Sectoral Impact Analysis and Brexit Readiness Assessment

Sectoral Impact Analysis – Final Report

January 2019

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Reliance restricted

Director of International Trade and Investment
Scottish Government
5 Atlantic Quay
150 Broomielaw
Glasgow G2 8LU

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Sectoral Impact Analysis

We attach our Sectoral Impact Analysis report, prepared in accordance with our contract for Case 419628: Sectoral Impact Analysis and Readiness for Brexit Assessment dated 17 September 2018 (the “Contract”). For the avoidance of doubt, this report relates to milestone 5 of the Statement of requirements, as set out in the Contract.

Purpose of our report

In accordance with your instructions, our report has been prepared for use by the Scottish Government (SG) in connection with assessing trade policy. The report describes the key findings from our analysis of Scottish business sectors’ key challenges and preparedness for Brexit.

The report draws on an assessment of Brexit risks carried out in September and October 2018 across 14 key sectors in the Scottish economy identified by SG through a Rapid Synthesis, and a series of sector-specific dynamic consultation workshops facilitated by us on behalf of SG during November 2018.

Restrictions on use and disclosure of our report

Our report is based on information available from public sources, information received from dynamic consultation, workshops with Scottish businesses and trade organisations and information provided by other parties who participate in the Scottish economy. We have not sought to verify the accuracy or completeness of the data or the information provided by these parties. The circumstances and perception of Brexit are evolving. We have not contacted information providers to obtain updated information to reflect changes in circumstances and perceptions since information was originally provided to us. Our findings may materially differ if our report was based on supplemental, different or updated information sources. We accept no responsibility to update the report in light of subsequent events or for any other reason.

The report (or any portion or summary of it) may not be quoted, referred to or shown to any other parties except as provided in the agreed Contract. Our report is provided on a confidential basis and is subject to the disclosure restrictions applicable to Supplier Confidential Information (as defined in the Contract).

The report may be published for information purposes by SG subject to our agreement and any conditions specified in such agreement.

Third party disclaimers

Our report may not have considered issues relevant to any party other than SG. We accept no responsibility or liability to any person other than to SG and, accordingly, if such other persons choose to rely upon any of the contents of this report, they do so at their own risk.

The report is general in nature. The report should not be relied upon by third parties as accounting, tax, or other professional advice for their particular interests. The report does not constitute a recommendation or endorsement by us to invest in, sell, or otherwise use any of the markets or companies referred to in it.

Peter Arnold
Partner | Economic Advisory
Ernst & Young LLP

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Executive summary

Background

The Scottish Government (SG) does not welcome Brexit and has consistently stated in its *Scotland's Place in Europe* publications[1] that Scotland's future is best served by continued membership of the European Union (EU). Failing that, continued membership of the European Single Market and Customs Union remain viable alternatives. However, the SG recognises the need to support Scottish businesses and other stakeholders to mitigate the impacts of Brexit, if and when it happens. Accordingly, this report sets out the results of a Sectoral Impact Analysis and Brexit Readiness Assessment commissioned by the SG's Directorate for International Trade and Investment (DITI). It summarises the risks to Scottish businesses from a "no deal" Brexit (i.e. on WTO terms) and captures the views of over 80 businesses and trade associations from a cross-section of sectors who participated in a dynamic consultation.

Key findings

- **Brexit-related uncertainty was a major concern for all the businesses and trade associations consulted**. Businesses highlighted the risks this posed to their competitiveness, profitability and, in some cases, their viability. Two-thirds of participants, many of whom are key players in Scotland's economy, were not confident that the UK would secure a Brexit deal by March 2019.

- Amongst businesses polled in consultation[2], **only 8% felt fully ready for Brexit**, although the majority (74%) said that they had taken steps to prepare. Most worryingly, the remainder of businesses (18%) reported that they did not feel ready for Brexit at all.

- Tariffs and non-tariff barriers will clearly make it harder for Scottish businesses to trade with the EU, and will likely reduce the volume of trade. **The sectors that appear most vulnerable include food and drink, chemicals, life sciences and other manufacturing sectors.** Impacts are likely to be felt quickly, although longer-term there may be opportunities to explore alternative international markets and rebuild domestic supply chains.

- Representatives from financial services, chemicals, life sciences, creative industries and food and drink sectors also **emphasised the importance of regulatory alignment (e.g. via agreement on equivalence or mutual recognition)** with EU standards in facilitating trade, not only with the EU, but also with non-EU countries where EU standards are widely accepted.

- EU funding has contributed to Scottish economic productivity and has played a part in creating Scottish jobs and leveraging investment. **Exit from the EU threatens this funding**, with the greatest impacts likely to be in agriculture, fisheries and aquaculture, construction and life sciences.

- A **risk of higher consumer prices** was identified, particularly for food and drink and energy, from short-term currency risks and from tariffs and border disruptions. Although it was recognised that this provided an opportunity to pivot to the domestic market, and longer-term Scotland could switch to alternative sources of supply from non-EU markets (depending on UK trade policy).

- A recurrent theme was **concern about reduced access to talent at all wage and skill levels**. Sectors that were particularly concerned included food and drink, financial services, life sciences and creative sectors.

[1] https://www.gov.scot/publications/scotlands-place-europe-assessment-uk-governments-proposed-future-relationship-eu/
[2] 68 organisations responded to a private poll during the dynamic consultation run under Chatham House Rules.

- **Scottish-specific risks included business demography** (e.g. smaller native enterprises, the importance of clusters and integration with EU value chains) and the logistical challenges that stemmed from Scotland's geography and location.
- **A number of businesses are already reporting negative impacts** in the shape of delayed investment plans from foreign-owned parent companies, the cost of allocating resource to Brexit planning, and heightened challenges in recruiting EU staff with key skills.

Brexit risks

The analysis considered the following potential Brexit risks[3] and feedback from businesses consulted focused on these categories:

- **Tariffs and non-tariff barriers** that will disrupt the frictionless and tariff-free movement of goods between Scotland and the EU.
- **Sourcing and supply resilience** – trade frictions, corresponding disruptions to supply chains, and potential changes in the value of Sterling will impact Scottish companies and their supply chains.
- **Legal and regulatory compliance** – leaving the EU will result in the UK leaving a number of regulatory regimes (e.g. REACH in the chemicals sector, and Clinical Trial Regulation EU No. 536/2014 in life sciences), and the end of passporting in financial services.
- **Workforce** – the end of free movement will exacerbate the challenges Scotland already faces to attract and retain talent in the context of an ageing population. Weaker Sterling may create disincentives for workers to come to the UK and Scotland.
- **EU funding and finance** – Scotland will no longer benefit from EU funding beyond 2020.
- **Foreign Direct Investment (FDI)** – Brexit may also reduce the attractiveness of Scotland as a destination for FDI; however, a weaker Sterling may increase Scotland's attractiveness for FDI.

Sector RAG ratings

A Sectoral Impact Analysis Rapid Synthesis Survey of existing analysis on Brexit impacts and mitigation strategies, across key sectors of the Scottish economy, was conducted in September 2018. The output of this review was a brief report that summarised findings on Brexit risks for key Scottish sectors. Findings were presented via a "RAG" rating that captured the scale of the impact of Brexit by sector and Brexit risk category.

Table 1 updates these risk impact category RAG ratings. It summarises evidence from consultations with businesses and trade associations which explored the impact of Brexit on key sectors in the Scottish economy. The RAG ratings by Brexit risk category were validated and moderated by dynamic consultation participants.

Thereafter the findings from in this report are presented by theme rather than by these risks.

[3] Scottish Government, Scottish Parliament and Fraser of Allander Institute, to name a few, have published a number of analytical papers on the potential impact that Brexit could have on the Scottish economy.

Table 1: Sector RAG ratings

	Tariff and non-tariff barriers	Sourcing & supply resilience	Legal & regulatory compliance	Workforce	EU funding & finance	Foreign Direct Investment	Overall RAG rating and rationale based on contextual sector information & sector impact RAG ratings
Life sciences	Red	Red	Red	Red	Amber	Amber	Key export sector dependent on EU intermediary goods, and on EU legislation governing product standards. Regulatory divergence and workforce issues are risks.
High value manufacturing	Amber	Red	Red	Amber	Red	Red	Key export sector dependent on EU intermediary goods, and on EU legislation governing product standards. Regulatory divergence and investment issues are risks.
Chemicals	Red	Amber	Red	Amber	Red	Amber	Key export sector dependent on EU intermediary goods, and on EU legislation governing product standards. Regulatory divergence and investment issues are risks.
Logistics	Red	Green	Red	Red	Red	Green	Important in terms of size and impact on other sectors in Scotland. Scotland has unique geographical challenges. Customs and border controls and workforce are risks.
Food and drink, incl. agri- and aquaculture	Red, Amber[4]	Amber	Red	Red	Amber	Green	Key export sector and employer. Regulatory divergence and workforce issues post-Brexit are risks. Scotland a net exporter of seafood, the UK is a net importer.
Creative industries, including Digital	Amber	Green	Amber	Red	Amber	Amber	A vital and growing sector in Scotland, contributing to urban regeneration and employment. Digital a key sub-sector but with post-Brexit risks more similar to UK.
Financial & business services, incl. fintech	Green	Green	Red	Red	Amber	Green	Significant sector in terms of size and its impact on the rest of the Scottish economy. Market access, regulatory divergence and workforce issues post-Brexit are risks.
Energy	Amber	Amber	Amber	Green	Red	Green	Implications of Brexit for energy not unique to Scotland as a result of the importance of the GB regulated market. However, generation market more based on renewables.
Construction	Amber	Amber	Green	Amber	Green	Amber	Risks facing construction in Scotland relate to macro-environment, workforce and supply chain similar to rest of UK industry, although some reliance on EU imports of timber.

[4] The two RAG ratings in this cell for tariff and non-tariff barriers reflect different RAG ratings for the food and drinks sectors in Scotland with the red RAG for the food sector and amber for the drinks sector.

Implications and policy response

The SG and its agencies have taken action[5] to address some of the risks that arise from Brexit. Programmes include the multi-partner, pan-Scotland *Prepare for Brexit* campaign, designed to help businesses prepare for Brexit and to act to secure continued business growth. More broadly, the SG recently published an *Economic Action Plan*, which sets out a vision for achieving sustainable and inclusive economic growth in Scotland. This is complemented by the *Scotland is Now* campaign, which seeks to attract people to Scotland as a place to visit, live, work, and invest.

Together these measures will help build a strong, vibrant and diverse economy and should mitigate some of the impacts of Brexit. However, the analysis conducted for this report highlighted a number of Scottish-specific themes that should be considered in further detail. These themes are used to structure the rest of this report. These themes are:

- Theme A: Implications for trade, inward investment and EU funding.
- Theme B: Access to talent.
- Theme C: Impact on SMEs.
- Theme D: Routes to market and logistics.

Below, each of these key themes is summarised and corresponding recommendations for SG, the UK Government (UKG) and business are set out.

Theme A: Implications for trade, inward investment and EU funding

Scotland is a small, open economy with several sectors that are heavily export orientated. It has benefitted from many aspects of EU membership including tariff-free and frictionless trade with the EU and countries with free trade agreements (FTAs) with the EU, and successful attraction of inward investment and access to EU funding. Brexit is therefore a risk to the profitability and viability of key activities in Scotland across all sectors in some form.

Tariffs and non-tariff barriers

- Trade barriers are a particular concern for food and drink given their impact on the level of exports. In primary producing sub-sectors, e.g. meat (particularly lamb) and seafood, tariffs (EU average tariffs between 50% and 100%[6] for the former and between 2% and 20% for the latter[7]) threaten the competitiveness of Scottish produce. Indeed, the viability of some of the trade itself may be endangered, specifically by non-tariff barriers, given the requirement to get fresh produce to market quickly to maximise its value.

Legal and regulatory compliance

- The need for regulatory alignment, and for that alignment to be recognised by the EU, is of particular importance to a number of Scottish industries, including chemicals, life sciences and financial services.
- For example, in chemicals and life sciences, failure to agree equivalence/alignment with EU regulations (e.g. REACH for chemicals and for Clinical Trials Regulations in life sciences) could see activity move outside Scotland.

[5] https://www.gov.scot/brexit/
[6] The EU meat industry in a Hard Brexit Scenario, European Livestock and Meat Trades Union, November 2017, www.uecbv.eu/UECBV/documents/BrexitMeatreport12373.pdf
[7] European Union Committee, Brexit: fisheries, 8th Report of Session 2016-17 - published 17 December 2016 - HL Paper 78, https://publications.parliament.uk/pa/ld201617/ldselect/ldeucom/78/7811.htm

EU funding and finance

- ► Scottish businesses have benefitted from EU funding that has supported productivity, e.g. the Common Agricultural Policy (CAP), Horizon 2020 and other targeted EU funding programmes.
- ► Losing access to EU funding could affect levels of demand in some sectors, e.g. construction, and affect the viability and investment environment of some businesses, including many rural firms. The rate of start-up and innovation spin-outs from universities and innovation centres could also be impacted.

Scottish industry characteristics

- ► A number of sectors of the Scottish economy, such as financial services, chemicals, life sciences and key parts of the creative industries sector, are located in geographic clusters. There is a risk that, if businesses move activity out of Scotland, this could start to undermine the agglomeration benefits of these clusters.

Impact on consumers

- ► The impact of Brexit on consumers in Scotland could be significant through price rises on all traded goods as a consequence of tariffs, border frictions and a weaker currency. This would likely be felt in food and drink most prominently, but also through higher energy prices, which would be of concern to energy-intensive businesses as well as to consumers.

