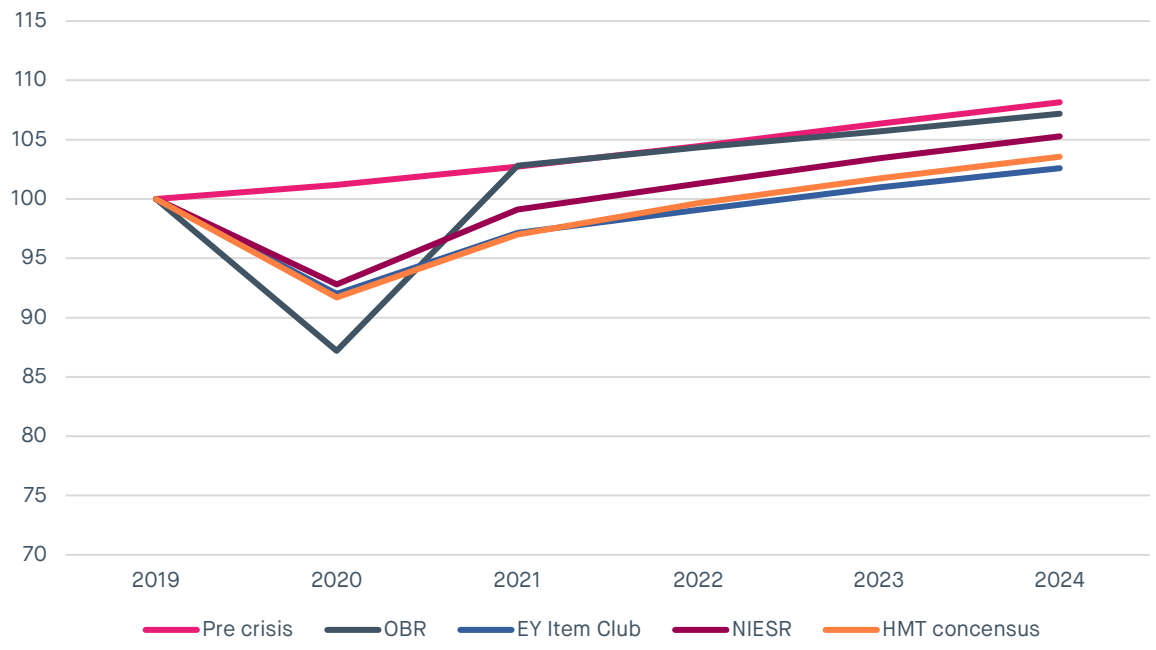
Table 6: Medium-long term impacts of coronavirus on GDP by organisation and date of forecast

	UK GDP percentage (%) change on previous annual period				
	2020	2021	2022	2023	2024
IMF (14th April)	-6.5	4	-	-	-
OBR (14th April)	-12.8	17.9	1.5	1.3	1.4
NIESR (28th April)	-7.2	6.8	2.2	2.1	1.8
EY ITEM Club (May)	-8.0	5.6	2.0	1.9	1.6
HMT consensus (20th May)	-8.3	5.8	2.7	2.1	1.8

Source: IMF, OBR, EY, NIESR & HMT (2020)

The growth percentage figures are shown graphically as an index of GDP below.

Figure 8: Index of UK GDP, 2019=100



Source: SMF analysis of HMT, OBR, EY & NIESR (2020)

This shock is likely to have a deeper economic impact than the previous recession after the Global Financial Crisis, due to the impact of ongoing social distancing measures and other restrictions on activity on both the supply and demand sides of the economy.

Table 7: GDP change following the recession of 2008-09

UK GDP percentage (%) change on previous annual period			
2008	2009	2010	2011
-0.3	-4.2	1.9	1.5

Source: IMF (2020)

On the supply-side, there are numerous potential disruptions which make quantifying the long-term impact difficult at this stage. This includes the possibility of a returning surge of coronavirus, long-term damage to supply chains and global trade, reduced global travel as well as rising insolvency and unemployment as businesses struggle to run at reduced capacity for social distancing.

The OBR projection of a V-shaped recovery was predicated on 'pent-up demand' stimulating consumer spending as lockdown measures ease. Our assumption is that there will likely be structural changes to consumer behaviour that will have longer-term impacts on growth. Consumers are likely to show a reluctance in taking what they perceive to be health risks, for instance by eating out in restaurants and favour household saving over-spending, particularly where incomes are reduced or lost. A survey by YouGov and Cebr found that consumer confidence fell by 5.9 points to 92.7 in April - its lowest level since January 2012.[37] Given these findings and the current restrictions on supply, consumer spending is projected to fall by 13.5% in 2020.[38]

Unemployment

While the Government has taken steps to stop mass unemployment, job losses are still occurring. Claims for unemployment benefits[vi] rose to 2.1 million in April 2020 for the first time since 1996, signalling the extent of job / income losses so far and the economic fallout ahead. The ONS reported the surge of 69% as one of the biggest monthly surges on record.[vii] [39]

Estimates suggest that unemployment will almost double in 2020 to around 7% from 3.8% in 2019, recovering gradually over the following years. This represents an increase in unemployment of more than 1 million workers – 7% unemployment is equivalent to 2.5 million people out of work. The OBR believes unemployment will be above pre pandemic forecasts until 2023.[40] For the most part, these projections paint a more generous picture than the aftermath of the 2008-09 recession where unemployment peaked at 8.1% in 2011.[41]

Table 8: Projected rate of unemployment by organisation and date of forecast

	UK unemployment as a percentage (%)					
	Q2	Q3	2020	2021	2022	2023
IMF (14th April)	-	-	4.8	4.4	-	-
OBR (14th April)	10	8.5	7.3	6	4.5	4
NIESR (28th April)	-	10.5	8.5	6.5	-	-
KPMG (29th April)	-	-	7.6	6.3	-	-
EY ITEM Club (May)	-	-	6.3	5.7	4.5	4.1
HMT consensus (20th May)	-	-	7.7	6.3	6.1	5.5

Source: IMF, OBR, NIESR, KPMG. EY & HMT (2020)

The Government's CJRS has proven extremely popular thus far, with 800,000 employers registering 6.3 million workers as furloughed within the scheme's first two weeks.[viii] While furloughed workers currently remain in employment, it is unknown how effective this intervention will be in saving jobs and businesses in the long run. As the scheme winds down, we expect to see another wave of redundancies in the second half of 2020 as businesses struggle to meet operating costs without government support.

The long-term impacts are less certain but looking back at previous recessions, we know that quick recoveries are limited – it took seven years for unemployment to decline from its peak in the 2008-09 recession (from 8.1% in 2011 to 4.1% in 2018). There is an inherent risk that as the unemployed drift further from the labour force, over time they may lose skills and have to return to lower-paying jobs. Evidence from 2008-09 recession found that workers who were permanently separated from employment suffered losses in monthly earnings from 2%-12%.[42] There is a risk that some sectors will experience

[vi] This is a combination of claimants of Jobseeker's Allowance and claimants of Universal Credit (UC) who fall within the UC "searching for work" conditionality.
[vii] Accurate as of 19 May 2020.
[viii] Accurate as of 4 May 2020. The CJRS portal opened on 20 April 2020 for employers to register furloughed workers.

permanent job losses as they look to invest further in technology and develop their online sales platforms.

Trade

UK exports will likely be hit by sharply contracting overseas markets as both demand and supply abroad fall due to the global pandemic. The WTO forecast that global trade in goods could contract between 13% and 32% in 2020 with a recovery of 21% to 24% in 2021.[43]

Although coronavirus is a global shock that has disrupted trade and supply chains across all countries, the extent to which the UK is hit is still largely dependent on details of the trade agreement with the EU. However, in the immediate term, the decrease in sterling since early March relative to the euro and US dollar could increase import prices and put a greater strain on businesses to absorb extra costs while lockdown restrictions on trade continue.[44]

Budget deficit

While comparisons to previous recessions are useful for perspective, this economic downturn differs in several ways from previous ones, including its cost to the public finances; the UK government has borrowed and spent vast amounts to support workers and households through the imposed shutdown.

Government borrowing has increased dramatically since the Budget of March 2020, when the Chancellor predicted a deficit of £55 billion in 2020/21. Now, the deficit is said to be on course to reach £337 billion (~17% of GDP) in the current fiscal year. That is much higher than the £150 billion (10% of GDP) that followed the Global Financial Crisis recession.[45]

Table 9: Projected rate of public sector net borrowing by organisation and date of forecast

	UK budget deficit projections in £bn	
	2020/21	2021/22
OBR (14th April)	273	76
HMT consensus (16th April)	173	116
NIESR (28th April)	200	-
PwC 'smooth exit' (6th May)	210	112
PwC 'bumpy exit' (6th May)	315	163
EY ITEM Club (May)	320	140
HMT consensus (20th May)	271	156

Source: OBR, HMT, NIESR, PwC, EY & HMT (2020)

Thus far, fiscal policy has been significant in propping up the short-term economic hit and attempting to limit the long-term impact of coronavirus. However, the Government's approach to rein in this borrowing, whether through increasing taxes or cutting spending, will have important consequences for economic growth over time – as will the timing of any such fiscal consolidation. Carrying forward a large deficit may limit the Government's

ability to respond to potential future shocks to the economy, such as new trade tariffs with the EU.

Sectoral impact of coronavirus

Under the current lockdown restrictions, it is evident that certain sectors have taken a larger hit than others. Already, the figures on furloughed workers, businesses trading status' and financial confidence indicate that the most negatively impacted sectors are accommodation and food services, arts, entertainment and recreation, construction, and manufacturing.[46]

Table 10: Output losses by sector in the second quarter of 2020 & medium-long term sector impact (up to 2023)[ix]

	OBR (percentage)		SMF (severity)
	Weight in whole economy value added	Effect on output relative to baseline	Medium-long term sectoral impacts
Agriculture	0.7	0	Moderate (-)
Mining, energy and water supply	3.4	-20	Mild
Manufacturing	10.2	-55	Moderate
Construction	6.1	-70	Severe (-)
Wholesale, retail and motor trades	10.5	-50	Moderate (-)
Transport and storage	4.2	-35	Severe (-)
Accommodation and food services	2.8	-85	Moderate (-)
Information and communication	6.6	-45	Mild
Financial and insurance services	7.2	-5	Moderate (-)
Real estate	14.0	-20	Severe (-)
Professional, scientific and technical activities	7.6	-40	Moderate (-)
Administrative and support activities	5.1	-40	Moderate (-)
Public administration and defence	4.9	-20	Mild
Education	5.8	-90	Moderate (-)
Human health and social activities	7.5	50	Mild
Other services	3.5	-60	Mild

Source: OBR & SMF(2020)

[ix] The severity of sectoral impact is categorised relative to the other sectors. While we anticipate some sectors will see moderate or severe negative impact (underperformance), growth is still possible.

