

Scotland's Productivity Challenge: Exploring the issues

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Overview

Scotland's productivity has outperformed all regions of the UK over the 1999-2019 period, recording an average growth of real output per hour of 1.5% per annum. Despite this, productivity is still below the national average and sits below the median OECD. Scotland's productivity growth has slowed in recent years too.

Productivity is not just an abstract concept. It matters greatly for the wellbeing of every person in Scotland. It is key to supporting high quality and rewarding jobs, and funding public services. Unlocking Scotland's productivity potential will help build a stronger more resilient economy that delivers inclusive and sustainable growth.

Reflecting upon Scotland's productivity performance is a story of puzzles and apparent contradictions, with strength in some areas but below average performance elsewhere.

For example, Scotland has success in high productivity sectors such as energy and finance. With its renowned group of world-leading Universities it also has one of the most educated workforces in the OECD. It is near the top (third behind London and Lille in France) in the European Union for the proportion of working age population (25 to 64) with a tertiary education.

But at the same time, Scotland has a higher percentage of adults without any qualification (9.8%), in comparison to the UK (7.9%). Indeed, Glasgow is in the bottom 10 UK cities for the highest percentage of its working age population with no qualifications.

Like other parts of the UK, whilst employment growth has been strong in recent years, the majority of this growth since 2009 has been in the (relatively) low value-added service sector.

The business ecosystem in Scotland lacks a critical mass of large scale-ups. This impacts a range of outcomes, including export performance —with around 100 companies accounting for 60% of Scottish international exports. A significant challenge is the persistently low rate of business start-ups, which lags the rest of the UK by 150 companies per 10,000 residents. Like the rest of the UK, the majority of Scotland's business base is clustered at low levels of productivity. Highly productive firms are concentrated in the knowledge intensive service industries, but they account for a small number of employment and employers report various skills gaps that hold back their growth potential.

Another area for improvement is in investment. Levels of private investment in the Scottish economy are typically lower than in the best performing countries. In areas such as Research and Development (R&D), expenditure has been chronically low in comparison with the OECD and below the UK average. Again, there are puzzles here. Scottish Universities contribution to R&D is among the best in the OECD, but this has yet to translate into a step-change in innovation in the Scottish economy. Indeed, in the most recent UK Innovation survey, Scotland lags the UK in key metrics of innovation (from new products and processes to workplace innovations). If anything, performance has deteriorated over the last decade.

One driver of innovation is the adoption of digital technologies. Research identifies a strong link between the digital technology and firm productivity. Evidence indicates a low degree of digital penetration in the Scottish business sector. Businesses report gaps in employee digital skills—crucial for the ecosystem to engage fully and reap the benefits from digital transformations. Strong leadership and management practices are strongly correlated with firm productivity and are a key enabler of technology adoption and IT engagement. More broadly, there is a growing recognition that quality of management and employee engagement are crucial for Fair Work and Workplace Innovation – key priorities of the Scottish Government.

Beyond this national picture, large variations have emerged at a regional level within Scotland. In the best performing region output per hour (city of Edinburgh) is £41.9 compared to £28.3 in the worst performing region (Na h-Eileanan Siar). Edinburgh built out its advantage over 15 years compared to all other regions, including cities as Aberdeen (at £35.4) and Glasgow (at £31.1). To put these differences into perspective, a hypothetical rise in productivity of lagging Scottish regions to the national average (£34.4), would yield an additional £632 for every person in Scotland.

From a productivity perspective, the Scottish economy can be best understood as having four quite distinct regional dimensions which shape outcomes: i) the North-East, including Aberdeen, with the dominance of its high value oil-and-gas sector, ii) Edinburgh and surrounding areas (Eastern Scotland) with its strong finance, public sector and professional services sector; iii) Glasgow and the Central Belt (Western Central Scotland) with a mix of sectors and areas recovering from post-industrial decline, iv) the rural and island areas (Highlands and Island and Southern Scotland).

These differences in productivity levels reflect, in part, the nature of growth in cities, the industrial make-up of each region and geography. It is puzzling that Glasgow, a big city itself, suffers from chronic low productivity in comparison to Edinburgh. Output per hour is 35% higher in Edinburgh compared to Glasgow. A reasonable hypothesis that may explain the disparities in intraregional productivities is the dynamism of certain local economies (Edinburgh and Aberdeen) in comparison to other parts of the country. Evidence suggests that Edinburgh and Aberdeen perform better on metrics such as R&D within businesses, business start-up rates, qualified workforce employed, and exporting activity compared to most other cities and regions.

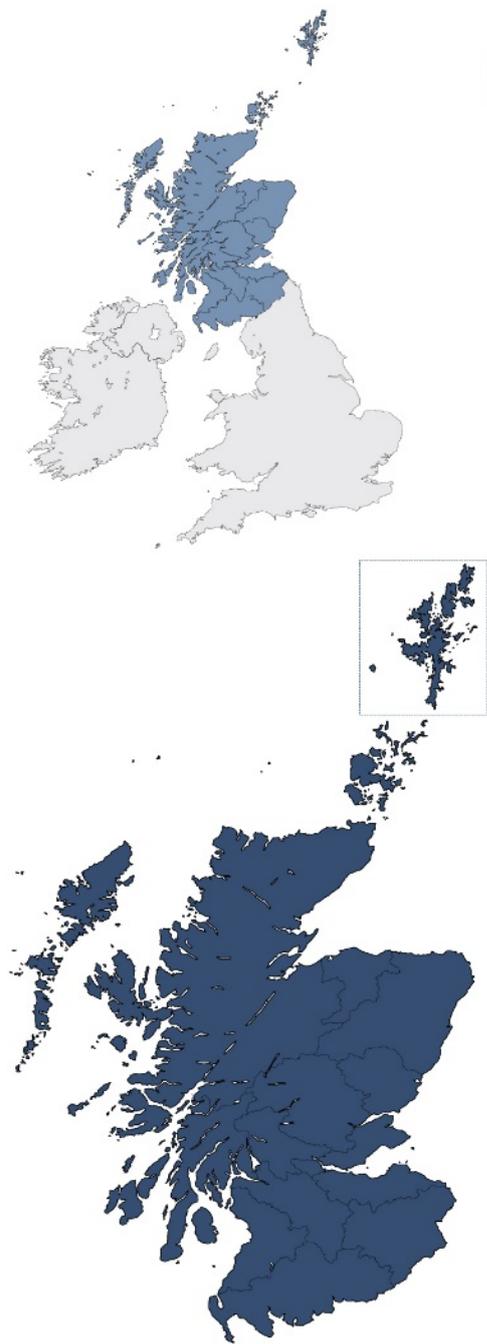
Improving Scotland's productivity performance has been a policy objective of successive governments in both London and Edinburgh. Under devolution, responsibility for improving productivity is shared across different tiers of government. In recent years, there have been criticisms that the policy landscape to support the economy, and improvements in productivity, is cluttered. There have been numerous 'strategies' and 'action plans' but arguably less focus upon delivery, implementation and evaluation of 'what works'.

Key macroeconomic, industrial, innovation and fiscal levers are controlled by the UK Government. This includes key drivers of productivity such as business tax policies, policies to support internationalisation, access to finance and regulatory levers. Specific policy initiatives,

such as the Industrial Strategy and Levelling-Up agenda, will see resources specifically targeted at key sectors and regions within Scotland with the aim of helping to boost productivity.

In contrast, the Scottish Government controls more of the microeconomic levers to support productivity. This includes the education and skills system, support for business start-ups and broader economic development, infrastructure, and small business growth. Delivery of policy in these areas is often devolved to arms-length agencies, such as Scottish Enterprise, Highlands and Islands Enterprise and Skills Development Scotland. The 2015 Scottish Government Economic Strategy sets out an ambition to reach the top quartile of OECD countries on productivity as part of its ambitions around inclusive growth and a focus upon a wellbeing economy. Local government too has a role to play, particularly around planning and through City and Regional Growth Deals.

Figure 1. Scotland at a Glance, 2019



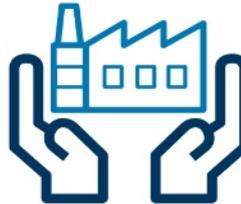
Population:
5.46 million
Economically active:
2.64 million
Size of economy:
£168.5 bn



356,550 private sector enterprises
98.2% small
(0 to 49 employees)
1.1% medium
(50 to 249 employees)
0.7% large
(250 and above employees)



Health industry is the largest employer
14.07%
of total employment



SMEs
provide for
1.2m



GDP
per person
£30,822

GVA per hour varies from

£41.9 (Edinburgh)

£28.3 (Na h-Eileanan Siar)

Scotland Average

GVA per hour

£34.4 (Scottish average)