Key recommendations

Table A: Recommendations on trade, inward investment and EU funding

Ref	Recommendation	Owner	Materiality[8]	Urgency
RA.1	**SG should continue to push the UKG to secure tariff free trade and regulatory equivalence** (or mutual recognition of any UK or devolved regulatory standards with EU regulation), in particular, REACH for chemicals, clinical trials in life sciences, and making sure that Scottish television and film productions are still designated European works.	SG / UKG		
RA.2	**Businesses should explore opportunities** to sell their products to new export markets outside of the EU, seek domestic market opportunities (import substitution) and/or look for opportunities to re-shore their supply chain. In particular, there may be opportunities in food and drink, chemicals, energy (specifically renewables) and financial services.	Industry		
RA.3	**SG and SG Enterprise Agencies should continue to support business in the exploration of new markets**, and routes to market. SG should consider conducting sector-specific analysis on wider exporting opportunities post-Brexit, building on existing SG economic growth strategies.	SG		
RA.4	SG already focuses on attracting FDI. A new Trade Plan is due early in 2019, and Scottish Development Interternational (SDI) has restructured to refocus on emerging risks and opportunities. However, **SG should consider a review of the current approach** in the context of the challenges presented by Brexit to focus on attracting skills and promoting Scottish exports.	SG		

[8] RAG = Red, Amber, Green, where Red represents significant materiality or urgency, and Green represents a low level of materiality or urgency.

RA.5	More could be made of Scotland's different terms for clinical trials for life sciences companies. **SG Enterprise Agencies should continue to support business to capitalise on leveraging NHS Scotland's attributes in medicines testing** and to promote their products to Health boards.	SG Enterprise Agencies		
RA.6	**SG should continue to develop policy proposals for an alternative to CAP post-Brexit**. Although the UKG has guaranteed funding for the lifetime of this parliament, alternative arrangements will be required thereafter, and SG should be ready. We note SG's intention to introduce legislation to enable the implementation of proposals for rural financial support up to 2024.	SG		
RA.7	**SG to further explore options for the replacement of EU funding** beyond the Brexit transition period. This is already happening via the Shared Prosperity Fund consultation. This could include consideration of the extent to which the UK continues to seek membership (and hence makes contributions) to EU programmes. This would also require a detailed assessment of the various EU programmes that SG benefits from and their impact on Scotland.	SG/UKG		
RA.8	**SG to consider the pricing impact of energy on Scottish consumers**, especially those at risk of fuel poverty.	SG		

Theme B: Access to talent

Scottish businesses already face challenges in attracting and retaining talent at all skill and salary levels. According to official data in 2017, there were 18,000 vacancies in Scotland relating to specific skills and a further 23,000 hard-to-fill vacancies due to general labour shortages. This is in part driven by demographics, but also by the smaller size and scale of Scottish sectors. For example, the larger life sciences clusters in Cambridge and London can provide greater career opportunities for in-demand talent.

Brexit will make these challenges harder for Scottish business as a consequence of formal limitations on immigration from EU markets and potentially a declining perception of the UK (and as a consequence, Scotland) as an attractive place to live and pursue a career.

Workforce

- EU migrants make up a notable share of employment in a number of sectors, including in agriculture and life sciences. Scotland's Rural College (SRUC) estimates that there were 9,257 seasonal migrant workers employed in Scottish agriculture in 2017 with a significant majority (78%) originating from three EU countries (Bulgaria, Romania and Poland) and employed in the East Coast soft fruit sector during the summer months[9]. In life sciences almost 17% of the workforce are EU nationals[10].

- There could be a challenge in attracting temporary migrant labour in agriculture to Scotland post-Brexit if there are limitations on numbers of temporary visas and high levels of demand in England for the same workers. Further concerns in food and drink include shortages of official veterinarians in agriculture, and workers in food processing.

- Although the construction sector in Scotland is less dependent on EU workers than the Scottish average, there could be significant indirect impacts given the higher reliance on EU workers in the rest of the UK. Skills shortages in England, particularly London, could

[9] Migrant labour in Scottish agriculture, 2018, Scottish Parliament, SPICe Briefing, https://sp-bpr-en-prod-cdnep.azureedge.net/published/2018/10/30/Migrant-labour-in-Scottish-agriculture/SB%2018-71.pdf
[10] Economic Impact of Leaving the EU – Life sciences, Scottish Government.

push up wages for construction workers in England. As a result, this could put upward pressure on construction wages in Scotland to prevent workers from migrating south.

- Scottish workers have also benefitted from free movement, enabling them to gain experience and opportunities overseas. This advantage was seen as being particularly important for workers in creative industries who may not be able to sustain livelihoods in the sector were it not for these international opportunities.

Implications for productivity

- Limitations on the ability to recruit non-UK EU nationals will have a significant impact on the productive capacity of a number of key sectors, including food and drink, but also higher value-add sectors such as life sciences and financial services. This may also be a determinant of the ability to attract FDI, as evidenced by results from EY's Attractiveness Survey where gaps in skills availability were raised as a significant worry for investors.

- There remains uncertainty regarding visas for UK citizens working in the EU post-Brexit and vice versa. The UK has committed to respecting the rights of EU citizens currently in the UK, while the EU has indicated that policy regarding UK nationals will be the responsibility of individual member states. SG recently announced that it would pay the cost of settled status applications for NHS workers, and that Scotland's Citizens Advice network will provide a new advice service to European citizens in Scotland affected by changes in the immigration rules as a result of Brexit[11].

Key recommendations

Table B: Recommendations to address workforce issues

Ref	Recommendation	Owner	Materiality	Urgency
RB.1	**SG should continue to push for a migration policy that meets the needs of Scottish business** – e.g. continuation of free movement, minimal barriers to hiring EU workers, and exemptions for specific Scottish sectors and occupations where there are skills gaps and labour shortages (under the Shortage Occupation List).	SG / UKG	🔴	🔴
RB.2	**Scottish businesses need to review their recruitment and retention plans** in the context of the loss of free movement. In particular, they should review their retention plans for key EU talent and explore alternative sources of talent from under-represented segments of the community (e.g. women, the elderly, the disabled, and minority communities).	Industry	🟡	🔴

Theme C: Support SMEs in Scottish key sectors through Brexit

The larger firms consulted as part of the dynamic consultation exercise indicated that they had undertaken preparations for Brexit and had developed an understanding of the potential impacts of a no deal Brexit on their business. For example, 9 out of 10 firms who attended financial services, life sciences, chemicals, energy and high value manufacturing workshops indicated that they had undertaken preparation of some form[12]. This included practical steps to assess the readiness of their supply chains, e.g. supplier surveys, moving annual maintenance periods into April 2019, and/or stockpiling of supplies and finished products. Small and medium enterprises (SMEs) were far less likely to have assessed the extent of their Brexit risk or undertaken any contingency planning. For example, a survey conducted by the Federation of Small Businesses Scotland indicated that 1 in 7 small businesses has yet to make any preparations for a no deal Brexit[13].

[11] https://www.gov.scot/news/information-and-advice-for-eu-citizens/.
[12] Participant business were asked anonymously through an electronic voting tool to describe their organisations level of readiness for Brexit.
[13] Small businesses entirely unprepared for chaotic no deal Brexit, 18 September 2018, FSB, https://www.fsb.org.uk/media-centre/press-releases/small-businesses-entirely-unprepared-for-chaotic-no-deal-brexit

Capacity constraints

- In Scotland, 98% per cent of enterprises are classed as small, having between 0 – 49 employees[14]. SMEs are unlikely to have the capacity to prepare contingency plans. As a consequence, there is a risk that these businesses will not be ready for Brexit with consequent disruption to their activities, and the supply chains they support.

- SMEs (and indeed larger businesses) may well face cash flow challenges immediately post Brexit, particularly where supply chains are disrupted as a consequence of additional border checks.

Key recommendations

Table C: Recommendations to support SMEs

Ref	Recommendation	Owner	Materiality	Urgency
RC.1	**SG and SG Enterprise Agencies should build on the *Prepare for Brexit* campaign, website and self-assessment, and in particular explore how they can further raise awareness of the targeted support available to SMEs**. This could include calling on larger businesses to provide support to SMEs in their supply chains, to understand sector-specific Brexit impacts (e.g. tariffs and customs).	SG & SG Enterprise Agencies	🔴	🔴
RC.2	**SMEs should also recognise the opportunities they can take advantage of as smaller and more nimble organisations**. For example, pivoting to become part of domestic supply chains or taking advantage of opportunities for import substitution.	Industry	🟡	🟡
RC.3	**SG and businesses to encourage UK-wide trade associations to consider the specific needs of Scottish members** especially where prioritisation of Brexit issues differ (e.g. creative industries), perhaps through existing or new Brexit-specific industry groups to facilitate knowledge sharing across sub-sectors.	SG & Industry	🟡	🔴
RC.4	**Businesses should review their financing and cash positions** in the context of the potential challenges that Brexit represents (e.g. border delays) for cash flows and working capital.	Industry	🟡	🔴
RC.5	**SG to engage with Scottish retail banks about relaxing credit requirements through Brexit** to assist SMEs if activity is disrupted and cash flow and working capital are hit.	SG	🟡	🟡

Theme D: Review routes to market in light of Brexit

Scotland's transport infrastructure is configured on the basis of free movement of goods between the UK and EU. A significant proportion of goods are transported by road between the EU and Scotland via roll-on-roll-off (RORO) ferry services at ports outside Scotland with few, if any, checks at borders[15]. The same applies for the rest of the UK but, given Scotland's geography, products have longer to travel by road to the EU compared to England.

Brexit will challenge the viability of existing logistics models due to the need to re-establish border controls for customs processes and other checks (e.g. sanitary and phytosanitary checks). This will lead to border delays, threatening the competitiveness and viability of existing trade routes.

[14] ONS UK Business: Activity, Size and Location – 2018, Table 3, https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/bulletins/ukbusinessactivitysizeandlocation/2018
[15] There will be occasional random checks for security purposes, and checks on hazardous cargo.

Sourcing and supply resilience

- The imposition of border controls in a no deal Brexit (or indeed even under a Canada-style free trade agreement) would increase firms' logistics costs and risk perishable goods expiring. It is seen as a particular threat to businesses that export perishable goods.

- It is also of particular concern for manufacturing businesses – especially for high-value just-in-time producers integrated in EU supply chains. Businesses in this sector are already reviewing supply chains and processes as a means to mitigate border disruption.

- For imported products, Scotland may need additional customs and phytosanitary Border Inspection Posts (BIP) to accommodate extra checks, especially for animals and animal products. It should, however, be noted that the UK Government has stated that it would continue to recognise Transporter Authorisations, Certificates of Competence, Vehicle Approval Certificates and Journey Logs issued by other EU Member States for an interim period[16].

- The dependence on transport by roads is driven by the longer transit times, and often higher cost associated with alternative forms of transport. A trade industry body in this sector indicated that ports in Scotland are on a smaller scale than in the UK and competition among the ports is relatively low, reflecting limited demand.

Key recommendations

Table D: Recommendations to build on Scotland's direct physical trade routes to support trade

Ref	Recommendation	Owner	Materiality	Urgency
RD.1	**SG to lobby for regulatory alignment (e.g. via agreed equivalence or mutual recognition of standards) for animal welfare with the EU** (hygiene checks, EU veterinary standards, C Branding) and product labelling to reduce the need for significant border checks.	SG		
RD.2	**SG should facilitate discussion among airports, ports, hauliers and shipping companies** to ensure all parties are prepared and coordinated for Brexit, including the identification of further opportunities for export routes.	SG		
RD.3	Scottish port and rail companies should explore the opportunity **to facilitate trade directly between Scotland and the EU**.	Industry		
RD.4	Scottish logistics and export-oriented businesses could use **Authorised Economic Operator (AEO)** status to simplify customs procedures and benefit from arrangements under Mutual Recognition Agreements (MRAs).	Industry		
RD.5	**SG should continue to seek clarifications on the investments made by UKG in border facilities** to enable the necessary checks on both the import and export of goods in Scotland.	SG & UKG		
RD.6	SG and business to explore opportunities for **alternative means of exporting non-perishable goods** using Scottish ports and airports, and mechanisms for fast-tracking the movement of perishable goods across UK borders.	SG & Industry		
RD.7	**SG to develop mitigating measures to manage the potential impact of increased demand for export health (EHCs) and catch certificates** to be issued by local authorities and government respectively.	SG		

[16] https://www.gov.uk/government/publications/importing-animals-and-animal-products-if-theres-no-brexit-deal/importing-animals-and-animal-products-if-theres-no-brexit-deal.

1. Introduction

1.1 Background

In September 2018, the Scottish Government (SG) Directorate for International Trade and Investment (DITI) commissioned EY to undertake a Sectoral Impact Analysis and Brexit Readiness Assessment. The purpose of this exercise was to:

1. Understand Scottish business sectors' key challenges and preparedness for Brexit; and

2. To inform SG negotiating offensive or defensive positions on trade policy matters by identifying where Scotland has a sectoral or local interest which differs from the UK at large and/or has a comparative export advantage to be maintained, and by making certain they reflect data and views from the Scottish business community.

This work was undertaken over a period of three months and provides an overview of the impacts of Brexit across a number of key Scottish sectors. The analysis builds on work already completed by the SG, and produces insights that are as much qualitative as quantitative in nature to bring out the key facts, risks and opportunities by sector.

In this report, EY considers the possible impacts of a Brexit under a World Trade Organisation (WTO) outcome, referred to in this paper as a "no deal" Brexit. It draws on a range of literature, as well as a dynamic consultation with leading businesses in selected sectors. Analysis of wider Brexit risks and international trade opportunities was undertaken with specific reference to the Scottish context, and hence risks that would apply to the UK as a whole are not the focus of this report.

1.2 Approach

The Sectoral Impact Analysis comprised two elements. The first was a Rapid Synthesis Survey of existing analysis on Brexit impacts and mitigation strategies. This drew on existing material prepared by SG, augmented by additional research and analysis from other third-party sources, and EY's own experience of assisting businesses with preparing for Brexit.

The output of this stage of work was a brief report that summarised findings on Brexit risks and international opportunities for key Scottish sectors. Findings were presented via a "RAG"[17] rating that captured the scale of the impact of Brexit, the relative importance of these sectors to the Scottish economy and factored in SG trade and investment ambitions. The summary RAG rating from this exercise is set out in Table 1. The synthesis was used in two ways:

- To determine which sectors would progress to the dynamic consultation process.