However, how sectors fare over the medium-long term is not necessarily determined by the immediate impact of the lockdown. The table above sets out short-term and medium-long term projections of the economic impact on each sector using the OBR's analysis for Q2 2020 and our analysis of 2020-2023. We have assessed the severity of impact in each sector (mild, moderate or severe) based on assumptions about structural changes to consumer behaviour and supply disruption.

Severe impact

Over the next three years, we expect that construction, transport and storage, real estate, and arts, entertainment and recreation sectors will be most negatively impacted by the coronavirus crisis and subsequent recession.

We forecast that construction will be significantly hit due to reduced demand for and investment in capital projects and material delays from disrupted supply chains. A modal shift to working from home during the lockdown is likely to change the way workers and employers think about office space and remote working. A Deloitte survey found that 98% of Chief Financial Officers expect home working to increase in the longer term and 46% of developers plan to reduce their pipelines in the next six months.[47] As a result, we expect demand for commercial properties to shrink. Falling property prices and rents will exacerbate a sectoral underperformance in real estate.

The transport and storage sector will also be significantly impacted as aviation and rail businesses will likely struggle to recover from the halting of activity in 2020. YouGov polling found that 24% of people think they will not have a foreign holiday until after 2021, suggesting that consumer confidence in air travel is unlikely to return to pre-virus levels even after distancing measures are no longer necessary.[48] Following the 2008/09 recession, overseas travel of UK residents took eight years to return to pre-downturn levels.[49] Rail will likely face structural decline after suffering a 19% fall in private investment last year and calls to now redirect infrastructure funding towards broadband.[50]

For some, the impending recession will mean reduced household spending due to decreased consumer confidence and potential income losses. We expect that the arts, entertainment and recreation sectors will suffer particularly as consumers are likely to spend less on non-essential recreational activities.

Moderate impact

The accommodation and food services sector will be moderately impacted. An Ipsos Mori survey found that consumer confidence towards the food industry is likely to be low even after lockdown with over 60% feeling uncomfortable about going to bars or restaurants should restrictions be relaxed.[51] However, a preference for domestic holidays could offset some of the sectoral hit and support accommodation providers. Reduced international travel is also likely to affect the education sector, as universities face a fall in income from a reduction in international students. Cambridge University has announced that all lectures will be online until the summer of 2021, we do not know how this will impact student numbers in September 2020.[52] There is a risk that both international and domestic students defer entry causing major difficulties for universities and their finances.

Manufacturing is likely to take a mid-sized hit – in the immediate term, disruption to global supply chains and productivity throughout the pandemic will have impacted the sector. However, as restrictions on supply ease in line with public health measures, consumer spending will increase (albeit moderately) leading to a surge in production. The boost in supply will be dependent upon the good produced; for example, demand for aviation or

automotive production will fall but medical manufacturing will benefit from £84 million of new government funding.[53]

The finance and insurance services sector will also be impacted with moderate severity. Coronavirus is having a significant, negative impact on consumer confidence and measures related to personal finances and (perceived) job security. Consequently, we will probably see a downturn in demand for personal loans, mortgages and some insurance products. Investment will also fall due to uncertainty and reduced confidence in financial markets.

Both the professional, scientific and technical and the business administration and support services sectors encompass a broad range of industries, each with their own difficulties to face. We expect these sectors will be exposed to moderate negative impacts as ripple effects from underperformance in the national economy and other sectors will affect their output.

Mild impact

We believe the sectors that will be least impacted from coronavirus are information and communication, agriculture, forestry and fishing, the public sector and the health and social care sector. They are not majorly impacted by changes in consumer behaviour and were some of the least affected sectors during the 2008 financial crisis.[54]

Summary of industry impact

Due to the way local area industrial mix is presented we have had to create an impact table based on a broader industry definition. This is presented below along with information on the contribution to the UK economy. Previously we had discussed banking and finance as a medium risk industry, however, due to the inclusion of real estate (which accounts for 40% of the category's GVA) in the broader industry category 'Banking, Financial & Insurance etc' this now becomes a severely impacted industry. For industries we deem to be mildly impacted by coronavirus there is a possibility that the industry will not experience a reduction in growth.

Table 11[x]: Broad industry impact of coronavirus[xi]

	Medium-long term sectoral impacts (up to 2023):	UK GVA (£ millions)	Contribution to UK GVA
Banking, finance & insurance etc	Severe (-)	£653,039	33%
Public admin, education & health	Mild (+/-)	£364,272	18%
Distribution, hotels & restaurants	Moderate (-)	£267,935	14%
Transport & Communication	Moderate (-)	£228,794	12%
Manufacturing	Moderate (-)	£191,157	10%
Construction	Severe (-)	£122,805	6%
Energy & water	Mild (+/-)	£72,979	4%
Other services	Moderate (-)	£69,569	4%
Agriculture & fishing	Mild (+/-)	£13,554	1%

Source: SMF analysis & ONS (2019)

[x] Appendix D shows how the previous industries are now categorised.
[xi] The severity of industrial impact is categorised relative to the other industries. While we anticipate some industries will see moderate or severe negative impact (underperformance), growth is still possible.

Regional and local impacts

Similarly, while all areas of the country have been impacted by the coronavirus crisis, some places will be harder hit than others due to their local industry structure. We consider that places will be impacted by two interacting effects: first, the reduced contribution of affected sectors to the GVA of an area and second, the number of jobs at risk due to the sector structure of the local labour force. It is also likely that pre-existing economic conditions of an area will play a role in how resilient they are to downturns.

Research from the Centre for Towns shows the areas most impacted by the immediate lockdown – as is seen in Table 12. More than a quarter (25.3%) of workers in the South West are employed in sectors affected by the immediate lockdown, compared to 18% in the West Midlands. Workers from the most-affected sectors are not randomly distributed, but people and places with the lowest incomes are found to be the most vulnerable to job losses thus far.[55]

However, as set out above, the medium to long-term sectoral impacts may be different to the immediate effects of coronavirus. Therefore, it is important to consider how each area will be affected in the future.

Table 12: Regional breakdown of people employed in at-risk sectors affect by COVID-19 (excludes London, Wales, Scotland and NI)

	Proportion of people employed in each sector most affected by lockdown				
	Accommodation	Non-food retail	Pubs & restaurants	Arts & Leisure	All sectors
East Midlands	1.4	10.2	6.3	1.9	19.7
East of England	1.2	10.6	5.7	2.1	19.7
North East	1.3	11.1	7.0	1.5	20.9
North West	1.0	11.1	6.1	1.8	20.0
South East	1.3	10.1	6.3	2.5	20.2
South West	3.1	12.2	7.3	2.6	25.3
Wales	1.4	11.7	6.5	2.1	21.7
West Midlands	0.7	10.6	5.4	1.3	18.0
Yorkshire and The Humber	1.0	10.1	7.4	1.8	20.4

Source: Centre for Towns (2020)

Gross Value Added

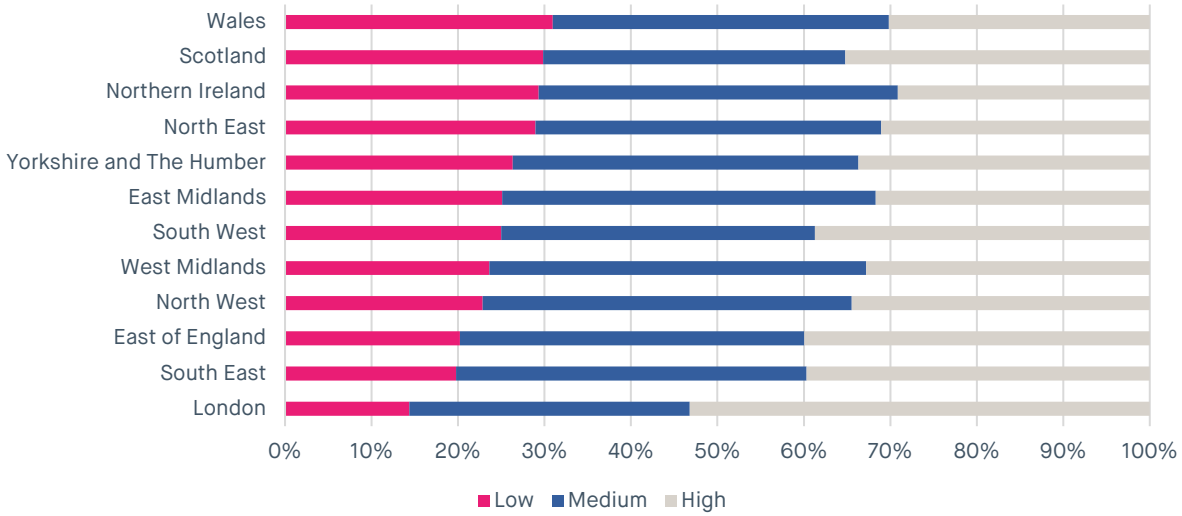
Based on the previous sector impact analysis, we are able to see the severity with which different regions may be affected over time (2020-2023).

London is likely to face the biggest coronavirus-induced underperformance as the majority (86% or £192.8 billion) of its total GVA is from sectors facing medium or high negative impacts. This includes from the banking, finance and insurance sector. In part

this is due to real estate which accounts for 40% of GVA for the banking, finance and insurance sector.

The regions that will be least affected in the future are those where output rests most heavily on sectors facing low negative impacts such as agriculture and fishing, energy and water, or public administration, education and health. Wales and Scotland will be least affected as almost a third (31% and 30% or £20.2 billion and £42.4 billion respectively) of their total output reliant on sectors least severely impacted by the medium-term impact of coronavirus, in comparison to London at just 14% (£64.7 billion).