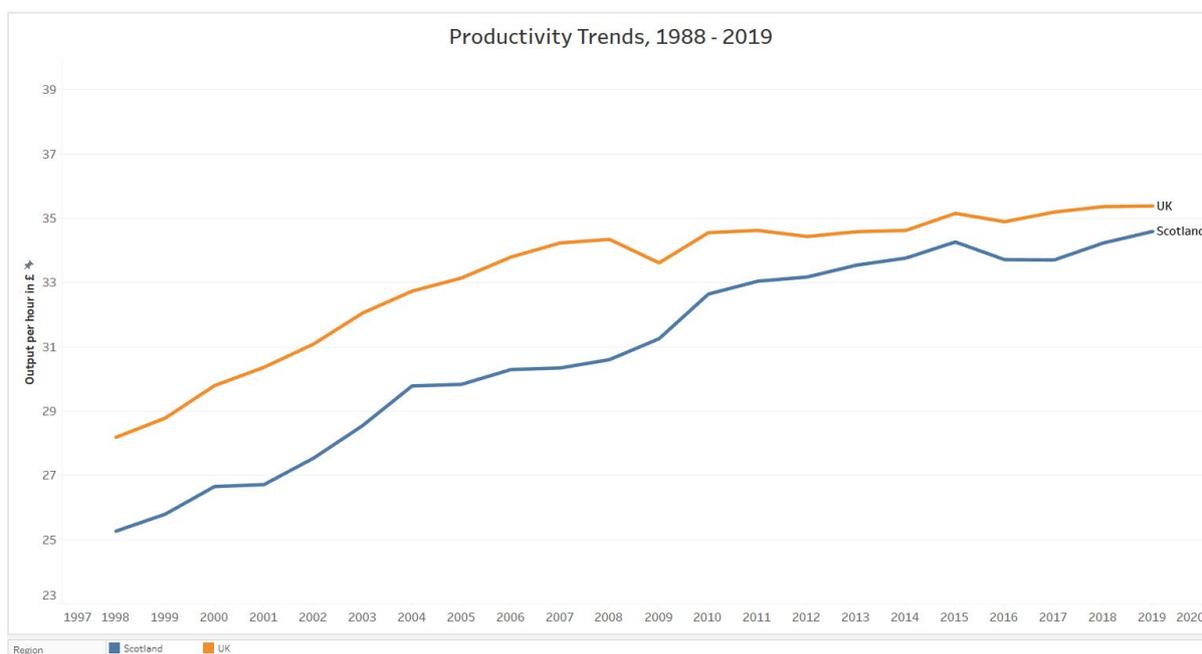
Introduction

- 1.1. Productivity in the UK has stagnated since the onset of the financial crisis of 2007-2008 and has since become a serious drag on the UK economy, impacting economic growth and living standards for more than a decade. Addressing the UK productivity challenge is a matter of national priority, especially now, where fresh challenges brought about by the Covid-19 pandemic, the intensification of global competition and the rebalancing of the economy following Brexit. Responding to the productivity challenge and recognising the importance of the regional disparities of productivity across the UK, the Productivity Institute was established to advance our understanding of productivity stagnation and propose national and regional solutions to restart productivity growth across regions and nations. Eight Regional Productivity Forums (RPF) are tasked to develop the productivity agenda and deliver bespoke solutions in the UK regions.
- 1.2. Productivity impacts everyone in Scotland. It affects pay and benefits providing citizens more money to spend, the creation of new jobs, business growth and profits, the quality of public services, pensions and health service. The agenda of Scotland's RPF is to identify the productivity gaps, analyse the causes, and collaborate with the business and policy communities to develop and deliver targeted interventions to boost productivity.
- 1.3. Unlocking the productivity potential will allow Scotland to create a stronger more resilient economy in Scotland, especially for those currently so badly affected by the impacts of Covid-19. Scotland has an ambition to build back a prosperous economy by adopting a progressive approach as framed by the Sustainable Development Goals. Harnessing the power of diversity to transform existing thinking, open up exciting possibilities and establish an environment where radical, step-change innovation thrives. Scotland has a highly skilled workforce to provide the talent and leadership required to achieve this ambition and secure Scotland's economic future.
- 1.4. The paper will present key data shaping the productivity performance for the nation. The presentation is organised around the broad research themes of the Institute and draws comparisons with other UK regions and internationally. Section 2 presents the broad productivity and intraregional trends. Section 3 collects evidence on productivity drivers and presents the policy landscape. The last section outlines some of the key issues for Scotland as they emerge from the analysis.

The productivity landscape in Scotland

- 2.1. Scotland has, over the last two decades, significantly closed the gap in productivity levels with the UK average (Figure 2). Real output per hour in Scotland in 2019 was £34.6 in comparison to £35.4 in the UK as a whole. Scotland has outperformed all regions of the UK in the 1999-2019 period, recording an average growth of real output per hour of 1.52% per annum. Despite this solid performance, Scotland's productivity, like many other UK regions, is still below the national average. Only London and the South-East have outperformed compared to the national average (Figure 3).
- 2.2. This progress has been halted, during the last decade, where productivity growth in Scotland, mirroring the rest of the UK, has been very weak, registering a 0.7% annual increase in the 2011 to 2019 period. Scotland's on-going ambition, formally stated in 2007 by the Scottish Government, is to be in the top quartile of OECD countries for productivity. However, Scotland's OECD ranking in productivity has barely moved since 2000 and sits below the median OECD productivity (Figure 4). To reach this ambitious goal requires an increase in Scotland's productivity by over 30%--a growth performance that has never been achieved by an advanced economy (with the exception of Ireland).¹

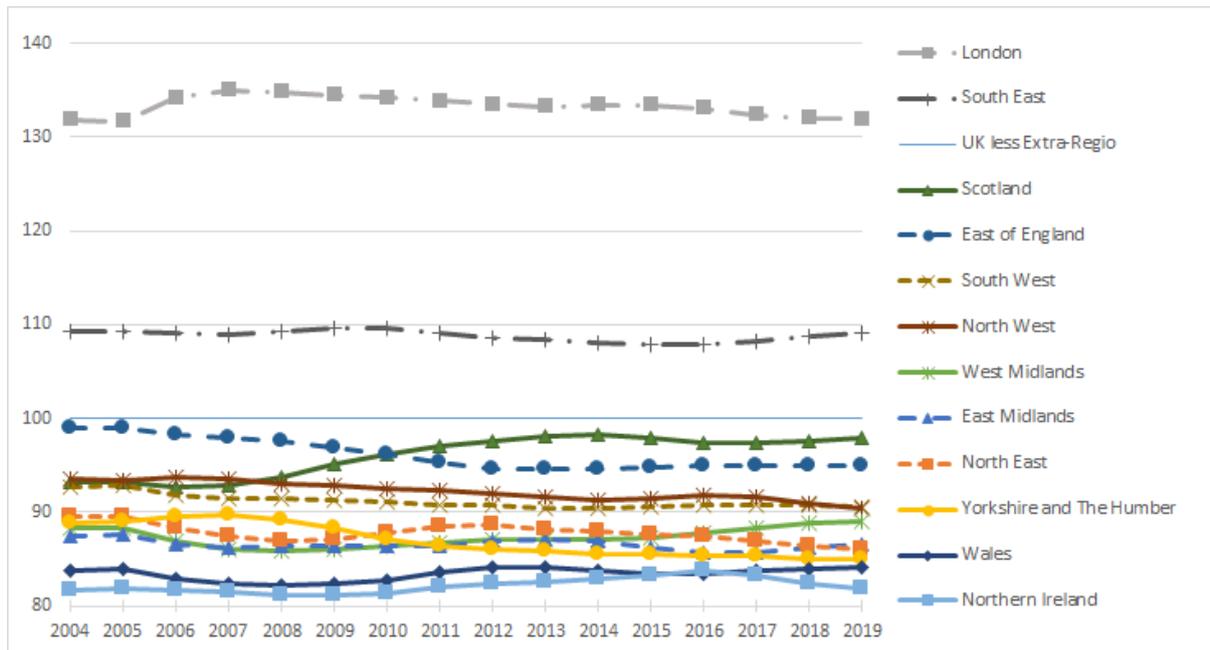
Figure 2. Productivity trends, 1998-2019



Source: Office for National Statistics, Scottish Government

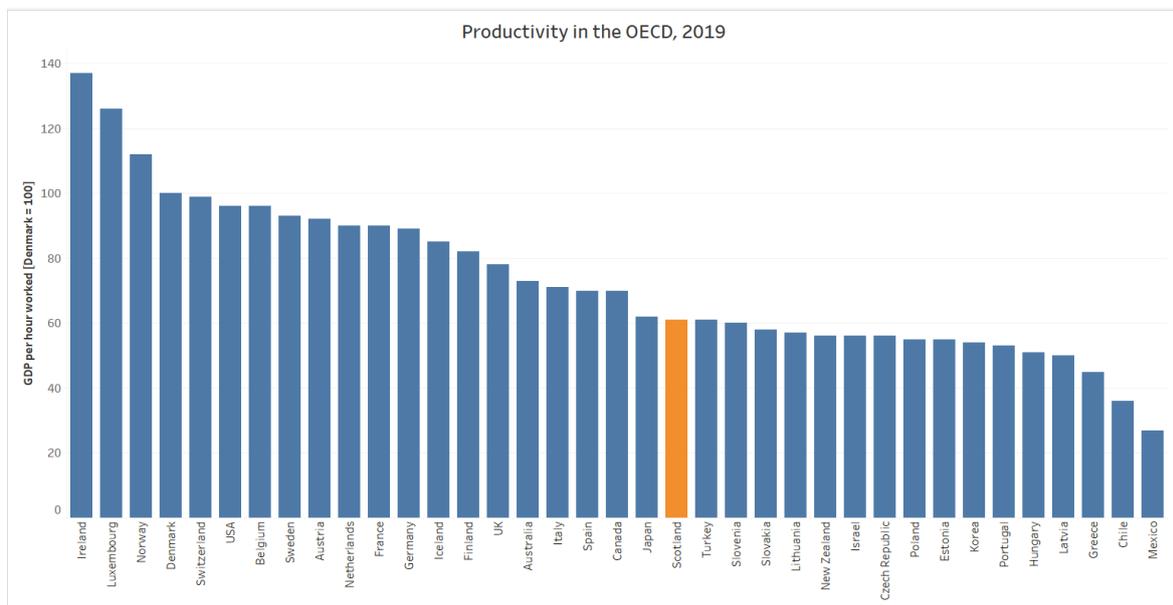
¹ Some commentators raise the question and caution on the relevance and feasibility of the productivity target set by successive Scottish governments since devolution. See Roy (2018), 'How relevant are targets for Scottish productivity', Fraser of Allander Institute.