- To refine a set of questions for interrogating Brexit impacts in key sectors during dynamic consultation. Sectors selected for dynamic consultation were food and drink, chemicals, construction, creative industries, energy, financial and business services including fintech, life sciences, logistics and high value manufacturing.

The second element of the work was a dynamic consultation. This took the form of nine workshops that EY ran with businesses (predominantly larger enterprises, but also with smaller ones), trade associations and SG and SG Enterprise Agency sector leads. Workshop attendees were identified through a joint process between EY and SG, with SG issuing all invitations in the name of the Minister for Trade, Investment and Innovation.

[17] RAG = Red, Amber, Green, where Red represents a significant risk, and Green limited or no risk.

In these workshops EY sought to capture businesses' views on Scotland-specific Brexit risks, as well as actions that could be taken by SG, the UK Government (UKG) or the businesses themselves, to mitigate these risks or to harness future trade opportunities.

In total 82 organisations were contacted during the dynamic consultation, this included 49 businesses and 23 trade associations who attended workshops, as well as a further ten organisations which were subsequently contacted by telephone (see Appendix A for a full list of contributors).

1.2.1 Sectors selected for dynamic consultation

The nine sectors selected for dynamic consultation were chosen based on the perceived potential scale of risks of Brexit to these sectors, their significance to the Scottish economy, and the uniqueness of these sectors in Scotland compared to the rest of the UK.

Sectors most likely to be impacted by Brexit, or which have specific Scottish characteristics, include food and drink, fisheries and aquaculture, and energy. A number of growth sectors were also captured including life sciences, chemicals, creative industries, and financial services. Logistics was included to capture specific Brexit issues arising from Scotland's physical location, and the particular challenges of Scottish export sectors located in the Highlands and Islands region. Construction was included at the request of SG as there were concerns that housebuilding in Scotland would be disproportionately affected given that EU-imported timber is used more extensively in housebuilding than in the rest of the UK. Finally, high value manufacturing was identified as a gap in the Rapid Synthesis Survey, and hence was also included in the dynamic consultation.

The chosen nine sectors account for over 40% of the Scottish Gross Value Added (GVA) (see Table 2)[18]. They align broadly with the Office for the Chief Economic Advisor (OCEA) analysis of Scotland's revealed comparative advantage in exports compared to the rest of the UK[19,20]. An overview of the sectors included in the dynamic consultation, including Scottish specific characteristics, is provided in Appendix B.

[18] The most significant sectors in the Scottish economy not part of dynamic consultation included automotive, administrative and support activities, retail, wholesale activities and sustainable tourism.
[19] Brexit: Sectoral Economic Impact Analysis, Office of the Chief Economic Advisor, Scottish Government 2018.
[20] Revealed comparative advantage is a measure of the relative advantage in exports in certain sectors of an economy as evidenced by trade flows. When a country has a comparative advantage, it means that it can produce goods and services more cheaply than countries it trades with. For example, Scotland has a comparative advantage in whisky, which means it can produce this spirit more cheaply and to a better quality than competitors elsewhere.

Table 2: Key sector metrics

Sector	GVA (2016)[21]	All employment in Scotland and % of all employment[22] (2017)	EU national employment in Scotland and % of all in employment (2017)	Enterprise Size (2018)[23]
Food and drink and fisheries (incl. agri- & aquaculture)[24]	£4,131m (3.2%)	43,000 (1.7%)	10,000[25] (25.3%)	Small – 95.2% Medium – 3.6% Large – 1.2%
Chemicals	£871m (0.7%)	10,000 (0.4%)	Estimates suppressed as being unreliable due to small sample sizes	Small – 85.7% Medium – 11.4% Large – 2.9%
Life sciences[26]	£1,513m (1.2%)	23,000 (0.9%)	4,000 (16.8%)	Small – 89.0% Medium – 6.4% Large – 4.6%
Energy[27]	£12,948m (10%)	109,000 (4.2%)	7,000 (6.8%)	Small – 96.5% Medium – 1.7% Large – 1.8%
Creative industries	£4,389m (3.4%)	135,000 (5.1%)	7,000 (5.3%)	Small – 97.9% Medium – 1.5% Large – 0.6%
Construction	£7,113m (5.5%)	185,000 (7.1%)	7,000 (4%)	Small – 98.6% Medium – 1.2% Large – 0.2%
High value manufacturing[28]	£6,425m (5.0%)	106,800 (4.1%)[29]	Not able to accurately define.	Small – 95.4% Medium – 3.9% Large – 0.7%
Logistics	£5,525m (1.2%)	115,000 (4.4%)	4,000 (3.3%)	Small – 96.6% Medium – 2.5% Large – 0.8%
Financial & business services	£15,046m (11.6%)	205,000 (7.8%)	8,000 (4.1%)	Small – 97.8% Medium – 1.1% Large – 1.1%

Source: EY analysis; various sources identified in footnotes

[21] For all sectors per original SG briefing, these figures are taken from statistics provided from ONS, Annual Business Survey (compiled by SG). High value manufacturing figures have been taken from Scotland by Division statistics per the SG website.
[22] For all sectors per original SG briefing, these figures are taken from statistics provided by SG from the Annual Population survey.
[23] Enterprise data taken from most recent growth sector briefings (updated November 2018). For all others enterprise data was taken from the ONS UK Business: Activity, Size and Location – 2018.
[24] Defined as SIC 10 & 11.
[25] Does not include fisheries as estimates suppressed as being unreliable due to small sample sizes.
[26] Enterprise data taken from most recent growth sector briefings (updated November 2018). For all others enterprise data was taken from the ONS UK Business: Activity, Size and Location – 2018. Estimates may differ to those used by the sectors themselves as a result of different sector definitions.
[27] Excludes offshore oil and gas.
[28] Defined as SIC 16-18,22-25, 27-33
[29] This figure is for 2016, taken from the statistics per the SG for Scotland by Division.

2. Implications for trade, inward investment and EU funding

Key findings

- Scotland is a small, open economy with several sectors which are heavily export orientated. It has benefitted from many aspects of EU membership including tariff-free and frictionless trade, inward investment as well as EU funding. Scotland's export strengths compared to the rest of the UK are in food and drink (whisky, salmon, crustaceans and molluscs), and in energy and chemicals (petroleum, gas and chemicals materials and products).
- The introduction of tariffs and non-tariff barriers to trade will likely reduce the volume of trade between Scotland and the EU. This risks the viability of some key activities in Scotland in the short-term, but also as Scotland moves to new trading relationships with the EU and third-party countries. In particular, sectors that are most vulnerable include food and drink, chemicals, life sciences and high value manufacturing.
- Businesses in the chemicals, creative industries and food and drink sectors emphasised the importance of EU standards. This not only enables frictionless movement of goods across borders within the EU, but also facilitates trade with non-EU countries where EU standards are widely accepted.
- Scottish businesses have benefitted from EU funding that has supported productivity, e.g. the Common Agricultural Policy (CAP), Horizon 2020 and other targeted EU funding programmes[30]. Losing access to EU funding could affect levels of demand in some sectors, e.g. construction, and affect viability and investment environment of some business, including many businesses in rural economies and the rate of start-ups and innovation spin-outs.
- A characteristic of a number of sectors of the Scottish economy, such as financial services, chemical, life sciences and key parts of the creatives industries sector, is that many businesses are located in clusters across Scotland. There is a risk that if businesses move activity out of Scotland this could start to undermine the agglomeration benefits of these clusters.
- The impact of Brexit on consumers in Scotland could be significant through price rises on all imported goods as a consequence of tariffs, border frictions and a weaker currency. This would likely be felt in food and drink most prominently (although this could be positive for domestic producers), but also potentially through higher energy prices which would also be of concern to energy-intensive businesses.

2.1 Brexit risks

A no deal Brexit on WTO terms would lead to the introduction of tariffs and non-tariff barriers to trade (e.g. additional customs processes), exit from a number of EU regulatory regimes, and the loss of EU funding from various programmes.

[30] SPICe Briefing, 2018, Scottish Parliament, European Union funding in Scotland, https://sp-bpr-en-prod-cdnep.azureedge.net/published/2018/9/28/European-Union-funding-in-Scotland/SB%2018-61.pdf

2.2 Evidence

2.2.1 Tariffs and non-tariff barriers to trade

Scotland is a significant exporter – in 2016, total exports were worth £29.8bn, of which £12.7bn went to the EU[31]. In total, exports accounted for 50% of GDP in 2016-17[32] compared with 30.5% for the whole of the UK in 2016[33].

Key exporting sectors include:

- ► Food and drink (including agriculture and seafood), with total international exports of £5.5bn in 2016, with the EU accounting for approximately 37% of this trade[34].
- ► Chemicals and energy, with international exports of petroleum and chemicals worth £2.6bn and mining and quarrying exports worth £2.0bn in 2016; EU trade accounted for 86% and 28% of trade in these products respectively[35].
- ► Creative industries, with international exports of £1.0bn in 2016, and over a third going to EU countries[36].

The introduction of any tariffs and non-tariff barriers to trade will likely reduce the volume of trade between Scotland and the EU. This risks the viability of some key activities in Scotland in the short-term, but also as Scotland moves to new trading relationships with the EU and third-party countries – in particular, sectors that are most vulnerable include food and drink, chemicals, life sciences and high value manufacturing.

The impact of tariffs on competitiveness was a primary concern for businesses, especially in the primary agriculture and aquaculture sectors. For example, WTO tariffs for meat products are between 50% – 100%, and for dairy products they could be between 42% – 45%. Although the Scotch Whisky Association's stated position on the draft Withdrawal Agreement and accompanying Political Declaration on the Future UK-EU Relationship is that, on balance, is that they stand up well against the Scotch whisky industry's Brexit priorities[37], whisky production currently benefits from EU trade agreements with third parties. Analysis by the Scotch Whisky Association indicated that the risk of losing lower tariffs for these countries would have amounted to around £53 million in 2017, with the equivalent figure under current arrangements being £3.3m[38]. The Scottish potato sector may also be disproportionately affected (Insight 1).

Insight 1: Seed potatoes

Because of its climate, Scotland can produce superior seed potatoes compared to other countries[39]. Seed potatoes make up roughly half of the potato sector in Scotland – a sector potentially worth £80-100m per year[40] – and the EU is a significant export market (13.5% of production). The EU external tariff is around 40% and this would make Scottish seed potatoes uncompetitive compared with rival producers in the EU, particularly from the Netherlands, who, anecdotally, are ready to fill in lost supply from Scotland.

Source: EY dynamic consultation

[31] Exports Statistics Scotland 2016 released in January 2018, https://www2.gov.scot/Topics/Statistics/Browse/Economy/Exports/ESSPublication
[32] EY calculations using Quarterly National Accounts Scotland Quarter 1 2017 data and Exports Statistics Scotland released in January 2016
[33] https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS
[34] Calculations using Exports Statistics Scotland released in January 2016
[35] Calculations using Exports Statistics Scotland released in January 2016
[36] Economic Impact of Leaving the EU – Creative Industries
[37] The Scotch Whisky Association stated position on Brexit is, on balance, that the draft Withdrawal Agreement and accompanying Political Declaration on the Future UK-EU Relationship stand up well against the Scotch whisky industry's Brexit priorities. Source: SWA website: https://www.scotch-whisky.org.uk/what-we-do/brexit/
[38] Continuity of EU Free Trade Agreements, October 2018, Scotch Whisky Authority
[39] SASA, Scottish Seed Potato https://www.sasa.gov.uk/sites/default/files/SPCS%20Leaflet%20English%20v14.pdf
[40] https://www.thescottishfarmer.co.uk/news/14822072.scottish-seed-potatoes-need-export-markets/

Tariffs would also be damaging for lamb producers (Insight 2).

Insight 2: Scottish lamb exports and New Zealand tariffs

Scottish lamb exports may become subject to tariffs of around 13%[41], and will face strong competitive challenge from New Zealand which has agreed a zero tariff on its lamb exports to the EU up to a limit of 228,000 tonnes. However, it was highlighted that there may be scope for Scottish producers to diversify export markets in the medium to long term. For example, opportunities for halal lamb meat for Middle East and North African markets were identified, although the feasibility and scale of this opportunity had yet to be assessed.

Source: EY dynamic consultation

Tariffs, both on exports and imports, were also a particular concern in the chemicals industry. Indeed, in a Chemicals Industry Association survey, 46% of the 94 respondents indicated that maintaining free trade with EU countries was the highest priority for their future success.

The low margin on products in the chemicals sector means that even the relatively low tariffs in this sector (between 3% to 4%) could be enough to make production uncompetitive. As a result there is a risk that value-add activity across the UK will shift elsewhere in Europe, which could lead to a loss of productive capacity in the sector. Across the UK, tariffs could eventually encourage activity across the energy intensive sector to move out of the UK, because WTO tariffs are typically greater on higher value add chemical products.

Higher import costs due to border delays would be compounded by any exchange rate depreciation, and the possibility that tariffs will need to be levied on EU goods. Construction products and primary materials are extremely price sensitive, with customers, at present, easily able to switch supply domestically/internationally (e.g. electrical components, marble).

The Construction Products Association estimates that approximately 20% of all construction products (by value) used in the UK are imported, while EU imports comprise 60% of all building material imports to the UK[42]. Within the Scottish housebuilding sector there is particular dependence on timber imported from the EU; there is a much greater share of timber frame new build in Scotland (around 80% compared with around 10% in England), and around 60% of all sawn wood used in the UK is sourced from the EU.

Potential mitigations

The manufacturing and processing elements of the food and drink sector rely on inputs from other EU countries that will be subject to import tariffs as well as potential border delays. This could provide an opportunity for domestic suppliers, although it could lead to higher prices for consumers. Import substitution, e.g. replacing imports with domestic production, was identified as a potential opportunity for beef, pork and for dairy products, where one food manufacturer noted that it was seeking alternative UK sources of butter to its current Irish supply (tariffs would be around 40% to 50%)[43]. Import substitution could also be possible in the wider supply chain for whisky (Insight 3).