Figure 9: Proportion of regional GVA by industrial coronavirus risk (2020-2023)



Source: SMF & ONS

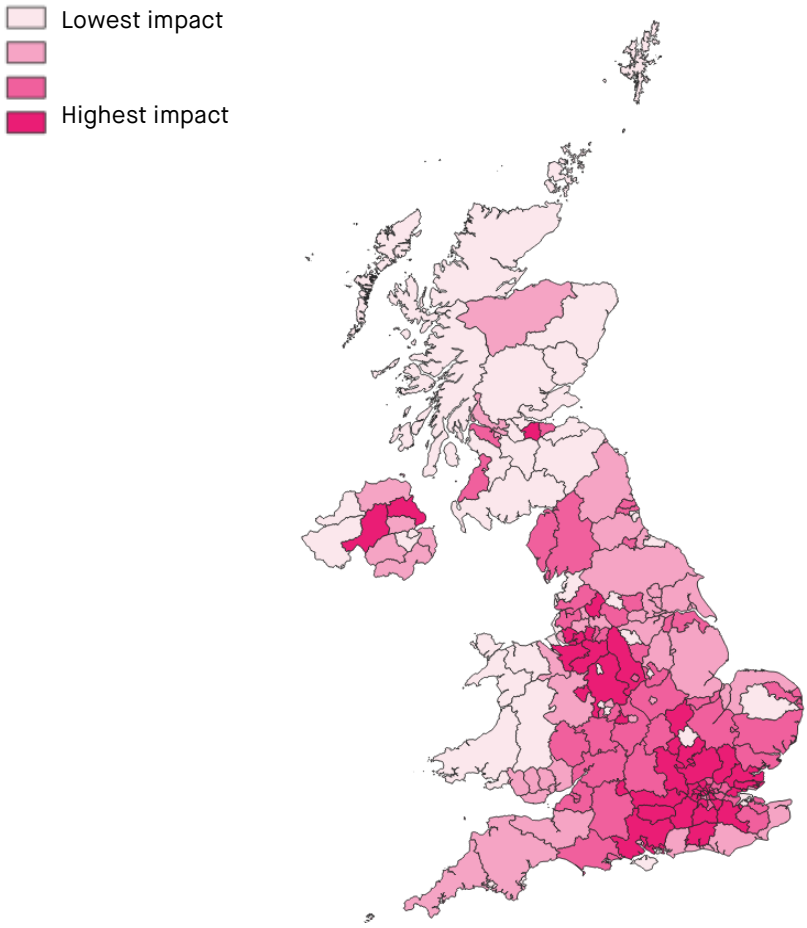
There are likely to be ripple effects between sectors as underperformance in one industry causes disruption in supply chains, impacting others.

However, the regional picture can mask some of the more local economic issues – as shown in Figure 10.

Although London's regional output is projected to see the most severe impact, areas outside the capital will also be significantly affected. Cheshire East and Solihull's local economies will likely face medium to long-term challenges to growth due to the reliance on impacted sectors such as wholesale and retail trade, real estate and manufacturing. Overall, 88% (£12 billion) and 87% (£8 billion) of Cheshire East and Solihull's GVAs (respectively) are dependent on more severely affected sectors.

Comparatively, over half (57% or £346 million) of Orkney Islands' output is reliant on sectors facing low negative impact such as human health and social work which accounts for almost a quarter (24% or £153 million) of total GVA.

Figure 10: Proportion of GVA from medium and high impact sectors NUTS3



Source: SMF analysis

10 highest impact areas[xii]

- Camden and City of London (93%)
- Tower Hamlets (90%)
- Hounslow and Richmond upon Thames (90%)
- Haringey and Islington (88%)
- North Hampshire (88%)
- Cheshire East (88%)
- Solihull (87%)
- Milton Keynes (86%)
- Hertfordshire (85%)
- West Kent (85)

10 lowest impact areas

- Orkney Islands (43%)
- Shetland Islands (50%)
- Na h-Eileanan Siar (57%)
- Blackpool (58%)
- Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute (59%)
- Powys (61%)
- South Teeside (61%)
- Derry City and Strabane (61%)
- Conwy and Denbighshire (61%)
- Isle of Wight (61%)

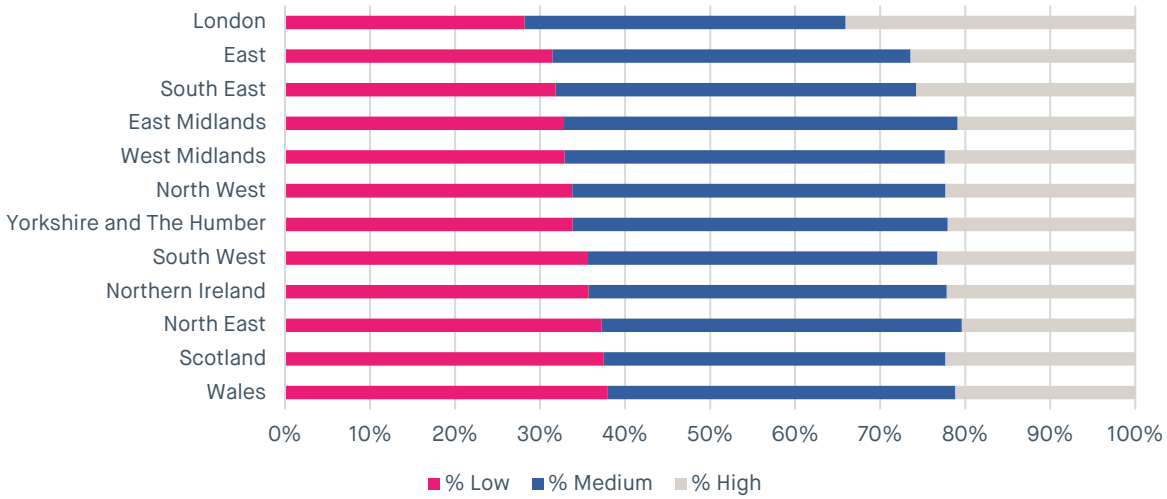
[xii] Percentage figures represent the proportion of local GVA that comprise industries facing moderate and severe coronavirus-related negative impacts (up to 2023).

Unemployment

GVA is not the only measure of economic performance – we can also see how reliant the local labour market is on the industries severely impacted by coronavirus.

A similar pattern emerges with 3.2 million (72%) London jobs are in industries facing the greatest impact in comparison to 859,000 (62%) in Wales – proportionally the least at risk region.[xiii] However, the scale of impact on jobs is not the same as on output with public sector jobs protecting around a third (33%) of the workforce across all regions.[xiv]

Figure 11: Proportion of regional employment by industrial coronavirus risk (2020-2023)



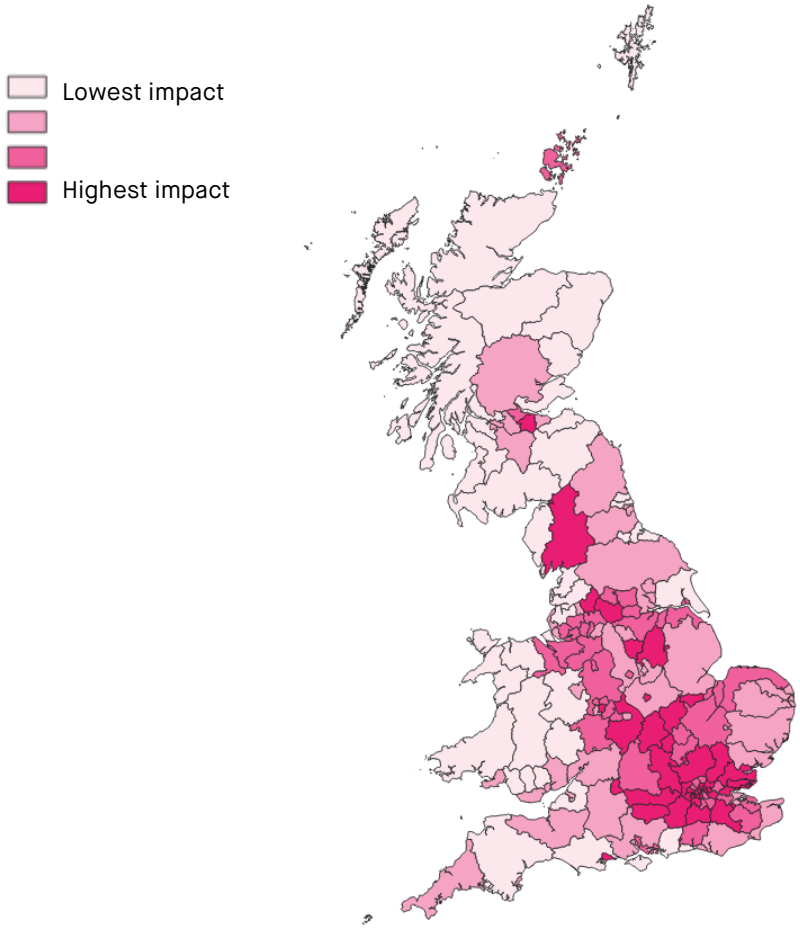
Source: SMF & ONS

Workers in the North West and Yorkshire & The Humber are likely to be moderately affected relative to other regions with two thirds (66% or 2.2 million and 1.6 million respectively) of jobs in sectors that face medium or high negative impact from coronavirus-related underperformance.

Local economies again show a similar pattern with workers in areas of London and the South East emerging as predominantly most severely affected. More than three quarters (79% or 108,700) of workers in Camden and City of London work in sectors that will be most impacted, such as finance, construction and real estate. Additionally, 78% (146,000) of workers in East Lancashire and 74% (82,500) in Swindon are in sectors likely to be severely affected over time. In comparison, nearly half (54% or 16,300) of the labour force in Isle of Anglesey is employed in low-impacted sectors such as public administration, education and health which accounts for 11,700 of total workers.

[xiii] Figures represent the proportion of jobs in sectors assessed as likely to experience medium and high medium-term economic scarring (up to 2023).
[xiv] Proportionally, public administration, education and health sector account for 29% of jobs in London (lowest) and 37% in the north east (highest).