Figure 3. GVA per hour worked (smoothed), relative to UK =100, UK regions



Source: Office for National Statistics

Figure 4. Productivity in the OECD, 2019



Source: OECD, Scottish Government

Figure 5. GVA (smoothed) per hour worked, ITL-3 regions, 2019

2019 nominal GVA per hour worked	ITL-3 region	Above or below Scotland ITL-3 2019 Average
41.9	City of Edinburgh	Above
36.8	Falkirk	Above
36.1	West Lothian	Above
35.8	Clackmannanshire and Fife	Above
35.7	North Lanarkshire	Above
35.4	Aberdeen City and Aberdeenshire	Above
35.2	Perth and Kinross and Stirling	Above
35.0	Shetland Islands	Above
34.4	Scotland ITL-3 Average	
	Inverness and Nairn and Moray, Badenoch and Strathspey	Below
33.5	East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond	Below
33.4	South Lanarkshire	Below
33.4	East Lothian and Midlothian	Below
33.1	East Lothian and Midlothian	Below
32.7	Inverclyde, East Renfrewshire and Renfrewshire	Below
32.5	South Ayrshire	Below
32.4	Caithness and Sutherland and Ross and Cromarty	Below
32.4	Dumfries and Galloway	Below
32.4	Orkney Islands	Below
32.4	Orkney Islands	Below
31.2	Angus and Dundee City	Below
31.1	Glasgow City	Below
	Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute	Below
30.3	Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute	Below
29.8	East Ayrshire and North Ayrshire mainland	Below
29.7	Scottish Borders	Below
28.3	Na h-Eileanan Siar	Below

Source: Office for National Statistics

2.3. Disparities in the productivity levels of Scottish regions are significant (Figure 5). Output per hour in Edinburgh is £41.9 compared to £28.3 in Na h-Eileanan Siar. This reflects, in part, the nature of growth in cities, which benefit from a concentration of economic activity. Only eight regions in Scotland were above the Scotland ITL-3 regional average in 2019. In the period 2004 to 2019, 11 out of 23 regions experienced faster (total) productivity growth than Scotland as a whole. The dispersion in output per hour within Scotland's regions is relatively high amongst all devolved nations and UK regions. Comparing productivity levels, the City of Edinburgh has systematically featured in the top three performing regions. While Perth and Kinross and Stirling have entered the top three since 2013, Aberdeen has dropped out since 2018. The Scottish borders feature consistently in the bottom three regions since 2004. These regional disparities have a counterpart in the

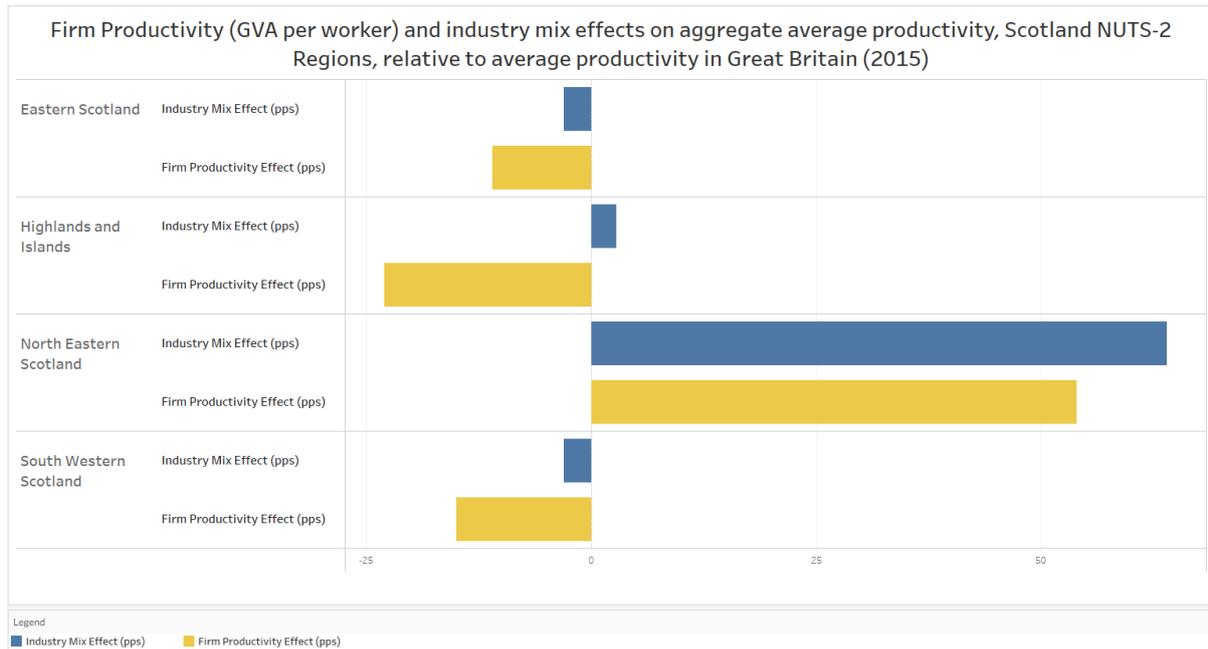
performance of productivity in the business sector. Analysis by the Office for National Statistics (ONS) describe average regional productivity as stemming from two sources, 1) firm productivities within industries--firm productivity effect, and 2) industry mix effect.² Figure 6 suggests that low productivity in Scottish regions (expressed relative to the Great Britain average) is to a large extent due to relatively low average firm productivities within industries and only slightly impacted by the local industry mix. The exception is North Eastern Scotland which shows a higher level of productivity relative to the Great Britain average, due to the fact that the high concentration of productive firms in the large oil and gas sector in Aberdeen.

- 2.4. A reasonable thesis that may help explain the wide disparities in intraregional productivities evidenced in Figure 5 is the dynamism of the local economies around the cities of Edinburgh and Aberdeen in comparison to the South and West-Central regions. Evidence from the City regions suggest that the former perform better on metrics such as R&D within businesses, business start-up rates, qualified workforce employed, and exporting activity compared to most other cities and regions.³ Whilst the oil and gas sector has pulled up Scottish productivity performance in the past, emerging trends in green energy--as well as the recent decline in oil prices--paint a more nuanced picture going forward with challenges and opportunities. Evidence from the ONS suggests that the region and sector has been shedding jobs since 2014.

² Non-financial business sector. The Firm Productivity Index, which shows the average level of productivity in a region (relative to the national average) assuming the industry composition in that region is the same as for the economy as a whole; this is designed to demonstrate the effect of the firm level productivities on the region's estimated average aggregate productivity. The Industry Composition Index, which shows the average level of productivity in a region (relative to national average) assuming the productivity of each industry in that region equals nationwide average productivity for that industry; this is designed to demonstrate the effect of the industry composition on the region's estimated average aggregate productivity. This is based on the employment share of two digits SIC industries in the regions' employment.

³ Data available from the Scottish Government: <https://www.gov.scot/publications/city-regions-summary/>.

Figure 6. Firm productivity (GVA per worker) and industry mix effects on aggregate average productivity, Scotland NUTS-2 regions, relative to average aggregate productivity in Great Britain, 2015



Source: Office for National Statistics, Annual business survey

Productivity drivers in Scotland

Human capital and skills

- 3.1. Scotland, like the rest of the UK, has rapidly created jobs reducing its unemployment rate from 8.8% in 2010 to 3.5% in 2019. Robust employment growth in the period 2009 to 2019 has mostly materialised in Scotland’s (relatively) low value-added service sector.
- 3.2. In the 1998-2019 period eight industrial sectors performed better in terms of productivity growth compared to the UK average. But jobs creation has largely skewed away from most productive sectors (Figure 7) and has mostly concentrated in low value-added sectors. *Only four out of the high performing sectors have experienced robust jobs growth during the same period: **Information and communication, Professional, scientific and technical services, Administrative, and support service activities, Health and Social work.*** Two extreme examples highlight the mismatch between jobs growth and productivity growth: **Manufacturing** is a highly productive sector but losing jobs, whilst **Real estate** experiences robust jobs growth at the backdrop of negative productivity growth.
- 3.3. Despite the overall low unemployment rate, job opportunities are unevenly distributed across regions. The number of jobs as a proportion of economically active 16-64 population varies significantly between regions (Figure 8), with the West and South Scotland being the worst performing regions.

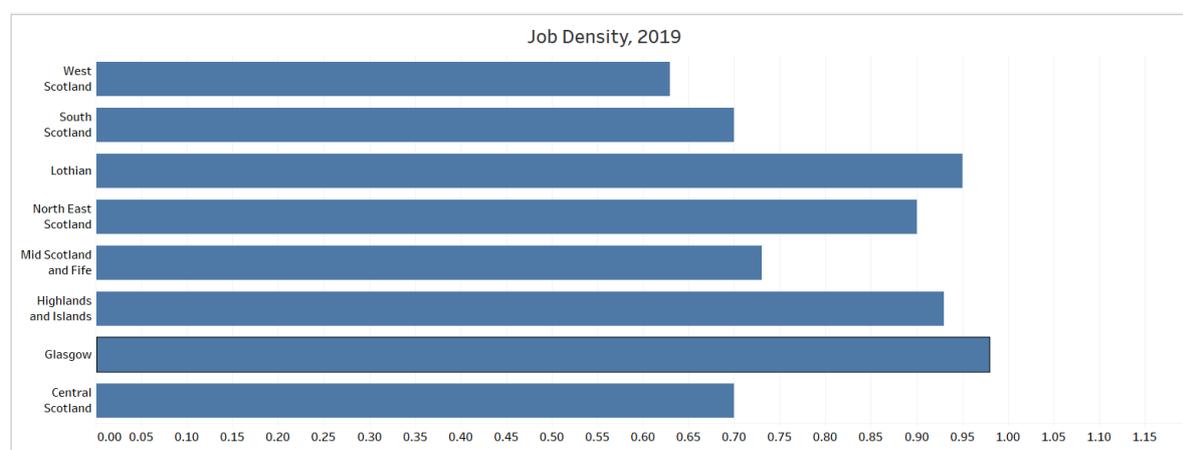
Figure 7. Annual employment growth and annual productivity growth by sector, 1998-2019

Broad Industry	Annual Employment growth 1998-2019	Annual Productivity growth 1998-2019
All Industries	0.5%	1.52%
Non-Manufacturing Production & Agriculture	0.5%	0.63%
Manufacturing	-2.8%	3.08%
Construction	0.4%	0.65%
Finance and Insurance	-0.2%	2.35%
Services (excluding Finance)	1.0%	1.54%
Wholesale and retail trade	-0.2%	2.19%
Transportation and storage	-0.1%	1.55%
Accommodation and service activities	0.9%	0.97%
Information and communication	2.1%	3.10%
Real estate activities	4.5%	-1.07%
Professional, scientific, and technical activities	2.0%	3.06%
Administrative and support service activities	2.6%	2.59%
Public administration and defence	0.1%	0.77%
Education	0.9%	-0.79%
Human health and social work activities	1.4%	1.46%
Arts, entertainment and recreation	2.1%	-0.85%
Other service activities & Activities of households as employers	1.2%	0.91%

The colour key shows the strength of the growth in employment and productivity by industry. Green shows the sectors experiencing the strongest growth over the period, while red shows those experiencing the weakest growth. The more vibrant the colour (in terms of red and green), the stronger the growth.