[41] Potential post-Brexit tariff costs for EU-UK trade, Civitas, October 2016, http://madb.europa.eu/madb/euTariffs.htm?productCode=0204100010&country=NP
[42] Construction Products Association, https://www.constructionproducts.org.uk/
[43] The UK in aggregate is a net importer of Pork and Beef, but a net exporter of Lamb.

Insight 3: Scotch whisky supply chain

The whisky industry uses domestically sourced barley and water, but glass bottles need to be imported, currently largely from the EU. Competitiveness could be put at risk by tariffs on supply chain inputs as average tariffs on glass and glassware are around 5%[44]. In the absence of the UK pursuing maintained lower tariffs on the import of glass bottles, it also represents an opportunity for the development of local bottle manufacturing.

Source: EY dynamic consultation

Import substitution represents a cross-sectoral opportunity. In the dynamic consultation with the energy sector, opportunities to develop a domestic supply chain were highlighted; for example, in the renewables sector there may be an opportunity to grow the supply chain for manufacturing and maintenance of wind turbines to Scotland.

Scotland may also benefit, in the medium-term, from focusing on sectors in which there are lower levels of intra-industry trade, and hence would be less affected by EU tariffs. For example, SG could seek to develop further industries that are less exposed to tariffs such as television production or computer games (Insight 4).

Insight 4: Sectors for future investment

Television production and the computer games industry focus on creating value through design and intellectual property. For example, computer games are largely unaffected by tariffs and the need for physical goods trade between two countries to produce their products. A constraint, however, is making sure that these products can still be sold to the EU market, so regulatory alignment remains important.

Source: EY dynamic consultation

Post-Brexit investment in system changes and logistics may be required to facilitate continued trade with the EU. This may be more feasible for some sectors than others and it may also be more affordable for firms with wider margins. For example, in dynamic consultation, manufacturers operating on a just-in-time basis indicated that they had sought to procure extra warehousing to store spare parts in case of border delays; this will increase warehousing costs. However, this may not be feasible for all companies, for instance if these extra costs are too high or border checks mean time-crucial products do not get to market at a critical juncture.

Exploration of alternative international markets should also be considered. For example, from dynamic consultation it became clear that the life sciences sector in Scotland already exports globally, and in particular to the US. It may therefore have some resilience in respect of Brexit.

Finally, representatives from the energy sector (including oil & gas), were less concerned about barriers to trade, on the basis that the industry was largely domestic in focus (generation and transmission), or was highly global in nature, with minimal (or zero) tariffs, and used to operating under political uncertainty (extraction of oil & gas).

2.2.2 Regulatory alignment

In dynamic consultation, businesses in the chemicals, creative industries and food and drink sectors emphasised the importance of regulatory alignment to EU standards. This not only enables frictionless movement of goods across borders within the EU, but also facilitates trade with non-EU countries where EU standards are widely accepted.

The need for regulatory alignment or at a minimum, mutual recognition of standards, is of particular importance to the chemicals sector in Scotland, which is highly integrated in EU value chains, with products moving back and forth between Scotland and EU countries. In a

[44] https://www.civitas.org.uk/content/files/potentialpostbrexittariffcostsforeuuktrade.pdf.

Chemicals Industry Association survey, 36% of respondents said retaining regulatory consistency was a priority, second only to maintaining free trade with the EU.

For such activity to continue, it is crucial that businesses in this sector meet standards set by REACH. Businesses indicated in dynamic consultation that they had invested significantly to be compliant with REACH and want UK regulations to align to these same standards, or at least for any new UK regulations to be recognised by the EU. REACH is also widely accepted in markets outside the EU, for example, following recent changes in US regulation it is now seen as closer to US standards[45].

Similarly, in life sciences, companies conducting clinical trials in the EU need to be compliant with the Clinical Trials Directive. EU regulation is changing in this area to facilitate large pan-European trials. If the UK is no longer subject to this EU regulation, then UK companies' involvement in these trials could become administratively more complex. In dynamic consultation, a company in this sector indicated that they may consider relocating labs to the EU. Companies had also started the recruitment process for Qualified Persons (QP) in the EU, to oversee batch release and quality control testing for EU trade purposes in case of divergence.

Businesses in the creative industries in Scotland also rely on close regulatory alignment. In the Scottish screen sector for instance, European designation plays an essential enabling role in providing markets for Scottish television production companies' output. Scottish television production companies, particularly independent producers, have benefitted from the designation of their work as European which means their productions meet requirements on broadcasting companies to show a minimum level of European content. The potential loss of designation of European status for Scottish screen works is perceived as a significant issue for the sector and may threaten the survival of some independent businesses, although further analysis would be required to assess the scale of this impact and potential mitigations.

Regulatory alignment also enables access to EU markets for the computer games industry in Scotland, for example, requirements on age labelling are set at the EU level, and compliance is necessary to sell into EU markets. The cost of developing games is too high to rely only on sales to UK markets and the industry requires a worldwide audience, as evidenced by trade body figures shared during dynamic consultation, e.g. 95% of the UK industry exports, and this is equally likely to apply to the Scottish parts of this sector. Further analysis is required to understand the full extent of risks associated with regulatory divergence in the video games industry.

Regulatory alignment in aviation is also crucial as it covers the whole system of engineering certification for materials, parts, components, aircraft and maintenance services governed by EASA, as well as the EU-US Open Skies agreement. Having certainty around the UK's continued involvement in this agreement is crucial for airports and airlines to be able to operate normally post-Brexit. The UKG has taken actions to ensure that, in the event of a no deal Brexit, the UK would grant EU airlines permission to operate in the UK, and the UK would expect EU countries to reciprocate in turn[46].

Post-Brexit, there may be opportunities for the UK and Scotland (via its devolved powers) to diverge from EU standards to, for example, reduce certain costs to businesses. Regulatory divergence could include lower tax rates, increased capital allowances, or incentives for expansion. However, it was noted that the benefits of divergence may not outweigh the costs if it means that exporters could no longer sell key products in EU markets, or if it raises the costs of exporting due to the need to demonstrate regulatory compliance.

[45] https://www.jonesday.com/files/upload/Assessment%20Comparison%20New%20TSCA%20REACH.pdf
[46] https://www.gov.uk/government/publications/flights-to-and-from-the-uk-if-theres-no-brexit-deal/flights-to-and-from-the-uk-if-theres-no-brexit-deal.

2.2.3 EU funding

Scotland has benefitted as a recipient of EU funding across a range of areas, including:

- The Common Agricultural Policy (CAP) that provides over £500 million per year to Scotland.
- Scotland has been allocated €941 million through Structural Funds over the period 2014-2020 for economic development. These funds include the European Development Fund through which Scotland has an allocation of €476 million to invest in smart and sustainable growth[47].
- The European Maritime and Fisheries Fund (EMFF)[48] is also a Structural and Investment Fund. Scotland receives 44% (€108m) of the total UK allocation, of which 80% of this has been committed to projects to date[49].
- The European Investment Bank (EIB) provides long-term loans to SG on a project by project basis; over the last decade this has amounted to £3bn[50].

Farming and agriculture in Scotland have been very reliant on direct EU support, and funding in the fisheries and aquaculture sector has helped to develop port infrastructure to support seafood exports. The CAP also provides Scottish farmers financial certainty and funding over seven-year cycles, and is key for supporting the funding and finance environment to support agriculture investments.

Public sector spending accounts for around 50% of turnover in the construction industry in Scotland, of which a significant proportion comes via EU structural funds, though SG notes that this has been declining in recent years[51]. If Scotland's public sector budget for construction works falls as a result of Brexit, this could pose a risk for businesses which rely on these contracts.

The EU has provided funding through Social Enterprise Funds (SEF), the Connecting Europe Facility (CEF) and the Trans-European Transport Network Policy (TENTE) to benefit the logistics sector in Scotland; it has been particularly important to smaller fishing ports in Scotland.

For some key Scottish sectors, e.g. life sciences and newer offshore renewable technologies, research and development (R&D), supported by EU funding, has been important for developing productive capacity and driving productivity growth. For example, sectors including chemicals, life sciences and high value manufacturing in Scotland have benefitted from Horizon 2020 funding, and Scotland receives more per head from Horizon 2020 than the other UK nations[52]. Losing EU funding could affect business start-ups including university spin-outs, which are perceived as important for the future of several of Scotland's emerging sectors. Scotland's share of business births in the UK (6.1%) is already lower than might be expected given that it constitutes 7.7% of the UK economy[53]. Life sciences in particular have benefitted from Horizon 2020 funding (Insight 5).

[47] Citizen's Summary: European Regional Development Fund Implementation in Scotland, Scottish Government, https://www.gov.scot/binaries/content/documents/govscot/publications/corporate-report/2017/09/european-regional-development-fund-air-2015/documents/60b246cd-53ac-44b8-987b-d78ce5b0d69f/60b246cd-53ac-44b8-987b-d78ce5b0d69f/govscot:document/?inline=true/.
[48] The EMFF supports a wide range of activities in addition to fishing including support to coastal communities to diversifying their economies.
[49] https://digitalpublications.parliament.scot/ResearchBriefings/Report/2018/9/28/European-Union-funding-in-Scotland.
[50] http://www.eib.org/en/infocentre/press/releases/all/2016/2016-049-eib-to-outline-new-innovation-financing-for-scottish-companies-and-announce-record-university-investment.htm.
[51] Economic Impact of Leaving the EU – Construction, Scottish Government.
[52] https://www.rse.org.uk/wp-content/uploads/2017/07/17-15_Final_EU_series_Research_Innovation_and_Tertiary_Education.pdf
[53] ONS – Births, Deaths (first, second and final estimates) and Active VAT and/or PAYE based enterprises in Countries of the United Kingdom by UK SIC 2007 Section letter.

Insight 5: EU funding supports productive capacity in the life sciences sector

> Since 2015, €533 million of Horizon 2020 funding for R&D has been secured by Scottish organisations[54]. This funding has supported growth in industrial biotechnology and university spin-outs.

Source: EY dynamic consultation

EU structural funds have supported construction activity in Scotland while Creative Europe and Erasmus have been beneficial for creative industries in Scotland, although further analysis would be required to assess whether Scotland disproportionately benefits compared to the rest of the UK.

Euclid estimated for Creative Scotland that Scottish arts, media and creative industries benefitted from at least £23mn of funding between 2007 and 2016 across a range of EU programmes[55]. In the television production sector, membership of the EU MEDIA Programme has provided funding in Scotland for screen works which are pan-European in content. According to a small independent production company, this source of funding has been beneficial for the independent production businesses, which make up a significant proportion of the sector.

Companies in the Scottish energy sector could lose access to innovation funding and the significant amount of EU funding which has gone into community energy schemes. This has been important for renewables, especially given the rural nature of the population in the more remote parts of Scotland.

Through dynamic consultation, an organisation indicated that funding from the European Social Fund is also used in Scotland to support debt advice activities by housing associations and other organisations. These activities may be even more crucial after Brexit if it leads to higher poverty as a result of higher prices for consumers. SG could undertake further research to verify and confirm the scale of this issue.

2.2.4 Scottish industry characteristics

A characteristic of the Scottish economy is that a number of sectors, such as financial services, chemicals, life sciences and computer games, are located in clusters in Grangemouth, Edinburgh and Dundee respectively. In dynamic consultation, businesses indicated that there is a risk of activity moving out of Scotland, reducing the critical mass of the cluster and hence some of the agglomeration benefits[56]. For example, in the financial services sector dynamic consultation, a firm indicated that they benefit from having the right supportive infrastructure for this business (e.g. specialist lawyers). An aerospace business in Prestwick noted that having lots of businesses in the same location increases the attractiveness of the area to other similar firms and encourages further activity in the sector.

In the life sciences sector, there is a risk that post-Brexit Scotland may lose out on investment and activity to London, Cambridge and potentially EU countries like Ireland (a business in this sector had been approached to invest in Ireland). According to feedback in dynamic consultation, more could be done to capitalise on the differences between England and Scotland to attract more business in this sector (Insight 6).

https://www.ons.gov.uk/businessindustryandtrade/changestobusiness/businessbirthsdeathsandsurvivalrates/adhocs/005208demographydataforcountriesoftheunitedkingdomanddistrictsofscotlandbyuksic2007section

[54] https://sp-bpr-en-prod-cdnep.azureedge.net/published/2018/9/28/European-Union-funding-in-Scotland/SB%2018-61.pdf

[55] Assessing the European Union's contribution to the arts, media & creative industries in Scotland, Research for Creative Scotland – undertaken by Euclid – May 2017.

[56] Clusters of interconnected companies benefit from being in the same location for a number of reasons including shared infrastructure, suppliers and distribution networks as well as ease of recruitment.

Insight 6: NHS Scotland has some advantages over the NHS in England for life sciences

NHS Scotland has a different approach to clinical trials which may make the Scottish sector more attractive for R&D. In the Scottish NHS there is one system for patient data and patients can make their data available for clinical research. This is not the case in England where different parts of the NHS use different systems for data. Furthermore, in Scotland medications are commissioned and paid for through fourteen NHS Boards which could be an opportunity to attract further activity in this sector. In the UK there is one approval body, the National Institute for Care and Excellence, which determines which drugs are made available through the NHS in England.

Source: EY dynamic consultation

There may be opportunities to strengthen clusters in Scotland by building links with clusters in EU countries. For example, in financial services, a trade body sees an opportunity to develop links between Scotland and Ireland to protect Scottish financial services against the challenges of Brexit, and in particular Scotland's asset management activity. The purported benefits of strengthening this relationship include reducing Scottish and Irish reliance on London and for this "Scottish-Irish corridor" to act as a bridge for financial services between the UK and the EU. The trade body notes examples where existing companies in this sector have located offices in Dublin for the purposes of protecting, as well as expanding, their European business.