Figure 12: Proportion of jobs in medium to high impact industries by NUTS3[xv]



Source: SMF analysis

10 highest impact areas

- Camden and City of London (79%)
- Kingston and Chelsea and Hammersmith and Fulham (79%)
- Lambeth (78%)
- East Lancashire (78%)
- Hounslow and Richmond upon Thames (76%)
- Ealing (75%)
- Tower Hamlets (75%)
- Westminster (74%)
- Swindon (74%)
- West Essex (74%)

10 lowest impact areas

- Isle of Anglesey (54%)
- South Ayrshire (57%)
- Conwy and Denbighshire (57%)
- Gwynedd (58%)
- Na h-Eileanan Siar (58%)
- Aberdeen City and Aberdeenshire (58%)
- Powys (58%)
- Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute (59%)
- West Cumbria (59%)
- South West Wales (59%)

[xv] Unfortunately, this analysis excludes Northern Ireland due to data availability

Summary of coronavirus impact

Coronavirus is expected to have a significant negative impact on the UK economy. A sluggish "U-shaped" recession is likely to follow the immediate lockdown-related downturn due to restrictions on supply and demand.

- NIESR predicts that GDP will fall by almost 7% in 2020 and will recover to pre-virus levels by 2022.
- Unemployment will likely increase by 1 million workers (7%) in 2020. OBR predicts unemployment will stay above pre-virus forecasts until 2023.

Sectoral impact

The severity of impact felt by different sectors over the next three years is dependent on how industries respond to both the coronavirus crisis and recessions more generally. We expect that construction and banking, finance and insurance etc will be the most severely impacted broad industries.

	Medium-long term sectoral impacts (up to 2023):	UK GVA (£ millions)	Contribution to UK GVA
Banking, finance & insurance etc	Severe (-)	£653,039	33%
Public admin, education & health	Mild (+/-)	£364,272	18%
Distribution, hotels & restaurants	Moderate (-)	£267,935	14%
Transport & Communication	Moderate (-)	£228,794	12%
Manufacturing	Moderate (-)	£191,157	10%
Construction	Severe (-)	£122,805	6%
Energy & water	Mild (+/-)	£72,979	4%
Other services	Moderate (-)	£69,569	4%
Agriculture & fishing	Mild (+/-)	£13,554	1%

Source: SMF analysis

Regional impact

Regions will be impacted differently depending on their industrial make up. Local economies differ by how their economic activity (GVA contribution) and employment derives from different sectors. Our analysis identifies which regions and places will face the most severe coronavirus-related economic impact over the next three years.

London will likely face the greatest proportional underperformance followed by the East of England, as they rely most heavily on the most-exposed sectors, while Wales and Scotland will be least affected. Underperformance in London will likely impact growth in other parts of the country. More locally, our analysis finds that areas most severely affected by the coronavirus crisis are also found in the South East and North West of England.

CHAPTER 4: BREXIT IN THE AGE OF CORONAVIRUS

Based on the evidence in the previous two chapters, Brexit (in either of the modelled forms) and coronavirus will both have an effect on the UK economy in 2021 and potentially 2022. The scale of the negative impact from the changed relationship with the EU will be highly dependent on the specifics of the trade agreement or whether a deal is even reached, all of which is yet to be decided. This uncertainty is matched by the range of theories on the shape of the recovery from coronavirus. Regardless of whether Britain is heading for a 'U' a 'V' or a 'W' shaped recovery after lockdown, ending the transition period on December 31st 2020 is likely to suppress growth further.

Sectoral impact

Based on the analysis in the previous chapters we can identify which industries are likely to experience a double economic impact from coronavirus and Brexit. Some industries which are likely to experience a medium to severe impact in 2021 / 2022 from coronavirus are also likely to face pressures when the UK leaves the EU, regardless of the deal. Some industries which may not need much government support during and following lockdown will need government support in 2021 under a WTO scenario and this could put further pressures on government finances.

Table 13: Magnitude of industry impact under coronavirus and FTA

		Coronavirus industry impact (to 2023)		
		Low	Medium	High
Trade policy impact compared to today (average FTA)	Low	Agriculture, Energy & Water	Transport & Communication	Construction
	Medium	Public admin, education & health	Manufacturing, Distribution, hotels & restaurants, Other services	Banking, finance & insurance etc
	High			

Source: SMF analysis

Table 14: Magnitude of industry impact under coronavirus and WTO

		Coronavirus industry impact (to 2023)		
		Low	Medium	High
Trade policy impact compared to today (WTO)	Low	Agriculture, Energy & Water	Transport & Communication	Construction
	Medium	Public admin, education & health	Distribution, hotels & restaurants, Other services	
	High		Manufacturing	Banking, finance & insurance etc

Source: SMF analysis

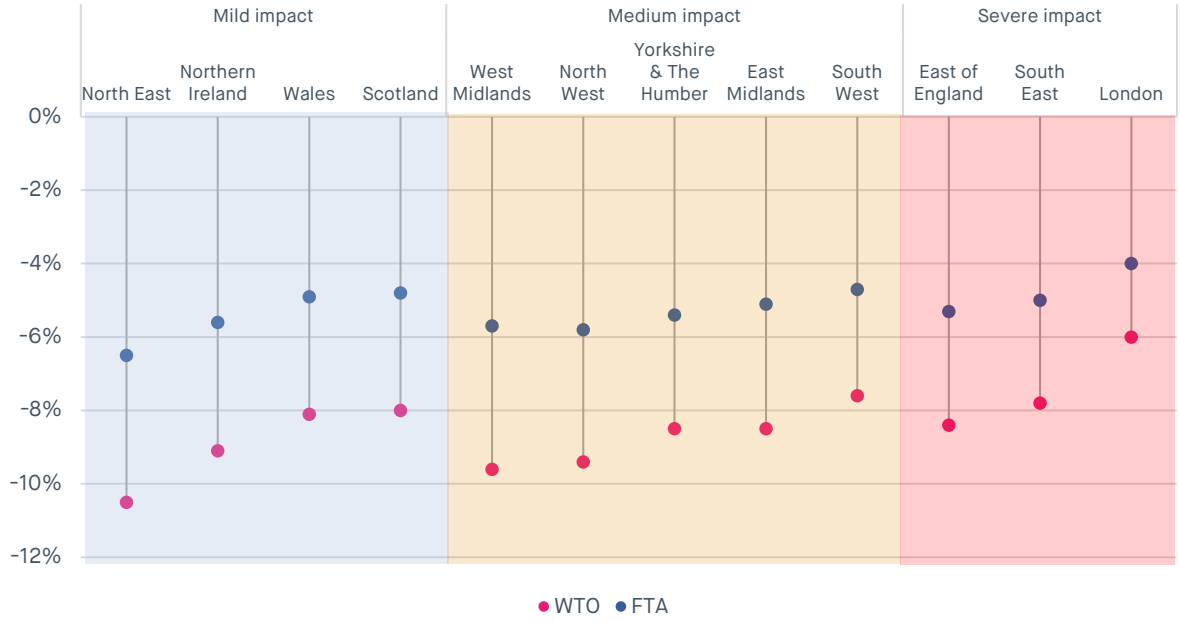
If the UK fails to secure a trade deal with the EU at the end of the transition period this would increase the impact of leaving the EU on a number of industries, particularly on manufacturing and banking, finance and insurance. While industries in the public admin, education and health sector will be relatively unaffected by coronavirus, mainly due to the increased health spending, they will be impacted by the end of the transition period and the smaller economy that this will bring.

It is likely that one of the knock-on effects of coronavirus is that people may be more cautious in their attitude towards international travel. There are also likely to be reductions in construction pipelines due to changes in the real estate market. These are industries that would not necessarily have been on the Government's list of sectors to support at the end of the transition period, however both transport and communication and construction are likely to be impacted by the economic consequences of coronavirus.

Regional impact

Our analysis has shown which regions are most likely to be affected by Brexit and coronavirus in isolation. However, now we look at areas of the country that are likely to face a double hit in the medium-term. While the North East economy faces the largest challenge at the end of the transition period, it is deemed to be mildly impacted from coronavirus using our industrial impact scale.

Figure 13: Scale of long-term economic impact of FTA and WTO combined with medium-term coronavirus impact

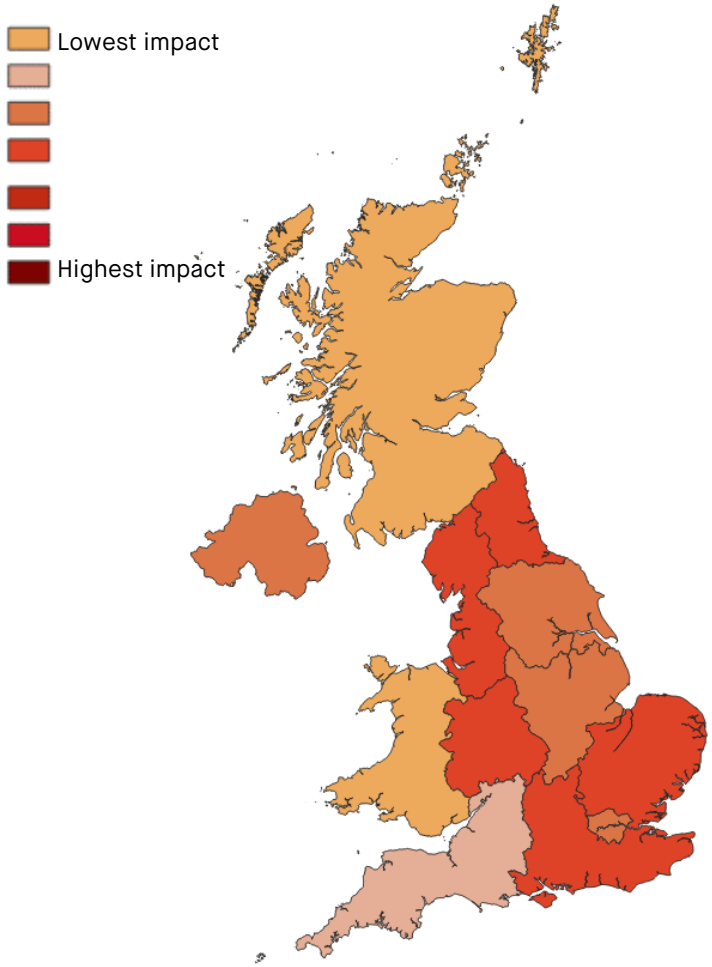


Source: SMF analysis & HM Government

In our analysis, the regions are ranked on a scale from 1 to 24 depending on the predicted impact from an FTA or failing to secure a deal (WTO terms) and then put into six groups of four.[xvi] We then compare the regional impact of either an FTA or WTO with our regional coronavirus impact. This is based on the regional industrial mix of GVA. This creates an impact scale ranging from 'Mild impact under WTO and coronavirus' to 'Severe impact under FTA and coronavirus'. The two maps below use this impact scale.