Source: Office for National Statistics, Scottish Government

Figure 8. Jobs density, 2019



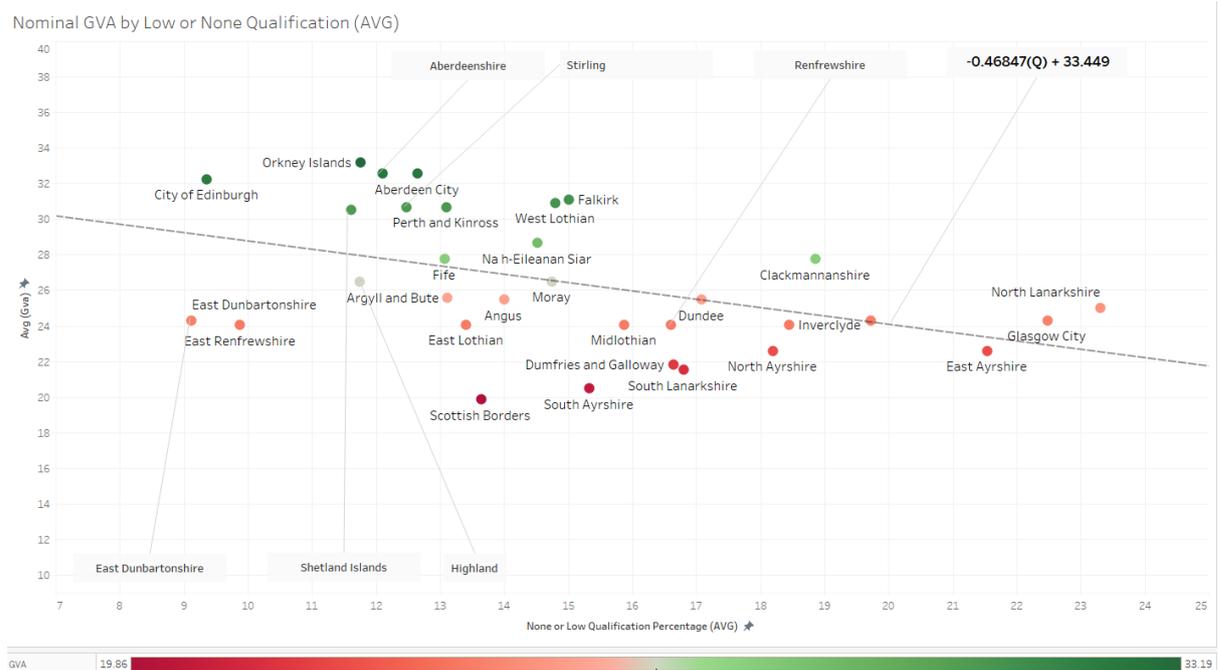
Source: Annual population survey, 2019

- 3.4. The overall decline in unemployment masks interesting differences across different groups and cohorts in terms of labour market outcomes. Whilst the gender employment gap (difference between the employment rates for men and women) had decreased from 8.2 percentage points in 2009 to 6.3 percentage points in 2019, a much greater proportion of women are in part time jobs (41.2%) compared to men (12.4%). The employment rate for the disabled population was 49.0%, significantly lower than the employment rate for those not classed as disabled (81.6%). The employment rate for the minority ethnic population aged 16 to 64 was 59.3%, significantly lower than the white population employment rate of 75.7%.
- 3.5. The youth unemployment rate (8.4%) in Scotland is comparable to the UK rate, however, those in the 16-24 group are predominantly concentrated in Retail, Wholesale, Motor Trades, and Food and Accommodation services, accounting for 22.3% and 36.8% of all employment in those sectors respectively. The severity of the Covid-19 shock that has hit the majority of businesses in those sectors suggests a potentially significant decline in employment opportunities for this group going forward.
- 3.6. The UK has one of the most educated workforces in the OECD. Scotland has the highest proportion of adult 16-64 population with NV+4 qualifications in the country at 45.3% vs 40.2% for the UK. At 50.4%, Scotland places third (behind London and Lille in France) in the EU for the proportion of working age population (25 to 64) with a tertiary education.⁴ 37.2% of the workforce workers in Scotland aged 25 to 64 in 2019 were graduates (SCQF Level 9+), representing an increase of 11% since 2009. Nevertheless, regional disparities are significant; for example, in North Ayrshire and North Lanarkshire this share is only 23%.⁵ At the same time, Scotland has a higher percentage of adult population without any (9.8%) qualification, in comparison to the UK (7.9%), even though this share has been steadily declining since 2004. Glasgow is in the bottom 10 UK cities with the highest percentage of working age population with no qualifications (11.9%). Differences in the proportion of qualifications seem to have a counterpart in the productivity performance of council areas. On average, council areas with a high proportion of residents with low or no qualifications tend to perform worse in terms of economic output and productivity (Figure 9).

⁴ See https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_04/default/table?lang=en.

⁵ Aberdeen (48.9%), Edinburgh (58.8%), Glasgow (46.7%) feature in the UK top 10 cities for the share of working age population with NV+4 or higher-level qualifications for 2018.

Figure 9. Gross Value added and qualifications relationship (2004-2013)

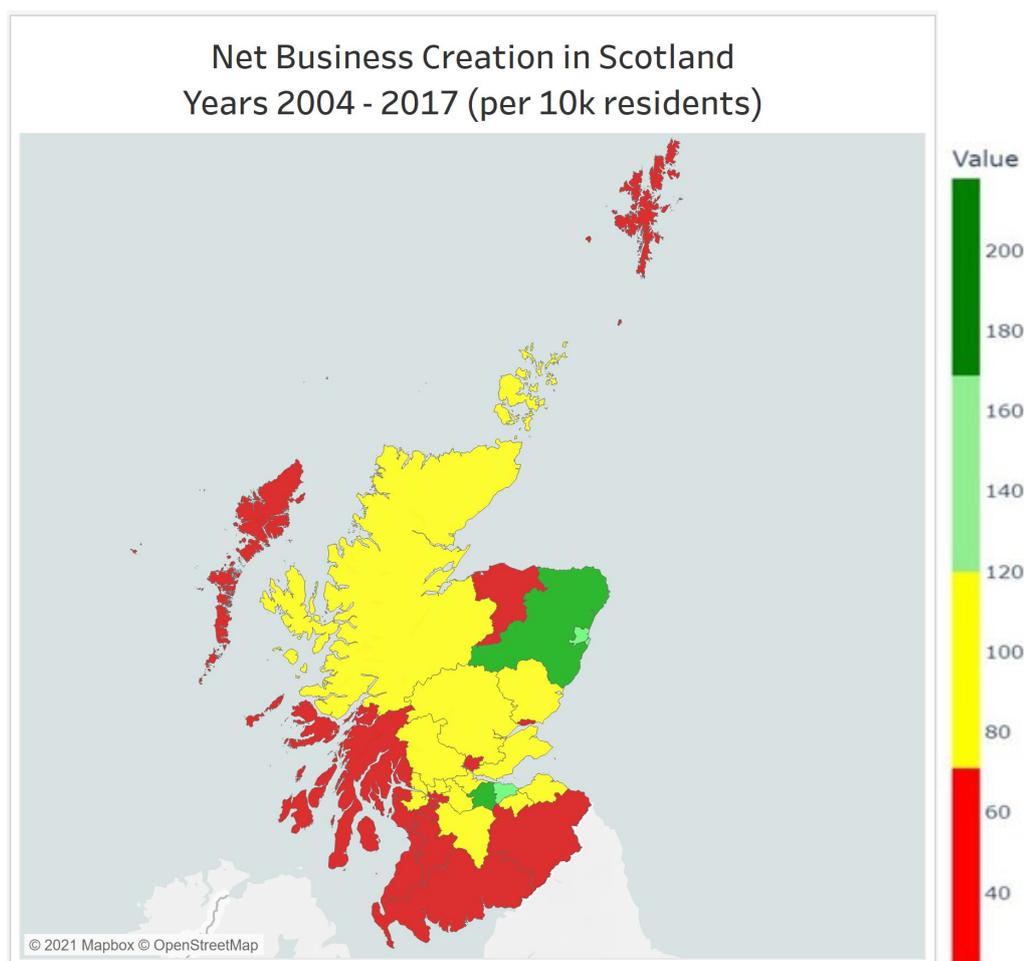


Source: Scottish Government

Organisational capital and the business base

- 3.7. Scotland's business stock amounts to 364,310 enterprises (registered and unregistered) and provide 1.2 million of private sector jobs. The SME sector accounts for 98% of businesses but is considerably smaller in comparison to the rest of the UK. In 2020 the gap amounted to 150 companies per 10,000 population and the gap has been persistent, indicating a lack of entrepreneurial skills, opportunities, and ambition. The gap can be traced to Scotland's lower rates of business start-ups than the UK as a whole. For 2018, business births per 10,000 population in Scotland was 45.6 compared to 70.7 in the rest of the UK. Since 2012, the growth rate of business creation in Scotland at 2.1% has lagged the respective UK growth rate (at 4.5%).
- 3.8. Intra-regional disparities in business start-up rates are significant, with Edinburgh and the East regions experiencing considerably higher start up rates in comparison to Glasgow City, West and South regions. Figure 10 displays a heat map of net business creation--defined as registrations less de-registrations--at council level. Most councils in the west and south regions (in red) have experienced a considerably smaller number of net business creation in comparison to councils around Edinburgh and Aberdeen (green shades). The majority of councils in the central belt and the highlands have experienced moderate net business creation.