In some Scottish sectors, like high value manufacturing, financial services and logistics, between 20% and 30% of companies are foreign-owned. This could represent a Brexit risk as their presence in Scotland may at least partly be related to the ability to access EU markets. Foreign ownership also implies that decision makers are located within the parent company, and not in Scotland, which could make the investment more vulnerable.

2.2.5 Impact on consumers

The impact on the Scottish consumer from Brexit could be significant. In particular, prices could rise for all traded goods as a consequence of tariffs, border frictions and a weaker currency. This would be most keenly felt in food and drink, where the EU currently supplies around 30% of the food consumed in the UK, although this could also represent an opportunity for Scottish food producers via import substitution. According to Money Advice Scotland, higher prices would have a significant impact on rural and island communities in Scotland which are already under financial strain.

The impact of Brexit on the price of energy would also be a concern. If the UK leaves the Internal Energy Market, it could still source energy supplies via interconnectors, for example, with Ireland and France. However, this access would be on a different basis than it currently is, potentially reducing the efficiency of the system and ultimately leading to higher prices. Businesses in dynamic consultation in the energy industry noted that any higher costs of electricity and gas would be likely passed directly onto consumers in the form of higher retail prices.

Higher energy prices were also a concern for business in terms of their competitiveness against EU producers. Businesses in dynamic consultation noted that energy costs were already higher in the UK than in other countries[57].

[57] State of the energy market, Ofgem, 2018
https://www.ofgem.gov.uk/system/files/docs/2018/10/state_of_the_energy_market_report_2018.pdf

2.3 Implications and policy response

SG's overriding concern is to protect Scotland's national interests. In *Scotland's Place in Europe*[58] published in October 2018, Scotland's position on Brexit was for continued EU membership. Short of continued EU membership, a compromise plan is to keep Scotland and the UK in the European Single Market and Customs Union to limit the impact of Brexit as much as possible. SG has lobbied the UK Government (UKG) for a future trade deal that achieves as close alignment as possible. However, to prepare for a no deal Brexit on WTO terms some additional actions should be considered.

2.3.1 Maintain trade with EU and seek new markets for Scottish exports

- SG to lobby the UKG for a future trade deal that achieves tariff-free trade.
- SG to argue that the UKG should seek regulatory equivalence or mutual recognition of any UK regulatory standards with EU regulation.
- Business should explore opportunities to sell their products to new export markets outside of the EU, to seek domestic market opportunities, and to look for opportunities to re-shore their supply chain. In pushing for new markets, producers could focus on Scottish brand strengths which include the premium nature of Scottish products.
- SG and SG Enterprise Agencies to support business in the exploration of new markets, and routes to market – e.g. halal lamb meat, and alternative market routes for seafood exports. This would be informed by a series of sector specific papers analysing potential wider exporting opportunities post-Brexit, building on existing SG economic growth strategies.

2.3.2 Promote Scotland as an attractive place to do business

SG already undertakes extensive activity to promote Scotland as a place to do business and to work. However, exit from the EU will reduce Scotland's attractiveness, and hence current approaches should be reviewed in this context.

- SG and SG Enterprise Agencies already focus on attracting foreign and inward investment the *Scotland is Now* campaign and other initiatives. However, the current approach could be reviewed in the context of the challenges presented by Brexit, with a focus on Scotland's infrastructure strengths, overall attractive business environment and competitive and skilled workforce as enablers for competitive just-in-time production models.
- Life sciences – more could be made of Scotland's different terms for drug trials for life sciences companies. In addition, business could further leverage NHS Scotland's differences to the English NHS in medicines testing, and at the same time promote their products to Health boards.
- SG and SG Enterprise Agencies should conduct further research to understand the functions and/or productive capacity that both domestic and foreign owned firms have already shifted away from Scotland and what further activities are at risk.

2.3.3 Maintain access to key EU funding programmes or ensure appropriate UK replacement of funding programmes post-Brexit

Scottish sectors benefit from EU funding; it would be desirable for Scotland to find replacement sources of funding post-Brexit.

[58] Scotland's Place in Europe, Scottish Government, October 2018, https://www.gov.scot/publications/scotlands-place-europe-way-forward/.

- SG to accelerate the development of policy proposals for an alternative to CAP post-Brexit. Although the UK Government has guaranteed funding until the end of 2020, alternative arrangements for the whole of the UK will be required post-2020, and SG should be ready.

- SG to explore options for replacement EU funding beyond the Brexit transition period – in particular, the extent to which the UK continues to seek membership (and hence make contributions) to EU programmes. This would require a detailed assessment of the various EU programmes that SG benefits from, and their impact on Scotland, as well as consideration and input from SG into future UK regional policy and funding[59].

2.3.4 Consider mitigation opportunities for consumers

- SG to consider the differential pricing impact of energy on Scottish consumers, especially those at risk of fuel poverty.

[59] SG and SG Enterprise Agencies are already developing a Scottish position to secure future funding post-2020.

3. Access to talent

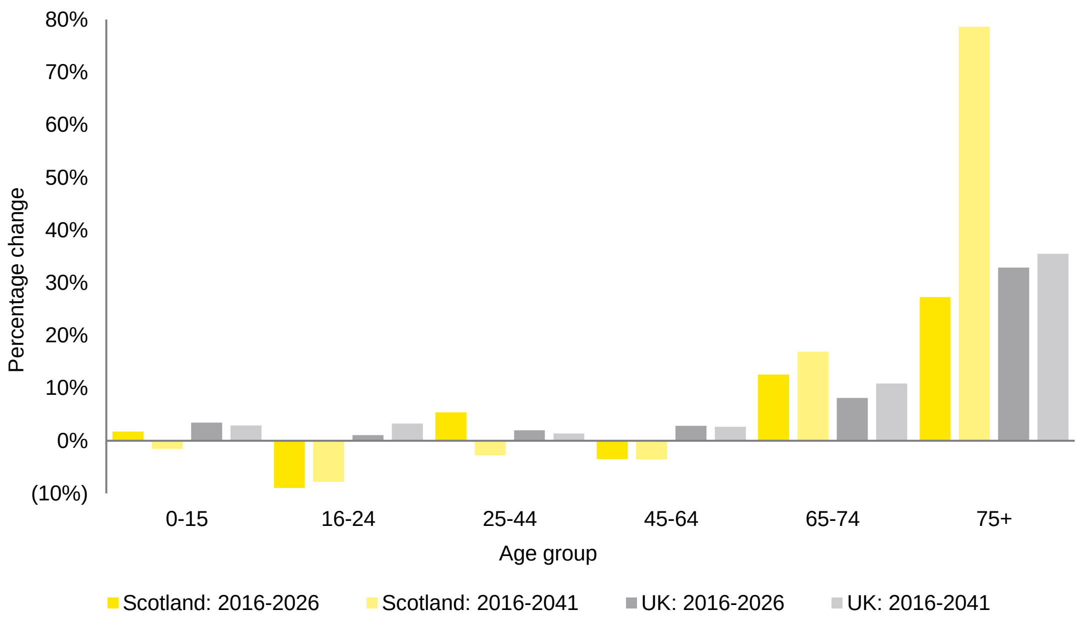
Key findings

- Scottish businesses already face challenges in attracting and retaining talent at all skill and salary levels. This is in part driven by demographics, but also the smaller size and scale of Scottish sectors. According to official data in 2017 there were 18,000 vacancies in Scotland relating to specific skills, and a further 23,000 hard-to-fill vacancies due to general labour shortages.
- A no deal Brexit will bring an end to the free movement of labour between the UK and EU and make these challenges harder for Scottish sectors. It may lead to formal restrictions on the movement of labour, alongside declining perceptions of the UK (including Scotland) as a place to live.
- Most importantly, the impacts of more restricted EU labour movements to Scotland are likely to be disproportionate relative to the UK, due to factors including the scale of market and physical location, and the potential that salary may be used as a proxy for skill levels in a new UK immigration system. Sectors which reported they were most likely to be impacted include food and drink, life sciences, financial services, and creative industries.
- EU migrants make up a notable share of employment in a number of sectors, including in agriculture (where there are around 10,000 seasonal migrant workers engaged in Scottish agriculture), and the life sciences sector (accounting for 17% of the workforce). Retaining non-UK EU national workers is critical to many Scottish businesses.

3.1 Brexit risks

A no deal Brexit will see the end of the free movement of labour between the UK and the EU. This represents a challenge to Scotland given the current and anticipated demographic challenges it faces (see Figure 1). Scotland's population is ageing more rapidly than the UK's as a whole, which suggests that the size of the domestic labour force will continue to shrink over time.

Figure 1: Projected change in population by age group, Scotland & UK, 2016-26 & 2016-41



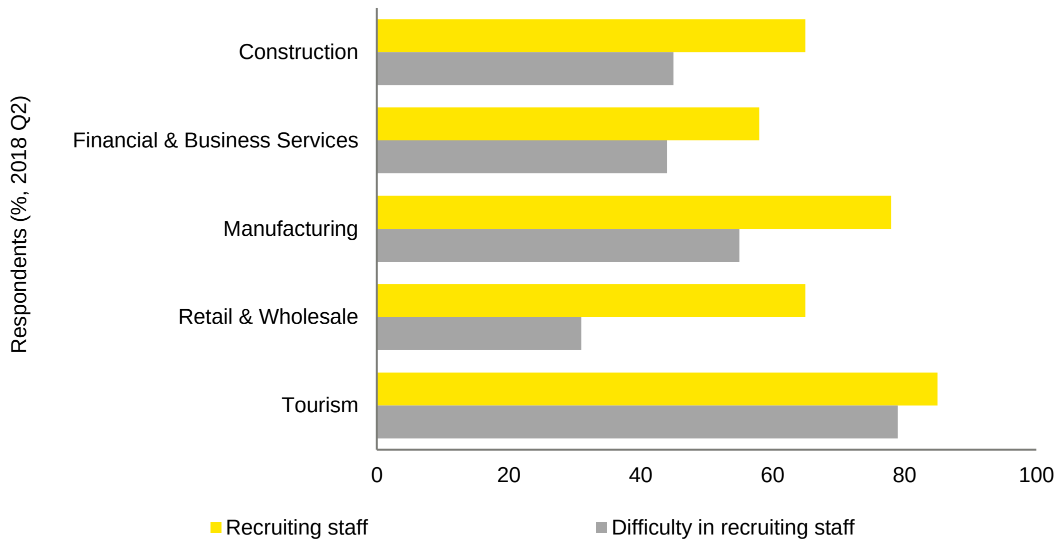
Source: National Records of Scotland, ONS

3.2 Evidence

3.2.1 The importance of EU labour

Scotland's businesses already face considerable challenges in recruiting and retaining talent across all skill and salary levels. The most recent Scottish Chambers of Commerce Quarterly Economic Indicator (Q2 2018) shows that recruitment difficulties are acting to constrain growth across a variety of sectors[60] (see Figure 2). According to a survey by French Duncan, 37.5% of Scottish businesses surveyed indicated that they expect recruitment problems because of Brexit[61].

Figure 2: Balance Scottish firms recruiting staff, encountering difficulty recruiting staff, Q2 2018



Source: Quarterly Economic Indicator Q2 2018, Scottish Chambers of Commerce

It was a theme across a number of the dynamic consultation workshops that having access to a skilled EU workforce makes up for the domestic skills shortage in sectors including food and drink, high value manufacturing, financial services, life sciences and construction.

In the Scottish food and drink sector 12.3% of workers are from non-UK EU countries[62], which is below the figure of 30% for the UK as a whole[63]. However, while Scotland may appear less reliant on EU workers than the UK, the sector is proportionately larger in Scotland, and already faces challenges in recruiting workers due to Scotland's geography and smaller domestic market. The proportion of EU nationals is also higher in specific sub-sectors of food and drink, for example, veterinary medicine, meat and fish processing and fruit picking. The Scotland's Rural College (SRUC) estimates that there were 9,257 seasonal migrant workers engaged in Scottish agriculture in 2017 with a significant majority engaged in the East Coast soft fruit sector during the summer months. Bulgarian and Romanian workers remain fundamental to the sector, accounting for an estimated 60% of Scotland's seasonal migrant workforce in 2017, with a further 18% come from Poland[64]. It can also be challenging

[60] Quarterly Economic Indicator Q2 2018, Scottish Chambers of Commerce https://www.scottishchambers.org.uk/userfiles/files/QEI%20Report%20Q2%202018%20-%20Web%20Res.pdf
[61] Scottish businesses 'hostile to Brexit' as two thirds expect no benefits, Scottish financial News, 30 November 2018, https://scottishfinancialnews.com/article/scottish-businesses-hostile-to-brexit-as-two-thirds-expect-no-benefits
[62] The Contribution of EEA Citizens to Scotland: SG's Response to the Migration Advisory Committee call for evidence on the role of EEA workers in the UK labour market, 2017, https://www.gov.scot/publications/contribution-eea-citizens-scotland-scottish-governments-response-migration-advisory-committee/pages/3/
[63] How the food and drink industry is preparing for EU Exit, Food and drink federation, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/719762/02_Helen Munday_FDF.pdf
[64] Migrant labour in Scottish agriculture, 2018, Scottish Parliament, SPICe Briefing, https://sp-bpr-en-prod-cdnep.azureedge.net/published/2018/10/30/Migrant-labour-in-Scottish-agriculture/SB%2018-71.pdf

to recruit domestic workers into certain jobs, given the length of time it takes to become fully trained, and the underlying attractiveness of the jobs (Insight 7).

Insight 7: EU labour in the Scottish food and drink sector

Scottish meat processors currently have a fifth less staffing than required. According to a trade body, the UK has a shortage of official veterinarians in agriculture who are specialised in large animals, so the needs of the domestic meat industry are not met with the domestic supply of workers. This is corroborated by evidence from the British Veterinary Association[65]. Evidence from the sector suggests EU labour is more skilled, productive and willing to work at the given wage rates.

Source: EY dynamic consultation

In dynamic consultation, a number of manufacturers felt that they may be less reliant on EU workers than the rest of the UK, but they did identify acute skills gaps in specialist roles in large engineering projects, which are currently filled by EU workers.