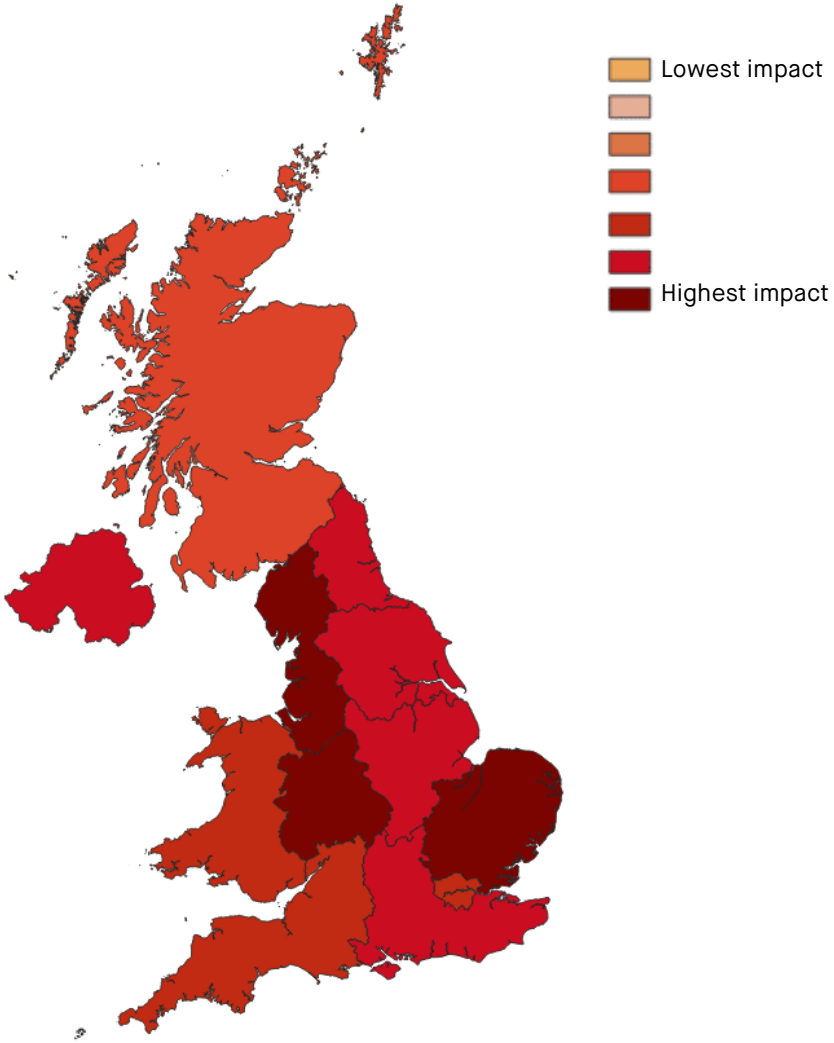
[xvi] See Appendix E for more details.

Figure 14: Magnitude of regional GVA impact under coronavirus and FTA



Source: SMF analysis and HM government

Figure 15: Magnitude of regional GVA impact under coronavirus and WTO



Source: SMF analysis and HM government

It is apparent from the maps above that the highest impact is felt in the scenario where the UK fails to negotiate a deal with the European Union. In this case, the North West, West Midlands and East of England are likely to face the most severe double impact due to the compounding effect of coronavirus.

In the event that a deal is not secure and FTA rules apply, the five English regions most affected by the double impact of coronavirus and an FTA are the South East, East of England, West Midlands, North West and North East. They have different economies and have different reasons for being most affected under an FTA. The South East and East of England are not due to be as severely impacted by Brexit but 40% of their GVA comes from industries we assess as likely to be highly impacted by coronavirus in the medium-term.

The most severe impacts are seen in the scenario where the UK leaves the EU without a deal. In this situation, the most impacted regions are the East of England, West Midlands and the North East. The North West of England and the West Midlands are two of the most negatively impacted regions by the UK leaving the EU without a deal (according to earlier HM Government analysis). However, they are likely to experience a 'medium' impact from changes to their local economy from coronavirus – this is due to the importance of manufacturing and distribution, hotels and restaurants to their regional GVA.

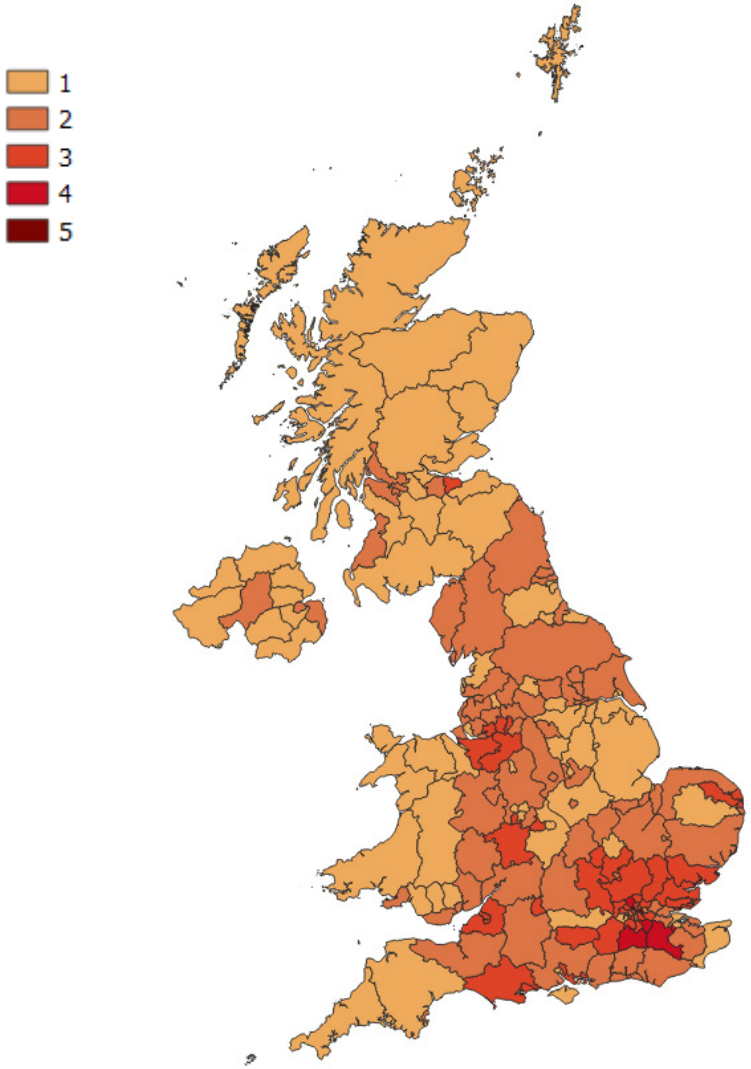
Local area impact

The Government has not published official analysis of how Brexit may impact local areas. However, our analysis shows how different areas of the country rely on industries which will experience different magnitudes of impact from both coronavirus and Brexit, based firstly on GVA and in the later part of this section, jobs. This analysis does not account for how reliant the local area is on trade in goods or services with the EU.

Double impact on GVA

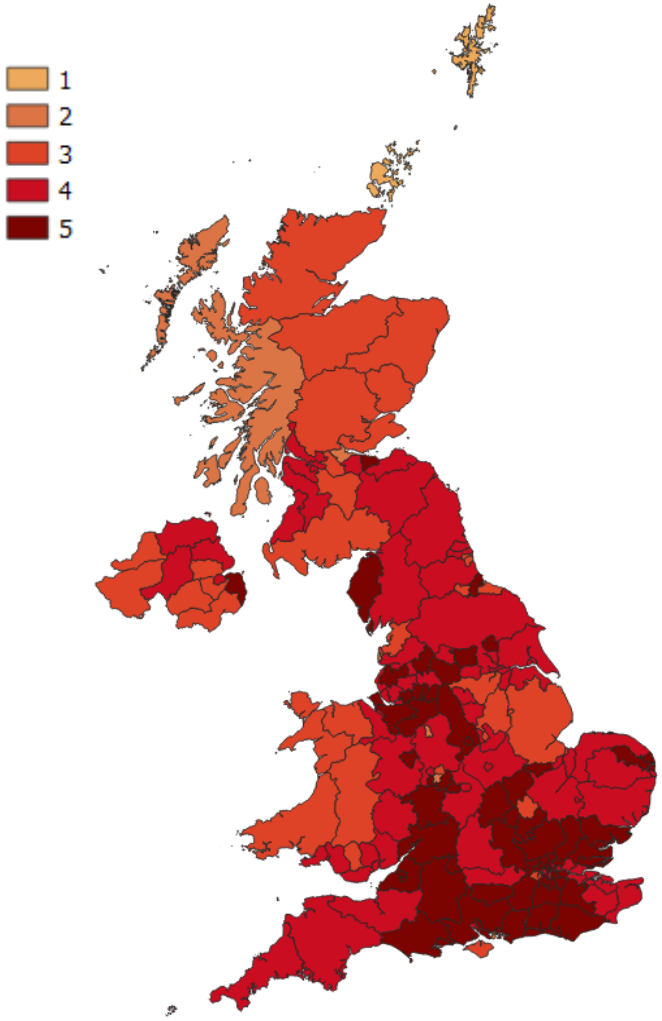
The maps below represent the combined impact on each NUTS3 area of Brexit (either FTA or WTO variant) and the coronavirus on local GVA. The impacts under coronavirus and either Brexit scenario have been categorised into five quintiles of severity, with 1 representing the mildest harm and 5 the most severe, the same scale applies across bot maps.