Figure 10. Net Business Creation in Scotland - Years 2004 - 2017 (per 10k residents)



Source: Scottish Government

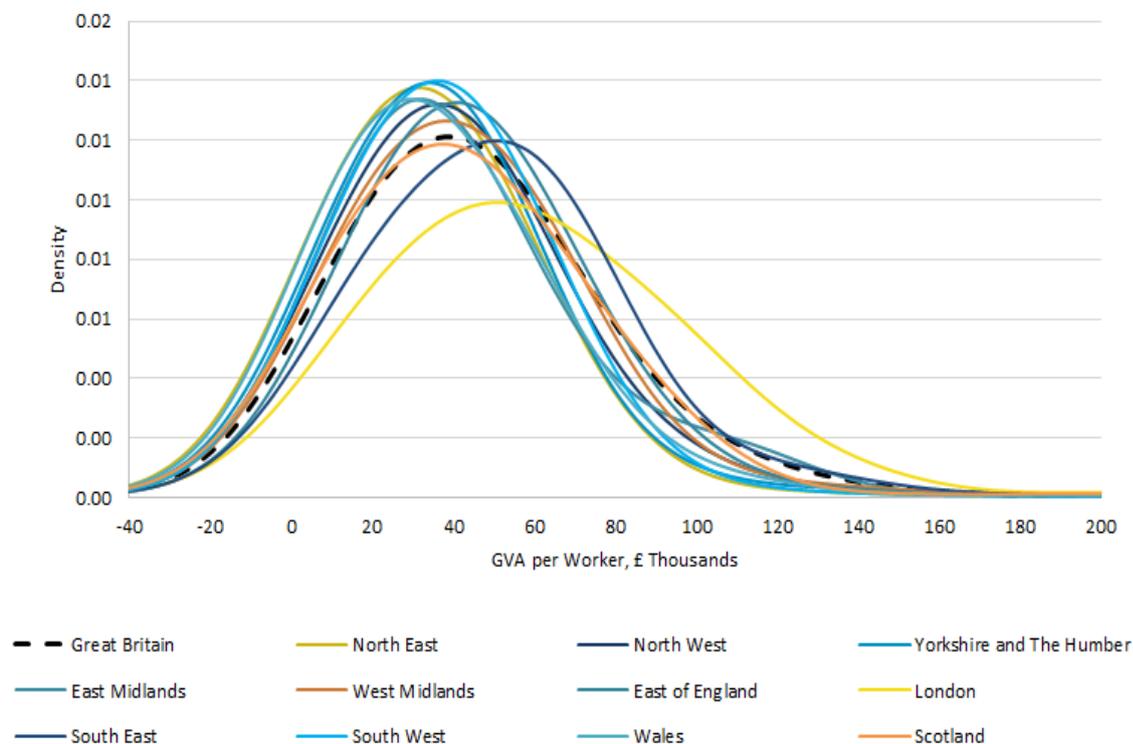
- 3.9. Further insight can be gained by looking at firm level productivity trends using the annual business survey from the ONS. The distribution of productivities shape is remarkably similar in all regions except London and the South East. They depict a relatively large group of firms clustered at low levels of productivity (Figure 11) and a relatively small group of firms with high levels of productivity. In Scotland, between 2004-2014, growth in firm productivity was: 13% on average per annum for the top 0.1% firms, 7% for the top 1% of firms, 0% for 99% of firms. Figure 12 illustrates the lack of a critical mass of high growth businesses in Scotland in a regional heat map⁶. There is only a handful of council areas (in green shades) that exhibit a proportion of high growth businesses greater than two percent. One explanation for the large tail of poor performing firms is that due to low adoption this group has failed to keep pace with technologies that are being used by the frontier firms.⁷ Scotland has a

⁶ This indicator is the proportion of businesses with more than 10 employees that exhibits an average of 20 percent growth in turnover in a three-year window.

⁷ Haldane A (2017) 'Productivity Puzzles', speech, Bank of England.
<https://www.bankofengland.co.uk/speech/2017/productivity-puzzles>

number of world leading companies at the cutting edge of innovation, but it remains to be seen how the benefits of innovation will spill to the wider business base.

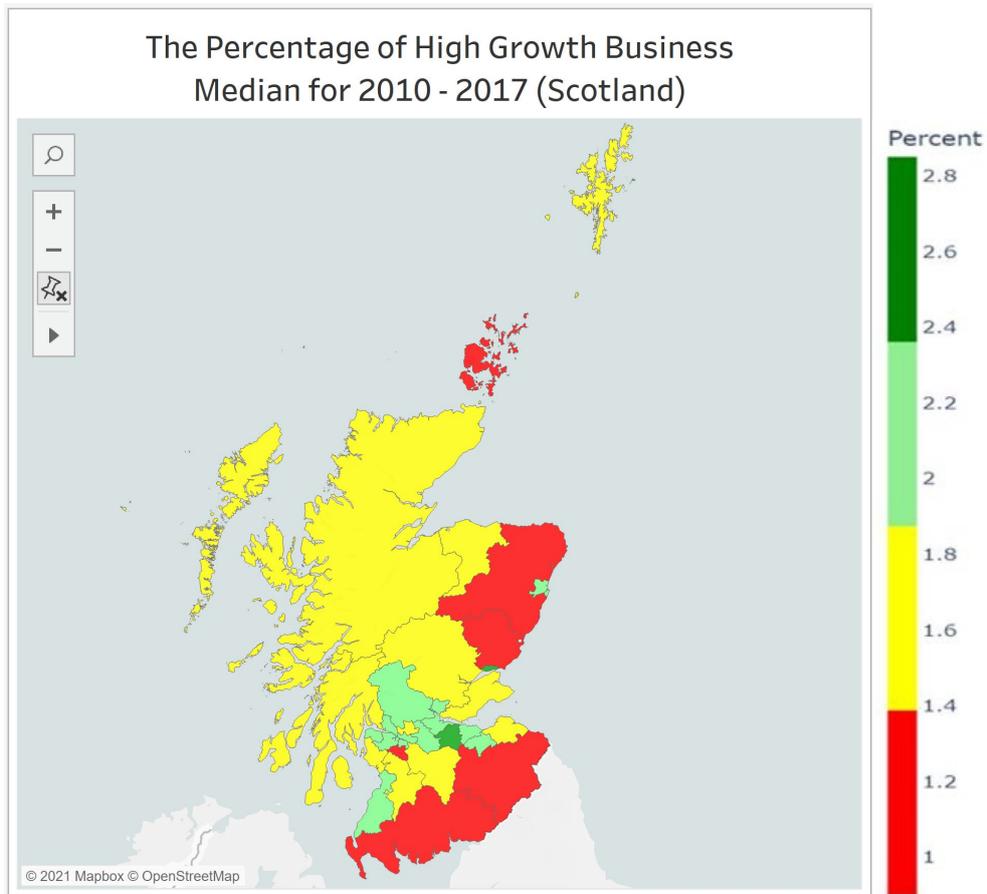
3.10. The top 20% of firm productivity distributions is generally over-represented by Knowledge intensive services; in Scotland this feature is more pronounced in comparison to other UK regions. In Scotland, the majority of the firms in the Knowledge intensive services sectors that make up the top 20% of the distribution are micro (1 to 9 employees). The bottom 20% of firm productivity distributions is dominated by less Knowledge intensive industries (Figure 13).⁸



Source: Office for National Statistics, Annual business survey

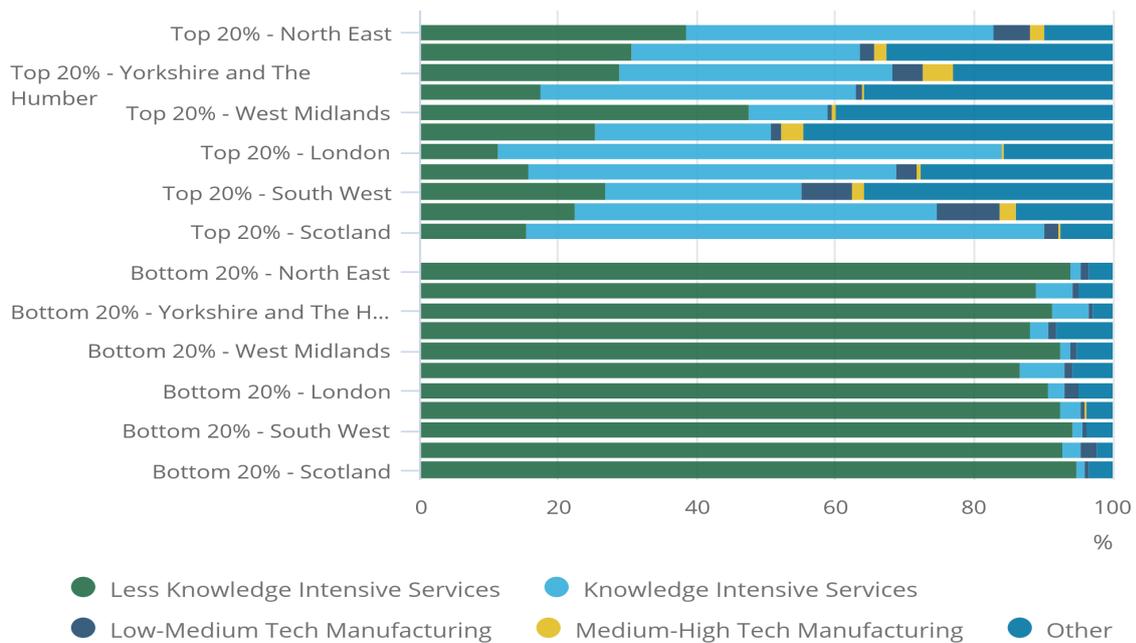
⁸ The ONS aggregates into knowledge-intensive services (KIS) and less knowledge-intensive services (LKIS) based on the share of tertiary-educated persons at NACE two-digit level. Knowledge-intensive services include high-tech knowledge-intensive sectors such as telecommunication or information service activities; market services such as architectural and engineering activities, technical testing and analysis; or legal and accounting activities and other services such as veterinary activities. Less knowledge-intensive services sectors include accommodation and food service activities or wholesale and retail trade sectors. Other include construction, real estate, and non-manufacturing production.