A financial services trade body commented that to successfully maintain and develop Scotland's financial services industry, it needs to attract the best possible talent whatever the country of origin. This is particularly the case when the significant number of EU nationals who enter the sector as graduates from Scotland's further education institutions are considered.

In life sciences, maintaining the attractiveness of employment to non-UK EU nationals is considered to be crucial, particularly for functions that require very specific skills (e.g. laboratory technicians, and business development employees with language skills who tend to be from the EU27).

In the construction industry dynamic consultation, one large company indicated that there is a current deficit of 59,000 workers. It was also highlighted that it will be very difficult to train workers in some sub-sectors in the short term. It is therefore necessary that there continues to be easy access for workers in key sectors during transition and after Brexit, otherwise this may harm the prospects of these sub-sectors (Insight 8). Skills shortages in England, particularly London, could push up wages for construction workers in England. As a result, this could put upward pressure on construction wages in Scotland to prevent workers from migrating south.

Insight 8: Construction

There is an existing skills shortage in the Scottish construction sector, due to an ageing workforce and the interruption to the training pipeline caused by the sharp fall in construction activity during the 2008/09 financial crisis. While the share of EU workers in the Scottish construction sector is below their overall share in the Scottish workforce, there is a much higher proportion of EU workers in the construction sector in the rest of the UK. Brexit could therefore have an indirect impact on Scottish construction if greater competition for workers increases wage differentials between Scotland and the rest of the UK. This is particularly in the context of the significant engineering projects in England, e.g. Crossrail, HS2, Hinkley Point C and Heathrow.

Source: EY dynamic consultation

In the dynamic consultation for the logistical support sector, a trade association and a business noted the sector's reliance on EU nationals working in warehousing and as Heavy Goods Vehicle (HGV) drivers. Attendees did note, however, that a decline in non-UK EU HGV drivers is a bigger risk for the UK as a whole as it is more dependent on EU drivers than Scotland. The sector already finds it difficult to recruit and retain workers, and they are now considering how to attract non-EU drivers.

[65] https://www.bva.co.uk/news-campaigns-and-policy/newsroom/news-releases/strong-case-vets-shortage-occupation-list/

3.2.2 Challenges in attracting EU workers after Brexit

Almost all the sectors covered in dynamic consultation reported a decline in the number of job applications from EU nationals following the referendum vote. For example, in dynamic consultation, one large manufacturer in the food and drink sector noted that it has not been able to run its factories at capacity, even though there is demand for its products, because of labour shortages on the production lines. In response it is considering moving production volumes overseas.

This anecdotal evidence is consistent with the latest official UK migration statistics published by the Office of National Statistics which show that EU net migration has continued to decline from the peak in the year ending June 2016 (+189,000) to +87,000 in the year ending March 2018, its lowest level since 2012.

Scotland may already face disadvantages in attracting workers from abroad because Scotland's sectors, in general, are smaller than those in the UK. We understand from dynamic consultation that one consideration for migrant workers is the extent to which similar companies in the same sector exist in the event that they seek to change jobs.

In dynamic consultation, food and drink businesses expressed a concern that other parts of the food and drink sector in the UK may absorb migratory labour post-Brexit. For example, less skilled and seasonal migration is a specific concern in the agricultural sector in Scotland. Seasonal pickers often start the season in England and then move north to Scotland through the season, so fewer seasonal workers in England could cut the availability of workers in Scotland.

It was noted across a number of dynamic consultation workshops that high earners in Scotland are subject to marginally higher income tax than they are elsewhere in the UK. Scotland needs to market itself accordingly to be able to attract the best talent as it is clear that some sectors are dependent on these highly skilled workers (see Insight 9).

Insight 9: Life sciences

Attracting non-UK EU nationals is a high priority for Scottish life sciences companies. Scotland competes with Cambridge and London to attract top employees. It is challenging to attract labour to Scotland because the sector in aggregate is smaller, and hence there are fewer job opportunities. This sector is dependent on EU staff as skills are very specific (e.g. laboratory staff) and the pool of workers in the UK is too small. Business development staff tend to be from the EU because of their language skills. In some firms EU staff could be up to 50% of the workforce, but technical and factory staff are likely to be Scottish.

Source: EY dynamic consultation

There may also be challenges for earners on the other end of the earnings spectrum. While the UKG has indicated that they will continue skilled immigration after Brexit, there are concerns that the UKG may have income requirements akin to the current Tier 2 visa salary minimum, which may be too high in many key Scottish industries and especially for growing small to medium enterprises, e.g. games sub-sector companies and start-ups. These arrangements will be expensive and could put Scottish games companies at a competitive disadvantage compared to the rest of the UK (where there are larger labour markets) and the rest of Europe. Another example identified by the SG is the construction sector. Data from the ONS Annual Survey of Hours and Earning (ASHE) from 2017 shows that the median wage in the construction sector was under £30,000, so if the income requirement is too high it could create significant challenges for plugging the construction skills gap.

3.2.3 Implications for productivity

Limitations on the ability to recruit non-UK EU nationals will have a significant impact on the productive capacity of a number of key sectors. While having access to the right workers now is important, making sure there is a potential flow of future workers is critical for the growth potential of Scottish sectors. This may also be a determinant of the ability to attract FDI, as evidenced by results from EY's Attractiveness Survey programme which shows that gaps in skills availability were raised as a significant worry for investors[66].

In the long term, investments in increased automation may mitigate some of the impacts, but a number of businesses noted that automation requires significant capital expenditure, and additionally, has significant lead times. For example, representatives from the Scottish fishing sector have travelled to Iceland to visit a manufacturer of machinery that automates elements of fish processing. However, they noted the significant capital outlay required, and the 3-year lead time on the equipment as barriers to rapid adoption. There could be a role for Government in supporting capital investment for automation.

A number of companies consulted mentioned their reliance on the use of EU workers for temporary projects (Insight 10).

Insight 10: Chemicals

The workforce in the Scottish chemicals sector is largely indigenous, but for capital projects, or for annual servicing or upgrades, a number of companies highlighted that they call on specialists from the EU. Without access to non-UK EU workers there is potential for degrading capacity and competitiveness of the sector in Scotland.

Source: EY dynamic consultation

In the creative sector, a concern for festivals organisers is the bureaucracy associated with short-term visas for artists. If a process is required for EU27 citizens to be able to come to the UK in future to perform at festivals, this will be time consuming and costly. Crucially it also might lead to unwillingness of groups to include Scotland on European tours because of the additional burden. While some of Scotland's major festivals, including the Edinburgh International Festival, the Edinburgh International Festival Fringe and the Edinburgh International Book Festival currently have "permit free festival" status, most festivals and arts organisations do not, and this could be a real issue for them.

3.2.4 Opportunities for Scottish workers

Scottish workers have also benefitted from free movement, enabling them to gain experience overseas, to base themselves in Scotland and take advantage of wider opportunities. This advantage was seen as being particularly important for workers in Scotland in the creative industries who may not be able to sustain livelihoods in the sector were it not for these international opportunities (Insight 11).

Insight 11: Creative industries

A characteristic of the sector is that there is a high level of contract and portfolio working for many different professions like musicians, artists and freelance TV producers. Currently these workers can live in Scotland and work all across Europe. If they cannot move freely to the EU after Brexit, then there may not be enough work to sustain them in Scotland. Scotland may well then lose workers to London (or other UK metropolitan regions) where there is enough activity to sustain workers completely without EU travel. Scotland could seek to promote itself to attract these workers.

Source: EY dynamic consultation

[66] EY Scotland Attractiveness Survey, 2018, EY, https://www.ey.com/Publication/vwLUAssets/2018-UK-Attractiveness-Survey/%24FILE/EY-UK-Atttractiveness-Survey-2018.pdf

According to a report for the Scottish Contemporary Art Network, the Federation of Scottish Theatre and partners, just under half of the 341 respondents in this sector had worked abroad. Analysis showed that of those who had travelled for work, most said that they visit the EU (outside the UK) for between 1 and 7 days per year (30%). However, a substantial proportion visit the EU for either 15-30 days (25%) or 31+ days (21%). Findings from this survey also indicated that more than a quarter (26%) of all respondents plan to, or were considering, leaving Scotland/the UK after Brexit, rising to 57% of (other) EU nationals and 36% of nationals from outside the EU[67].

3.3 Implications and policy response

Skills shortages in construction[68], high value manufacturing and financial services in Scotland[69] mean that continued access to EU nationals is a necessity both to maintain current levels of activity and to ensure the future productive capacity of some sectors through maintenance and the ability to attract FDI[70]. The end of free movement as a result of Brexit may reduce the attractiveness of the UK and Scotland as a place to live and work for EU nationals, particularly if there is a change in the working or residency rights.

There remains uncertainty regarding visas for UK citizens working in the EU27 post-Brexit and vice versa. The UK has committed to respecting the rights of EU citizens currently in the UK, while the EU has indicated that policy regarding UK nationals will be the responsibility of individual member states. SG recently announced that Scotland's Citizens Advice network will provide a new advice service to European citizens in Scotland affected by changes in the immigration rules as a result of Brexit[71].

Therefore, given the current shortage of domestic workers with the requisite skills for the sectors surveyed in dynamic consultation, it is important that Scotland provides the right education and training to ensure a future supply of skilled domestic workers. There is also an opportunity for businesses to adopt broader recruitment practices to employ UK workers at a disadvantage in the labour market to substitute for any loss of EU migrants. For example, these could include women, older workers, younger workers, ethnic minorities and people with disabilities. Scottish Enterprise has sought to retrain 2,000 staff from a major retail bank so they can work in the digital sector, and they are also working with a technology company, scoping the potential to encourage more female workers, for example in retail, to follow the same path. SG and Scottish Enterprise should continue identifying and investigating opportunities like these.

Investing in education, especially at the university and further education level, could also mean that international students, including from the EU, will continue to come to Scotland and may continue to work in the country after graduating[72]. If Brexit is a disincentive for top academics in research coming to Scottish Universities, due to a potential decline in research funding, this could have knock on consequences for attracting EU students, a potential source of labour in Scotland[73].

[67] Final report: The impact of Brexit on the arts sector in Scotland, Ruthless Research, October 2018.
[68] CITB Analysis, Local Construction Skills Needs for Scotland https://www.citb.co.uk/documents/research/local_construction_skills_needs_scotland_summary_july2018.pdf.
[69] Jobs and Skills in Scotland, The evidence, Skills Development Scotland, November 2017 https://www.skillsdevelopmentscotland.co.uk/media/43852/jobs-and-skills-in-scotland-2017-main-report.pdf, p9.
[70] Scotland's Citizens Advice network will provide a new advice service to European citizens in Scotland affected by changes in the immigration rules as a result of Brexit.
[71] https://www.gov.scot/news/information-and-advice-for-eu-citizens/.
[72] Scottish Government. Fresh Talent: Working in Scotland Scheme: an Evidence Review https://www2.gov.scot/Publications/2008/08/15155422/1
[73] ESRC Briefing Note – Attracting international students to the UK https://esrc.ukri.org/files/news-events-and-publications/evidence-briefings/attracting-international-students-to-the-uk/

3.3.1 Initiate business and policy action to address workforce/talent issues

- SG should continue to push for a migration policy that meets the needs of Scottish business – e.g., continuation of free movement, minimal barriers to hiring EU workers, and exemptions (under the Shortage Occupation List) for specific Scottish sectors and occupations where there are skills gaps and labour shortages.

- Scottish businesses need to review their recruitment and retention plans in the context of the loss of free movement. In particular, they should put in place retention plans for key EU talent, and also explore alternative sources of talent from under-represented segments of the community (e.g. women, older workers, younger workers, ethnic minorities and people with disabilities).

4. Impact on SMEs

Key findings

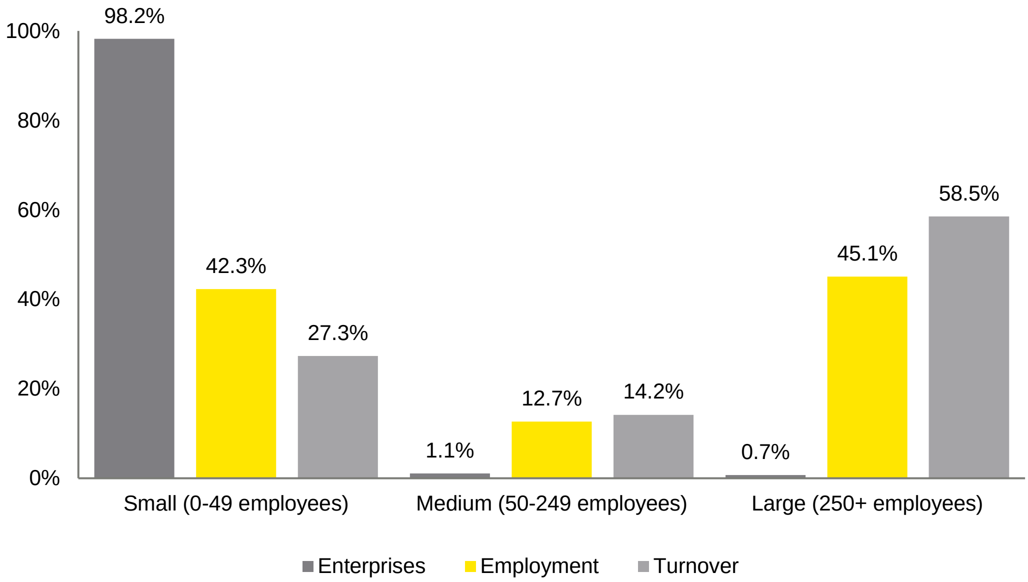
- Scotland's economy comprises predominantly small and medium sized enterprises (SMEs) which are likely to find it more difficult to prepare for Brexit due to resource constraints and uncertainty over what to prepare for. This was a theme raised in most dynamic consultation workshops with particularly clear risks identified in chemicals, construction and financial services.
- Larger companies are more likely to have capacity to prepare for Brexit and put in place relevant contingency plans. As a consequence, there is a risk that SMEs may be at a disadvantage in undertaking Brexit preparations more slowly than larger firms; for example, earlier contingency actions taken by larger companies to secure warehousing or mitigate logistic issues could limit the scope for SMEs to do same.