Figure 16: Magnitude of local area GVA impact under coronavirus and FTA (quintile 1= lowest, 5 = highest)



Source: SMF analysis

Figure 17: Magnitude of local area GVA impact under coronavirus and WTO (quintile 1= lowest, 5 = highest)



Source: SMF analysis

If the UK was to secure an FTA, the impact of this, combined with the economic effect of this year's coronavirus, means the areas hardest-hit by the two effects will be parts of London and the South of England. The North West and West Midlands are the only two regions with areas ranked into the third quintile of impact due to their reliance on industries such as distribution, hotels and restaurants and manufacturing.

If the UK fails to secure a deal and WTO terms apply the economic impact of Brexit is more severe. There are only two areas who rank in the lowest impact quintile (Orkney Islands and Shetland Islands). In contrast there are 70 areas ranking in the top quintile for the magnitude of impact from coronavirus and if the UK fails to secure a deal (full list in Appendix F). The vast majority (95%) of local areas in London are in quintile 4 and 5 and therefore likely to be face a high double impact from a Brexit under WTO terms and the coronavirus. A similar picture emerges amongst the other regions in the South of England. However, 50% of areas in the North West of England are also in quintile 5 and a further 40% are in quintile 4.

These areas have a substantial proportion of their local GVA coming from sectors likely to be severely impacted under coronavirus. If we focus on those most likely to be impacted by the severe hit from the coronavirus and the UK failing to secure a deal, then 13 of the 70 areas mentioned above have more than 50% of their GVA coming from these two industries. These are listed in Table 15. Four of the top 13 are in the North West and three are in London, it is clear that the double impact will be felt in a variety of areas and regions.

Table 15: List of areas in Q5 of coronavirus and WTO analysis with more than 50% of GVA from manufacturing, finance, banking, insurance etc.

Local areas (NUTS 3)	Region	GVA from manufacturing and finance, banking, insurance etc.
Camden and City of London	London	71%
Tower Hamlets	London	68%
Cheshire East	North West	62%
East Surrey	South East	56%
Swindon	South West	56%
Solihull	West Midlands	55%
Cheshire West and Chester	North West	55%
Telford and Wrekin	West Midlands	53%
East Lancashire	North West	53%
West Cumbria	North West	52%
City of Edinburgh	Scotland	51%
West Kent	South East	50%
Bromley	London	50%

Source: SMF analysis

It is clear from the analysis above that ending the Brexit transition without a trade deal with the European Union is likely to severely impact parts of the country that are also likely to suffer most from the medium-term economic consequences of coronavirus.

While the picture may look bad for areas of London, the South East and East of England, it is important to consider the pockets of severe impact in the North West and West

Midlands. The last recession in the UK has shown us that some areas are more resilient to economic downturns and are able to recover more quickly. The UK economy took five years to recover from the financial crisis in 2008 (in terms of GVA). The services sector was able to recover much more quickly than other sectors with output returning to a pre-crisis level in 2012. On the other hand, ten years on from that downturn, manufacturing and production had still not returned to their 2008 levels.[56] The implication of this is that some areas of the country have experienced very different rates of growth in the years that followed the crisis and subsequently took a very long time to recover from the 2008 crisis.

Double impact on jobs

There is a difference between the industrial components of GVA and jobs in a local area and therefore it is important to consider both economic indicators. Based on the same weighted industrial impact rankings we can create quintiles of impact, using the same methodology as above but with job composition rather than GVA.[xvii]

Again, it is clear to see that the severity of impact is highest in the scenario where the UK fails to negotiate a deal with the EU. There are 66 areas in quintile 5 of double impact from coronavirus and the situation where the UK fails to secure a deal and trades unto WTO terms with the EU.[xviii] One sixth (11 out of 66) of the areas have more than a third of their labour market working in either manufacturing or finance, banking and insurance etc. (the two industries most impacted). Across the 66 areas a total of 3.9 million people are employed in these two industries. Four of the 66 areas have more than 100,000 jobs in these two industries. These are:

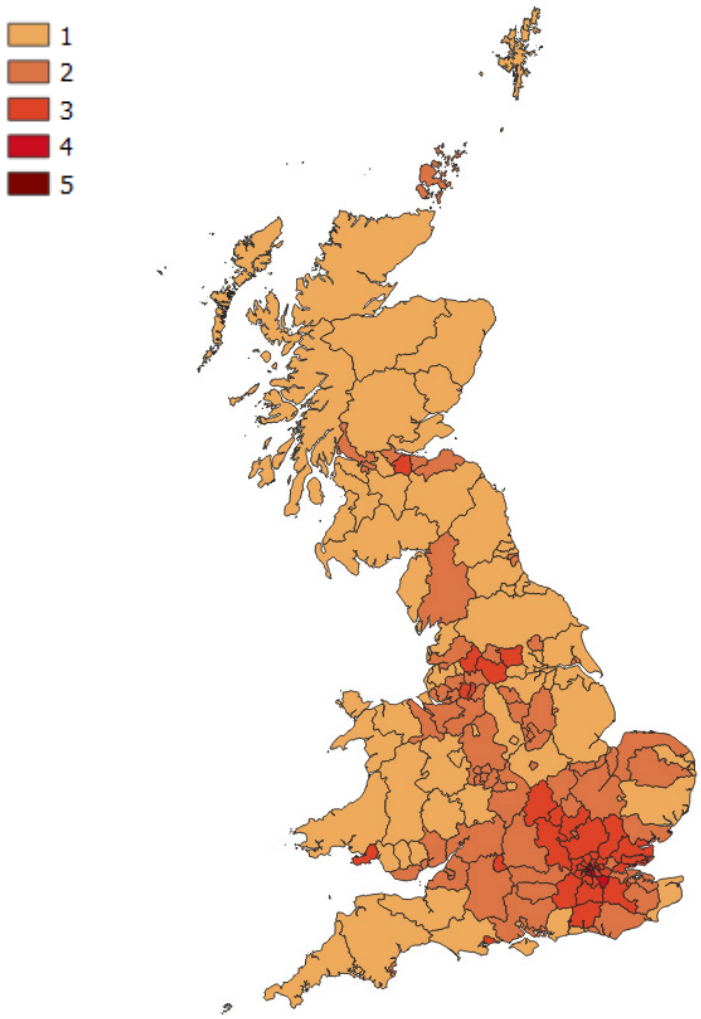
Table 16: Areas in quintile 5 of coronavirus and WTO impact with more than 100,000 jobs in manufacturing, finance, banking and insurance etc.

Local areas (NUTS3)	Region	Jobs in manufacturing, finance, banking and insurance etc.
Hertfordshire	East of England	160,400
Berkshire	South East	131,100
West Surrey	South East	118,400
Leeds	Yorkshire & The Humber	109,000

Source: SMF analysis

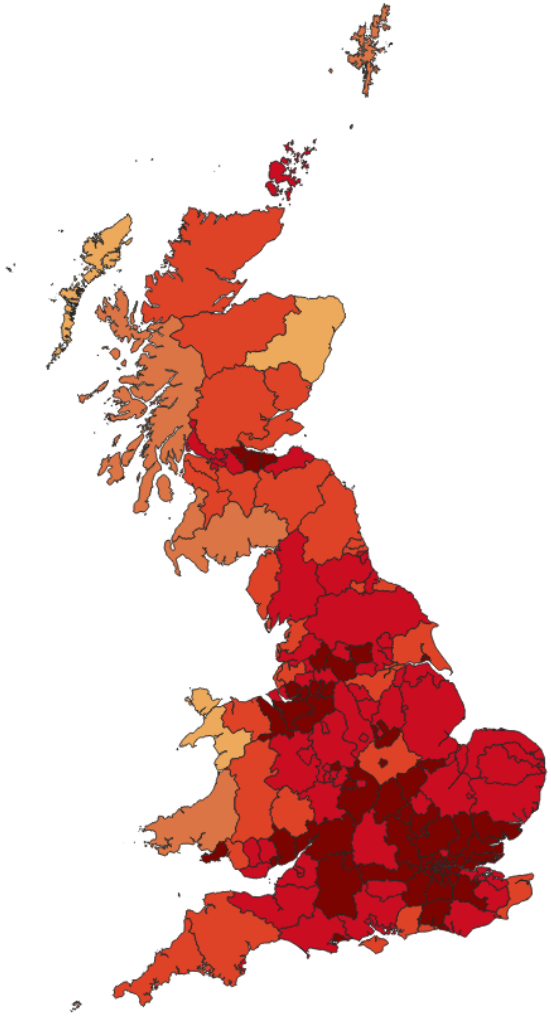
[xvii] Unfortunately, this analysis excludes Northern Ireland due to data availability
[xviii] A list of the 66 areas are in Appendix G

Figure 18: Magnitude of local area job impact under coronavirus and FTA (quintile 1= lowest, 5 = highest)



Source: SMF analysis

Figure 19: Magnitude of local area job impact under coronavirus and WTO (quintile 1= lowest, 5 = highest)



Source: SMF analysis

Fiscal implications

Coronavirus is having an immediate impact on the Government's fiscal position. The OBR has calculated the direct impact of the policy response on cash borrowing in 2020-21 to be £123 billion.[57] To put this into perspective total health spending in England in 2018/19 was £129 billion.[58]

All of the trade deal scenarios leave the UK economy smaller than it would have been if the UK had remained in the EU – therefore tax revenue will also be smaller than it would have been. Revenue losses will be most apparent following the transition period when the UK experiences barriers to trade (dependent upon the deal secure). Revenue losses will be compounded by the impact of the coronavirus of economic growth.

Research by NIESR has projected that under a Johnson FTA, tax revenues will be lower by about £10 billion per year in the next Parliament and by about £30 billion in the long-term (by 2030). However, this does not include benefits from not having to contribute to the EU budget, although these benefits may be modest due to 'divorce bill' costs. Therefore, the net revenue shortfall of leaving the EU under the terms of a Johnson deal is estimated at £4 billion per year in the next Parliament and just under £20 billion per year in the long-term.[59] This is almost equivalent to the budget for the Department for Transport.[60]

In the event that the UK fails to secure a deal with the EU, it is likely that the Government would need to bring about a stimulus package to support specific industries and parts of the country. This includes industries and parts of the country that may have been relatively unaffected by coronavirus. This could lead to further increases in government expenditure as the need for government support continues to grow. Given the large increase in government expenditure as a result of coronavirus it is hard to see how the Government could afford another stimulus package in early 2021 without adding to already unprecedented borrowing and potentially testing the patience of gilt buyers.