Figure 12. The Percentage of High Growth Business. Median for 2010-2017 (Scotland)



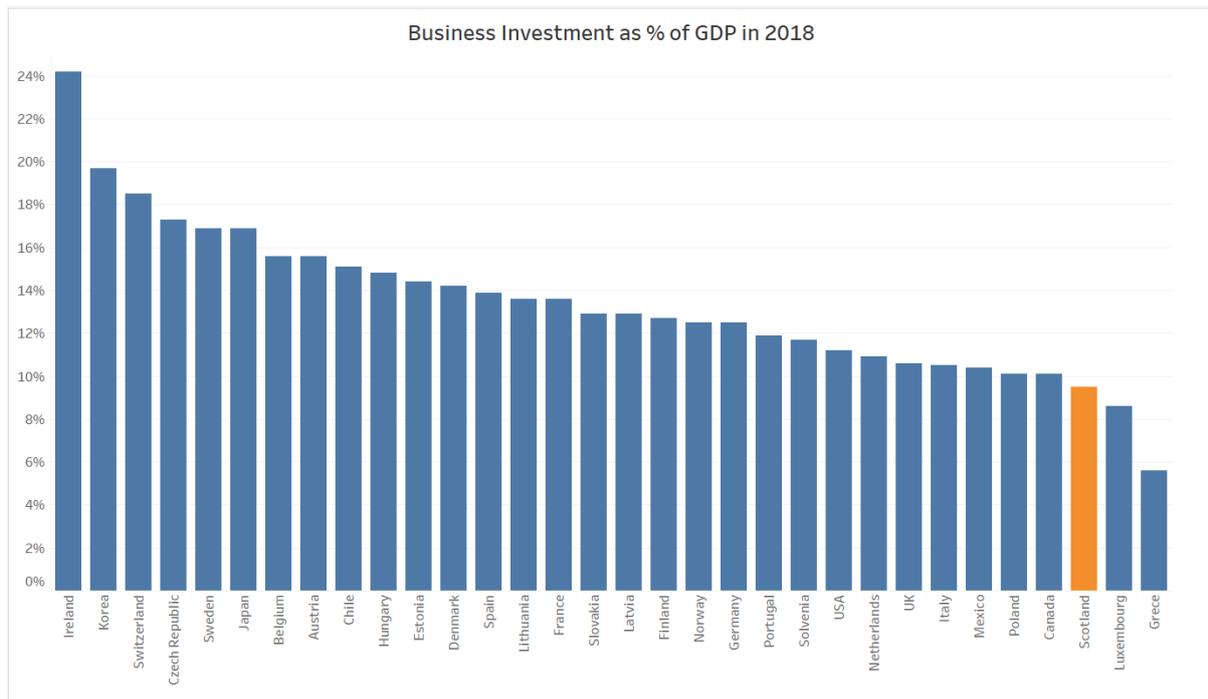
Source: Scottish Government

Figure 13. Industry composition of firm productivity distributions, 2015



Source: Office for National Statistics

Figure 14. Business investment (corporate gross fixed capital formation) as % of GDP, 2018



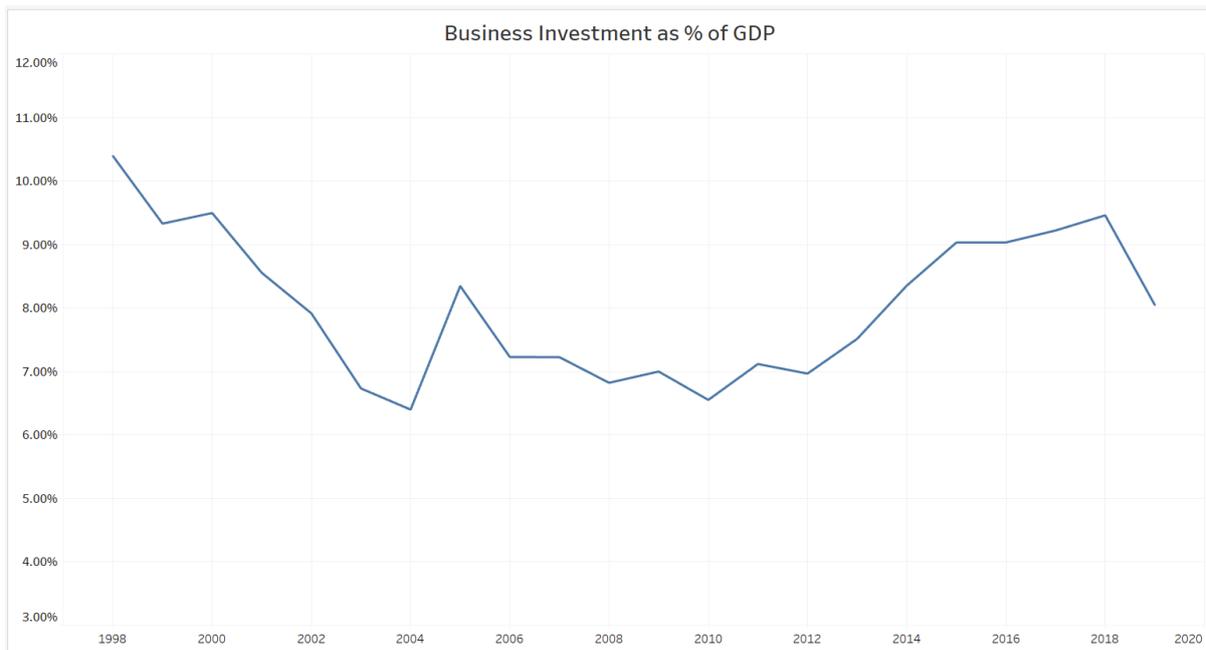
Source: OECD, Scottish Government

Business Investment, innovation, and R&D

- 3.11. Business investment in physical and intangible capital (machinery and equipment, buildings, ICT, R&D) is a key enabler of productivity and growth. The availability and quality of capital per worker (*capital deepening*) is a determinant of labour productivity. For example, investment in ICT capital allows firms access new technologies that raise productivity. Business investment has been chronically low in Scotland and as of 2018 at very near the bottom of the OECD Table (figure 14) and below the UK average. As a percent of GDP, Scottish real business investment has been relatively flat since 1998 (figure 15). A recent report from the Fraser of Allander Institute estimates that for Scotland to match the UK average, every Scottish business with more than 50 employees will need to invest an additional £55,000 per annum.⁹

⁹ Business investment performance in Scotland, Fraser of Allander Institute Economic Commentary, 2017.

Figure 15. Business investment in Scotland

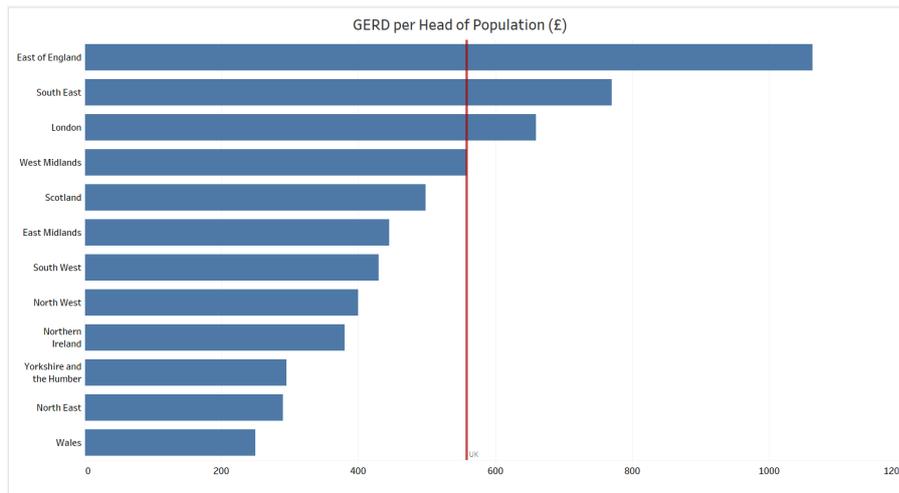


Source: Scottish Government

- 3.12. The international competitiveness of the business sector can be measured by its export record. Exporting allows businesses tap new sources of growth, create new jobs, and boost productivity. Firms which export have systematically higher levels of productivity than domestically oriented firms, on average by around a third.¹⁰ Scotland has increased its exports since 2005 in absolute value, but not as a share of GDP. The export base is very narrow, with approximately only 11,000 businesses that are exporters. This reflects the absence of large scale-ups. And of those that export, 100 businesses account for 60% of exports. A further 400 businesses account for 20% of exports.
- 3.13. Scotland's gross expenditure on **Research and Development (GERD)**—a key enabler of productivity growth—was 1.65% of GDP in 2018. GERD per head of population ranks fifth in the UK, below the UK average (Figure 16), and in the third quartile of OECD.
- 3.14. Within total R&D, business expenditure (BERD) at 50.1% made up a relatively small proportion of GERD compared to other regions of the UK and concentrated in a small number of large businesses. To an extent Scotland's low BERD (compared to the UK) is a consequence of the smaller business base in the high R&D intensive sectors, such as manufacturing. Countries comparable in size such as Finland and Sweden spend over three times as much on BERD.

¹⁰ Bank of England (2017), Speech by Andy Haldane, Productivity puzzles.

Figure 16. GERD per head of population, UK regions, 2018



Source: Scottish Government

- 3.15. Scotland on the other hand has had a strong performance--outperformed all of UK regions and ranks seventh in the OECD (2018)-with R&D spent by higher education institutions (HERD), and at 41.6% makes up a large proportion of GERD. The HE sector is very effective in leveraging public sector funding, through high impact research, knowledge exchange, partnerships, FDI, spin-offs, etc. Scottish Universities are internationally renowned and have an influential role in shaping and driving the agenda of research and innovation, working closely with businesses to form new collaborations and maximise their impact on the economy. The challenge remains on how, given a level of HERD spending Scotland can generate more BERD spending and translate the world class research into commercial opportunities.¹¹
- 3.16. Public R&D has declined over the longer term by 24.9% between 2007 and 2018. Potentially, more public investment in targeted areas that have big societal impact (energy, environment, and climate) will be beneficial. The newly established Scottish National Investment Bank can crowd-in private investment and support innovation.
- 3.17. Innovation can take many forms, from design of new products and processes to workplace innovations, such as management practices. In the most recent UK Innovation survey 2019¹², Scotland lags the UK in all metrics of Innovation. The proportion of innovation active firms in Scotland is 32.2% compared to 37.6% for the UK. This share has been declining since 2012.¹³