4.1 Brexit risks

A survey conducted by the Federation of Small Businesses Scotland indicated that 1 in 7 small businesses has yet to make any preparations for a no deal Brexit[74]. This theme emerged in a number of the dynamic consultation workshops including food and drink, life sciences, high value manufacturing, construction and the creative industries. This is a particular risk for the Scottish economy given the relatively high proportion of SMEs.

Scottish industries tend to consist of a few large companies, relatively few medium sized firms, and then a significant number of smaller businesses. This is illustrated in Figure 3 below, that shows over 98% of Scottish businesses are classified as small (employing less than 50 people), accounting for over two-fifths (42.4%) of total employment. In contrast, less than one percent of Scottish businesses are considered to be large, accounting for a similar level of employment (45.1%)[75].

Figure 3: Share of enterprises, employment and turnover by size of enterprise, Scotland, 2018



Source: Businesses in Scotland, Scottish Government

[74] Small businesses entirely unprepared for chaotic no deal Brexit, 18 September 2018, FSB, https://www.fsb.org.uk/media-centre/press-releases/small-businesses-entirely-unprepared-for-chaotic-no-deal-brexit
[75] Businesses in Scotland, 2018, Scottish Government https://www2.gov.scot/Topics/Statistics/Browse/Business/Corporate

4.2 Evidence

4.2.1 Capacity constraints

The larger firms consulted as part of the dynamic consultation exercise indicated that they had undertaken preparations for Brexit and had developed an understanding of the potential impacts of a no deal Brexit on their business. Although this was more evident in foreign-owned firms in manufacturing, larger companies had also taken practical steps to assess the readiness of their supply chains, e.g. supplier surveys, moving annual maintenance periods into April 2019, and stockpiling supplies and finished products. Common examples of Brexit preparation activities in Scotland, and across the UK include:

- Supplier engagement – surveys, contract reviews, switching to more local or less exposed suppliers.
- Entity review – subject to review of regulatory requirements, moving to or setting up EU-27 entities for regulatory approvals or distribution, setting up new UK entities.
- Adjusting trade flows – for example servicing customers in Northern Ireland directly from Scotland rather than via the Republic of Ireland (or mitigating via bonded warehouses).
- Border delay hedges – including Authorised Economic Operator (AEO), increasing inventory stock-holdings or changing service lead-time guarantees.
- Customs readiness and up-scaling – including UK Tariff Codes/integrated Tariff of the European Union (TARIC) classifications, HMRC's new Customs Declarations Service, systems configuration, hiring additional customs compliance staff, assessing broker readiness.

The shared perception from the dynamic consultation process was that SMEs were far less likely to have assessed the extent of their Brexit risk or undertaken any contingency planning. In particular, while large organisations were able to establish governance structures dedicated to Brexit and assign a number of staff for reviewing risks and preparing contingency plans, SMEs were consistently reported to be unlikely to have the capacity to make similar investments.

The dynamic consultation demonstrated higher levels of self-assessed Brexit readiness in sectors dominated by foreign owned enterprises or in highly regulated industries (e.g. financial services, life sciences, chemicals, energy and high value manufacturing)[76]. Only 1 in 10 of businesses asked in these sectors reported they were not ready at all for Brexit, with 4 out of every five saying they were only partly ready.

Further, two-thirds of business were not confident that the UK would secure a Brexit deal prior to March 2019, and while the majority of firms responded that they had made preparations for such an outcome, a greater proportion of foreign-owned firms, and those that operate in heavily regulated industries, had done so.

For example, in the chemicals and high value manufacturing sectors, larger companies engaged in dynamic consultation had sought to establish if their suppliers had processes in place for Brexit. It was their view, made on the basis of responses they had received from their supply chains, that many SMEs have not yet started this process. In some sectors (high value manufacturing and chemicals) larger firms have been further pursuing SMEs for reassurances, while in others (construction) there was an explicit acknowledgement that the complexity of supply chains made this a more challenging task. In the chemicals sector, a trade association indicated that large companies are likely to have sought to establish if their hauliers had processes in place for Brexit. It was their belief that SMEs would not have started this process yet.

[76] Participant business were asked anonymously through an electronic voting tool to describe their organisations level of readiness for Brexit.

Smaller companies may be at a disadvantage in undertaking Brexit preparations more slowly than large companies. For example, larger companies are likely to implement logistical solutions first, like warehousing and transportation mitigations, and as a result there may be limited capacity for small businesses to do the same.

Dynamic consultation evidence indicated that small businesses are more likely to find dealing with regulatory changes and changes in the visas system to employ EU workers difficult. According to a trade association, a challenge for the many smaller firms in the Scottish financial services industry is that they will find it more difficult than larger companies to deal with Brexit without transitional arrangements and with a loss of passporting. Further research is required by SG to understand how to mitigate the impact of a loss of passporting.

Smaller firms in the chemicals sector will face a particular challenge in respect of REACH registration (Insight 12).

Insight 12: Scotland's chemicals sector and regulatory alignment

The Scottish chemicals sector has a large degree of intra-industry trade with the EU; this is facilitated by regulatory equivalence. Companies in this sector are registered with the ECHA and REACH. Companies in this sector that are already registered will have to transfer their registration to a EU27 address. This may be more difficult for smaller companies which do not have European arms. The process is likely to be longer for firms which do not yet import or export with the EU as they will have to register for the first time.

Source: EY dynamic consultation

Some of the mitigations that larger businesses indicated they had been undertaking may not be possible for smaller firms. For example, a larger company in the food and drink sector reported hedging against currency risks of Brexit. This company noted that smaller companies would be unlikely to be able to do the same.

Likewise, some larger companies in the construction industry had begun to stockpile materials. This would be challenging for the significant proportion of small construction firms in Scotland, as they lack the resources to evaluate their exposure to what can be very complex supply chains. They would also struggle to stockpile materials due to cash flow constraints, and would have challenges in forecasting future work due to the bespoke nature of individual contracts. Consequently, border delays could lead to business failure for small businesses through delays to contracts and customer complaints. Some large companies have also noted they are stockpiling contracts in their project pipeline.

There is also likely to be a significant cash flow risk to SMEs (and indeed larger firms) in the event of a no deal Brexit. In particular, disruptions to supply chains from border delays could result in increased demands on working capital. Financial institutions in particular may need to extend additional credit, or relax normal lending conditions to prevent increased levels of financial distress. While this is a risk particularly for SMEs, it also extends across the wider Scottish economy, and potentially calls for a coordinated response by SG, the Enterprise Agencies and the financial services sector.

4.2.2 Opportunities for SMEs in preparing for Brexit

A number of businesses in the dynamic consultation mentioned that there may be some advantages in Scotland's small scale in terms of opportunities for better coordination in response to Brexit. For example, there was a common complaint by those who had undertaken significant preparations as to the extent to which it has taken up resources and senior management time that would have otherwise been best directed at growing the business. SG could facilitate sharing best practice between businesses. There was evidence from the dynamic consultation that this might be more realistic in the Scottish context than across the UK. For example, in the financial services sector in Scotland, the extent to which firms shared best practices was anecdotally remarked upon as being more collaborative than for the sector across the UK as a whole.

This is more possible in sectors like financial services and life sciences that are more geographically focused and can take advantage of their closer-knit professional communities. Indeed, almost all businesses which participated in the dynamic consultations reported that the workshops were either useful or very useful. This level of goodwill could be something the sectors themselves and Government can build on.

There was also the more general question as to whether Scottish businesses are getting relevant support from their trade associations on general and Scotland specific Brexit issues. Businesses that EY spoke to in some sectors, for example the creative industries, indicated that they felt there was less support in Scotland because most of the activity in this sector is London-centric where their trade associations are also largely based. This is an important consideration for business in Scotland because, if the support and activities by industry trade bodies on Brexit are London/UK centric, it may not reflect the views and issues of Scottish businesses, or it might leave business in Scotland slightly isolated from trade body and wider discussions. This was felt to be a particular issue for SMEs in the creative industries which do not have representation or the resource to travel to London.

There was some awareness – which was also promoted in the dynamic consultation – that SG are delivering a number of initiatives to support business through Brexit, for example, the multi-partner, pan Scotland *Prepare for Brexit* campaign and website[77]. This initiative aims to equip businesses of all sizes, sectors and locations with the know-how and confidence to actively plan for Brexit. That said, there was evidence from the dynamic consultation that this may not be reaching all businesses across Scotland. Further targeting may be warranted especially amongst SMEs in Scotland’s key industries in order to raise awareness of the support already available.

4.3 Implications and policy response

The evidence from dynamic consultation suggests that SMEs are unlikely to have made preparations for Brexit. SG should consider how it could further support these enterprises ahead of and during Brexit.

4.3.1 Support SMEs in key Scottish sectors through Brexit

- SG Enterprise Agencies should build on the *Prepare for Brexit* campaign, and in particular, explore how it can provide more targeted support to SMEs. This could include calling on larger business to provide support to SMEs in their supply chains.

- SMEs should also recognise the opportunities they can take advantage of as smaller and more nimble organisations, for example, pivoting to become part of domestic supply chains. Indeed, this applies to Scotland more generally: there are likely to be advantages of scale. For example, it may be easier to coordinate activity and share best practice that the Scottish economy could take advantage of: examples include closer alignment between the life sciences sector, Scottish universities and NHS Scotland to fast track the commercialisation of new products.

- SG and businesses should encourage UK-wide trade associations to consider the specific need of Scottish members. Perhaps through existing or new Brexit-specific industry groups to facilitate knowledge sharing across sub-sectors.

- Businesses should review their financing and cash positions in the context of the potential challenges that Brexit represents (e.g. border delays) to cash flows and working capital.

- SG should engage with Scottish retail banks about relaxing credit requirements through Brexit to assist SMEs if activity is disrupted and cash flow and working capital are hit.

[77] Scottish Enterprise Prepare for Brexit toolkit https://www.scottish-enterprise.com/learning-zone/business-guides-and-webinars/components-folder/business-guides-and-webinar-listing/prepare-for-brexit-toolkit

5. Routes to market and logistics

Key findings

- Scotland's transport infrastructure is configured on the basis of free movement of goods between the UK and EU. A significant proportion of Scottish goods are transported by road to the south of England and cross over to the EU via the short-straits. Therefore, there are few customs checkpoints in Scotland capable of handling EU trade.
- Brexit may challenge the viability of the current logistics models due to risk of potential border delays and an increased need for customs check points. This is a particular risk for sectors that import and export physical goods in significant volumes like food and drink, chemicals and other high value manufacturing sectors.

5.1 Brexit risks

Scotland's location in the north-west of Europe presents logistical challenges. Goods transported between Scotland and the EU move predominantly by road and then the short strait ferry routes, and Scotland is hence dependent on ports in the south of England. If there are hard borders after Brexit, Scotland will need to develop its transport infrastructure to adapt to this new world.

5.2 Evidence

5.2.1 Customs and border delays

The imposition of border controls in a no deal Brexit on WTO terms (or indeed even under a Canada-style free trade agreement) would increase firms' logistics costs and risk perishable goods expiring.

The impact of border delays was raised by participant businesses and trade associations in a number of the dynamic consultation workshops. It was seen as a particular threat to businesses that operate on a just-in-time basis. As a consequence, a number of contributors were increasing their warehousing to shore up their supply chains.

Some businesses in high value manufacturing and renewables indicated that there might be opportunities to move supply chains back into the UK as a mitigation through import substitution. A chemicals business, in dynamic consultation, indicated that larger companies would find this easier to do than smaller companies because of the costs involved and the potential volume savings from reconfiguring supply chains. That is, the upfront fixed costs of on-shoring supply chains could be prohibitive for SMEs compared with larger firms with greater resources and buying power.

One manufacturer in the life sciences sector alluded to adjusting its production timelines to try and avoid the worst of border disruptions in the case of a disorderly Brexit. In the longer term, this disruption to supply chains and slowing down of just-in-time models of production could affect Scottish enterprises' overall competitiveness.

In the Scottish fisheries and aquaculture sub-sectors, any marginal increase in border transit time could have a detrimental impact on the value of the produce, and the viability of the trade route. The value of the final product for these businesses is dependent on the time it takes to get the product to market; an important consideration for exporting perishable goods from Scotland to consumers in mainland Europe.

A gutted salmon has a maximum shelf life of 14 days. A salmon producer engaged through dynamic consultation thinks that they currently have the benefit of proximity to market and can send product to market one or two days more quickly than Norwegian salmon. Delays of even a couple of hours could be detrimental to this producer, and they may consider moving transport of their goods from road to air freight at considerably greater cost which would impact margin. They also recognise they will need to become more efficient at processing paperwork. Currently, non EU exports require two documents: Certificate of origin documents that are relatively straightforward to complete, and an Export Health Certificate which presents more of a challenge. The latter document is completed manually during normal working hours by local authorities, and the producer believes that this system needs to become electronic, to accelerate the rate of completion. That said, what is of upmost importance is that the system used to provide certificates is acceptable for EU sanitary and phytosanitary (SPS) rules.

5.2.2 Customs and checkpoint capacity

If there is regulatory divergence, particularly in the food and drink and life sciences sectors, Scotland may need more phytosanitary posts to accommodate these extra checks for imported products in Scotland.

As for wider customs checks, there is a risk that if more posts and points need to be set up in Scotland then more staff will be required to man these points. SG should ensure local authorities have enough capacity to undertake certification of origin checks and seek clarity on the role of AEOs in these checks post-Brexit. Checks will need to be conducted on both exports and imports, and the current 9am – 5pm provision at existing posts would not be sufficient for business needs. AEOs can also undertake these checks but it can take months to get AEO certification.