Immigration

The UK points-based system will be implemented after the end of transition period. The aim of the new system is to move UK immigration towards more highly skilled occupations. However, the global pandemic could cause a shortage in workers looking to migrate internationally. There is a risk that the UK may find itself in competition for international workers with countries that were able to contain coronavirus more quickly than the UK.

Coronavirus has bought with it a need for more workers in certain industries, often ones which are reliant on labour from the EU and who do not meet the minimum income thresholds, such as social care. There is a risk that these sectors could face workforce shortages in 2021.

Summary of double impact from coronavirus and ending the transition period

Regardless of whether the UK is heading for a 'U' a 'V' or a 'W' shaped recovery after lockdown, ending the transition period on December 31st 2020 is likely to suppress growth further.

Sectoral impact

If the UK fails to secure a trade deal with the EU at the end of the transition period this would increase the impact of leaving the EU on several industries, particularly on manufacturing and banking, finance and insurance. While industries in the public admin, education and health sector will be relatively unaffected by coronavirus, mainly due to the increased health spending, they will be impacted by the end of the transition period and the smaller economy that this may bring.

Regional impact

In the FTA scenario the five English regions most affected by the double impact of coronavirus and Brexit are the South East, East of England, West Midlands, North West and North East. If a deal is not secured, the North West, West Midlands and East of England are likely to face the most severe double impact due to the compounding effect of coronavirus.

Local area impact

If the UK was to secure an FTA, the impact of this, combined with the economic effect of this year's coronavirus, means the areas hardest-hit by the two effects will be parts of London and the South of England. With negative impacts also being felt in parts of the North West and West Midlands.

If the UK fails to secure a deal and WTO terms apply the economic impact of Brexit is more severe. There are 66 areas in quintile 5 of double impact under WTO term.

- The vast majority (95%) of local areas in London are in quintile 4 and 5 for high impact.
- Half (50%) of areas in the North West of England are also in quintile 5 and a further 40% are in quintile 4.
- One sixth (11 out of 66) of the areas have more than a third of their labour market working in either manufacturing or finance, banking and insurance etc.

Other implications

Given the large increase in government expenditure as a result of coronavirus the stimulus packages that might be needed due to the end of the transition period in early 2021 will add to already unprecedented borrowing.

Coronavirus has bought with it a need for more workers in certain industries, often ones which are reliant on labour from the EU and who do not meet the minimum income thresholds, such as social care. There is a risk that these sectors could face workforce shortages in 2021.

APPENDIX A: BREXIT MODEL ASSUMPTIONS

Details of model assumptions used in Figure 1:[61]

	Existing EU FTAs	New FTAs
Bertelsmann	EEA – retain access WTO – lose access	None
CEP	Retain access	None
CPB	Retain access	None
Ciuriak	Retain access	USA: +0.3% to GDP China, Japan, ASEAN and India: +0.6% to GDP
EFT	Retain access	None
HMG	Retain access	USA: +0.1%–0.3% to GDP China, Australia, New Zealand, Japan, ASEAN and India: +0.1–0.4% to GDP
NIESR	Lose access	None
OECD	Lose access	None
Open Europe	Retain access	See Ciuriak[37]
Oxford Economics	Retain access	None
PwC	FTA – retain access WTO – renegotiate by 2026	USA deal (2021): Cuts cost of exports by 0.4% USA deal (2026): Cuts cost of exports by 0.4%
Rabobank	Lose access but renegotiate 40% of them	None
RAND	Retain access	USA deal: +2.4% (relative to a WTO baseline)
Treasury	Lose access but renegotiate over 15 years	None

Details of model assumptions used in Table 1:[62]

The model divides the world into 31 sectors and 35 regions, including the UK and the major EU economies. It features trade in intermediate inputs, which are used in the production of each sector's output and takes account of how changes in trade barriers affect income levels through their impact on the UK's trade with both the EU and the rest of the world.

The model makes a number of assumptions about how trade costs between the UK and the EU will change under Mr Johnson's proposals. They divide changes in trade costs into three parts: first, tariffs on goods trade; second, non-tariff barriers to trade arising from customs checks, product standards and regulations, and other costs of cross-border trade; and, third, the loss to the UK of not benefiting from any future steps the EU takes towards reducing non-tariff barriers through deeper integration within the single market.

For the WTO estimation, not only would the UK leave both the single market and the customs union, but there would be no UK-EU free trade agreement. UK-EU goods trade would be subject to the EU's most-favoured nation tariffs, and all UK-EU trade would face an increase in non-tariff barriers three-quarters as large as the estimated reducible non-

tariff barriers between the EU and the US. This assumption reflects the judgment that, because of the close integration that currently exists between the UK and EU, even without a free trade agreement non-tariff barriers on UK-EU trade would be lower than on EU-US trade. It implies an increase in non-tariff barriers of 8.3%. We also assume that, in line with estimates of the rate of cross-country price convergence, intra-EU trade costs fall 40% faster than trade costs in the rest of the world over the ten-year forecast period, but UK-EU trade costs do not. Assuming the fall in trade costs applies to three-quarters of reducible non-tariff barriers, this implies a 12.7% reduction in intra-EU non-tariff barriers that the UK does not benefit from.

Under a 'Canada minus' trade agreement involves higher trade barriers than a customs union. The model assumes UK-EU goods trade would be subject to half of the reducible non-tariff barriers between the EU and the US under Mr Johnson's proposals. Non-tariff barriers increase by 5.5%. Johnson's deal does not reduce non-tariff barriers on trade in service by much compared to trading on WTO terms. The model assumes services trade would be subject to two-thirds of the estimated reducible non-tariff barriers between the EU and the US, implying a 7.3% increase. The model assumes that after Brexit the UK does not benefit from future reductions in intra-EU trade costs.

In both the WTO scenario and Johnson's deal intra-EU trade costs fall 40% faster than trade costs in the rest of the world over the ten-year forecast period, but UK-EU trade costs do not. For Mr Johnson's proposals we assume that the fall in trade costs only applies to half of reducible non-tariff barriers in goods, while for services it applies to two-thirds.

APPENDIX B: EXPLANATION OF POINTS-BASED SYSTEM

Skilled workers

Those wishing to migrate to the UK under the employer-led system will need to demonstrate that they have a job offer from an approved sponsor, that the job offer is at the required skill level, and that they speak English. In addition to this, if the applicant earns more than the higher of the going rate in their field (the specific salary threshold) and the general salary threshold (£25,600) (the minimum salary threshold) then the individual would be eligible to make an application. This means they have met the 70 points needed to apply.

However, if they earn less than the required minimum salary threshold, but no less than £20,480, they may still be able to come to the UK if they can demonstrate that they have a job offer in a specific shortage occupation, as designated by the Migration Advisory Committee (MAC), or that they have a PhD relevant to the job. Applicants will be able to 'trade' characteristics such as their specific job offer and qualifications against a salary lower than the minimum salary threshold. There will be reduced salary requirements – set 30% lower – for new entrants to the labour market.

Characteristics	Tradeable	Points
Offer of job by approved sponsor	No	20
Job at appropriate skill level	No	20
Speaks English at required level	No	10
Salary of £20,480 (minimum) – £23,039	Yes	0
Salary of £23,040 – £25,599	Yes	10
Salary of £25,600 or above	Yes	20
Job in a shortage occupation (as designated by the MAC)	Yes	20
Education qualification: PhD in subject relevant to the job	Yes	10
Education qualification: PhD in a STEM subject relevant to the job	Yes	20

Highly-skilled workers

From January 2021, the Government intends to extend the current Global Talent route to EU citizens. The most highly skilled, who can achieve the required level of points, will be able to enter the UK without a job offer if they are endorsed by a relevant and competent body. This scheme is mainly targeted at academics and researchers in specific sectors and has recently been expanded to be more accessible to those with a background in STEM subjects who wish to come to the UK.

Separately, in line with the recommendations from the MAC, the Government will create a broader unsponsored route within the points-based system to run alongside the employer-led system, but unlike the employer-led system the numbers coming in under the broader unsponsored route would be capped.

Low-skilled workers

Following the end of the transition period and of free movement of EU workers to the UK, the Government will not implement a route for low-skilled workers. Those coming in temporarily under the seasonal agriculture scheme and the youth mobility scheme will be available for these jobs, as will those who lawfully come into the country under other immigration routes, such as family migrants and refugees.

APPENDIX C: CORONAVIRUS MODEL ASSUMPTIONS

Details of forecast assumptions used in Chapter 3 by organisation and date of forecast.

Due to the uncertainty surrounding the pandemic, external economic estimates vary in their assumptions of the duration and nature of the virus and the corresponding lockdown. As a result, estimates of the impact of coronavirus on the UK economy largely differ per data source.

IMF (14th April) – The baseline scenario assumes that the pandemic fades in the second half of 2020 and containment efforts can be gradually unwound. This model projects a drop of 6.5% in 2020 and a growth of 4% in 2021.[63]

OBR (14th April) – This model assumes that the current economic lockdown will last for three months. Consequently, the projected impact of restrictions is a GDP fall of 35% in Q2 of 2020; the downturn is then halved in Q3 of 2020 (growing by 27%) and returns to pre-outbreak levels in Q4. This scenario assumes that it is not necessary to reimpose restrictions for a second surge of the virus and long-term economic scarring is not accounted for.[64]

NIESR (28th April) – The main-case forecast scenario assumes that the lockdown period starts to be eased from the middle of May and that economic activity safely resumes in the second half of 2020. During this time, the Government continues to support businesses and jobs through various fiscal schemes, which limits a degree of long-term damage to the economy. With lockdown assumed to be in place from mid-March to mid-May, it is forecasted that UK GDP falls by ~5% in Q1 of 2020 and 15% in Q2. As lockdown restrictions are eased, GDP recovers rising by 20% in Q3 and 7% in Q4. Overall, GDP returns to its Q4 2019 level by Q4 2021.[65]

KPMG (29th April) – The base case forecasts assumes lockdown will last an initial 10-weeks starting at the end of March, followed by two further four-weeks in August and November 2020. It is also assumed that a vaccine becomes available in January 2021, allowing the removal of all restrictions shortly afterwards. GDP is expected to contract by nearly 8% in 2020 before recovering in 2021 due to a sharp setback in household consumption and overall investment, which is only partially offset by an increase in government spending.[66]

PwC (6th May) – Two scenarios are modelled to project a 'smooth' exit and a 'bumpy' exit. The smooth exit assumes that the virus peaks in April 2020 and lockdown restrictions are lifted gradual phases from late May onwards. As a result, GDP falls by ~12% in Q2 but output recovers relatively quickly as restrictions are eased and economic lifestyle returns to normal (GDP returns to just 1.5% below pre-crisis levels by the end of 2021). Alternatively, the bumpy exit scenario projects larger scarring effects due to a smaller second surge in the later months of 2020. Consequently, GDP is expected to fall by 16% in Q2 2020 returning to 4% below pre-crisis levels by the end of 2021. Both scenarios assume a vaccine will be available from June 2021.[67]

EY ITEM Club (27th April/May) – Projections are based on the assumption that the lockdown begins easing in late Q2 and continues over Q3. Recovery is aided by pent-up demand emerging as restrictions ease following the collapse in consumer spending during lockdown. While it is assumed that the Government's support schemes limit the potential for long-term damage, unemployment will limit the capacity for recovery. As a result, the economy is not expected to return to its Q4 2019 size until Q1 2023. This

forecast also makes the assumption that the UK and EU avoid a 'no deal' outcome at the end of 2020.[68] Figures in Table 5, 6, 8 and 9 are updated in line with EY's May submission to the HMT consensus.