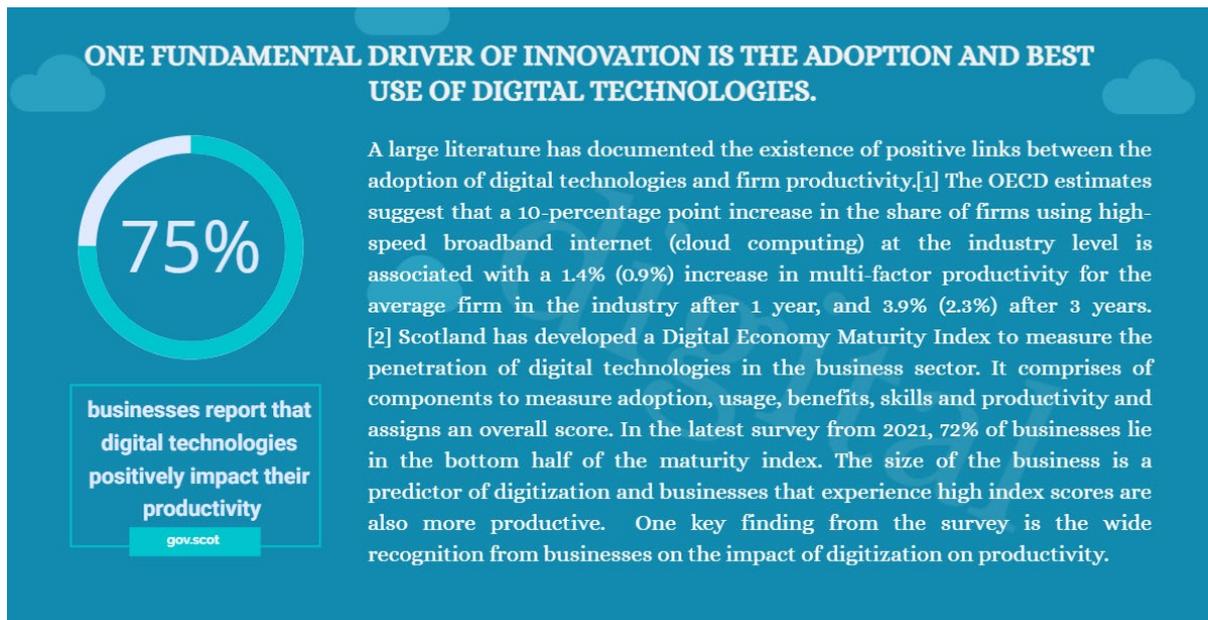
¹¹ The Muscatelli report: driving innovation in Scotland—a national mission (2019).

https://www.gla.ac.uk/media/Media_700300_smxx.pdf

¹² <https://www.gov.uk/government/statistics/uk-innovation-survey-2019-headline-findings>

¹³ Improving quality products and services, followed by improving outdated products and processes were the main drivers of innovation.

Figure 17. Investing in digital



- 3.18. It is interesting to note that businesses across the spectrum of digital maturity, including digital pioneers, report significant gaps in terms of digital skills. Only 26 per cent of Scottish businesses report their employees are fully equipped with the skills to meet the business's digital technology needs, and just 34 per cent of businesses are developing their existing employees' digital skills¹⁴. Over half of employers report they want to provide more opportunities for tech skills training. A significant proportion of employers (58%) reported skills issues in terms of the necessary employability or work readiness skills and of those reporting a skills gap, 68% report it has an impact on business performance; 35% of businesses report staff are under-utilised; and 69% of employers identified the need for up-skilling in the next twelve months.¹⁵ The Covid-19 pandemic will only intensify these gaps as businesses will have to swiftly adapt to the new ways of working.
- 3.19. Strong leadership and management practices have been shown to be strongly correlated to firm-level productivity, with even small improvements in management practices being associated with up to a 5% increase in the growth rate of a business's productivity.¹⁶ A recent OECD report identifies management capabilities as a key enabler of technology adoption and IT engagement.¹⁷ The Enterprise and Skills review on innovation suggests SMEs do not fully understand the benefits of workplace innovations or can navigate the support programmes offered by Scottish

¹⁴ See Scottish Government (2021) *Digital Economy Business Survey 2021*. <https://www.gov.scot/publications/digital-economy-business-survey-2021>.

¹⁵ The Scottish Council for Voluntary Organisations estimates that **nearly one in five adults in Scotland** do not have the skills to make full use of digital technology at home or at work. <https://scvo.org.uk/p/36175/2020/03/19/no-one-left-behind-digital-scotland-Covid-19>.

¹⁶ Bryson et al (2018), The impact of management practices on SME performance. NIESR discussion paper, no. 488.

¹⁷ The report is available at: <http://www.oecd.org/cfe/leed/UK-BDS-Synthesis-Report-Final.pdf>.

Enterprise.¹⁸ Simple solutions, such as behavioural nudges and a strong peer group for SME businesses can be leveraged to begin a journey of innovation.

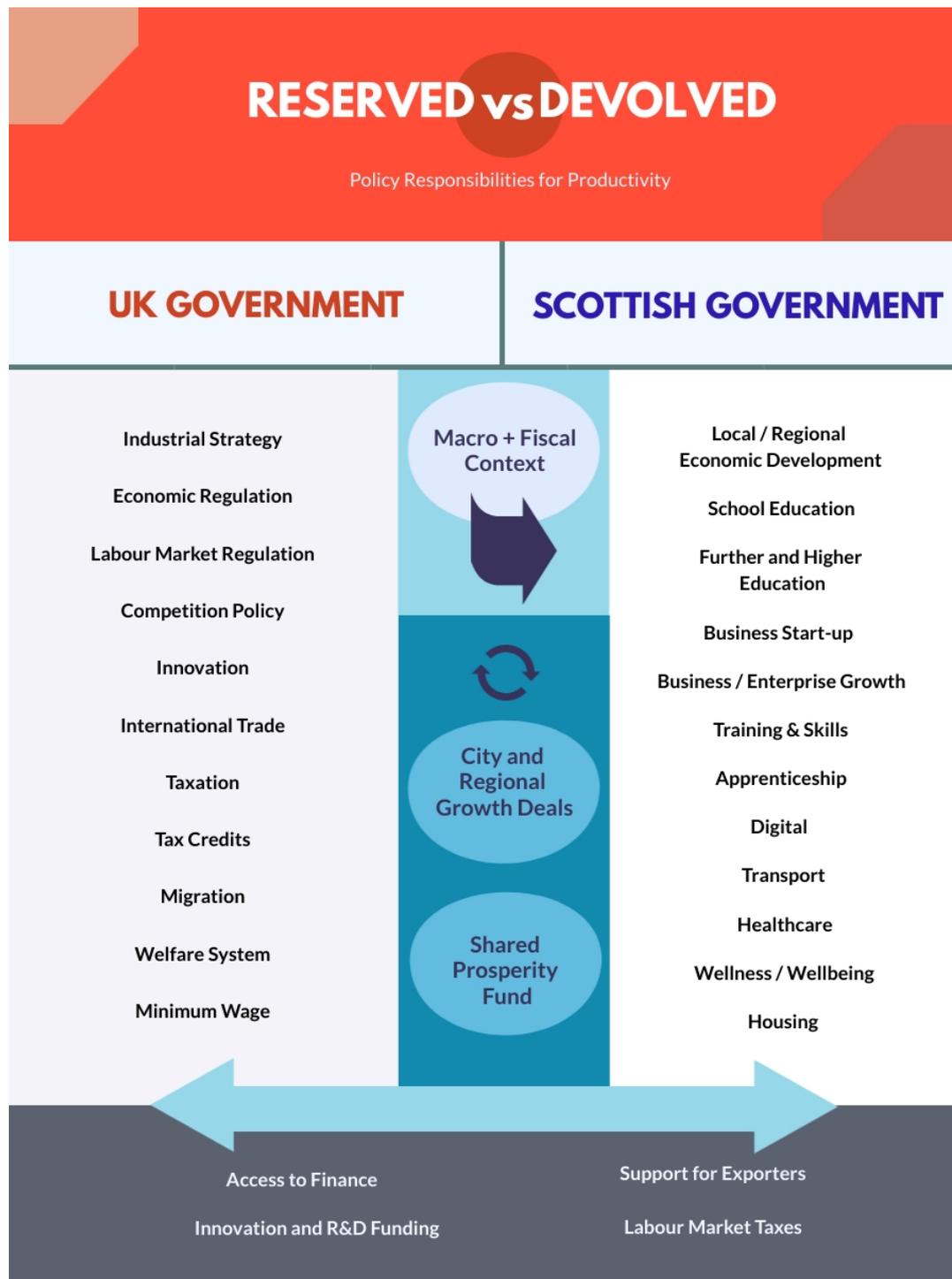
- 3.20. For the current and aspiring business leaders, consolidation and management of resources about best practices—which often is shared through peer networks—across the spectrum of providers (a ‘one-stop-shop’) can remove initial obstacles especially for SMEs that are willing to embark on a growth journey but do not know where or how to start. In that context, a recent Scottish Government’s pilot with the Productivity clubs, planted the seeds for peer-to-peer learning networks and it is important for the Institute to share knowledge in this space to maximise the reach of this initiative.

Institutions, governance, and strategic ambitions

- 3.21. Under devolution, responsibility for policies that directly – and indirectly – impact upon productivity are shared between the Scottish and UK governments. The system is now complex and arguably has become even more complex as more economic and fiscal powers have been granted to the Scottish Parliament (most recently in 2016). The nature of this shared responsibility is summarised in Figure 18 below.
- 3.22. Macroeconomic, industrial, innovation and fiscal levers are controlled by the UK Government. This includes key drivers of productivity such as business tax policies, policies to support internationalisation, access to finance and regulatory levers. Specific policy initiatives, such as the Levelling-Up agenda, should see resources specifically targeted at sectors and regions within Scotland with the aim of helping to boost productivity.
- 3.23. In contrast, the Scottish Government controls more of the microeconomic levers to support productivity. This includes the education and skills system, support for business start-ups and broader economic development, infrastructure, and small business growth. Delivery of policy in these areas is often tasked to agencies, such as Scottish Enterprise, Highlands and Islands Enterprise and Skills Development Scotland. Local government too has a role, including through City and Regional Growth Deals. They are also responsible for initiatives such as Business Gateway (the administration of support to help business start-up) and more place-based initiatives such as planning, local transport projects and regeneration initiatives.