A potential opportunity for Scotland is that Forth Ports are the only ports group in the UK with AEO status. This could provide a direct route for trade between Scotland and the EU, avoiding the potential disruption at the busier ports of southern England. However, the feasibility of this as an alternative and the identification of potential beneficiaries would require further analysis.

5.2.3 Transport routes

The dependence on transport by road is facilitated by the longer transit times and often higher cost of alternative forms of transport. A trade industry body in this sector indicated that ports in Scotland are on a smaller scale than in the UK and competition among the ports is relatively low, reflecting limited demand (Insight 13).

Insight 13: There are currently limited channels for transporting goods

A port business indicated that Scotland is always the last leg of the trip so it is more expensive to serve. A factor in this expense is that Scotland is a net exporter, so that the volume of goods entering Scotland is lower than those being exported, resulting in under-utilisation of containers and hence higher costs.

Source: EY dynamic consultation

Indications from businesses in dynamic consultation were that the goods that travel by air freight are higher in value and lower in volume, compared with road or sea. In addition to considerations around CO_2 emissions targets, a challenge in promoting more air freight is that the planes need to be full on both arrival and on departure; this is difficult to achieve in a country which exports more than it imports. A business in the dynamic consultation for food and drink suggested that a lot of air freight goes via Heathrow because there is not the capacity in Scotland. Furthermore, a major airport operator in Scotland confirmed that it carries minimal freight.

In other evidence participants in the logistic dynamic consultations suggested that there may be new opportunities in the growing Scottish cruise market should it be outside the Single Market, e.g. sale of duty free goods, which may currently be underexploited.

5.3 Implications and policy response

A significant proportion of Scottish exports to the EU are transported goods via road, and this could be disrupted in the event of a no deal Brexit. EY notes a number of businesses that are taking precautions against supply chain delays. These include a European fast-moving goods (FMCG) company which sells perishable consumer goods that is changing its European distribution hub from the UK to Netherlands[78].

5.3.1 Build on Scotland's direct physical trade routes to support trade

Scotland's infrastructure is suited to current trade patterns and may need to change post-Brexit. For example, products of animal origin are required to go through an appropriate BIP in the EU. Calais is not currently designated as a BIP, but is currently an important entry point for Scottish produce, particularly seafood. As a consequence, Scottish businesses will need to review, and potentially change their physical routes to market in cooperation with their logistics suppliers. In this context, actions that should be undertaken include:

- SG to lobby for regulatory alignment for animal welfare (hygiene checks, EU veterinary standards, C Branding) and product labelling to reduce the need for significant border checks.
- SG could facilitate discussion among airports, ports, hauliers and shipping companies to ensure all parties are prepared and coordinated for Brexit changes, including the identification of further opportunities for export routes.
- There may be an opportunity for port and rail companies to develop links to provide wider options for customers, to help importers and exporters facilitate timely and cost effective movement of goods directly to and from Scotland.
- Forth Ports and exporting businesses can use its AEO status to streamline exporting and attract more goods to be transported through Scottish ports. There are challenges in terms of capacity though.
- SG should ascertain whether the UKG needs to consider investment in border facilities to enable the necessary checks on the import and export of goods in Scotland.
- SG and business should explore opportunities for alternative means of exporting non-perishable goods, and mechanisms for fast-tracking the movement of perishable goods across UK borders.
- SG to ensure that the relevant competent authority has the capacity to ensure appropriate certification for seafood products leaving or entering once the UK becomes a third country.

[78] Fast-Moving Consumer Goods (FMCG) are products that are sold quickly and at a relatively low cost. Examples include non-durable goods such as packaged foods, beverages, toiletries, over-the-counter drugs, and other consumables.

6. Conclusion

As a small, open economy, Scotland has benefitted from many aspects of EU membership, including tariff-free and frictionless trade with the EU, free movement of people and access to EU funding. Some industries in Scotland have flourished on the basis of these advantages, for example chemicals and food and drink. A no deal Brexit will challenge the patterns of trade that have been established between the EU and Scotland. This will pose risks to the profitability and the viability of some key activities in Scotland across all sectors in some form.

In the *Scotland's Place in Europe*[79] suite of publications, Scotland's position on Brexit is for continued EU membership. Short of continued EU membership, a compromise plan is to keep Scotland and the UK in the European Single Market and Customs Union to limit the impact of Brexit as much as possible. SG and SG agencies have also undertaken campaigns which may address some Brexit risks (*Scotland is Now*) and released materials (*Prepare for Brexit* toolkit) to ensure that Scottish businesses start preparing for Brexit. In terms of next steps, SG should continue to focus on the possibility of a no deal Brexit to make sure that the Scottish economy is prepared for the worst-case scenario. The key themes to focus on include:

- Promote Scotland as open for business, seek both domestic opportunities for reshoring, and new international markets, and emphasise Scotland's attractiveness as a place to do business to shore up FDI, and to protect economic activity in Scotland.

- Secure access to talent, making sure that Scotland can still recruit workers from the EU for key sectors (e.g. food and drink, life sciences, financial services) through any new UK immigration policy, and ensure that domestic talent is nurtured to meet the needs of business.

- Support SMEs through Brexit, identifying support mechanisms and helping them harness their smaller size as an advantage in responding to the risks of Brexit.

- Build on Scotland's existing transport infrastructure (e.g. ports and airports) to support and facilitate continued EU trade, as the current infrastructure is predicated on the basis of free movement of goods between the UK and the EU (a significant proportion of which is currently transported via road and the short straits).

[79] Scotland's Place in Europe, Scottish Government, October 2018, https://www.gov.scot/publications/scotlands-place-europe-way-forward/

Appendix A Organisations consulted

Sector	Businesses and trade associations represented			
Creative industries	4J Studios BBC Scotland	Culture Counts Edinburgh Festival Fringe	Federation of Scottish Theatre Matchlight	The Modern Institute
Energy	DANA Drax EDF Energy	Energy UK Natural Power Oil & Gas UK	Scottish Power Renewables Spirit Energy SP Energy Networks	SSE Group Total
Financial services	Aberdeen Standard Baillie Gifford	CMS CMO LLP Julius Baer	RBS Scottish Financial Enterprises	Scottish Irish Finance Initiative Standard Life
High value manufacturing	Bosch Doosan Babcock Leonardo MW	Liberty Mitsubishi Electric Air Conditioning Systems Europe Ltd	Optos Raytheon Sanmina	Scottish Engineering Terasaki Woodward
Chemicals	Chemical Industries Association	Chemical Sciences Scotland Industry Leadership Group	PetroIneos	Versalis UK
Food and drink	Albert Bartlett Food and Drink Federation Scotland Food Standards Scotland	Marine Harvest National Farmers Union Scotland Quality Meat Scotland	Scottish Agricultural Organisation Society Scottish Fishermen's Organisation Scotland Food & Drink	Scottish Salmon Company Seafood Scotland Scotch Whisky Association Walkers Shortbread
Logistics	British Ports	Edinburgh Airport	Forth Ports	Road Haulage Association
Life sciences	Archangel Cohesion Medical	IQVIA (formally QuintilesIMS following the merger of Quintiles and IMS Health)	Grant Pearson Brown Consulting Medtronic Optos	Synpromics TC BioPharm Tissue Solutions Valneva
Construction	Association of Consulting Engineers BAM Construction Industry Training Board	Construction Scotland EGGER Federation of Master Builders Homes for Scotland	Morgan Sindall Newton Steel Frames	SELECT Thomas and Adamson
Cross-sector	CBI Scotland	Federation of Small Businesses Scotland	Fraser of Allander Institute	Money Advice Scotland

Appendix B Profile of sectors in dynamic consultation

Sector	Profile of sector
Food and drink (incl. agri- & aquaculture)	► The sector is varied including primary agriculture, fisheries and aquaculture and food and drinks manufacturers. ► It is more reliant on exports as a share of output than the rest of the UK. According to HMRC data, exports of beverages and fish, crustaceans and molluscs are Scotland's second and third most significant exports to the EU. The equivalent rankings for the UK are 20 and 32 respectively[80]. ► Companies are often in rural locations and smaller in scale than the UK average, for example, just 2.9% of Scottish businesses in this sector are considered large in comparison to 5.3% in the UK[81]. ► Scotland has a number of Protected Food Names and manufactures high quality luxury products, e.g. Scotch Whisky, Scottish Salmon. In total, global whisky exports were worth £4.3bn in 2017, with the EU accounting for over 30% of this trade. Salmon is the largest single UK food export at 8% of UK food and drink exports; in 2017, exports of salmon were worth £600m.
Chemicals	► This sector includes the manufacture of coke and refined petroleum products and the manufacture of chemicals and chemical products. ► It represents 7.8% of the UK GVA contribution from the chemicals sector (the Scottish economy represents around 7.7% of total UK GVA). ► It has crucial linkages to Scotland's off-shore oil and gas industry. ► Scottish businesses are embedded in EU supply chains with intermediate products making multiple trips between other EU countries and Scotland.
Construction	► This sector includes the construction of buildings, civil engineering and specialised construction activities. ► The sector represents 7.7% of the UK GVA[82]. ► SG evidence indicates that the sector in Scotland is largely reliant on public sector funding for construction projects[83]. According to SG, public sector funding remains extremely important for maintaining key skills and output in the sector. The ONS does not collect data on the scale of revenue in this sector from public or private funded activities.
Creative industries	► This is a diverse sector that includes visual art, performance, audio-visual, books and press, heritage, digital industries and cultural education. ► In absolute numbers of businesses, software/electronic publishing companies are the biggest component of the sector in Scotland with 7,265 enterprises in 2017. The smallest is computer games with 105 companies, alhough it plays a key role in Scotland's creative industries[84]. ► The scale of this sector compared with the rest of the UK is smaller. However, companies are more dispersed across Scotland in Edinburgh, Glasgow and Dundee compared to big hubs such as London. Notably, 65.4% of exports from this industry are to the rest of the UK[85].

[80] HMRC Interactive tables, 2017.
[81] ONS Inter Departmental Business Register, UK Business: Activity, size and location 2018.
[82] Taken from statistics provided by SG from ONS, Annual Business Survey (Compiled by SG).
[83] Economic Impact of Leaving the EU – Construction, Scottish Government.
[84] Economic Impact of Leaving the EU – Creative industries, Scottish Government.
[85] Scottish Growth Sector briefings, Scottish Government, November 2018, https://www2.gov.scot/Topics/Statistics/Browse/Business/Publications/GrowthSectors/Briefings.

Sector	Profile of sector
Energy	► This sector includes the extraction of crude petroleum, natural gas, low carbon and renewable energy, as well as generation and transmission. ► It is a major sector for Scotland, who are the largest petroleum producer in the EU. ► Scotland accounts for 96% of UK crude oil and natural gas liquids (NGL) production and 22.4% of employment in the UK energy sector. Unlike the rest of the UK, Scotland is a net exporter of energy. ► Scotland has particular strengths, reflecting its natural resource in renewable energy (offshore wind, wave and tidal power) compared to the rest of the UK which presents export opportunities with the growing renewables market. ► The Scottish energy sector has a greater proportion of renewable energy generated by wind turbines than the UK in aggregate.
Financial & business services/Fintech	► This sector in Scotland is focused on banking, fund management, life assurance and fintech. In particular, Scotland specialises in asset management and servicing, making it distinct from the wider UK sector. ► Edinburgh is the second largest financial centre in the UK after London and is a financial hub within Europe. Financial services in Edinburgh generates £5bn in GVA, employs 50,000 people, and accounts for 13% of all UK banking jobs[86]. ► Scotland also has a thriving fintech ecosystem, which it is looking to significantly develop within the next two years. ► The expertise present in Scotland and talent from local universities combined with lower living costs and high quality of life provides Scotland with a unique selling point to compete with London as a base for financial companies.
Life sciences	► Life sciences encompasses a wide range of activities including the manufacture of pharmaceutical products and medical & dental supplies. Particular areas of expertise in Scotland include medical technology and diagnostics, and pharmaceutical services. ► It is the third most productive sector in Scotland and has been identified as a Scottish growth sector. ► Businesses in dynamic consultation suggested that Scottish life sciences businesses were typically smaller than their UK equivalents. ► The smaller scale of the sector in Scotland potentially provides an opportunity to better coordinate and commercialise the links between private and public sectors and academia.

[86] City UK data published in the Financial Times, https://www.ft.com/content/415e30a2-cacf-11e7-ab18-7a9fb7d6163e.

Sector	Profile of sector
Logistics	► This sector includes transport via road, pipelines, water & air, warehousing storage and postal & courier activities. In dynamic consultation, EY engaged with organisations in road haulage, ports and airports. ► In contrast with the rest of the UK ports, the only active roll-on-roll-off (RORO) port in Scotland is Rosyth; the majority of cargo travelling through Scottish ports is via container[87]. However, Leith, Dundee and Grangemouth have the facilities to handle a variety of RORO project cargos when required[88]. ► Scottish logistics represent 6.7% total UK GVA contribution from the sector[89]. ► Scottish exports include significant numbers of perishable products to the EU, a significant proportion of which is transported via the UK road network and enters the EU via the short-straits crossing in the South of England.
High value manufacturing	► This sector includes all other manufacturing such as wood, metals, rubber, plastics, transport equipment and motor vehicles. In dynamic consultation, EY engaged with manufacturers in a variety of sub-sectors including engineering, aerospace, energy, and steel. ► On the whole, the composition of the sector is similar to the UK although Scotland has lower levels of car manufacturing than the rest of the UK. ► Further, compared to the rest of the UK, a lot of companies are foreign owned and, as such, are production outposts for larger companies.

Source: EY analysis; various sources identified in footnotes

[87] Roll-on, roll-off ships are vessels designed to carry wheeled cargo that are driven on and off the ship on their own wheels. This is in contrast to lift-on, lift-off (LOLO) vessels, which use a crane to load and unload cargo.
[88] Forth Ports, https://forthports.co.uk/services/ro-ro/
[89] Taken from statistics provided by SG from ONS, Annual Business Survey (Compiled by SG)

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Ernst & Young LLP, 1 More London Place, London, SE1 2AF.

ey.com