HMT consensus (20th May) – The projections provided are summarised averages from a range of independent forecasts, each with their own assumptions which do not reflect the Treasury's own views.[69]

APPENDIX D: INDUSTRY GROUPING

Industry	Job codes
Agriculture & fishing	Agriculture, forestry and fishing
Energy & water	Mining and Quarrying
	Electricity, gas, steam and air conditioning supply. Water supply; sewerage, waste management and remediation activities
Manufacturing	Manufacturing
Construction	Construction
Distribution, hotels & restaurants	Wholesale and retail trade; repair of motor vehicles and motorcycles
	Accommodation and food services
Transport & Communication	Transportation and storage
	Information and communication
Banking, finance & insurance etc	Financial and Insurance activities
	Real estate
	Professional, scientific and technical activities
	Administrative and support activities
Public admin, education & health	Public administration and defence
	Education
	Human health and social work activities
Other services	Arts entertainment and recreation
	Other service activities
	Activities of households as employers

APPENDIX E: BREXIT IMPACT ORDERING

Region rank for Brexit, 1 to 24, based on HM government analysis.[70]

Rank	Region	Model	Impact
1	North East	WTO	-10.50%
2	West Midlands	WTO	-9.60%
3	North West	WTO	-9.40%
4	Northern Ireland	WTO	-9.10%
5	Yorkshire & The Humber	WTO	-8.50%
6	East Midlands	WTO	-8.50%
7	East of England	WTO	-8.40%
8	Wales	WTO	-8.10%
9	Scotland	WTO	-8%
10	South East	WTO	-7.80%
11	South West	WTO	-7.60%
12	North East	FTA	-6.50%
13	London	WTO	-6%
14	North West	FTA	-5.80%
15	West Midlands	FTA	-5.70%
16	Northern Ireland	FTA	-5.60%
17	Yorkshire & The Humber	FTA	-5.40%
18	East of England	FTA	-5.30%
19	East Midlands	FTA	-5.10%
20	South East	FTA	-5%
21	Wales	FTA	-4.90%
22	Scotland	FTA	-4.80%
23	South West	FTA	-4.70%
24	London	FTA	-4%

APPENDIX F: LOCAL AREAS IN QUINTILE 5 OF GVA IMPACT UNDER CORONAVIRUS AND WTO TERMS

Local area	Region	Jobs in severely impacted sectors[xix]
Hartlepool and Stockton-on-Tees	North East (England)	25%
West Cumbria	North West (England)	28%
Manchester	North West (England)	25%
Greater Manchester South West	North West (England)	29%
Greater Manchester South East	North West (England)	30%
East Lancashire	North West (England)	30%
Chorley and West Lancashire	North West (England)	26%
Warrington	North West (England)	30%
Cheshire East	North West (England)	29%
Cheshire West and Chester	North West (England)	29%
Wirral	North West (England)	25%
York	Yorkshire and The Humber	23%
Leeds	Yorkshire and The Humber	29%
Calderdale and Kirklees	Yorkshire and The Humber	30%
Derby	East Midlands (England)	28%
South and West Derbyshire	East Midlands (England)	29%
West Northamptonshire	East Midlands (England)	34%
North Northamptonshire	East Midlands (England)	26%
Worcestershire	West Midlands (England)	27%
Telford and Wrekin	West Midlands (England)	29%
Birmingham	West Midlands (England)	27%
Solihull	West Midlands (England)	31%
Dudley	West Midlands (England)	26%
Peterborough	East of England	28%
Norwich and East Norfolk	East of England	24%
Luton	East of England	26%
Hertfordshire	East of England	27%
Central Bedfordshire	East of England	30%
Southend-on-Sea	East of England	34%
Essex Haven Gateway	East of England	27%
West Essex	East of England	34%
Heart of Essex	East of England	29%
Essex Thames Gateway	East of England	25%
Camden and City of London	London	39%
Westminster	London	41%
Wandsworth	London	39%
Tower Hamlets	London	34%
Haringey and Islington	London	27%
Lewisham and Southwark	London	28%
Bexley and Greenwich	London	28%
Redbridge and Waltham Forest	London	28%
Enfield	London	21%

[xix] **'Medium WTO & severe coronavirus', 'Severe WTO & medium coronavirus' and 'Severe WTO and severe coronavirus'**

Bromley	London	35%
Croydon	London	28%
Merton, Kingston upon Thames and Sutton	London	30%
Barnet	London	30%
Brent	London	30%
Ealing	London	28%
Harrow and Hillingdon	London	27%
Milton Keynes	South East (England)	28%
Buckinghamshire CC	South East (England)	31%
Brighton and Hove	South East (England)	26%
East Sussex CC	South East (England)	21%
West Surrey	South East (England)	30%
East Surrey	South East (England)	31%
West Sussex (South West)	South East (England)	21%
West Sussex (North East)	South East (England)	31%
South Hampshire	South East (England)	27%
Central Hampshire	South East (England)	27%
North Hampshire	South East (England)	26%
West Kent	South East (England)	27%
Bristol, City of	South West (England)	26%
Bath and North East Somerset, North Somerset and South Gloucestershire	South West (England)	26%
Gloucestershire	South West (England)	29%
Swindon	South West (England)	34%
Wiltshire	South West (England)	28%
Bournemouth and Poole	South West (England)	29%
Dorset CC	South West (England)	27%
City of Edinburgh	Scotland	25%
Ards and North Down	Northern Ireland	N/A

APPENDIX G: LOCAL AREAS IN QUINTILE 5 OF JOB IMPACT UNDER CORONAVIRUS AND WTO TERMS

		Jobs in manufacturing & banking finance	
Name	**Region**	**Number of jobs**	**Percentage of all jobs**
Westminster	London	49,500	41%
Wandsworth	London	74,400	39%
Camden and City of London	London	52,800	39%
Kensington & Chelsea and Hammersmith & Fulham	London	61,700	38%
Bromley	London	58,800	35%
Lambeth	London	66,800	35%
West Northamptonshire	East Midlands (England)	68,200	34%
Tower Hamlets	London	57,100	34%
Southend-on-Sea	East of England	29,100	34%
Swindon	South West (England)	37,400	34%
West Essex	East of England	48,300	34%
Flintshire and Wrexham	Wales	43,100	31%
Buckinghamshire CC	South East (England)	80,700	31%
East Surrey	South East (England)	60,500	31%
Solihull	West Midlands (England)	29,900	31%
West Sussex (North East)	South East (England)	61,600	31%
Leicester	East Midlands (England)	51,200	31%
Merton, Kingston upon Thames and Sutton	London	93,200	30%
Warwickshire	West Midlands (England)	83,000	30%
Warrington	North West (England)	31,200	30%
Barnet	London	57,600	30%
West Surrey	South East (England)	118,400	30%
Calderdale and Kirklees	Yorkshire and The Humber	86,200	30%
Falkirk	Scotland	22,300	30%
Greater Manchester South East	North West (England)	70,700	30%
East Lancashire	North West (England)	43,400	30%
Central Bedfordshire	East of England	42,600	30%
Brent	London	46,800	30%
West Lothian	Scotland	26,600	29%
Kingston upon Hull, City of	Yorkshire and The Humber	35,000	29%
Cheshire East	North West (England)	53,000	29%
Greater Manchester South West	North West (England)	68,800	29%
Monmouthshire and Newport	Wales	31,700	29%
Bournemouth and Poole	South West (England)	50,200	29%
Gloucestershire	South West (England)	89,300	29%
Cheshire West and Chester	North West (England)	44,900	29%

Heart of Essex	East of England	44,200	29%
Leeds	Yorkshire and The Humber	109,000	29%
Hounslow and Richmond upon Thames	London	65,600	29%
Berkshire	South East (England)	131,100	29%
Peterborough	East of England	26,300	28%
Lewisham and Southwark	London	99,700	28%
Bexley and Greenwich	London	75,900	28%
Walsall	West Midlands (England)	34,300	28%
Milton Keynes	South East (England)	37,700	28%
Ealing	London	45,600	28%
East Merseyside	North West (England)	59,100	28%
South Nottinghamshire	East Midlands (England)	47,100	28%
Hackney and Newham	London	90,600	28%
Redbridge and Waltham Forest	London	78,500	28%
Croydon	London	52,100	28%
Wiltshire	South West (England)	63,200	28%
Hertfordshire	East of England	160,400	27%
Essex Haven Gateway	East of England	58,100	27%
West Kent	South East (England)	48,700	27%
Haringey and Islington	London	77,100	27%
Harrow and Hillingdon	London	67,000	27%
Swansea	Wales	28,600	27%
North Northamptonshire	East Midlands (England)	44,900	26%
Thurrock	East of England	22,200	26%
Brighton and Hove	South East (England)	40,900	26%
Luton	East of England	25,300	26%
Edinburgh, City of	Scotland	67,900	25%
Barking & Dagenham and Havering	London	53,900	25%
Essex Thames Gateway	East of England	43,700	25%
Manchester	North West (England)	64,000	25%

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