¹⁸ Results from a Scottish survey of SMEs emphasizes the importance of management and leadership skills for company performance. See, ‘Leadership and management skills, management practices and firm performance and growth in Scottish SMEs’ Enterprise Research Centre, University of Warwick, 2015.

Figure 18. National and devolved policies for productivity



3.24. The policy landscape in Scotland has been criticised in recent times for being complex. For example, both the Scottish and UK Governments have their own distinct policies for promoting drivers of productivity, such as exports and access to finance. Moreover, it is often the case that outcomes in certain key areas require joined-up policymaking between Edinburgh and London. In many cases this works well (for example, in Higher Education), but in other areas – most recently for example, in the

case of Freeports – this has arguably been less effective. The Scottish Budget is still also largely determined by a ‘block grant’ from Westminster so how much the Scottish Government has to spend on economic policies is, to an extent, still influenced by UK budget decisions.

- 3.25. This complexity is likely to increase in the years to come. Since 1999, there has always been the implicit assumption that the UK Government would not spend money in areas where legislative competence was devolved. But plans for the new UK Shared Prosperity Fund will mean that the UK Government will soon start spending directly in areas of devolved legislative competence that have implications for productivity, such as transport infrastructure in Scotland.
- 3.26. Therefore, the success of economic policy efforts to promote productivity in Scotland is a mix of both UK and Scottish Government policy initiatives and how effective these initiatives are at working collaboratively with each other.
- 3.27. The UK Government’s Plan for Growth, speaks to many of the productivity challenges in Scotland, including the need to grow its industrial base, to tackle inequalities both within and between regions and the importance of the transition to net zero.
- 3.28. Likewise, the Scottish Government’s approach - reformulated in their 2015 Economic Strategy and soon to be updated in their Strategy for Economic Transformation - sets out an ambition to boost productivity while simultaneously tackling inequalities.
- 3.29. One criticism of economic policy making in recent times has been the focus upon strategies and action plans as opposed to delivery and implementation. The Scottish Government currently has over 50 strategy documents focused upon the economy. Numerous delivery bodies play a role in supporting productivity in a devolved context which adds a further layer of organisation and complexity. Bodies include the Scottish Government itself, Scottish Enterprise, Skills Development Scotland, Highlands and Islands Enterprise, the Scottish Funding Council, the South of Scotland Enterprise Agency, the Scottish National Investment Bank, the Scottish Futures Trust, Visit Scotland and 32 local authorities.
- 3.30. To help address this, in 2017, the Scottish Government created a new Enterprise and Skills Strategic Board (ESSB) to provide strategic overview to Scotland’s enterprise and skills agencies. Its objective was to align and co-ordinate their activities. The new Scottish Government Council for Economic Transformation has also been tasked with providing greater clarity and focus to the economic policy landscape. One area for improvement – similar to other parts of the UK – is in evaluation of policymaking. Policies to promote productivity are only evaluated on occasion, with challenges around data etc. making big-ticket items, such as the Scottish Government’s flagship business tax policy ‘the Small Business Bonus’ almost impossible to assess whether it is good or bad for productivity growth.
- 3.31. One area where both the UK and Scottish Governments have worked closely as been the implementation of City Region and Regional Growth Deals. They are funded jointly by the UK and Scottish Governments as well as local partners and now cover 100% of Scotland. Glasgow City was the first region to secure funding in 2014. City Region deals have subsequently been agreed in, Aberdeen, Inverness and Highland, Edinburgh and South East Scotland, Stirling and Clackmannanshire, and Tay. City

Region Deals are mechanisms to accelerate growth by pulling in government investment. As they are a relatively new initiative, it remains to be seen how effective these initiatives have been.

Key issues and research priorities

Business eco-system scale up challenges

- 4.1 The business ecosystem in Scotland lacks a critical mass of large scale-ups. Except for Finance & Insurance and Oil and Gas, the business base comprises micro and small companies with limited growth potential. Our evidence points to **human capital** gaps in terms of leadership skills, strategic thinking and ambition, as well as access to talent and lack of diversity in the workplace and in leadership roles. There is often a need for organisational change and different workplace management practices for the next phase of enterprise growth, however, behavioural aspects such as complacency, lack of awareness, fear of change, appear to hold back businesses from making these intangible investments to enable a successful scale up. Further, there is a need for a clear road map ('how', 'when', 'where') for SMEs to embark on a growth journey.
- 4.2 Variations in quality of management appear, in some instances, to explain differences in productivity performance between the UK and key international competitors. At the same time, there is emerging evidence of the value of 'good work'/'fair work' and productivity (e.g. work-life balance through to pay & benefits and overall terms of employment). The links between 'good work'/'fair work' and productivity can be complex, and certain dimensions may not always be positively correlated with productivity. Outcomes appear to depend upon on a range of factors including the size of business and sector. This literature is particularly important in the context of COVID, with an increasing likelihood of large parts of the labour force working at home in the years ahead. How might remote working impact upon productivity? The ESRC's ProPEL Hub (based in Strathclyde University) is looking at such issues and is linked to the work of the Productivity Institute.
- 4.3 Engaging a diverse population is crucial to unlock innovation and productivity. Research shows that diversity leads to innovation and increases productivity. Radical step-change innovation does not thrive in a silo which lacks diversity of thought and experience. Across the business ecosystem, women are the majority of the newly self-employed, an unprecedented increase. Historically, women have made up just over a quarter of the self-employed, but since the 2008 downturn 58% of the newly self-employed have been female. The upward trend in the number of self-employed women goes alongside a sharp downward trend in their incomes, access to training and social protection. For a growing proportion of women, self-employment does not appear to be a "choice", but a necessity driven by factors such as public sector job losses, the uprating of the female retirement age, or a need to accommodate

caring responsibilities¹⁹. Women face specific challenges in starting and growing businesses and providing needs-based gender-specific support could unlock a £250bn opportunity²⁰. A further innovation dividend could then be released by creating a more gender balanced business ecosystem and the conditions where radical innovation thrives – boosting national competitiveness. Significant gaps exist between the growing Minority Ethnic communities (and within them women) and Scotland’s ability to tap into the rich talent pool within these communities. According to the Federation for Small Business (FSB) 2019 report, one in ten businesses are migrant led and contribute £13bn to the Scottish economy whilst employ over 100,000.

- 4.4 According to the Alison Rose Review of Female Entrepreneurship (2019), women of colour are significantly impacted by the lack of support to start, develop and scale businesses in the UK with a lack of relatable and accessible mentors and networks.²¹ Whilst the analysis identified several challenges faced by women in general, including lack of finance, they are more pronounced for Black Minority Ethnic (BME) women. While it is widely recognised that Ethnic Minority-led Businesses (EMBs) and individuals from migrant backgrounds make a variety of economic and social contributions to their communities and the wider society in Scotland, there are longstanding concerns that Ethnic Minority Entrepreneurs (EMEs) and individuals continue to experience relative disadvantage and multiple barriers which stifle economic productivity. It is therefore very pertinent that Scotland should explore new ways of inclusivity. To boost productivity, Scotland must strongly consider an intersectional approach with anti-racism embedded in the fabric of the design right from innovation through to end delivery. With Scotland’s ageing population, it is important that migrants are able to fully integrate within Scotland’s working population. It is in Scotland’s interest to ensure relevant and meaningful entrepreneurship support is made more accessible for these communities. There is a real lack of data which needs to be addressed to better understand the pressure points.

Innovation, skills and digital

- 4.5 What are the key interventions that can be engineered to establish quick wins in terms of innovation, skills and digital? Are the benefits of innovation articulated strong enough? How can a culture of enterprise be established and the diversity of our population to enterprise and innovation be harnessed?
- 4.6 The evidence points to skills mismatch as companies report big gaps especially around digital capabilities, despite a well-educated workforce. We have identified three key policy areas for intervention: adoption of technologies across the broader business base, digital skills and support and development of the tech sector following

¹⁹ Here to Stay: Women’s Self-Employment in a (Post) Austerity Era, Women’s Budget Group (2015)

²⁰ The Alison Rose Review of Female Entrepreneurship (2019)

²¹ <https://www.gov.uk/government/publications/the-alison-rose-review-of-female-entrepreneurship>

the recommendations of the Logan 2020 report.²² The Scottish Government deployed grant funding for SMEs to invest in digital technologies, the result of which presented the high levels of ambition within SMEs in terms of digital adoption. Digital transformation would undoubtedly help small, people-focused businesses to scale despite their low IT budgets, but there is a lack of vision and understanding of how to get there due to lack of in-house knowledge, and where knowledge sharing and expertise through the various initiatives of the Institute will add value. The SPF board agreed that the Institute's expertise can be deployed to extract value from the data, surveys and case studies to inform, a) the broader business base and b) future policy decisions.

Disparities and closing the intra-regional gap

- 4.8 The disparities in GVA and productivities across the different regions of Scotland are persistent and striking. The Scottish economy can be described as being four different economies: i) North-East with Aberdeen and its oil-and-gas sector, ii) Edinburgh with its finance sector which mimics a mini-London, iii) Glasgow and the West recovering from the post-industrial decline, iv) the rural areas.
- 4.9 Whilst it is evident that accelerating infrastructure projects (including digital) must be a policy priority for rural areas to catch up with the rest of the nation, it remains unclear why Glasgow and the West have for decades been lagging so much behind Edinburgh and the East. Analysis identifies potential explanations at an aggregate level with Glasgow for example having lower productivity rates in the same sectors compared to Edinburgh, but there is a real need to investigate at a deeper and multi-dimensional level to understand the drivers behind the differences in performance and why they persist over time. Besides differences in business creation, differences in economic inactivity rates, and residents without qualifications are primary suspects. There is an opportunity for Glasgow to learn from other cities with similar post-industrial histories like Liverpool and Manchester.

Policies and Implementation challenges

- 4.10 A challenge in every country is finding out 'what works' in policy development to support productivity. There can often be no shortage of good ideas to boost productivity, but delivery and implementation is more difficult. There is the opportunity, particularly with devolution, to invest more time and thinking as part of the economic policy process to consider issues of implementation and to evaluate success. This could be a partnership between the public sector, the private and third sectors and academia.

²² See, <https://www.gov.scot/publications/scottish-technology-ecosystem-review/>

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